

**ONLINE INFORMATION SEEKING BEHAVIOUR OF POST GRADUATE
STUDENTS IN AHMADU BELLO UNIVERSITY, ZARIA**

BY

**ESEW, Michael
MSc/EDUC/5111/2009-2010**

**A MASTERS THESIS SUBMITTED TO THE
POST GRADUATE SCHOOL
AHMADU BELLO UNIVERSITY, ZARIA**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD
OF MASTER OF INFORMATION SCIENCE (M.Sc)**

**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
AHMADU BELLO UNIVERSITY, ZARIA**

MAY, 2015

DECLARATION

I hereby declare that this thesis entitled “Online Information Seeking Behaviour of Postgraduate Students in Ahmadu Bello University, Zaria” has been written by me in the Department of Library and Information Science under the supervision of Professor Zakari Mohammed and Dr. Ezra S. Gbaje. All the literature cited were duly acknowledged.

ESEW, Michael

Signature

Date

CERTIFICATION

This is to certify that this thesis entitled “Online Information Seeking Behaviour of Postgraduate Students in Ahmadu Bello University, Zaria” by Michael Esew meets the regulations governing the award of the degree of Mater of Information Science (M.Sc) of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

Prof Zakari Mohammed
Chairman, Supervisory Committee

Date

Dr. Ezra S. Gbaje
Member, Supervisory Committee

Date

Dr. Abdullahi Musa Ibrahim
Head of Department

Date

Prof. A. Z. Hassan
Dean, Postgraduate School

Date

DEDICATION

This thesis is dedicated to my parents, Dr. and Mrs. Ntim G. Esew. May God continue to protect and bless them.

ACKNOWLEDGEMENT

All praises, honour and adoration go to God almighty who granted me the strength and opportunity to complete this research work. I wish to express my profound gratitude to my supervisors, Prof. Zakari Mohammed and Dr. Ezra S. Gbaje for their encouragement, constructive criticisms and patience throughout the period of this study. It is my prayer that God almighty will continue to bless them beyond measures. To Prof. Tijani Abubakar, Prof. Umar Ibrahim and Dr. Abdullahi Musa Ibrahim, I say thank you.

My sincere appreciation goes to the entire staff of the Department of Library and Information Science, Dr. K.A Momoh, Dr. Baba S. Aduku, Dr. Abu Yusufu, Dr. Babangida U. Dangani, Mal Hayatu, and Mal. Idris, just to mention but a few. I thank you all for your words of encouragement throughout the period of this research.

Let me also add my colleagues at Kashim Ibrahim Library, Mal. Aliyu Abdulkadir, Mrs. Whong, Andrew Isibor, Mrs Dorcas Ibinaiye, Aminu Liman, Moh'd Habibu, Sekinat Opoola, Rukayat Tijani, Liman Ishaq, Aminu Musa Umar, just to mention but a few and all the staff and management of K.I.L for their prayers and support during this research. To you all, I say thank you. I am also grateful to my research assistants, Kenneth Irenea, Kadijat Yunus Sufi, Joy Danladi, Dorcas and Dauda. Thank you all for your support during the course of my data collection. To my Wife- Onyeyirichi and daughter - Imelda, I thank you for your love care and encouragement.

I am very much grateful to the members of my family for their unflinching support and care throughout the period of this programme. They are Dr. Ntim G. Esew, Mrs. Mary Ntim, Martins Ntim, Anthony O. Esew, Juliet Sintim and Madina. My uncles and aunts, I thank you all for your support throughout this study.

I am also indebted to my 2009/2010 class members. To you all, I say thank you. I also recognize and say thank you to the amiable parishioners of *St. Enda's- A Place Where God Answers Prayers Sharp Sharp.*

ABSTRACT

This study was carried out to investigate the Online Information Seeking Behaviour of Postgraduate Students in Ahmadu Bello University, Zaria. Five research questions were raised and five (5) hypothesis were formulated and tested at $\alpha=0.05$. The research questions sought to find out the types of online information resources and services available for use by postgraduate students, their sources of online information, their information search pattern, how they evaluate and filter the quality of online information resources (OIRs) they use. The research adopted survey method; the instrument used for data collection was the questionnaire. Proportionate stratified random sampling was used to select respondents for this study. Data collected from the research questions were analysed using frequency tables and simple percentages, Pie Chart and Column Charts. Null hypotheses 1, 3, 4 and 5 were analysed using ANOVA while Null hypothesis 2 was analysed using t-test. The study discovered that majority of the postgraduate students are aware of the online information resource which they frequently use. They are also aware of e-journals, e-books and electronic theses and dissertations; majority of the postgraduate students in Ahmadu Bello University, Zaria are extraverted and enthusiastic by the results and amount of information they get online. This behavior affects their ability to get the required information; There is no significant difference between male and female students in Ahmadu Bello University on the sources of online information resources available for their use; There is no significant difference among students of different faculties of Ahmadu Bello University concerning the challenges faced in searching for online information resources; majority of the postgraduate students use Google and other search engines to look up information online. The study concluded that postgraduate students in Ahmadu Bello University have realized and have come to terms with the web knowing fully well that it is packed full with resources that they need for their academic advancement and research productivity. However, many of the postgraduate students have developed poor online information seeking behavior making it difficult for them to locate the right information. It is recommended that more awareness should be created on the availability Ahmadu Bello University's institutional repository and how to effectively search for information therein; the University Library should intensify the existing training programme for postgraduate students on how to effectively search for online information resources.

TABLE OF CONTENT

Title Page-	-	-	-	-	-	-	-	-	-	-	i
Declaration	-	-	-	-	-	-	-	-	-	-	ii
Certification-	-	-	-	-	-	-	-	-	-	-	iii
Dedication-	-	-	-	-	-	-	-	-	-	-	iv
Acknowledgement-	-	-	-	-	-	-	-	-	-	-	v
Abstract-	-	-	-	-	-	-	-	-	-	-	vi
Table of Content-	-	-	-	-	-	-	-	-	-	-	vii
List of Tables--	-	-	-	-	-	-	-	-	-	-	x
List of Figures-	-	-	-	-	-	-	-	-	-	-	xii
List of Appendices-	-	-	-	-	-	-	-	-	-	-	xiii
List of Abbreviations	-	-	-	-	-	-	-	-	-	-	xiii

CHAPTER ONE: Introduction

1.1	Background to the Study-	-	-	-	-	-	-	-	-	1
1.2	Statement of the Problem-	-	-	-	-	-	-	-	-	9
1.3	Research Questions	-	-	-	-	-	-	-	-	10
1.4	Research Hypotheses-	-	-	-	-	-	-	-	-	10
1.5	Objectives of the Study-	-	-	-	-	-	-	-	-	11
1.6	Significance of the Study-	-	-	-	-	-	-	-	-	12
1.7	Scope of the Study-	-	-	-	-	-	-	-	-	12
1.8	Limitation of the Study-	-	-	-	-	-	-	-	-	12
1.9	Operational Definition of Terms-	-	-	-	-	-	-	-	-	13
	References-	-	-	-	-	-	-	-	-	14

CHAPTER TWO: Review of Related Literature

2.1	Introduction-	-	-	-	-	-	-	-	-	17
2.2	The Concept of Information Seeking-	-	-	-	-	-	-	-	-	17
2.3	Online Information Seeking Behaviour-	-	-	-	-	-	-	-	-	20
2.4	Online Information Resources and Services Available in Academic Institutions									25
2.4.1	Online Information Resources in Academic Libraries-	-	-	-	-	-	-	-	-	27
2.4.2	Online Information Services in Academic Libraries--	-	-	-	-	-	-	-	-	29
2.5	Online Information search Strategies by Students in Academic Institutions -									31
2.6	Information and Communication Technology Competencies for Online Information Search-	-	-	-	-	-	-	-	-	34
2.6.1	Information and Communication Technology (ICT) Competence for Students in Higher Education -	-	-	-	-	-	-	-	-	36
2.6.2	Standards for Information and Communication Technology Literacy -									37
2.7	Online Information Seeking Behaviour Models	-	-	-	-	-	-	-	-	39
2.8	Summary of the Review-	-	-	-	-	-	-	-	-	47
	References	-	-	-	-	-	-	-	-	48

CHAPTER THREE: Research Methodology

3.1	Introduction	-	-	-	-	-	-	-	-	54
3.2	Research Method	-	-	-	-	-	-	-	-	54
3.3	Population of the Study	-	-	-	-	-	-	-	-	55
3.4	Sample and Sampling Technique	-	-	-	-	-	-	-	-	57
3.5	Instrument for Data Collection	-	-	-	-	-	-	-	-	58

3.6	Validity of the Research Instrument	-	-	-	-	-	-	-	-	58
3.7	Reliability of the Research Instrument	-	-	-	-	-	-	-	-	58
3.8	Procedure for Data Collection	-	-	-	-	-	-	-	-	59
3.9	Procedure for Data Presentation and Analysis-	-	-	-	-	-	-	-	-	59
	References	-	-	-	-	-	-	-	-	60

CHAPTER FOUR: Data Presentation, Analysis and Discussion

4.1	Introduction	-	-	-	-	-	-	-	-	61
4.2	Response Rate-	-	-	-	-	-	-	-	-	61
4.2.1	Educational Qualification of Postgraduate Students--	-	-	-	-	-	-	-	-	62
4.3	Data Analysis	-	-	-	-	-	-	-	-	64
4.3.1	Descriptive Analysis	-	-	-	-	-	-	-	-	64
4.4	Inferential Statistical Analysis	-	-	-	-	-	-	-	-	79
	Reference	-	-	-	-	-	-	-	-	85

CHAPTER FIVE: Summary, Conclusion and Recommendation

5.1	Introduction	-	-	-	-	-	-	-	-	86
5.2	Summary of the Study	-	-	-	-	-	-	-	-	86
5.3	Summary of the Major Findings	-	-	-	-	-	-	-	-	87
5.4	Conclusion	-	-	-	-	-	-	-	-	88
5.5	Recommendations	-	-	-	-	-	-	-	-	89
5.6	Suggestion for Further Study	-	-	-	-	-	-	-	-	90
	Bibliography	-	-	-	-	-	-	-	-	91
	Appendix	-	-	-	-	-	-	-	-	98

LIST OF TABLES

Table 3.1	Analysis of Postgraduate Students in Ahmadu Bello University by Faculty, Department and Gender	-	-	-	-	-	-	-	55
Table 4.1	Response Rate of the Respondents Sampled for the Study-	-	-	-	-	-	-	-	61
Table 4.2	Distribution of Respondents by their Degree in view-	-	-	-	-	-	-	-	62
Table 4.3	Gender Distribution of the Respondents	-	-	-	-	-	-	-	63
Table 4.4	Types of Online Information Resources	-	-	-	-	-	-	-	64
Table 4.5	Online information Services Available and aware of by the PG students in A.B.U, Zaria	-	-	-	-	-	-	-	66
Table 4.6	Sources of Online Information Resources for PG	-	-	-	-	-	-	-	67
Table 4.7	Format of Online Information Resources Preferred	-	-	-	-	-	-	-	68
Table 4.8	Frequency of Online Information Search Techniques by ABU PG Students-	-	-	-	-	-	-	-	69
Table 4.9	Applied Alternative Search	-	-	-	-	-	-	-	70
Table 4.10	Behaviour Exhibited	-	-	-	-	-	-	-	71
Table 4.11	Online Information Search Skills	-	-	-	-	-	-	-	71
Table 4.12	Training Undergone	-	-	-	-	-	-	-	73
Table 4.13	Postgraduate Students' Evaluation of Online Information Sources	-	-	-	-	-	-	-	74
Table 4.14	Criteria of Evaluation of Online Information Resources	-	-	-	-	-	-	-	75
Table 4.15	Level of Satisfaction	-	-	-	-	-	-	-	77
Table 4.16	Challenges Encountered	-	-	-	-	-	-	-	78
Table 4.17(a)	One Way Analysis of Variance (ANOVA) on Types of Online Information Resources Available to Post Graduate Students of the University by Faculties of Students	-	-	-	-	-	-	-	79

Table 4.17(b)	Multiple Comparison post HOC Scheffe Result Showing the Faculty Students that were Significantly Different From the Others on the Types of Online Information Resources	-	-	-	-	-	-	-	-	80
Table 4.18	Comparing Male and Female Scores for the Sources of Online Information Resources	-	-	-	-	-	-	-	-	81
Table 4.19	One Way Analysis of Variance (ANOVA) on Pattern of Search for Online Information Resources Available to Post Graduate Students of the University by Faculties of Students	-	-	-	-	-	-	-	-	81
Table 4.20(a)	One Way Analysis of Variance (ANOVA) on Satisfaction with Online Information Resources Available for their Use by Faculties of Students-									82
Table 4.20(b)	A post HOC Scheffe Result Showing the Faculty Students that were Significantly Different from the others in their Satisfaction with the Online Information Resources-	-	-	-	-	-	-	-	-	83
Table 4.21(a)	One Way Analysis of Variance (ANOVA) on Challenges Faced by Post Graduate Students in their Search for Online Information Resources in the University	-	-	-	-	-	-	-	-	83
Table 4.21(b)	A post HOC Scheffe Result Showing the Faculty Students that were Significantly Different from the others in the Problems Faced in Searching for Online Information Resources.	-	-	-	-	-	-	-	-	84

LIST OF FIGURES

Figure 2.1	A Breakdown of ICT literacy -	-	-	-	-	-	36
Figure 2.2	Dervin's Sense-Making Triangle	-	-	-	-	-	41
Figure 2.3	Dervin's 'Sense-making' Model Re-Drawn	-	-	-	-	-	42
Figure 2.4	Literature Search Moves: Ellis Model of Information Seeking Behaviour						45
Figure 2.5	Kuhlthau's Model of the Information Search Process (ISP)	-	-				47
Figure 4.2	Distribution of Respondents by their Degree Programme in View	-					62
Figure 4.3	Gender of PG students in ABU, Zaria-	-	-	-	-	-	63
Figure 4.4	Online Information Resources available and are Aware of by Postgraduate Students in ABU, Zaria.-	-	-	-	-	-	65
Figure 4.5	Online Information Services Available and are Aware of by Postgraduate Students in ABU, Zaria.-	-	-	-	-	-	66
Figure 4.12	Skills for Searching Online Information	-	-	-	-	-	72
Figure 4.13	Training Undergone	-	-	-	-	-	73
Figure 4.14	Postgraduate Students' Evaluation of Online Information Resources-						74
Figure 4.15	Aspect of Online Information Resources Evaluated	-	-	-	-	-	76

APPENDIX

Questionnaire on Online Information Seeking Behaviour of Postgraduate Students in Ahmadu Bello University, Zaria- - - - - 98

LIST OF ABBREVIATIONS

ABU	-	Ahmadu Bello University, Zaria
AGORA	-	Access to Global Online Research in Agriculture
AJOL	-	African Journals Online
ALA	-	American Library Association
ANOVA	-	Analysis of Variance
CD	-	Compact Disk
CD-ROM	-	Compact Disk Read Only Memory
Df	-	Degree of freedom
DOAJ	-	Directory of Open Access Journals
e-mail	-	electronic mail
ETD	-	Electronic Theses and Dissertations
ETS	-	Educational Training Services, USA
FTP	-	File Transfer Protocol
HINARY	-	Health Inter Network Access to Research Initiative
HTML	-	Hyper Text Markup Language
ICT	-	Information and Communication Technology
ICTL	-	Information and Communication Technology Literacy
ISP	-	Information Search Process
JSTOR	-	Journal Storage
LIS	-	Library and Information Science
ListServ	-	List Server
MIS	-	Management Information System
MS-Word	-	Microsoft Word
n.d.	-	not dated
n.p.	-	not published
OARE	-	Online Access to Research in the Environment
OIR	-	Online Information Resources
OPAC	-	Online Public Access Catalogue
PDF	-	Portable Document Format
PG	-	Postgraduate
SMS	-	Short Message Service
TEEAL	-	The Essential Electronic Agricultural Library
www	-	world wide web

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Information can be seen as anything that causes some behavioural changes when assimilated by an individual. Information is defined by Reitz (2004) as all conclusions, ideas and creative works of the human intellect and imagination that have been communicated formally and informally in any form. In a similar definition, Aina (2008) defines it as meaningful communication symbols transferred between any two points in human communication or machine networks. Aguolu (1984) asserted that information can increase our awareness and help us educate our people, accelerate progress and provide the source data required for the solution of our increasingly complex economic, social and scientific problems.

In Information Science, the concept of information has been defined in many different ways. In the cognitive view point, it is defined the information associated with a text as the generator's modified (by purpose, intent, knowledge of the recipient state of knowledge) conceptual structure which underlines the surface structure (e.g. language of that text). This definition is subsequently elaborated by Ingwersen (2008) as information being the result of a transformation of the generator's cognitive structure (by intentionality, model of the recipients' state of knowledge and in the form of signs). On the other hand also, it is a structure which when perceived may affect and transform the recipient's state of knowledge. In this study, therefore, information is conceptualized as something which students need during their studies and in the process of learning.

Relevance of Information to Academics

The importance of information in an academic environment cannot be overemphasized. Online information resources, as asserted by Gbaje (2007) is that which facilitate access to relevant and current information for teaching, learning and research development. Academics in any society are seen as the propellers of knowledge.

Higher education is changing rapidly with the advent of technology. According to Shuling (2007), in recent years, electronic information has gradually become a major resource in every university library. Majid et al (1999) argued that technological advancements opened up new horizons for the creation, storage, access, distribution and presentation of information. Brophy (1993) noted that the advantages of electronic information resources over print ones include the following: speed, ease of use, ability to search multiple files at the same time, ability to save, print and repeat searches, more frequent updating and the ability to access from outside the library (more advantageous to distant learners).

Academics now live in a superior new world. The rapid advancement of Information and Communication Technology (ICT) has brought a revolutionary change in the information scenario, giving rise to a number of options to the users' community, to handle varied information sources conveniently and effortlessly (Swain and Panda 2009). Dadzie (2005) highlighted the importance of online information to academics when he stated that online information could be accessed by users that are restricted by geographical location or finances, access to current information and provision of extensive links to additional resources or related content. They could be stored electronically thereby saving space and reducing the risk of lost, theft and damage. Academics are encouraged to become information literate, life-long learners in order to cope with the challenges of the fast-paced society, knowledge explosion, technological advancement, culture of information revolution and new academic and vocational opportunities. Because of the importance of information seeking behavior for academics, institutions of higher education need

to facilitate a culture of information seeking and to improve the utilization of resource support, such as library and documentation services. With knowledge changing rapidly and the ready access to technology, academics must upgrade their knowledge and skills in order to cope with an overflow of knowledge (Eskola, 1998; Griffiths & Brophy, 2002; Miculincer, 1997).

Information Behaviour

Information behaviour encompasses information seeking as well as the totality of other unintentional or passive behaviours (such as glimpsing or encountering information), as well as purposive behaviours that do not involve seeking, such as avoiding information (Case, 2002). Based on the general model of information behaviour developed by Wilson (1997), he posited that a general model of information behaviour needs to include at least three elements:

- i. an information need and its drives, i.e. the factors that give rise to an individual's perception of need,
- ii. the factors that affect the individual's response to the perception of needs; and,
- iii. the processes or actions involved in that response.

Taylor (1991) asserted that information is the product of certain element of the information use environment. These elements, according to him, are: the assumptions, formerly learned or not, made by a defined set of people concerning their nature of work, the kind and structure of the problems deemed important and typical by this set of people, the constraints and opportunities of typical environments within which any group or sub-group of this set of people operate and work, and the conscious perhaps unconscious assumptions made as to what constitutes a solution or better said a resolution of problems and what makes information useful and valuable in their contexts. From the above, therefore, information behaviour can be said to be the totality of human behaviour in relation to sources and channels of information, including both active and passive

information seeking and use.

Information Seeking

It is a universal phenomenon that human beings search for solutions to challenges in their quest to survive and advance. Information seeking is thus a natural and necessary mechanism of human existence (Marchionini: 1992). Case (2002) succinctly put that information seeking is a conscious effort to acquire information in response to a need or gap in the knowledge of a client. Ikoja-Odongo and Ochalla (2004) described information seeking as a process that requires an information seeker's cognitive ability, his or her knowledge and skills regarding information seeking. Information seeking therefore is the act of obtaining information from existing resources in both human and technological contexts. Information seeking starts with the needs of users, followed by needs analysis, collection and filtration, with the needs information finally transmitted to users. Sources of information include domain experts, knowledge workers, traditional paper files, document databases, digital media, and the Internet.

Information Need

In Information Science, information need is defined as that need originating from a vague awareness of something missing and then culminating in locating information that contributes to understanding and meaning (Kuhlthau: 1993). It is an anomalous state of knowledge (Belkin, Brooks and Oddy, 1982) or a gap in an individual's knowledge in sense making situations (Devin & Milan, 1986). For a person to experience an information need, there must be a motive behind it, (Wilson, 1997). From the above definitions, therefore, it can be noted that an information need is recognition that one's knowledge is inadequate to satisfy a goal that is at hand.

Information Seeking Behaviour

Information-seeking behaviour begins when someone realizes the existence of an information need and ends when that need is believed to have been satisfied (Krikelas 1983). The seeker turns to formal and informal sources of information and is ultimately satisfied or dissatisfied with the end result (Wilson, 2009). Similarly, it can be defined as an individual's way and manner of gathering and sourcing for information for personal use, knowledge updating and development. Fairer-Wessels (1990:361 in Kakai et al, 2004) refers to it as a way people search for and utilize information. Information seeking behavior refers to those activities a person engages in when identifying his or her own need for information, searching for such information in any way, and using or transferring that information. In relation to this study therefore, it can be deduced that information seeking behaviour is the purposive seeking for information as a consequence of a need to satisfy some goals. In the course of seeking for research and assignments, the individual may interact with manual information systems (such as newspaper or a library) or with computer-based systems (such as the Internet-world wide web).

Information Seeking Theories

Information seeking is the process of attempting to obtain information in both human and technological contexts. A variety of theories of information behaviour e.g. Zipf's Principle of Least Effort, Brenda Dervin's Sense, Making and Elfreda Chatman's Life in the Rounds, seek to understand the processes that surround information seeking. Foster (2005) and Kuhlthau (2006), asserted that information seeking has generally been accepted as dynamic and non-linear. People experience information search as a process of an interplay of thoughts, feelings and actions (Kuhlthau, 2006).

Online Information Systems, Resources and Services

Information systems have been defined as a set of inter-related components working together to collect, retrieve, process, store and distribute information over a network. It also consists of the network of all communication channels used within an organisation. Online information systems occupy the centre stage of information seeking in the online environment.

Online information resources as maintained by Gbaje (2007) are relevant information and communication technology that aid in the access of relevant and current information for teaching, learning and research development. Online information resources have the potentials of allowing institutions and researchers to share their own research output with the global community. Online information resources are capable of enhancing research and also lifelong learning through establishing constant and continuous access to shared online archival collections, as well as access to Online Electronic Thesis and Dissertations (ETDs) for the global community.

Online Information Search and Access

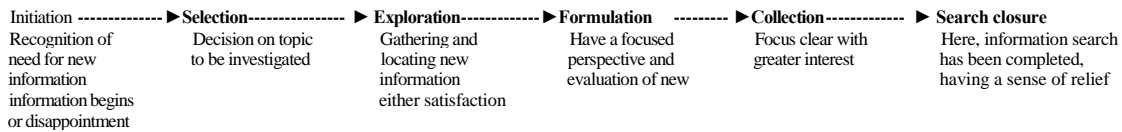
The challenge for education in the twenty-first century is to prepare students to use information in their work places, in their personal lives, and as responsible citizens. This is clearly stated in the

Report of the ALA Presidential Committee on Information Literacy as follows:

"Such a restructuring of the learning process will not only enhance the critical thinking skills of students, but will also empower them for lifelong learning and the effective performance of professional and civic responsibilities."

Education is changing from the assembly-line environment of the industrial age offered by textbook teaching to data-rich environment of the information age offered by resource-based learning. In response to this change, information centres have to design new means by which users can maximize the use of these resources with the purpose of gaining access to the information therein. In searching for information, basically six processes are involved as suggested by

Kuhlthau (2004). These processes are as follows:



In furtherance to how information can or should be searched on the web, the researcher has suggested the following steps:-

- 1. Analyse your topic:** - In order to start a fruitful search, it is always good to analyse the topic at hand. The topic should be broken into main concepts, relevant terms and phrases should be identified. A list of terms or phrases can also be created.
- 2. Choose a search tool:** - Always try to begin a search with the relevant resource for the chosen topic. After searching this resource thoroughly, move on to other resources to find different, broader or more items. Some examples of these search tools are Web pages, Journal articles, Full text and citations etc.
- 3. Narrowing and Broadening Search:** - For fewer and more precise results, it is good to narrow a search. Use more specific search terms and phrases. If the search tool being used has an index, use that to help pick the most specific terms to use for the search, also use hyperlinks if any is provided. For less precise results, try out the broader search. Use less specific and alternative search terms and phrases. Try out using the "OR" searches. Try to change search tools to achieve needed results. Try out the broader search. Use less specific and alternative search terms and phrases. Try out using the "OR" searches. Try to change search tools to achieve needed results.
- 4. Finally, try other search tips such as**
 - Always check out for the help or search tips information when using a new search tool. As they will suggest the kind of search operators you use.
 - Be aware that most search tools have a list of stop words e.g. and, or, the, in etc. they are usually ignored unless purposely inserted.
 - Many databases offer an index for its users. Check out the terms and phrases before engaging in a search.

Information access on the other hand, borders around ensuring that information users, have the opportunity to get and use information. There should be ease of access to information by users regardless of their location, position or status. Access to information is paramount on users mind. With the advent of technology which further gave birth to the Internet, it has been known for its richness in terms of its information content. It has promoted learning and allowed universal access to information. It allows students to broaden their academic horizon, access information, and communicate with others on the basis of academics. The Internet gives access to educational databases and sites that could make a user to be deviant and perverse as the case may be. Also, the Internet can give access to digitized and uploaded research works and holdings of a university. From the above, therefore, it is pertinent to note that access to information requires literacy skills by the recipient, offers acquisition of livelihood skills and assists the information seeker to make informed decision when need be, thereby making the right choice.

1.2 Statement of Problem

Information is a vital resource needed by students to perform well in their academic pursuit. The web is used to access relevant, useful and current information from different fields of endeavour the world over. The use of the web, no doubt, enhances quality research, access to a variety of information resources and current information resources on the web. Education requires studies that uncover how to optimally use technologies for the benefit of students and researchers.

Online information has been identified as an important information resource for postgraduate students. Having acknowledged the importance of online information resources, the management of Ahmadu Bello University, Zaria has invested so much to ensure that postgraduate students have access to online information resources by deploying Internet access points and hotspots in the Library and within the Campus at large.

The researcher has observed, however, that many postgraduate students are faced with the challenges of seeking online information. This is supported by many scholars. Abdulkadir (2011) noted that students spend long hours in the quest for online information. It is pertinent to note that a shift from print to electronic resources requires information technology skills for its effective use. It was observed that many students in Nigerian universities cannot use the web and other ICT facilities independently. Kari and Savolainen (2001) explained that skills (to search for and find information) are especially necessary because there is often a wide range of potentially relevant documents to make do with.

In the light of the above, this study investigates the Online Information Seeking Behaviour of Post-graduate Students in Ahmadu Bello University, Zaria.

1.3 Research Questions

The following are the research questions of this study.

1. What online information resources are available to postgraduate students in Ahmadu Bello University, Zaria?
2. What type of online information resources and services are accessed by the postgraduate students in Ahmadu Bello University, Zaria?
3. What techniques do the post graduate students in Ahmadu Bello University Zaria apply in seeking for online information?
4. How do the postgraduate students in Ahmadu Bello University Zaria evaluate the quality of online information resources they use?
5. To what extent are the postgraduate students in Ahmadu Bello University, Zaria satisfied with the available online information for their needs?

1.4 Hypotheses

The following are the hypotheses of this study.

H₀₁: There is no significant difference in the type of online information resources needed by post graduate students of the various faculties in Ahmadu Bello University, Zaria.

H₀₂: There is no significant difference between male and female postgraduate students in the various faculties in Ahmadu Bello University, Zaria on the sources of online information resources available for their use.

- H0₃:** There is no significant difference among the students of various faculties in Ahmadu Bello University, Zaria on the information search pattern adopted for accessing online information resources available for their use.
- H0₄:** There is no significant difference among the students of the various faculties of Ahmadu Bello University, Zaria in the level of satisfaction with online information resources available for their use.
- H0₅:** There is no significant difference among the post graduate students of the various faculties in Ahmadu Bello University, Zaria in the challenges faced in search for online information resources in the University.

1.5 Objectives of the Study

The following are the objectives of this study.

1. To identify the sources of online information resources used by postgraduate students in Ahmadu Bello University, Zaria.
2. To identify the types of online information resources and services that the post graduate students of Ahmadu Bello University, Zaria access.
3. To discover the techniques used by post graduate students in Ahmadu Bello University, Zaria in seeking for information online.
4. To determine how the postgraduate students in Ahmadu Bello University, Zaria evaluate the quality of online information resources they use.
5. To ascertain the extent to which the information postgraduate students in Ahmadu Bello University, Zaria satisfy their information needs.

1.6 Significance of the Study

There is no doubt that the findings of this study would be of great benefit to the postgraduate students and the University authority at large. This would no doubt improve upon the current techniques and behaviour exhibited by students while using online information resources. This study is actually timely because it would help users to improve their online information seeking skills by providing them with the requisite skills in order to effectively meet their online information needs. This research work intends to add to the existing researches carried out on online information seeking behaviour. This study is also of importance to librarians in their quest for providing effective online access to their information resources by making available Online Information Resources and Services that are tailor – made to users needs. It is also hoped that it would be of help to policy makers, and all those in charge of information and communication technology in education by studying closely models involved in online information seeking and advice in the design of better systems that would enhance and support seeking information online. Finally, this research work would be of great importance to researchers who will plough this area of research to improve upon online information provision.

1.7 Scope of the Study

This study covered the postgraduate students in Ahmadu Bello University, Zaria. There are twelve faculties in the University. It did not include the students in A.B.U affiliate schools.

1.8 Limitation of the Study

The study was limited to the postgraduate students in Ahmadu Bello University, Zaria. It did not cover the entire University population (i.e. undergraduate students), due to their size, time and the cost implication of carrying out such a research.

19 Operational Definition of Terms

The following are the operational definition of terms used for this study.

Information Behaviour: This is the totality of other unintentional or passive behaviours (such as glimpsing or encountering information) as well as purposive behaviours that do not involve seeking, such as avoiding information.

Information Need: This can be defined as a gap in an individual's knowledge in sense making situations.

Information Seeking: This is a conscious effort to acquire information in response to a need or gap identified in the knowledge of a clientele.

Information Seeking Behaviour: Refers to the way and manner people search for and utilize information.

Online Information Seeking: This can be defined as a process by which an individual or group of people seek/search for information on the Internet with the intention of causing a change in their current state of knowledge.

Online Information Seeking Behaviour: This simply refers to the various ways and manners by which users ensure that they access information in the online environment (Internet).

REFERENCES

- Abdulkadir, Aliyu (2011). Information Anxiety Among Internet Users in Ahmadu Bello University, Zaria. (Unpublished thesis).
- Aguolu, C.C. (1984). The Future of Library and Information Services in Nigeria. *Nigerian Libraries* Vol. 20 p 58.
- Aina, L. O. (2008). *Information and Knowledge Management in the digital age: Concepts Technologies and African Perspective*. Ibadan: Third World Information Services
- Belkin, N.J. Oddu, R. and Brooks, H. (1982). Information Retrieval: Pt 1 Background Theory. *Journal of Documentation* 8(2) 61 -71.
- Brophy, P. (1993). "Network in British Academic Libraries" *British Journal of Academic Librarianship*, Vol. 8 No. 1:49-60
- Case, D.O. (2002). *Looking for Information: A Survey Research on Information Seeking, Needs, and Behaviour* Amsterdam. Academic Press.
- Dadzie, P.S. (2009). "Electronic resources: access and usage at Ashesi University College". *Campus-Wide information systems*. Vol. 22. No. 5:1065-0741.
<http://www.emeraldinsight.com/insight/viewcontentsei^let?filename=PublishedVEmeraldfulltextarticle/articles/1650220504.htm>
- Dervin, B. & Nilan (1986). *Information Needs and Users*. Annual Review of Information Science and Technology, 22:3-33. Knowledge Industry Publication Inc. New York.
- Eskola, A. (1998). From small group research to conversion analysis. In: Lahikainen A. R & Pirttila Backman, A.M (eds). *Social Interaction*, Helsinki: Otava.
- Fairer-Wessels (1990). *Basic Community Information Needs of Urban Black Women in Mamelodi, Pretoria, South Africa*. Retrieved on 25th August 2008 from www.cais-acsi.ca/proceedings/1995/olson_1995.pdf
- Gbaje, S.E. (2007). *Implementing a National Virtual Library for Higher Institutions in Nigeria*. Retrieved from on 03/04/2012.
- Griffiths, J. R., & Brophy, P. (2002). Student Searching Behaviour in the JISC Information Environment. *Ariadne*, 33. Retrieved November 16, 2012, from <http://www.ariadne.ac.uk/issue33/edner/>.
- Ikoja-Odongo, R. and Ochalla, D.N. (2004). Information Seeking Behaviour of the Informal Sector Entrepreneurs: The Uganda Experience. *Libri* 54, pp. 54-66.
- Ikoja-Odongo, R. and Ochalla, D.N. (2004). Information Seeking Behaviour of Formal Sector Entrepreneurs. The Uganda Experience. *Libri* Vol. 54 pp 54-66.

- Ingwersen, P. (2008). Information and Information Science in context. In J. Olaisen, E. Munch-Petersen, P. Wilson (eds.). information Science. From the development of the discipline to social interaction. Oslo: Scandinavian University Press pp 69-111.
- Kari, J. & Savolainen, R. (2001). Web Searching in the Context of Information Seeking in Everyday Life: The cases of civic and spiritual action. A Research Proposal. Retrieved from <http://www.uta.fi/csiakar/kari-savolainen.pdf>.
- Krikelas, J. (1983). Information Seeking Behaviour: Patterns and Concepts. *Drexel Library Quarterly*, 19, 5-20.
- Kuhlthau, C. (2004). *Seeking Meaning: a process approach to library and information services*. London: Libraries Unlimited ISBN 1-59158-094-3
- Kuhlthau, C.C. (1993). *Seeking Meaning, a Process Approach to Library and Information Services*. Norwood, N.J. Ablex, Publishing.
- Majid, S., Aozova, A.F. (1999). " Computer literacy and use of electronic sources by academics:a case study of international Islamic University of Malaysia, Asian libraries". Vol. 8, No. 4.100-111.<http://www.emeraldinsight.com/insight/viewcontentservlet?Filename=published/EmeraldFullTextArticle/Articles/1730080401.html>. accessed (8th December, 2011)
- Marchionini, G. (1992); "Interfaces of End-User Information Seeking", *Journal of American Society for Information Science*, 43 (2), p. 156-163, 1992.
- Miculincer, M. (1997). Adult Attachment Style and Information Processing: Individual Differences in Curiosity and Cognitive Closure. *Journal of Personality and Social Psychology*, Vol. 72, no.5: 1217-1230
- Reitz, J.M. (2004). *Dictionary of Library and Information Science and Technology*. Boston: Academic.
- Shuling, W. (2007). "Investigation and analysis of current use of electronic resources in University libraries". *Library Management*. Vol, 28 No. 1 / 2 72-88. <http://www.emeraldinsight.com/insight/viewcontentservlet?Filename=published/EmeraldFullTextArticle/Articles/0150280107.html>. accessed (13th January, 2012)
- Swain, D.K, and Panda, K.C. (2009). "Use of electronic resources in business school libraries of an Indian: A study of librarians' opinion", *The electronic library*, Vol. 27, No. 1, pp 74-85.
- Taylor, R.S. (1991). *Information Use Environment.*: In Brenda, Dervin & Melvin J. Voigt (Eds). *Progress in Communication Sciences*, Norwood, NJ: Ablex 10.
- Wilson T. D. (1999). Models in Information Behaviour Research. *Journal of Documentation*, Page 249-270. Retrieved from <http://www.information.net> on 06/03/2012.

Wilson, T.D. (1997a). Information Behaviour. An Interdisciplinary Perspective. In P. Vakkari, R. Savolainen & B. Derkin (Eds). Information Seeking in Context of Proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts 14-15, August, 1996. Tampere, Finland. London Taylor Graham.

Wilson, T.D. (1999). Models in Information Behaviour Research. Journal of Documentation (Electronic Version) 55,249-270.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The review is done under the following subheadings:

- The Concept of Information Seeking
- The Concept of Online Information Seeking Behaviour
- Online Information Systems, Resources and Services available in Academic Institutions.
- Online Information Search Strategies by Students in Academic Institutions.
- Information and Communication Technology Competencies for online Information Search
- Models in Online Information Seeking Behavior.
- Summary of the Review

2.2 The Concept of Information Seeking

One of the first steps in dealing with information seeking behaviour is to get an idea of how best to describe the information seeking process. The problem is that information seeking, information-seeking behaviour, and information behaviour are complex terms often used synonymously for all aspects of humans' search for information (Wilson, 2000). Moreover, debates and concerns over definitions continue in the information profession, and information seeking terminology is constantly changing to accommodate new developments in the field (Wilson, 2000 and Reiterer, MuBler and Mann 2001). Siatri (1999) note that concepts such as information use or need, information seeking behaviour, and channels of communication all exist in a system of complicated and interdependent relations. It is believed that variations in the definitions of the terms used to describe information seeking are proving to be an

impediment to understanding what happens when people go online to communicate and/or retrieve information. The fact that web information seeking is a topic that unites many strands of academic and commercial research - from studies of information-seeking behaviour to the design and construction of large-scale interactive systems - makes it difficult to arrive at serviceable definitions. This perhaps justifies Kingrey's (2002) observation that: "The where, why, when, and how of information seeking continues as the topic of debate and discussion on both the theoretical and practical level of a variety of social science disciplines." The fact that this debate should continue is unsurprising, seeing as searching for information, retrieving it, and using it lies at the heart of university education.

According to Kingrey (2002), "The term information seeking often serves as an umbrella embracing a set of related concepts and issues." Kingrey's observations are that discussions of database construction and management, community information needs, reference services, and many other topics all resonate with the term in the library world, although a single, serviceable definition remains elusive. She concludes that:

"In the simplest terms, information seeking involves the search, retrieval, recognition, and application of meaningful content. This search may be explicit or implicit, the retrieval may be the result of specific strategies or serendipity, the resulting information may be embraced or rejected, the entire experience may be carried through to a logical conclusion or aborted in midstream, and there may be a million other potential results."

According to Case (2002), information seeking is a conscious effort to acquire information in response to a need or gap in one's knowledge. Marchionini and Komlodi (n.d) expand on this, defining information seeking as a process in which humans engage to purposefully change their state of knowledge. They suggest that the process is inherently interactive as information seekers direct attention, accept and adapt to stimuli, reflect on progress, and

evaluate the efficacy of continuation. The two scholars conclude that information seeking is a cybernetic process in which a knowledge state is changed through inputs, purposive outputs and feedback. However, it is a strictly human process that requires adaptive and reflective control over the afferent and efferent actions of the information seeker.

Another definition of information seeking is provided by Lallimo, Lakkala and Paavola (2004), who describe it as a term used widely in information science to encapsulate an entire process, from recognizing the need for information to finding and using it. They also believe that the term can be seen to overlap with other related terms such as information gathering, which is the phase during which the user searches for and acquires what he or she considers to be a relevant source of information. Information seeking also focuses on the interaction between the information seeker and information resources; is a cyclic or iterative process by nature that involves more than simply gathering information; and consists of reflective processes that involve posing and identifying the research questions, exploring the information available, refining the questions, gathering and evaluating further information, and synthesizing and using the information. This cyclic process of gathering, sorting, evaluating, and refining may be carried out a number of times (Lallimo, Lakkala and Paavola, 2004).

Another point of view is that information seeking looks at how individuals go about finding the materials that they need in order to satisfy their personal, professional and/or recreational information needs (Lines, 2003). This view is shared by many scholars, among them Nel (n.d), who suggests that information seeking is always embedded in the larger tasks of work, learning and play. A similar thought is shared by the University of Michigan's (School of Information's) information seeking behaviour instructor, Rieh (2004), who says: "Information seeking is a complex information and communication

activity requiring access to diverse information systems and resources in order to deal with work-related, personal, and social information problems."

Taylor and Procter (2005) define information seeking more simply, stating that it is the ability to scan literature efficiently using manual or computerized methods to identify a set of useful articles and books. This is congruent with Kari and Savolainen assertions that information seeking manifests itself in the end-user's active search for and consultation of information sources.

Like any other complex concept, information seeking means different things in different contexts. All the same, the definitions listed above lead one to deduce that information seeking is a process or activity that involves the consultation of sources. These sources can be manual or computerized, and there is often a behaviour, pattern or way one goes about consulting these sources.

2.3 Online Information Seeking Behaviour

The problem scholars' face when defining information seeking behaviour is well articulated by Case (2002), who explains that information seeking behaviour is a phenomenon that often defies generalization and escapes observation because it varies depending on people, situations, and objects of interest. A lot of it is intangible and takes place in a person's head, making it difficult to measure. Despite this quandary, a much studies and articles have been conducted examining information-seeking behaviour in a variety of diverse fields, resulting in a wide array of definitions.

Meho and Haas (2001) claim that information seeking behaviour is a broad term that encompasses the way in which individuals articulate their information needs and seek, evaluate, and use information. A similar definition is provided by Jarvelin and Ingwersen (2004), who state that information seeking behaviour is showcased in the act of acquiring

information from knowledge sources. Fairer-Wessels (in Kakai, Ikoja-Odongo and Kigongo-Bukenya, 2004) declares that information seeking behaviour refers to the way people search for and utilize information. This process, according to Patitungkho and Deshpande (2001), starts off with their reasons (personal or otherwise) for seeking information, and goes on to include the kind of information being sought, and the ways and sources that they use to find the information.

According to Wilson (2000), "Information seeking behaviour is the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web)."

It therefore generally appears as though information seeking behaviour involves some action being taken by a user to fulfill an information need, whether perceived or otherwise, and this culminates in an eventual interaction with some kind of information system. Information seeking can be affected by the characteristics of the users, such as age, knowledge and experience. Information seeking behaviour is also encapsulated and expressed in various forms, from reading printed material, to research and experimentation.

Although information seeking has a long history, information seeking using the web is a relatively new phenomenon. A brief examination of existing literature indicates that there are very few definitions of web information seeking behaviour per se. According to Choo et al. (in Shongwe, 2005), web information seeking behaviour is the active process of obtaining data from the web. This simple definition stems from the notion that any activity an individual engages in on the web is a form of information seeking. The above definition was the closest identified. It thus informed and was used in this study to set the parameters of what constitutes

online information seeking. Online information seeking in this study is taken to mean the same as web information seeking, the reason being that there is no fundamental difference between online and web information seeking - these concepts are often used synonymously. The researcher is, however, aware that some could argue that this may not altogether capture the true essence of web information seeking because 'online' often doesn't refer to whether or not something is available on the web. This shortcoming is noted as one of the dilemmas associated with information seeking in the electronic environment; constant changes that take place are not created in cycle with the conceptualisation of terminologies, making it difficult to understand the distinctions between terms. What the study stresses is that the choices users make when searching - what terms they choose, how many, and which other features (e.g. phrase search or Boolean logic) they naturally select - are key areas of research in the new web or online environment. Again, this area should be investigated broadly to encompass all possible online channels, such as search engines and directories like Google and Yahoo, social networking sites such as Facebook and You Tube, communication channels such as Skype, blogs, podcasts and other recent phenomena that are very much in tune with web behaviour. Fourie (2006) views information seeking and information searching as terms that belong to a broader field of user studies, and web information seeking as part of information seeking. Web information seeking in this investigation is understood to be the process in which humans engage to purposefully change their state of knowledge by using information on the web, while web information seeking behaviour stands for the actions and conduct of users while in pursuit of information specifically housed on the web.

Research in the domain of information needs, information seeking and information seeking behaviour spans a number of decades. Tibbo (n.d:n.p), while tracing the history of information seeking and behavioural studies, points to studies conducted in the early 1900s, citing Charles

Eliot in 1902 who wrote about what was being used in the library, and Ayres and McKinnie in 1916 who studied information seeking at the Cleveland Public Library. Tibbo reports that a notable proliferation of studies on the subject occurred in the 1960s [e.g. the study by the American Psychological Association, 1963 - 1969 and Earle and Vickery's study in 1969]. Wilson (2000) identifies an early emphasis on the use of information systems with a more person-oriented approach evolving later in the 1980s. Although early user-centred research concentrated on the scientific community, it quickly broadened to incorporate educational institutions to investigate students and staffs actions and motivations when using the technology.

The information seeking behaviour of academics also appears to have been a focus of inquiry for a long time, reflected in the many studies identified by Tibbo (n.d:n.p) [e.g. the study by the American Psychological Association, 1963 - 1969; Bath University, 1979 - 1980; and Earle and Vickery's study in 1969]. The view held by Borgman et al. (2005), is that research on the information needs and the information-seeking behaviour of academics extends back to the late 1950s, beginning with simple descriptive studies and evolving into discipline-specific investigations. Much of the research evolved from a more generalized interdisciplinary interest in the work of scientists and the nature of scientific communication, resulting in a large body of literature that dates back to 1940 - 1960. Parallel to this interest in science, other early studies focused on the work of technical experts, such as engineers, in an attempt to understand how information and information seeking permeates an individual's work-life and personal productivity. According to Francis (2008), "Researchers and practitioners in the field of LIS have long held an interest in the information-seeking behaviour of different client groups. Research in this area dates back to the 1940s and the focus was on scientists." Since then, studies quickly progressed, starting

with those intended to improve collection development, followed by those that explored the research habits of individuals or groups for the design of appropriate systems and services - in other words a user-centred approach that examines the system as seen by the user. Studies on web information seeking behaviour appeared later, and many pen down the mid-90s as the exact starting point. Spink and Jansen (2004) suggest that the earliest studies of web searching behaviour in the mid-90s occurred as web search engine and web browser use began to grow, particularly in academic environments. There is a feeling that while studies of the web as information and communication media are much younger, they have generated tremendous excitement (Choo, Detlor and Turnball, 2000). Reports by Fourie (2006) suggest that over the past few years, there has been a remarkable growth in the number of studies on web information seeking behaviour. This phenomenal growth has created a growing body of empirical research investigating many aspects of user interactions with the web. Stenmark & Jadaan (2006) confirm that alongside developments in technology, studies of users' behaviour when interacting with technology have gained momentum. Thus Hider (2005) declares, "Research into online behaviour is now well underway across a range of disciplines." Gleeson (2001) would agree, arguing that the study of information seeking behaviour of various populations is a well-known and major research area in library and information science, but not exclusively since it is also a popular research topic in different fields such as communication science, consumer science and computer science. The concept of information seeking behaviour is therefore broad in scope and stretches across a variety of other disciplines. Hargittai and Hinnant (n.d) suggest that researchers in library and information science have expanded their ideas on what should be studied in information seeking research, making information seeking part of a much bigger scene that they refer to as human information behaviour.

2.4 Online Information Resources and Services Available in Academic Institutions

In discussing the above in relation to academic institutions, it will be difficult not to bring the academic library into the picture. The academic library serves as a link between the students and the Online Information System, Resources and Services. It is pertinent therefore to link these systems resources and services in relation to the library. The inculcation of ICT into higher education learning has brought about lots of changes in the academic world. The use of ICTs have brought about a shift from print to digital information, which has created an impact on libraries and information centres. Gbaje (2004) asserted that the use of ICTs in libraries and information centres has made online access to information resources and services and file transfer possible, with networking and sharing of information. It is important to note here that ICT alone does not add quality to teaching and learning, but by providing an efficient and effective information delivery system, it is sure to boost teaching and learning. Librarians and the library have a role to play in this new era of ICT, by providing new library services and resources, and utilizing new systems and emerging technologies. An academic library can be defined as that library which is attached to an academic institution with the primary aim of supporting the institution in the aspect of teaching and research needs of students and staff, also geared at meeting to the mission and vision of the parent institution. Aina (2004) asserted that the main purpose of Academic library is to support the objective of a university system, which is in the areas of learning, teaching, and research and community service.

To buttress further, Aguolu (1983) identified six main functions of Nigerian university as follows:

1. Conservation of knowledge;
2. Pursuit, promotion and dissemination of knowledge through teaching;

3. Advancement of knowledge through research-pure, applied and development-oriented;
4. Provision of intellectual leadership;
5. Development of human resources for meeting manpower needs; and
6. Promotion of social and economic modernization.

As asserted and posited by Aina and Aguolu, the primary aim of academic libraries are basically set up to support the university achieve the above functions/objectives effectively and efficiently. For this to be feasible, Academic libraries ought to acquire and put in place online information systems, resources and services for users to have access to. For Academic libraries to succeed in supporting the university realize its mission, its information resources must not only be limited to books and journals but also, other information resources such as newspapers, magazines, manuscripts, photographs audio-visual materials microforms, CD-ROMs, online database and access to the Internet. This will enable the academic libraries provide current and up to date information to its users which will in turn encourage them to always visit and use the library as their major source of information. Academic libraries have various kinds of users who have varying information needs. Aguolu (2002) posited that Academic libraries are integral part of tertiary system. Furthermore, he asserted that they should not exist as inertia of knowledge, but as dynamic instrument of education to enable their parent institutions to discharge the teaching and research functions. But he lamented that under utilization of resources and services of the library is bedeviling these libraries.

2.4.1 Online Information Resources and System in Academic Institutions

An online information resource or system can be defined as any channel through which data is represented, received, process, stored and retrieved remotely. In order to come to terms with online information resources/ systems, it is important to understand what they are in the traditional sense. Furlong et al (1993) defined an information resource as the existing store of knowledge and expertise. Mason (1997) observed that it could simply mean any source of material generated within an organization such as reports correspondences, memos, bulletins, notices papers etc and from external environments taking any format such as books, journals, pamphlets, magazines, newspapers, manuscripts, monographic, conference seminar papers, workshop proceedings, projects, thesis, bibliographies, indexes, abstracts, exhibitions, display, notices, encyclopedias, dictionaries, general reference tools, telecommunication, computers e.t.c. Information resources are important instruments used in any organization or Institution in organizing standard libraries, information centres and archives etc. Similarly, Yahaya (2000) defined information resources as printed, non-printed collection/tools in an organization. Discussing on the format that it can take, Pritchett (1995) attested that information resource can be materials in any format, whether on open access or held in reserve, which have been developed either as general or special resource in terms of depth or coverage. Gupyem (1997) observed that for information resource to be effective in teaching and learning the idea of selecting relevant information resources processing the materials and making the information resources readily available for use by the intended users should be of paramount value to any library. Phyllis (1997) observed that students of all levels in their academic

pursuit will excel in their academic activities when relevant and pertinent information is available and easily accessible to them are provided. Based on the foregoing, it can be attested that information resources are the bedrock for good academic performance. This was in conformity with Dan (1991) who remarked that the use of information resources is a key for all successes in academic, political, business and social activities. Therefore, relevant resources and systems put in place for students to utilize will ensure their academic success. For the purpose of this study, the following online information resources and systems are examined:-

Electronic Mail: transmission of letters and other documents from one computer to another through a telecommunications network.

Listserv: a widely used, US-originated, mail server program frequently used when setting up Mailing lists.

Web: Short name of the World Wide Web (WWW), which is a network of a vast and growing number of information servers. It covers information on many different subject areas in many forms.

FTP: (file transfer protocol): a function that permits the logging on to a remote computer host, the location of publicly available files (e.g. electronic texts, programs, graphics files) and the downloading of those files to the home machine.

Online Catalog: up-to-date and complete list of a library's holdings accessible via a computer terminal.

Electronic Journal: usually an electronic counterpart to a conventional printed journal.

Though some electronic journals do not have a printed equivalent.

Database: file or systematically organized collection of bibliographic references or unit records representing original items, published literature or other recorded material; data that

is stored in some form (usually electronic) which can be retrieved and manipulated; a collection of information that can be organized in some way (possibly very simply) to facilitate storage and retrieval of individual items. Today this implies computer storage, but could include card indexes.

Portal: gateway to the web, which is often subject-specific, that includes a search engine, other links to relevant sites, a new service, e-mail and chat groups, as well as a list of search hits. The following resources and systems have been observed to tally with what is being put in place in Ahmadu Bello University, Zaria.

2.4.2 Online Information Services in Academic Libraries

Academic libraries have been developing and changing in order to meet up with the current trends of satisfying the needs of users. Various resources and services have been put in place in order to build and maintain confidence in their users. Among these efforts are the introduction of services such as online reference service, e-mail services i.e. current awareness service; online discussion forum/ group, selective dissemination of information; bulletin boards; online exhibitions services, user education, online charging in an out of information resources, etc. By embracing the Internet technology Academic libraries have been able to establishing their presence on the web by providing a variety of rich open source electronic thesis and dissertation (ETDs). This has tremendously created another opportunity for Academic libraries through their websites to reach thousands of users world over. Academic libraries are established to provide information resources and services in order to support the purpose of the university. Online information services can be defined as those activities concerned with ensuring the availability, accessibility and use of information by users remotely. However, with the adoption of Information and

Communication Technology (ICT) facilities in the library, it is needful to say that Academic libraries could employ any of these ICT services like e-mail facilities, SMS alerts, and online databases and websites to showcase what the library has.

It is important to stress that with the dynamics and growth of knowledge and information, academic libraries are expected to provide both manual and automated/online information services in order to meet the ever-growing needs of their users. Based on this, Fabunmi (2004) cautioned Academic libraries to work harder to provide information services that is timely in its delivery and easy to understand and use and is delivered by courteous and knowledgeable staff. Also, the advent of ICTs has ushered in new dimensions and challenges in library and information services provision in Academic libraries. Today, many of the major information services that are provided manually are now available and accessible on the Internet. Interestingly, library users can now search different databases, both online-and offline on CDs as well as online public access catalogues (OPACs) of other Academic libraries all over the globe.

Aina (2004) identified the following information services as major services to be provided by Academic libraries in its quest to satisfy the information needs of its diverse user groups. These information services are summarized below: lending services; inter library loan services, document delivery service, reservation services, reference services, selective dissemination of information, this services have been translated from their manual/ traditional form to services that can be performed remotely. Also, Aguolu (1983) suggests that for the Academic libraries to meet the research needs of its users in various disciplines, the library must promote these essential services which includes: - Bibliographic services, interlibrary loan services, user education services and creation of

special collection. It is important to know that the academic library deals with different kinds of users with diverse information seeking behavior. Academic libraries therefore need to provide new services, redesign study and research facilities, and acquire collections that will meet the needs of their users. Based on the above discussions, it is imperative to state that with an effective online information service put in place by academic libraries, members of the university community would find these essential information services very worthwhile, and will help in achieving the key functions of enhancing teaching, research and community service upon which the university stands.

2.5 Online Information Search Strategies by Students in Academic Institutions

Integrating information technology into teaching has been promoted in academic institutions of learning for decades. Searching information on the Web has become a common learning activity in university teaching in all subject domains. Students are often required to search information via the Web in order to finish and turn in their homework or research work (Fleischer et al (2008); McGreevy et al (2006), Tekinarslan, 2008). However, online information searching and processing is a complex cognitive process involving multifaceted cognitive and metacognitive strategies (Hill, 1999; Marchionini, 1995; Tsai & Tsai, 2003; Tsai, 2009). Many prior studies (Bos, 2000; Debowski, 2001; Dias, Gomes & Correia, 1999) reported that students often had disorientation problems and were not able to evaluate online information critically. Recent research by (Bond, Fevyer & Pitt, (2006), Chu & Law, (2008) Walraven, Brand-gruwel & Boshuizen, (2008), Phelps et al., (2006), Tekinarslan (2008) indicated that even graduate students and adult learners also had troubles with specifying search terms, judging search results, judging source and information as well as regulating the search process. The above statement is totally accepted by the researcher that some students find it difficult to search and retrieve online

information sources. Tsai and Tsai (2003) proposed a three dimensional framework for analysing searching strategies. Following this study, an instrument was developed by Tsai (2009) and metacognitive domain strategies were regarded as the most critical strategies to determine search outcomes. Laxman (2009) also conducted a baseline study for students' information literacy proficiencies. Tsai, Hsu & Tsai (2012) further observed searching strategies from a perspective of implicit versus explicit strategies framework.

They found reading time and evaluation strategies were important predictors and therefore suggested a further examination on implicit strategies. On the other hand, Laxman (2010) found that training for Internet information searching strategies was required for students' ill-structured problem solving. Topics or contexts of online enquiries could be one of the factors that influence students' use of online information searching strategies. In order to help students utilize effectively and critically online information for learning, educators and information literacy librarians must understand how students search online information, profile students' online information searching strategies and examine the factors influencing their search strategies. However, the Big6 suggested six strategies students can use to seek and utilize online information. The stages are as follows: -

1. Task Definition - In this step, the student determines exactly what the information problem is and the specific information related to the problem. For example when assigning a project, a student needs to know which questions need to be answered, what kind of information is needed to answer questions, when it is due, etc.

2. Information Seeking Strategies - Once the problem is clearly expressed, attention turns to the range of possible information sources. Information Seeking Strategies involves making decisions and selecting sources appropriate to the defined task.

3. Location and Access - This is where the information seeking strategy really

begins. Once students have decided on the appropriate strategy, the strategy is carried out.

4. Use of Information - Once students are able to locate and access a source, they must be able to read, view, listen or interact with the information and decide what is valuable for their particular situation. They must extract the information that they need using notes, copies, citations, etc.

5. Synthesis - The restructuring or repackaging of information into new or different formats to meet the requirements of the task is synthesis. Synthesis can be as simple as relaying a specific fact. Synthesis can be very complex involving several sources, a variety of media or presentation formats, and the effective communication of abstract ideas. This is where the real learning takes place as new information is brought in and links are made to pre-existing knowledge.

6. Evaluation - Evaluation determines how effectively and efficiently the information problem-solving process was conducted.

Some more models of information seeking be it online or offline have been considered in this study, some of which are that of Taylor and Chrum (Question-Negotiation and Information seeking model), Dervin's Sense making Metaphor, Ellis Model of Information Seeking Behaviour, and Kulthau's Model of the Information Search Process. All these models are designed to assist librarians and information service provider, design and implement information systems having carefully, observed and studied the information seeking pattern of students to ensure that they come up with better search results. As common with all the models stated, it was noted that search strategies is the crux of the matter, students search strategies need to be enhanced to come up with better search results each time they engage themselves in an information search process.

2.6 Information and Communication Technology Competencies for Online Information Search

Information and Communication Technology Literacy (ICTL) is increasingly being recognized worldwide as a panacea for functioning effectively in an emerging electronic environment. With ICTL, one can, among other things, gain access and make use of Information Communication Technology (ICT), enhance lifelong learning and adapt to changing skills requirements. Moreover, an ICT literate workforce is capable of enhancing an economy's competitiveness. Similarly, the level of digital awareness and skills are crucial to the deployment and use of a variety of ICTs. Digital skills are needed so that the technologies put in place can be maintained or adapted to local use, from which greater educational advantages can be derived.

ICT literacy is also vital for reaping the greatest advantages from the emerging digital era (Mutula and Wamukoya, 2007). ETS (2002) defined ICT literacy as using digital technology, communication tools, and or networks to access, manage, integrate, evaluate and create information in order to function in a knowledge society.

ICT represents the set of technologies that falls into the union of IT and communication technologies. Global industry, international media and academics increasingly now use ICT to describe this union.

Broadly defined, ICT literacy refers to the ability to use internet dependent applications and non-internet dependent applications. Internet dependent applications include, among others, networked environments encompassing a range of multimedia communication technologies, interactive and connected environments, email, chatting, surfing and blogging. Non-internet dependent applications include, for example, standalone computers and simple data entry devices, such as Microsoft applications, desktop publishing,

videogames and mobile phones, to mention but a few (Mutula and Wamukoya, 2007).

The concept of ICT literacy is variously defined in literatures. Some of those definitions are as follows:

- The ability to use computers and other technology to improve learning, productivity and performance (US Department of Education, 1996).
- Knowing some basics of ICT, such as saving and opening a file, using a word processing program and sending or receiving email for starters; having some sort of level of comfort around computers rather than having fear or a feeling of foreboding (New York Times Company, 2006).
- The ability to use digital technology, communications tools, and/or network to access, manage, integrate, evaluate and create information in order to function in a knowledge society (International ICT Literacy Panel, 2002).
- Knowledge about what technology is, how it works, what purposes it can serve and how it can be used efficiently and effectively to achieve specific goals (Trilling and Hood, 1999; International Technology Education Association, 2000).

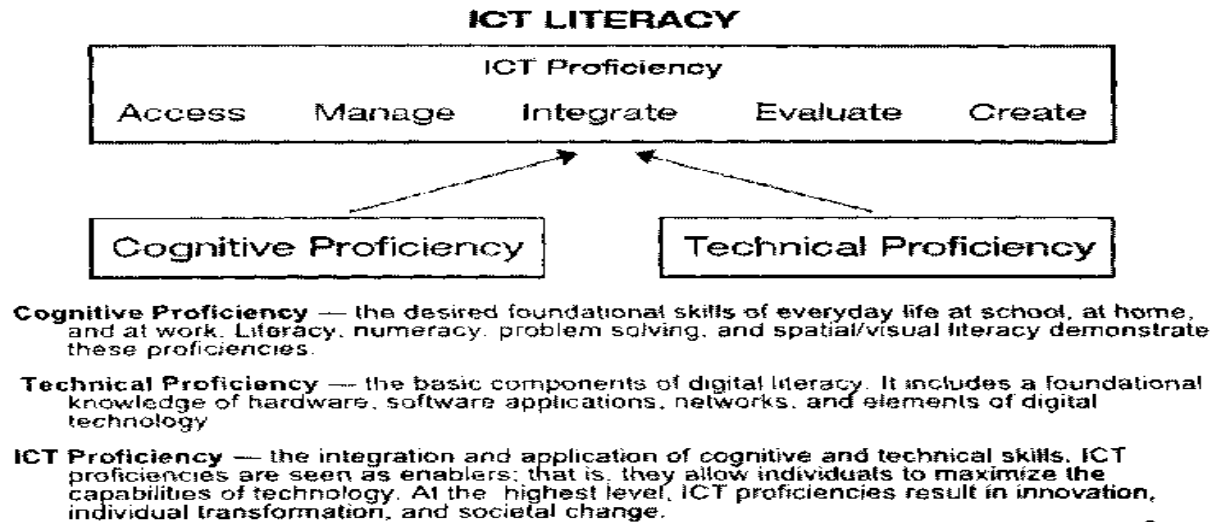


Fig 2.1 : A Breakdown of ICT Literacy

2.6.1 Information and Communication Technology (ICT) Competence for Students in Higher Education

The researcher has identified the following ICT competencies that are required to be possessed by students of higher institutions of learning in order to be proficient. These competencies are categorized into three, they are as follows: -

Basic Computer Skills:

- Knowing how to power a computer
- Being able to use a mouse to interact with elements on a computer screen
- Being able to use a computer keyboard.
- Being able to shut down the computer properly immediately after use.

Intermediate skills:

- Functional knowledge of word processing.
- How to use the e-mail.
- How to use the Internet.
- Installing software.
- Navigating a computer's file system.

Advance Skills

- Programming.
- Understanding problems of data security.

- Use of a computer for scientific research.
- Fixing software conflicts
- Repairing Computer Hardware.

2.6.2 Standards for Information and Communication Technology Literacy.

Working from the Association of College and Research Libraries "Information literacy competency standards for higher education" and other key documents, ETS and education partners identified seven literacy skill areas that assessment should measure: defining, accessing, managing, evaluating, integrating, creating and communicating information. Preliminary findings in (2007) identified that while students may be tech savvy when it comes to entertainment, they may not have the critical thinking skills to perform the kinds of information management and research tasks necessary for academic success.

<p>Define: the ability to use ICT tools to identify and appropriately represent an information need.</p>	<p>Develop and refine a range of questions to frame the search for new understanding.</p> <p>Display initiative and engagement by posing questions and investigating the answers beyond the collection of superficial facts.</p>
<p>Access: the ability to collect and retrieve information in digital environments.</p>	<p>Find, evaluate, and select appropriate sources to answer questions.</p>

	Demonstrate mastery of technology tools for accessing information and pursuing inquiry.
Manage: the ability to apply an existing organizational or classification scheme for digital information.	Organize knowledge so that it is useful.
Integrate: the ability to use ICT tools to synthesize, summarize, compare and contrast information from multiple digital sources.	Apply critical-thinking skills (analysis, synthesis, evaluation, organization) to information and knowledge. Use technology and other information tools to analyze and organize information.
Evaluate: the ability to judge the quality, relevance, authority, point of view/bias, currency, coverage or accuracy of digital information.	Evaluate information found in selected sources on the basis of accuracy, validity, appropriateness for needs, importance, and social and cultural context. Make sense of information gathered from diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.
Create: the ability to generate information by adapting, applying, designing or inventing information in ICT environments.	Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess.

<p>Communicate: the ability to communicate information properly in its context ... for a particular audience ... and in the appropriate venue.</p>	<p>Use the writing process, media and visual literacy, and technology skills to create products that express new understandings.</p> <p>Use information and technology ethically and responsibly.</p>
---	---

The researcher is totally in agreement with the standards identified by ETS for students in order to ensure that they always get the best of information they require during and after their academic pursuit.

2.7 Online Information Seeking Behaviour Models

This study therefore considered the following model in the review of related literature

- Taylor's Question-Negotiation and Information Seeking Model
- Dervin's Sense Making Metaphor
- Ellis' Model of Information Seeking Behaviour
- Kuhlthau's Model of the Information Search Process (ISP)

Information seeking is the process of attempting to obtain information in both human and technological contexts. A variety of theories of information behaviour e.g. Zipf's Principle of Least Effort, Brenda Dervin's Sense, Making and Elfreda Chatman's Life in the Rounds, seek to understand the processes that surround information seeking. Foster (2005); Kuhlthau (2006), asserted that information seeking has generally been accepted as dynamic and non-linear. People experience information search as process as an interplay of thoughts, feelings and actions (Kuhlthau, 2006).

Taylor's Question-Negotiation and Information Seeking Model

Taylor and Chrum described four levels of information need as:

Q1 - the actual, but unexpressed need for information (the visceral need)

Q2 - the conscious, with-in brain description of the need (the conscious need)

Q3 - the formal statement of the need (the formalized need)

Q4 - the question as presented to the information system (the compromised need)

(Question Negotiation and Information Seeking)

The **visceral level (Q1)** is the initial need for information that a user has. This need will change as information is added. At the **conscious level (Q2)** the user has an ambiguous mental description of what it is that he or she is looking for, but may need a colleague to help them focus the topic. At this the stage the user has a conscious description of the process. At the **formal level (Q3)**, the user can form a question, may question whether or not the information system can answer their question and the user may or may not realize that the librarian is a part of the information system. The **compromised level (Q4)** is the level in which the question is formalized. This is the stage in which the user may contact the reference librarian or take into account the organization of the files of information the library possess (books, pamphlets, tables, etc.). The reference librarian may have to go back to earlier stages in order to obtain information from the process that will help obtain the answer to the inquiry. Therefore this model gives a clear step on how users can better present their information need to either a traditional system or in the online environment. A clear understanding of the need to be satisfied is to be properly stated to achieve the anticipated result.

Dervin's Sense Making Metaphor

Dervin's sense-making theory has developed over a number of years, and cannot be seen simply as a model of information-seeking behavior. It is, rather, as she says '...a set of assumptions, a theoretic perspective, a methodological approach, a set of research methods, and a practice.' designed to cope with information perceived as, '...a human tool designed for making sense of a reality assumed to be both chaotic and orderly.' However, sense-making is implemented in terms of four constituent elements - a situation in time and space, which defines the context in which information problems arise; a gap, which identifies the difference between the contextual situation and the desired situation (e.g. uncertainty); an outcome, that is, the consequences of the sense-making process, and a bridge, that is, some means of closing the gap between situation and outcome. Dervin presents these elements in terms of a triangle: situation, gap/bridge, and outcome, which can be seen in figure the below:

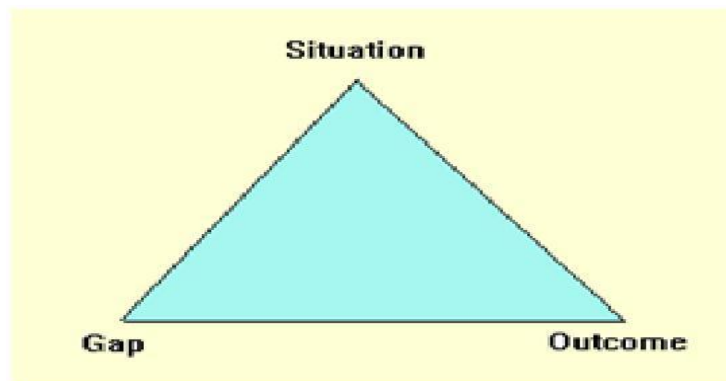


Fig 2.2: Dervin's 'Sense - Making' Triangle

However, it may be preferable to use the bridge metaphor more directly and present the model in the figure 2.3 below:

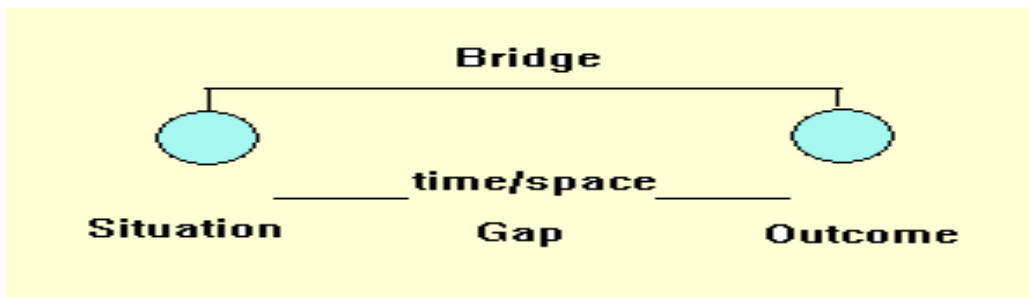


Figure 2.3: Dervin,s ‘Sense – Making’ Model Re-drawn

The strength of Dervin's model lies partly in its methodological consequences, since in relation to information behaviour, it can lead to a way of questioning that can reveal the nature of a problematic situation, the extent to which information serves to bridge the gap of uncertainty, confusion, or whatever, and the nature of the outcomes from the use of information. Applied consistently in 'micro-moment, time-line interviews' such questioning leads to genuine insights that can influence information service design and delivery. In relation to this study, the sense

making model brings to light the fact that online information sources help in bridging the gap between a user's uncertainty to a desirable outcome that is fulfilling to the user.

Ellis' Model of Information Seeking Behaviour

Ellis (1989), Ellis et al (1993) and Ellis and Haugan (1997), proposed and elaborated a general model of information seeking behaviour based on studies of information seeking patterns of academics. The model describes six categories of information seeking activities as generic: starting, chaining, browsing, differentiating, monitoring and extracting.

Starting: This comprise of those activities that form the initial search for information and identifying sources of interest that could serve as starting point of the search. Identified sources often include familiar sources that have been used before as well as less familiar sources that are expected to provide relevant information to users.

Chaining: This can be either backward or forward. Backward chaining takes place when printers or references from an initial source are followed. Conversely, forward chaining identifies and follows up on other sources that refer to an initial source or document. Although it can be an effective way of broadening a search, forward chaining is much less in use, because people are unaware of it.

Browsing: This is the activity of semi-directed search in areas of potential search. The individual often simplifies browsing by looking through tables of contents, lists of titles, subject headings, abstracts, and summaries and so on. Browsing takes place in many situations in which related information has been grouped together according to subject affinity. Chang and Rice (1993) defined browsing as "the process of exposing oneself to a resource space by scanning its content (objects or representations), structure, possibly resulting in awareness of unexpected or new content paths in that resource space." They further regarded browsing as a "rich and fundamental human information behaviour" that could lead to outcomes such as unanticipated findings, modification of information needs, learning and so on.

Differentiating: During this process, the individual filters and selects from among the sources scanned by noticing the differences between the nature and quality of the information offered. This process is likely to depend on the individual's prior or initial experiences with the sources, word-of-mouth, recommendations from personal contacts, or reviews in published sources. Taylor (1986) pointed out that for information to be relevant

and consequential, it should address not only the subject matter of the problem but also the particular circumstances that affect the resolution of that problem. He identified six categories of criteria by which individuals select and differentiate between sources: ease of use, noise reduction, quality, adaptability, time saving and cost saving.

Monitoring: This is the activity of keeping abreast of developments in an area by regularly following particular sources. The individual monitors by concentrating on a small number of what are perceived to be core sources. Core sources include the following: journals, online search updates, newspapers, conferences, magazines, books, catalogs and so on.

Extracting: This involves systematically working through a particular source or sources in order to identify material of interest. Taking the form of retrospective searching, extracting may be achieved by directly consulting the source, or by indirectly looking through bibliographies; indexes or online databases. Retrospective searching though, tends to be labour intensive, is more likely when there is a need for comprehensive or historical information on a topic.

From the foregoing, the identification of categories of information seeking behaviour suggest that information retrieval systems could increase their usefulness by including features that directly support these activities. Ellis posited that hypertext-based systems would have the capabilities to implement these functions (Ellis 1989).

Information Seeking Behaviours (Ellis and Ellis et al 1989, 1993, 1997)	Starting	Chaining	Browsing	Differentiating	Monitoring	Extracting
Literature search moves	Identification of sources of interest	Following up references found in given material	Scanning tables of contents or headings	Assessing or restricting information according to their usefulness	Receiving regular reports or summaries from selected sources.	Systematically working through a source to identify material of interest.
Anticipated web moves	Identifying website pages containing or pointing to information of interest	Following links on starting pages to other content related sites.	Scanning top level pages lists, headings site maps.	Selecting useful pages and sites by bookmarking, printing, copying and pasting etc. Choosing/starting at differentiated, preselected site of known content	Receiving site updates using e.g. push agents or profiles. Revisiting favourite sites for new information.	Systematically searches a local site to extract information of interest at that site.

Fig 2.4: Literature Search Moves: Ellis Model of Information Seeking Behaviour.

Relating Ellis's model above to online information seeking, it will be noted that it is already being supported by capabilities available in common web browser software. An individual could begin surfing the web, from one of a few favourite starting pages or sites (starting) follow hypertextual links to related information sources, both in backward and forward linking directions (chaining); scan the web pages of the sources selected (browsing); book mark useful sources for future reference and visits (differentiating; subscribe to e-mail based services that alerts the use of new information or developments (monitoring) also search a particular source or site for all information on that site on a particular topic (extracting). The Figure 4 above shows comparison between the original formulations of Ellis and Extensions of the activities to web information seeking.

Kuhlthau's Model of the Information Search Process (ISP)

The model of the ISP describes users' experience in the process of information seeking as a series of thoughts, feelings, and actions. Thoughts that begin as uncertain, vague, and ambiguous become clearer, more focused, and specific as the search process progresses. Feelings of anxiety and doubt become more confident and certain. Through their actions,

people seek information relevant to the general topic in the beginning stages of the search process and pertinent to the focused topic toward closure. Formulation of a focus or a personal perspective of a topic is a pivotal point in the search process. At that point, feelings shift from uncertain to confident, thoughts change from vague to more clear and interest increases. The model was verified in longitudinal case studies and large scale studies of diverse samples of library users. Further studies have examined the implementation of a process approach in education contexts and investigated the ISP in the workplace.

The ISP describes common experiences in the process of information seeking for a complex task that has a discrete beginning and ending and that requires considerable construction and learning to be accomplished. The model reveals a search process in which a person is seeking meaning in the course of seeking information. From the user's perspective, the primary objective of information seeking is to accomplish the task that initiated the search, not merely the collection of information as an end in itself. The ISP presents seeking information as a means to accomplish a goal. The model of the ISP is articulated in a holistic view of information seeking from the user's perspective in six stages:

Initiation: When a person first becomes aware of a lack of knowledge or understanding and feelings of uncertainty and apprehension are common.

Selection: When a general area, topic, or problem is identified and initial uncertainty often gives way to a brief sense of optimism and a readiness to begin the search.

Exploration: When inconsistent, incompatible information is encountered and uncertainty, confusion, and doubt frequently increase and people find themselves "in the dip" of confidence.

Formulation: When a focused perspective is formed and uncertainty diminishes as confidence begins to increase.

Collection: When information pertinent to the focused perspective is gathered and uncertainty subsides as interest and involvement deepens.

Presentation: When the search is completed with a new understanding enabling the person to explain his or her learning to others or in some way put the learning to use.

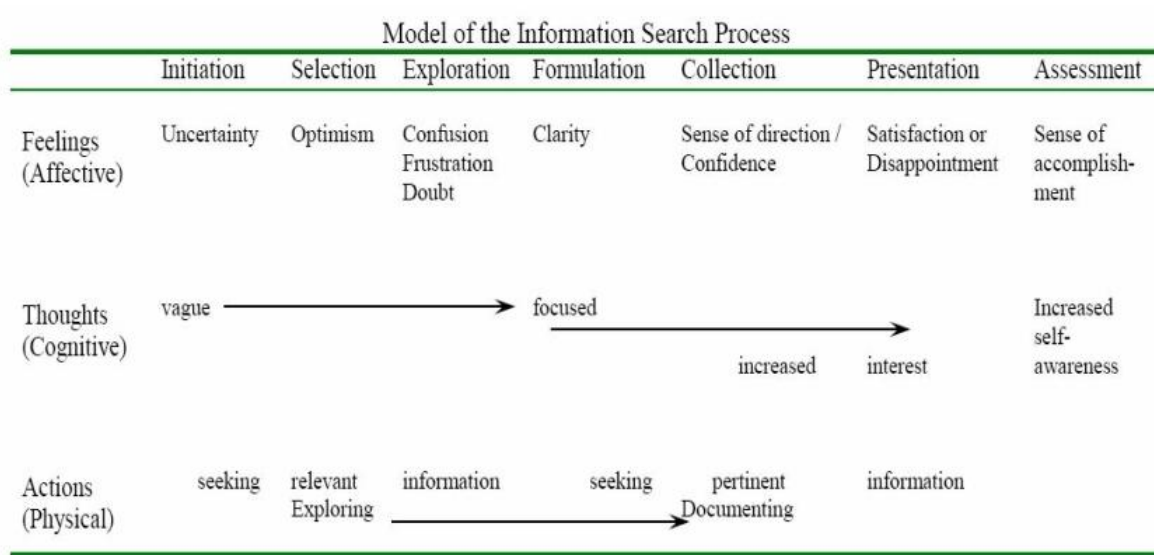


Fig 2.5: Kuhlthau’s Model of the Information Search Process (ISP)

2.8 Summary of the Review

This chapter reviewed various researches in the field of information seeking behavior. A lot of ideas have been brought forward from various researchers in the literatures reviewed. It is pertinent to note that the ability to search through literatures online goes a long way in helping postgraduate students perform well academically. Online information seeking behavior has been defined as the entirety of the process involved in users satisfying their information needs in the online environment. Information seeking models of Taylor, Dervin, Ellis and Kuhlthau have helped in properly understanding the way and manner users seek for and satisfy their online information needs.

REFERENCES

- Aguolu, C.C. (1983). The Future of Library and Information Services in Nigeria. *Nigerian Libraries* Vol. 20 p 58.
- Aina L. O. (2004). *Library and Information Science Text for Africa*. Ibadan: Third World Information Services Limited.
- Bond, C. S., Fevyer, D. & Pitt, C. (2006). Learning to use the Internet as a study tool: A review of available resources and exploration of students' priorities. *Health Information and Libraries Journal*, 23(3), 189-196. Retrieved from <http://dx.doi.org/10.1111/i.1471-1842.2006.00656.x> on 12/05/2012
- Borgman, C.L. Smart, L. J. Millwood, K. A. Finley, J. R. Champeny, L. Gilliland, A.J. & Leazer, G. H. (2005). Comparing Faculty Information Seeking in Teaching and Research: Implications for the Design of Digital Libraries. *Journal of the American Society for Information Science & Technology*, 56 (6), 636-656. Available at: http://www.sandia.gov/itg/newsletter/dec00/article_information_foragers.html (Accessed 20/08/10)
- Bos, N. (2000). High school students' critical evaluation of scientific resources on the World Wide Web. *Journal of Science Education and Technology*, 9(2), 161-173. Retrieved from <http://dx.doi.org/10.1023/A:1009426107434> on 16/01/2011
- Case, D. (2002). *Looking for information: A survey of information seeking behaviour*. London: Academic Press.
- Chang S. and Rice R.E. (1993), Browsing: A multidimensional framework, *Annual Review of Information Science and Technology (ARIST)*, Vol. 28, 1993, edited by M.E. Williams. Published for the American Society for Information Science (ASIS) by Learned Information Inc. Medford, N.J
- Choo, C.W. Detlor, B. & Turnbull, D. (2000). *Web work: information seeking and knowledge work on the World Wide Web*. Dordrecht: Kluwer Academic Publishers.
- Chu, S. K. W. & Law, N. (2008). The development of information search expertise of research students. *Journal of Librarianship and Information Science*, 40(3), 165-177. Retrieved from <http://dx.doi.org/10.1177/0961000608092552> 06/02/2012
- Dias, P., Gomes, M. J. & Correia, A. P. (1999). Disorientation in hypermedia environments: Mechanisms to support navigation. *Journal of Educational Computing Research*, 20(2), 93-117. Retrieved from <http://dx.doi.org/10.2190/G8C5-342V-DJX3-Q53F> 03/06/2012

- Debowski, S. (2001). Wrong way: Go back! An exploration of novice search behaviours while conducting an information search. *The Electronic Library*, 19(6), 371-382. Retrieved from <http://dx.doi.org/10.1108/0264047011041199112/01/2011>
- Ellis, D. (1989). A Behavioural Approach to Information Retrieval System Design, *Journal of Documentation*, 45, 3 (1989) p.171-212
- Ellis, D., Cox D. and Hall, K. (1993). A Comparison of the Information Seeking Patterns of Researchers in the Physical and Social Sciences. *Journal of Documentation* 49 (December 1993) p.356-369
- Fabunmi, B. (2004). Planning University Libraries for Effective Customer Services in Nigeria in *Technology for Information Management and Service: Modern Libraries and Information Centres in Developing countries* edited by E. C. Madu 147-58. Ibadan: Evi Coleman publications
- Fairer-Wessels (1990). Basic Community Information Needs of Urban Black Women in Mamelodi, Pretoria, South Africa. Retrieved on 25th August 2008 from www.cais-acsi.ca/proceedings/1995/olson_1995.pdf
- Fleiszer, D. M. & Posel, N. H. (2003). Development of an undergraduate medical curriculum: The McGill experience. *Academic Medicine*, 78(3), 265-269. Retrieved from <http://journals.lww.com/academicmedicine/pages/articleviewer.aspx?year=2003&issue=03000&article=00005&type=abstr> act on 03/02/2011
- Fortin, M. G. (2000). Faculty use of the World Wide Web: Modeling information seeking behaviour in a digital environment. Available at: <http://digital.library.unt.edu/permalink/meta-dc-2723:l>
- Fourie, I. (2006). Learning from web information seeking studies: some suggestions for LIS practitioners. *The Electronic Library*, 24 (1), 20-37. Available at: www.emeraldinsight.com/0264-0473.htm (Accessed 06/09/12)
- Francis, H. (2008). The Information-Seeking Behaviour of Social Science Faculty at the University of the West Indies, St. Augustine Campus. *The Journal of Academic Librarianship*, 31 (1),67—72. Available at: http://www.sciencedirect.com/science?_ob=MIimg&imagekey=B6W504_FBFR0D11&_cdi=6556&_user=1378591&_orig=search&_coverDate=01%2F01%2F2005&_sk=99689998&view=c&wchp=dGLbVzWzSkzS&md5=7ef476520fecafad331a8d8abfd58e54&ie=/sdarticle.pdf
- Gbaje, E.S. (2004). ICT and its Implication in Learning and Teaching. School of Library and Information Management, Emporia State University, Kansas. USA

- Gleeson, A. C. (2001). Information-Seeking Behaviour of Scientists and Their Adaptation to Electronic Journals. Available at: <http://ils.unc.edu/MSpapers/2672.pdf>
- Hargittai, E. & Hinnant, A. (n.d). Toward a Social Framework for Information Seeking. Available at: <http://www.eszter.com/research/pubs/hargittaihinnantinfoseeking.pdf> (Accessed 20/08/12)
- Hider, P. (2005). Coding online information seeking. *The Australian Library Journal*. Available at: http://www.accessmylibrary.com/coms2/summary_0286-14429600ITM
- Hill, J. R. (1999). A conceptual framework for understanding information seeking in open-ended information systems. *Educational Technology Research and Development*, 47(1), 5-27. <http://dx.doi.org/10.1007/BF02299474>
- Jansen, B. J. & Spink, A. (2004). *Web Search: Public Searching of the Web*. Dodrecht: Kluwer Academic Publishers.
- Jarvelin, K. & Ingwersen, P. (2004). Information seeking research needs extension towards tasks and technology. *Information Research*, 10 (1), paper 212. Available at: <http://InformationR.net/ir/10-1/paper212.html> (Accessed 03/02/13)
- Kingrey, K.P. (2002). Concepts of Information Seeking and Their Presence in the Practical Library Literature. *Library Philosophy and Practice*, 4 (2), 1-14. Available at: <http://www.webpages.uidaho.edu/~mbolin/kingrey.pdf> (Accessed 01/10/11)
- Lallimo, J. Lakkala, M. & Paavola, S. (2004). How to Promote Students' Information Seeking. Available at: http://www.eun.org/insight-pdf/ernist/Q5_1_%20Long_%20answer_%20How_%20to%20promote_%20students_%20information_%20seeking.pdf. (Accessed 19/12/12)
- Laxman, K. (2010). A conceptual framework mapping the application of information search strategies to well and ill-structured problem solving. *Computers & Education*, 55(2), 513-526. <http://dx.doi.org/10.1016/i.compedu.2010.02.014>
- Laxman, K. (2009). A baseline study on the Internet information search proficiencies of polytechnic students in Singapore. *International Journal of Education and Development using ICT*, 5(3). <http://ijedict.dec.uwi.edu/viewarticle.php?id=936>
- Levine, A. E., Bebermeyer, R. D., Chen, J. W., David, D. & Harty, C. (2008). Development of an interdisciplinary course in information resources and evidence-based dentistry.

- Journal of Dental Education*, 72(9), 1067-1076.
<http://vwww.identaled.Org/content/72/9/1067.full.pdf>
- Lines, A.D. (2003). Communicating Information across Cultures: Understanding How Others Work. *The Pantaneto Forum*, (9). Available at: <http://www.pantaneto.co.uk/issue9/andersen.htm> (Accessed 13/05/10) Loose, R.M. Jr. & Worley, K.A. (1994). *Research and Evaluation for Information professionals*. London: Academic Press Inc.
- Marchionini, G. (1995). *Information seeking in electronic environments*. New York: Cambridge University Press.
- Marchionini, G. & Komlodi, A. (n.d). Design of Interfaces for Information Seeking. Available at: <http://ils.unc.edu/~march/arist/DRAFT.htm>
- McGreevy, P., Shaw, T., Burn, D. & Miller, N. (2007). OLIVER: An online library of images for veterinary education and research. *Journal of Veterinary Medical Education*, 34(4), 510-516. <http://dx.doi.Org/10.3138/jvme.34.4.510>
- Meho, L.L. & Haas, S.W. (2001). Information seeking behaviour and use of social science faculty studying stateless nations: a case study. *Library and Information Science Research*, 23, 5-25. Available at: doi: 10.1016/S0740-8188(00)00065-7 (Accessed 01/10/11)
- Nel, J.G. (n.d). The information seeking process: is there a sixth sense? *Mousaion*, 19(2), 23-32. Available at: http://journals.sabinet.co.za/WebZ/images/ejour/mousaion/mousaion_v19_n2_a3.pdf?sessionid=01-57831-140272018&format=F Networking Services Unit (University of Zululand).
- Nkomo, N. (2009). A comparative analysis of the web information seeking behaviour of students and staff at the University of Zululand and the Durban University of Technology, (unpublished thesis).
- Patitungkho, K. & Deshpande, N. J. (2005). Information Seeking Behaviour of Faculty Members of Rajabhat Universities in Bangkok. *Webology*, 2 (4), Article 20. Available at: <http://www.webology.ir/2005/v2n4/a20.html> (Accessed 05/07/12)
- Phelps, R., Fisher, K. & Ellis, A. (2006). Organisational and technological skills: The overlooked dimension of research training. *Australasian Journal of Educational Technology*, 22(2), 145-165. <http://www.ascilite.org.au/ajet/aiet22/phelps.html>

- Reiterer, H. MuBler, G. & Mann T. M. (2001). A visual information seeking system for Web search. Available at: http://hci.uni-konstanz.de/downloads/hr-gm_tm_mc_2001.pdf (Accessed 12/05/10)
- Rieh, S.Y. (2004). SI 551: Information Seeking Behaviour 2004 School Of Information University Of Michigan, Ann Arbor
- Siatri, R. (1999). The Evolution of User Studies. *Libri*, 49, 132-141. Available at: http://www.librijournal.org/pdf/1999-3pp_132-141.pdf
- Stenmark, D. & Jadaan, T. (2006). Intranet users' information-seeking behaviour: an analysis of longitudinal search log data. Available at: <http://eprints.rclis.org/archive/00008102/01/dt02.pdf> (Accessed 13/03/10)
- Taylor, D. & Proctor, M. (2005). The Literature Review: A few tips on conducting it. Available at: <http://www.utoronto.ca/writing/pdf/litrev.pdf> (Accessed 13/04/12).
- Tekinarslan, E. (2008). Blogs: A qualitative investigation into an instructor and undergraduate students' experiences. *Australasian Journal of Educational Technology*, 21(4), 402-412. <http://www.ascilite.org.au/aiet/aiet24/tekinarslan.html> 894
Australasian Journal of Educational Technology, 2012, 28(5)
- Tibbo, H. R. (n.d). Information seeking behaviours. [PowerPoint Presentation] Available at: <http://www.delos.info/files/pdf/events/2004Sett610/Tibbo-Information-Seeking-Behaviors.pdf>
- Trilling, B. and Hood, P. (1999). "Learning, Technology and Educational Reform in the Knowledge Age or We're Wired, Webbed and Windowed, Now What?" *Educational Technology*, May-June 1999, 5-18.
- Tsai, M.-J. (2009). The model of strategic e-learning: Understanding and evaluating student e-learning from metacognitive perspectives. *Educational Technology and Society*, 12(1),34-48.
http://www.ifets.info/index.php?http://www.ifets.info/abstract.php?art_id=908
- Tsai, M.-J. & Tsai, C.-C. (2003). Information searching strategies in web-based science learning: The role of Internet self-efficacy. *Innovations in Education and Teaching International*, 40(1), 43-50. <http://dx.doi.org/10.1080/1355800032000038822> (Accessed 12/08/2012)
- Walraven, A., Brand-gruwel, A. & Boshuizen, P. A. H. (2008). Information-problem solving: A review of problems students encounter and instructional solutions. *Computers in Human Behavior*, 24(3), 623-648.

<http://dx.doi.org/10.1016/i.chb.2007.01.030>

Wilson, T. D. (2000). Human Information behaviour. *Special issue on Information Science Research*, 13 (2), 49-55. Available at <http://inform.nu/Articles/Vol3/v3n2p49-56.pdf>. (Accessed 11/03/13)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter discussed the methodology used in conducting the research. It is sub-divided into the following topics:

- The Research Method Adopted
- Population of the Study
- Sample and Sampling Technique
- Instrument for Data Collection
- Procedure for Data Collection
- Procedure for Analysis of the Data

3.2 Research Method

Survey research was adopted for this study. The choice of this method was necessitated by the topic of the study. A Survey research deals with gathering data about people and their thoughts and behaviour. Nwana (2005) asserted that survey research method is an appropriate method that is suitable for studies where the population is large over an area. Best and Khan (2006) identified the survey as a research instrument that uses both quantitative and qualitative research methodologies. Chava (1992) asserts that a survey research provides a qualitative or numeric description of trends, attitudes or opinions of a population by studying a sample of that population.

3.3 Population of the Study

The population of the study comprised postgraduate students in Ahmadu Bello University, Zaria. The University is made up of 12 faculties, (ABU, MIS, 2012). There are a total of 7739 postgraduate students in the University. The rationale behind the choice of this population is the fact that they make use of the Web which facilitates the conduct of their research. The demographic characteristics of the population is shown in Table 3.1 below.

Table 3.1 Postgraduate Students in Ahmadu Bello University by Faculty, Department and Gender

		Pg		Pg Total
Faculty	Department	Female	Male	
Administration	Accounting	105	263	3 68
	Business Administration	209	553	762
	Local Government and Development Studies	1	6	7
	Public Administration	147	338	485
Sub Total		462	1160	1622
Agriculture	Agricultural Economics and Rural Sociology	42	97	139
	Agriculture	13	28	41
	Agronomy	26	60	86
	Animal Science	7	14	21
	Crop Protection	0	1	1
	Fisheries	6	11	17
	Plant Science	6	24	30
Sub Total		100	235	335
Arts	African Languages and Cultures	21	107	128
	Arabic	10	10	20
	Archeology	100	65	165
	English	21	29	50
	French	14	46	60
	History	57	64	121
	Theatre and Performing Arts			
Sub Total		223	321	544
Education	Education	289	452	741
	Library and Information Science	86	116	202
	Physical and Health Education	46	116	162

Vocational and Technical Education		138	86	224
Sub Total		559	770	1329
Engineering	Agricultural Engineering	1	25	26
	Chemical Engineering	13	59	72
	Civil Engineering	7	79	86
	Electrical Engineering	17	170	187
	Mechanical Engineering	2	74	76
	Metallurgical and Materials Engineering	2	33	35
	Metallurgical Engineering	4	31	35
	Surveying			
	Water Resources and Environmental Engineering			
	Sub Total		46	471
Environmental Design	Architecture	59	171	230
	Building	38	241	279
	Fine Arts	17	60	77
	Geomatics	19	36	55
	Industrial Design	13	51	64
	Quantity Surveying	17	45	62
	Urban and Regional Planning			
Sub Total		163	604	767
Law	Civil Law	40	93	133
	Commercial Law	7	25	32
	Private Law	3	7	10
	Public Law Sharia	23	46	69
	Law	1	16	17
Sub Total		74	187	261
Medicine	Chemical Pathology	2	3	5
	Community Medicine	14	53	67
	Human Anatomy	12	29	41
	Human Physiology	10	31	41
	Medicine		1	1
	Nursing Science			
Sub Total		38	117	155
Pharmaceutical Sciences	Pharmaceutical and Medicinal Chemistry	10	32	42
	Pharmaceutics and Pharmaceutical Microbiology	20	38	58
		7	11	18
	Pharmacognosy and Drug Development	31	43	74
	Pharmacology and Clinical Pharmacy		2	2
	Pharmacy			
Sub Total		68	126	194
Science	Biochemistry	57	48	105
	Biological Sciences	43	74	117
	Chemistry	29	111	140

	Geography	80	231	311
	Geology	12	26	38
	Mathematics	33	155	188
	Microbiology	77	67	144
	Physics	7	54	61
	Textile Science and Technology	5	29	34
Sub Total		343	795	1138
Social Science	Economics	29	92	121
	Mass Communication	39	48	87
	Political Science	98	219	317
	Sociology	36	113	149
Sub Total		202	472	674
Veterinary Medicine	Veterinary Anatomy	1	6	7
	Veterinary Medicine	4	8	12
	Veterinary Parasitology and Entomology	4	29	33
	Veterinary Pathology and Microbiology	6	12	18
	Veterinary Physiology and Pharmacology	35	52	87
	Veterinary Public Health and Preventive Medicine	14	32	46
	Veterinary Surgery and Medicine			
Sub Total		64	139	203
Grand Total		2342	5397	7739

Source: ABU, MIS 2011/2012 Academic Session.

3.4 Sample and Sampling Technique

The ever increasing demand for research has created a need for an efficient method of determining the sample size needed to represent a given population. Determination of sample is usually a problem for researchers. To this effect, Krejcie and Morgan (1970) developed a standard scale for determination of sample size of a study from the entire population under study. From the above table, therefore, considering that the entire population under study was 7739, the sample size used for the study was 486. A proportionate stratified random sampling was used to select the sample size because it involved different predispositions of the students such as males / females, and different faculties with different programmes. The researcher adopted a stratified sampling technique to ensure that different groups of the population were adequately represented. This, according to Chava (1992), is to increase the level of accuracy in estimating parameters.

3.5 Instrument for Data Collection

Questionnaire was used as the instrument for data collection for this research. Considering its significance, Osuala (1993) posited that questionnaire is more economical for reasons of the time involved in conducting a research, and are directly associated with survey research design methods. Also, questionnaire's ability to elicit both qualitative and quantitative data on unobservable behaviour such as feelings, attitudes, ideas, opinions and viewpoints made it an instrument of choice. The questionnaire was divided into five sections. Section A carried demographic information about the respondents. Section B contained identification of online information resources and services. Section C contained identification of sources online information resources. Section D contained Online Information Search Techniques, and finally Section E contained evaluation of Online Information Resources. This was done in line with the research questions raised for the study.

3.6 Validity of the Research Instrument

Validity is often defined as the extent to which an instrument measures what it ought to measure. Validity requires that an instrument is reliable. In order to ascertain the validity of the instrument, the researcher subjected the instrument to research experts, colleagues and supervisors for validation. The instrument was corrected based on the comments of the supervisors as regards to the items, structure and format of the questionnaire.

3.7 Reliability of the Research Instrument

The reliability of the instrument was established by conducting a pilot study within one week at the University of Jos. The choice of this University was simply because it was not part of the scope of this study. Forty (40) PG students were issued the research instrument. Meriwether (2001) posited that pilot study is a small experiment designed to test logistics and gather information prior to a larger study under the same conditions as the larger one in order to

improve the latter's quality and efficiency. Pilot study can reveal deficiencies in the design of a proposed experiment or procedure and these can then be addressed before time and resources are expended on large scale studies. The reliability of the questionnaire was determined using the split half technique. In this method, copies of the instrument were distributed once. The scores were then correlated using t-test independent analysis to get the reliability coefficient alpha of the scale. The reliability coefficient of the questionnaire was found to be 0.861.

3.8 Procedure for Data Collection

The researcher, with the help of four research assistants, administered the instruments to the postgraduate students of the selected faculties with the help of their class representatives. The administration of the instrument was carried out confidentially to ensure that the right information was gotten from them without interference from other respondents. They were also given the assurance that their responses would be treated confidentially. A follow up was made to ensure speedy completion and return of the questionnaires administered.

3.9 Procedure for Data Presentation and Analysis

Descriptive statistics such as frequency tables and charts were used in presenting the data collected. Simple percentages were used to analyse the data relating to the research questions raised. Hypotheses H_{01} , H_{03} , H_{04} , and H_{05} were tested using ANOVA while H_{02} was tested using t-test.

REFERENCES

- Ahmadu Bello University, *Management Information System*, 2012.
- Best, J.W. & Khan, J.V. (2006). *Research in Education*. Boston: Pearson Education Inc.
- Chava, F.N. (1992). *Research Methods in the Social Science* 4th Ed London: J.W. Arrow smith Ltd. p. 117.
- Krejcie, R.V. & Morgan, D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30, 607-610.
- Meriwether, N. (2001). *12 Easy Steps to Successful Research Papers* (second ed.). Lincolnwood IL: National Textbook Co.
- Osuala, E. C. (1993). *Introduction to Research Methodology*. Onitsha: Africana FEP publishers Ltd. p. 180.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of the data collected, results and discussion of the findings of the study, according to the research questions and hypotheses raised in the study.

4.2 Response Rate

A total of four hundred and eighty six (486) copies of the questionnaire were distributed to the sampled postgraduate students of the various faculties in Ahmadu Bello University Zaria. Out of these four hundred and two (402) copies were duly completed, returned and found useful for analysis. This represents 82.7% response rate. This high response rate could be attributed to the researcher's effort in administering the instrument personally within one month and subsequent follow ups to retrieve the outstanding completed copies of the questionnaire from the respondents. The establishment of a good public relation with the respondents led to the on the spot completion of some copies of the questionnaire from some respondents.

Table 4.1: Response Rate of the Respondents Sampled for the Study.

Faculties	Number of PG Students	Number of questionnaires administered	Number of questionnaires returned	Percentage of questionnaires returned
Administration	1622	162	126	77.8
Education	1329	133	113	85.0
Environmental design	767	77	64	83.1
Sciences	1138	114	99	86.8
Total	4856	486	402	82.7

4.2.1 Educational Qualification of Post Graduate Students

For the purpose of the study of this nature, it is pertinent to consider the educational qualification of the postgraduate students in the study. It is assumed that students in this category are indulged in research work.

Table 4.2: Distribution of Respondents by their Degree Programmes in view

Distribution of Respondents by their Degree Programmes in view										
Faculty	Postgraduate Diploma		Masters		M.Phil		Doctorate		Total	
	f	%	f	%	f	%	f	%	f	%
Administration	70	17.4	50	12.4	0	0.0	6	1.5	126	31.3
Education	2	0.5	98	24.4	0	0.0	13	3.2	113	28.1
Environmental design	15	3.7	21	5.2	1	0.2	27	6.7	64	15.9
Science	27	6.7	57	14.2	0	0.0	15	3.7	99	24.6
Total	114	28.4	226	56.2	1	0.2	61	15.2	402	100.0

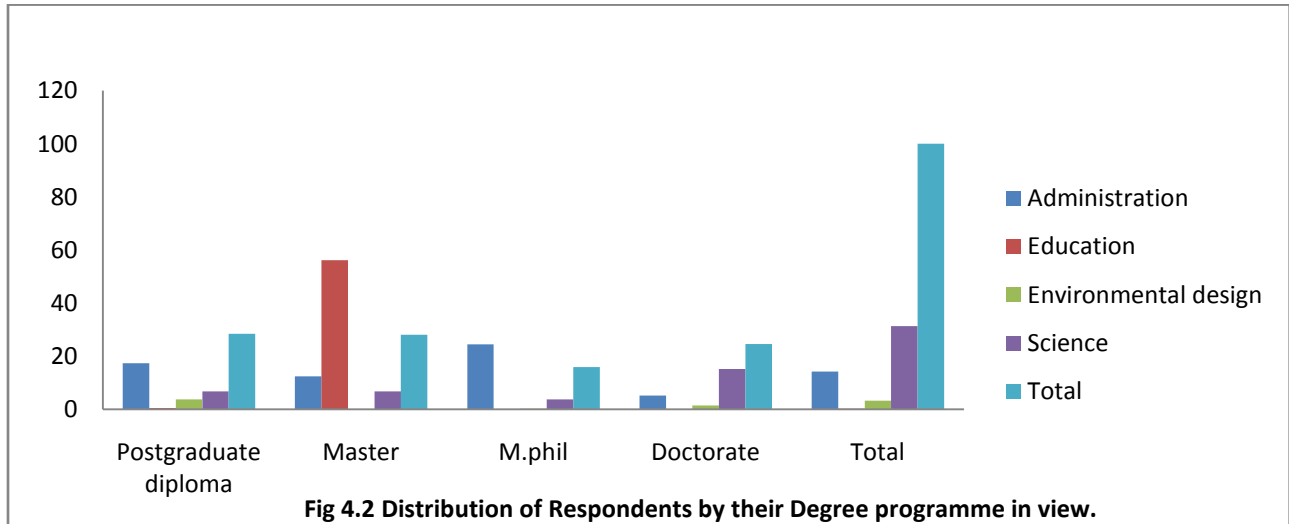


Table 4.2 and Figure 4.2 above revealed that 70(17.4%) of the respondents sampled were Postgraduate Diploma students from the faculty of Administration, 50(12.4%) were Masters students, 6(1.5%) were Doctorate students. From the Faculty of Education, 2(0.5%) were Postgraduate Diploma students, 98(24.4%) Masters students, and 13(3.2%) Doctorate students. Faculty of Environmental Design had 15(3.7%) Postgraduate Diploma students, 21(5.2%) Masters students, 1(0.2%) M.Phil students, and 27(6.7%) Doctorate students. Faculty of Science had 27(6.7%) postgraduate Diploma students, 57(14.2%) Masters students, and 15(3.7%)

Doctorate students. In general, therefore, majority of the students sampled were Masters students. This suggests that there is a high level of enrolment into the Master programmes compared to the other postgraduate programmes in Ahmadu Bello University, Zaria.

Table 4.3: Gender Distribution of the Respondents

Faculty	Male		Female		Total	
	f	%	f	%	f	%
Administration	99	24.6	27	6.7	126	31.3
Education	71	17.7	42	10.4	113	28.1
Environmental design	46	11.4	18	4.5	64	15.9
Science	69	17.2	30	7.5	99	24.6
Total	285	70.9	117	29.1	402	100.0

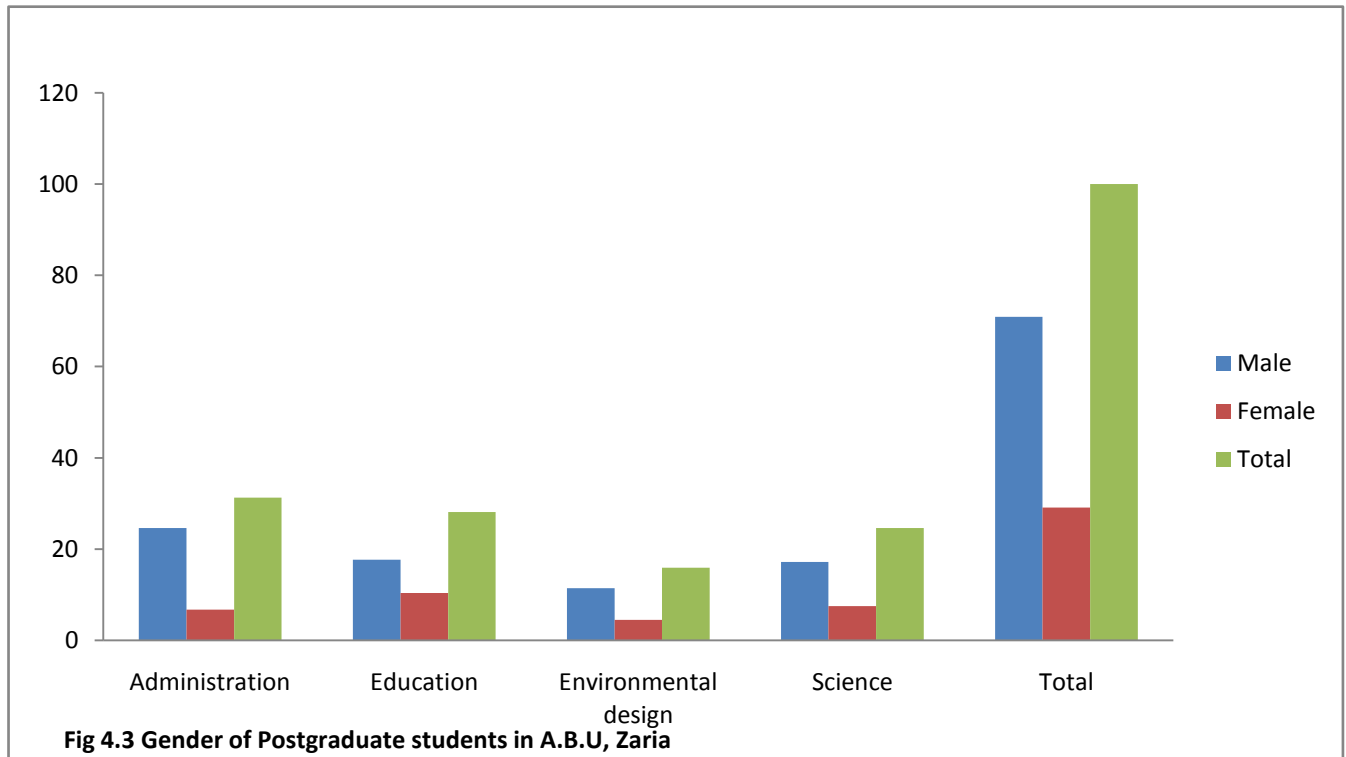


Table 4.3 and Figure 4.3 revealed that 99(24.6%) sampled from the Faculty of Administration were males while from the same Faculty 27(6.7%) respondents were females. In the Faculty of Education, a total of 71(17.7%) males were sampled whereas the females were 42(10.4%). Faculty of Environmental Design had 46(11.4%) males and 18(4.5%) females sampled for this study. Faculty of Sciences had 69(17.2%) males and 30(7.5%) females sampled for the study. In

general, a total of 285(70.9%) males and 117(29.1%) females were sampled for this Study. The study revealed that Faculty of Environmental Design had the lowest sampled respondents in both gender. It has been affirmed that majority of the postgraduate students in the University were males. This confirmed the issue that has long been lingering about the need to promote the girl-child education for achievement of the Millennium Development Goals (MDG).

4.3 Data Analysis

The presentation and analysis of the data were done under two sub headings namely: descriptive analysis and inferential analysis.

4.3.1 Descriptive Analysis

This section analysed and discussed the data collected for the purpose of answering the research questions raised in the study. Frequency tables and percentages were used to compute and present the results. Diagrams were also used to illustrate pictorial analysis of some of the data analysed.

4.3.2 Types of Online Information Resources and Services Accessed by the Postgraduate Students in A.B.U, Zaria.

This research has identified the types of online information resources and services that the PG students in Ahmadu Bello University, Zaria access. This is presented in Tables 4.4 and 4.5 below.

Table 4.4: Types of Online Information Resources

S/No.	Types of Online Information Resources	Frequency	Percentage
1	e-journals	199	49.5
2	e-books	148	36.8
3	Science Direct	99	24.6
4	JSTOR	117	29.1
5	HINARY	51	12.7
6	AGORA	59	14.7
7	OARE	56	13.9

8	DOAJ	58	14.4
9	AJOL	53	13.2
10	eGranary	41	10.2
11	TEEAL	57	14.2
12	Electronic Theses and Dissertation ETDs	130	32.3
13	Web	206	51.2
14	Portal	147	36.6
15	Others	31	7.7

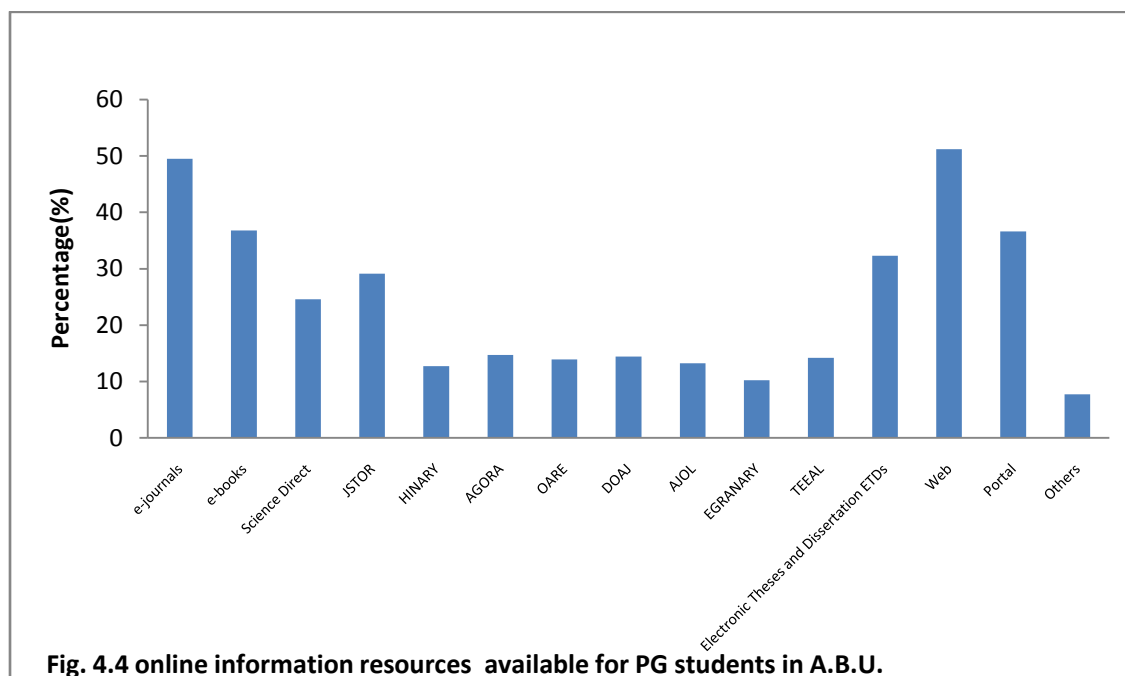


Fig. 4.4 online information resources available for PG students in A.B.U.

The Table 4.4 and Figure 4.4 revealed that 206(51.2%), constituting majority of the postgraduate students are aware of the availability of the web as an online information resource. They also indicated that they are aware of the availability of e-journals, e-books, electronic theses and dissertations, and portal with 199(49.5%), 148(36.8%), 130(32.3%) and 147(36.6%) respectively. This suggests that the online information resources are being advertized by the librarians in charge of the resources and through training and workshops for the PG students in A.B.U to be aware of them.

As a follow up of Table 4.4 above, Table 4.5 discussed the online information services available

for the PG students in A.B.U, Zaria, as presented in Table 4.5 below:

Table 4.5: Online Information Services Available for PG students in A.B.U, Zaria.

	Online information Services Available	Frequency	Percentage
1.	OPAC	132	14.4
2.	Virtua	74	8.1
3.	Electronic Newsletters and Journals	114	12.4
4.	Current Awareness Service	70	7.6
5.	Blogs	44	4.8
6.	Online Reference Service	78	8.5
7.	Online Tutorials	37	4.0
8.	Online Charging out and Charging in	44	4.8
9.	Electronic Theses and Dissertations	123	13.4
10.	Web Portal	172	18.8
11.	Others	29	3.2
	Total	917	100%

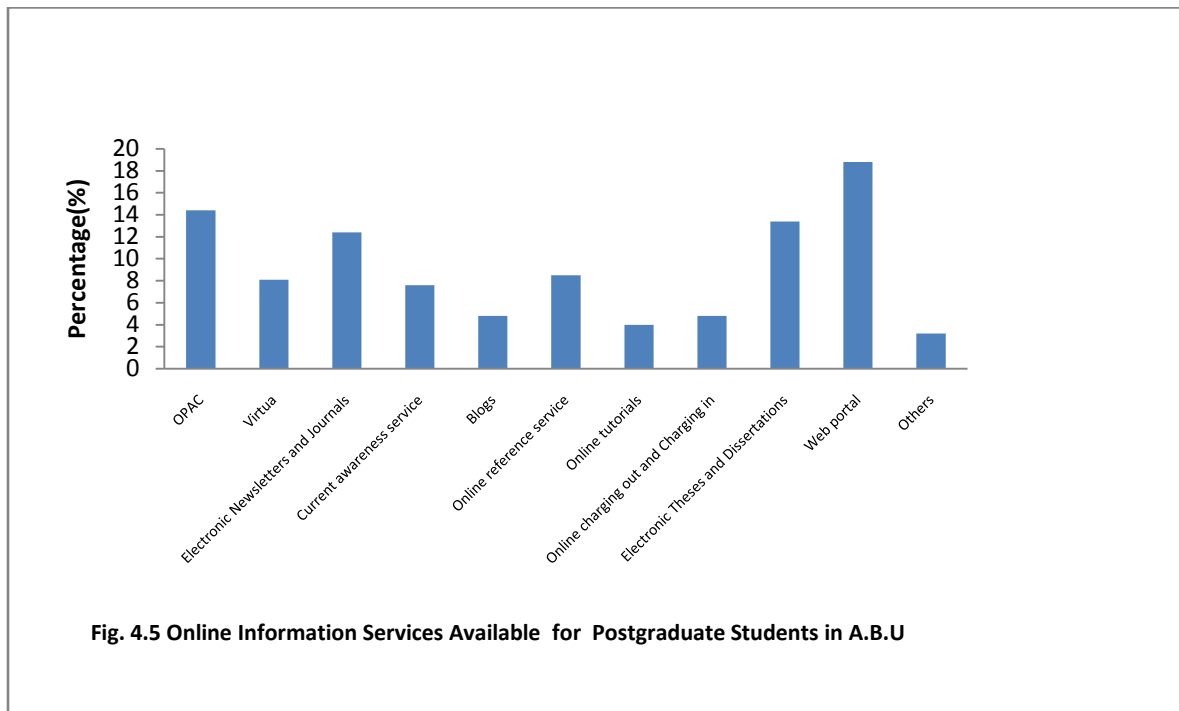


Table 4.5 and Figure 4.5 above have shown that the respondents are aware of web portal and are using it 172(18.8%). This high use of the web portal is based on the fact that it links them to other services which are domiciled on the web. Some of the respondents indicated their

awareness and use of the following online services: OPAC, Virtua, Electronic Newsletters and Journals, Electronic Theses and Dissertations, Online Reference Service, and Current Awareness Service, 132(14.4%), 74(8.1%), 114(12.4%), 123(13.4%), 78(8.5%), and 70(7.6%) respectively. The reason for the low response rates in some services like Blogs was because they are not commonly used by lecturers in interacting with the students.

4.3.3 Sources of Online Information Resources to Postgraduate Students in Ahmadu Bello University, Zaria.

The study has identified the sources of Online Information Resources available to postgraduate students in Ahmadu Bello University, Zaria. This is presented in Table 4.6, 4.7 and 4.8 respectively.

Table 4.6: Sources of Online Information Resources for PG Students.

Types of Online Information Resources	Availability of the Online Information Resource.
Science Direct	√
JSTOR	√
HINARY	√
AGORA	√
OARE	√
DOAJ	√
AJOL	√
EGRANARY	√
TEEAL	√
Portal	√
OPAC	√
Electronic theses and dissertations	√
Databases	√
Www	√
Blogs	√
Social networking sites	√
Specialized databases	√

Table 4.6 above revealed that all the Online Information resources listed above served as the sources of OIRs provided by the Library for use by the PG students in Ahmadu Bello University

Zaria.

Table 4.7: Format of Online Information Resources Preferred

Format of Online Information Resources	Most Preferred		More Preferred		Preferred		Not Preferred		Never Preferred	
	f	%	f	%	f	%	f	%	f	%
Html	83	20.6	93	23.1	40	10.0	2	0.5	184	45.8
PDF	150	37.3	74	18.4	76	18.9	11	2.7	91	22.6
MS-WORD	128	31.8	82	20.4	46	11.4	9	2.2	137	34.1
Power Point	146	36.3	80	19.9	76	18.9	18	4.5	82	20.4

Table 4.7 above revealed that PDF, MS-WORD, and Power-point were the most preferred formats used for retaining online information resources by postgraduate students in Ahmadu Bello University, Zaria with 150(37.3%), 128(31.8%) and 146(36.3%) respectively. It is therefore evident that the PDF is a general file format used to present online information resources. This could be due to the fact that online information resource providers consider the aspects of copyright when providing information online because the PDF does not create room for modification. The Table also revealed that majority of the postgraduate students do not like to access online information resources in HTML format. They prefer to download the information they need and use it at a later time.

4.3.4 Online Information Search Techniques Applied

This section tried to find out the type of search techniques PG students in ABU, Zaria employed when seeking for online information resources. Tables 4.8, 4.9, 4.10, 4.11 and 4.12 present responses gotten.

Table 4.8: Frequency of Online Information Search Techniques by ABU PG Students

Types of Search Techniques	Frequency of Application									
	Very often apply		Quite often apply		Often apply		Rarely apply		Never apply	
	f	%	f	%	f	%	f	%	f	%
One key word	168	41.8	45	11.2	42	10.4	48	11.9	99	24.6
More than one key word	213	53.0	32	8.0	67	16.7	64	15.9	26	6.5
Directly to URL	207	51.5	25	6.2	65	16.2	80	19.9	25	6.2
Boolean operators (and, or, not)	233	58.0	23	5.7	65	16.2	70	17.4	11	2.7
Truncation (eg library)	243	60.4	20	5.0	41	10.2	84	20.9	14	3.5
Search within results	207	51.5	37	9.2	84	20.9	52	12.9	22	5.5
Find similar results	198	49.3	27	6.7	72	17.9	84	20.9	21	5.2
Use of hyperlinks	201	50.0	26	6.5	72	17.9	82	20.4	21	5.2
Subject searching	188	46.8	64	15.9	95	23.6	40	10.0	15	3.7
Author/title search	169	42.0	58	14.4	77	19.2	70	17.4	28	7.0
Use of search engines. Google, alta vista etc	276	68.7	18	4.5	52	12.9	47	11.7	9	2.2

It was discovered from Table 4.8 above that majority of the postgraduate students 276(68.7%) very often use search engines e.g. Google, AltaVista, Yahoo, etc directly to search for online information sources. The hits returned with billions of sources which in turn confused the students on the aspect of satisfying their information needs. This lead them to frustration and in some cases end the search process. In ensuring that they got proper results in the search process, 233(58.0%) of the respondents made use of Boolean operators very often i.e. the use of AND, OR, and NOT while search for information online.

It was further discovered that students do alternative search when they do not obtain sufficient amount of information they require from an initial search as seen in Table 4.9 below.

Table 4.9 Applied Alternative Search

Alternative Search	Levels of Relevance									
	Most relevant		More relevant		Relevant		Less relevant		Not relevant	
	f	%	f	%	f	%	f	%	f	%
I choose different key words	207	51.5	41	10.2	72	17.9	41	10.2	41	10.2
I choose different information source (eg search engine, databases, journal etc)	226	56.2	28	7.0	49	12.2	82	20.4	17	4.2
I change initial search technique eg i use Boolean operators, truncation, search phrase instead of key words etc	174	43.3	73	18.2	64	15.9	67	16.7	24	6.0
I suppose that there are no satisfactory results and stop the search process	116	28.9	90	22.4	77	19.2	61	15.2	58	14.4

Table 4.9 has revealed that majority of the postgraduate students in ABU 226(56.2%) found it most appropriate to choose different methods of searching online information for their needed information if a previous search did not return with the desired information; they found this to be most relevant. It was also discovered that 174(43.3%) of the postgraduate students change the initial search technique they use i.e. they use Boolean operators, truncation, or search phrases instead of keywords etc. Surprisingly, 58(14.4%) of the postgraduate students indicated that they assumed that there are no satisfactory results and thereby ending the search process. This may be due to the fact that the student does not possess enough requisite skills on how to search for online information sources.

It was further discovered that in the process of seeking for online information, respondents exhibited some form of behavior as reported in Table 4.10 below.

Table 4.10: Behaviour Exhibited

Behaviour exhibited when searching online information sources.	Frequency									
	Strongly Agreed		Agreed		Indifferent		Disagreed		Strongly disagreed	
	f	%	f	%	f	%	f	%	f	%
Extraverted enthusiastic	241	60.0	39	9.7	40	10.0	42	10.4	40	10.0
Critical quarrelsome	225	56.0	26	6.5	77	19.2	56	13.9	18	4.5
Dependable self-disciplined	146	36.3	105	26.1	77	19.2	35	8.7	39	9.7
Anxious easily upset	200	49.8	45	11.2	67	16.7	78	19.4	12	3.0
Open to new experiences complex	144	35.8	107	26.6	53	13.2	38	9.5	60	14.9
Reserved quite	175	43.5	69	17.2	79	19.7	50	12.4	29	7.2
Sympathetic warm	194	48.3	46	11.4	60	14.9	88	21.9	14	3.5
Disorganized careless	237	59.0	64	15.9	33	8.2	52	12.9	16	4.0
Calm emotionally stable	136	33.8	108	26.9	43	10.7	62	15.4	53	13.2
Conventional uncreative	176	43.8	63	15.7	82	20.4	52	12.9	29	7.2

When asked about the behavior they put up when conducting online information search, 241(60.0%) of the postgraduate students under study strongly agreed that they were frequently extraverted and enthusiastic, 237(59.0%) indicated that they were disorganized/ careless when searching for information, whereas 136(33.8%) of the respondents agreed that they were usually calm and emotionally stable when they sought for information online. This is in line with Kuhlthau (2004) in the model for information search process that stated some physical behaviours exhibited by patrons when seeking for information.

In furtherance to the online information search patterns of PG students in Ahmadu Bello University, Table 4.11 revealed their online information search skills as seen below.

Table 4.11: Online Information Search Skills

online information search skills	Administration		Education		Environmental design		Science		Total	
	f	%	f	%	f	%	f	%	f	%
Navigational skills	28	22.2	44	38.9	19	29.7	40	40.4	131	32.6
Filtering skills	11	8.7	13	11.5	25	39.1	20	20.2	69	17.2
Advanced search skills	52	41.3	49	43.4	18	28.1	50	50.5	169	42.0

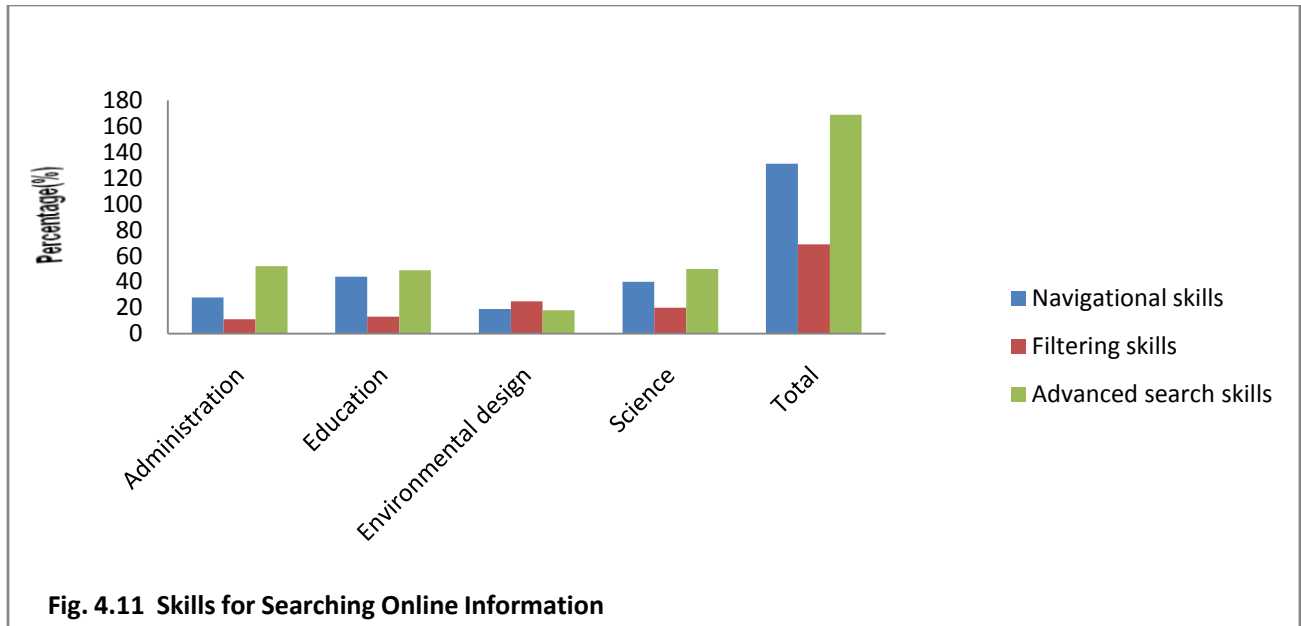


Table 4.11 and figure 4.11 above, revealed the skills possessed by post graduate students in performing online information search. Navigational skills are predominantly used by PG students of the Faculty of Education 44(38.9%), PG students from the Faculty of Environmental Design 25(39.1%) make use of filtering skills when searching for information online; whereas PG students from Faculty of Administration 52(41.3%) possess advanced search skill for searching for information online. The disparities of the search skills used is based on the fact that they are PG students from different faculties. The study, therefore, revealed that no two faculties possess the same search skills due to the nature of their courses and nature of conducting research.

Table 4.12 revealed the various kind of training attended by PG students in Ahmadu Bello University to help them utilize online information resources as shown below.

Table 4.12: Training Programme.

Training Programme	Administration		Education		Environmental design		Science		Total	
	f	%	f	%	f	%	f	%	f	%
Library organized internet training	37	29.4	30	26.5	26	40.6	27	27.3	120	29.9
Computer appreciation course	59	46.8	46	40.7	16	25.0	47	47.5	168	41.8
Workshop and seminars on internet use by faculties	14	11.1	29	25.7	16	25.0	32	32.3	91	22.6
External training in other institutions or centers	47	37.3	25	22.1	9	14.1	19	19.2	100	24.9
Foreign training abroad	38	30.2	3	2.7	11	17.2	6	6.1	58	14.4

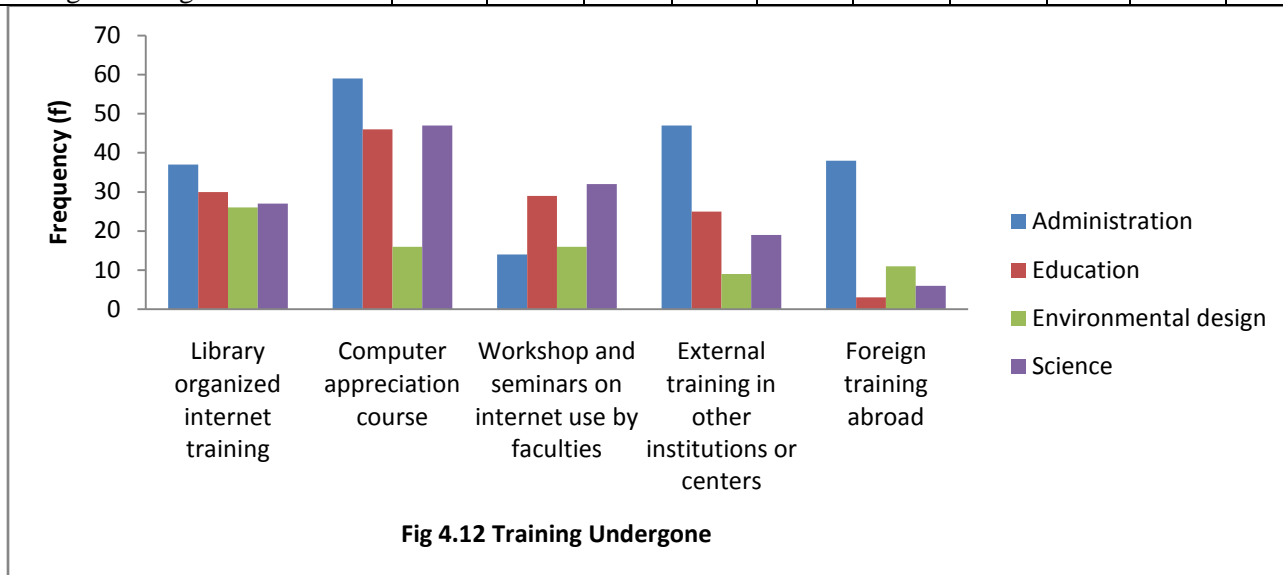


Table 4.12 and Figure 4.12 revealed the various kind of training undergone by postgraduate students in ABU, Zaria to help build up their skills. 168(35.1%) of the postgraduate students indicated that they attended library organized Internet training on the use of online information resources such as Science Direct, JSTOR, EBSCOHOST, etc. This is evident because majority of the respondents indicated so when their responses were analysed. Kashim Ibrahim Library, do organize training regularly on how to use online information resources for faculty staff and postgraduate students. One of the most recent of these training is that of Elsevier i.e. providers of Science Direct. It was also discovered that 120(25.1%) of the respondents indicated that they acquired some form of skills when attending computer appreciation courses e.g Use of Internet,

Databases, Introduction to Microsoft Office etc. Across board, some of the respondents indicated that they had some form of foreign training on how to effectively search for resources on the web. However, their number is not so encouraging.

4.3.5 Evaluation of Online Information Resources

In order to ensure that they use accurate and relevant materials, the PG students in ABU, Zaria need to evaluate the sources of information they get online. Therefore, the result below revealed how the PG students in the different faculties sampled evaluate their resources as shown in Table 4.13 and 4.14 accordingly.

Table 4.13: Postgraduate Students' Evaluation of Online Information Sources

Evaluation of Online Information Sources	Evaluation of Online Information Sources									
	Administration		Education		Environmental Design		Science		Total	
	f	%	f	%	f	%	f	%	f	%
Accuracy	30	23.8	55	48.7	21	32.8	56	56.6	162	40.3
Authority	47	37.3	34	30.1	15	23.4	30	30.3	126	31.3
Objectivity	31	24.6	36	31.9	29	45.3	35	35.4	131	32.6
Currency	40	31.7	45	39.8	25	39.1	32	32.3	142	35.3
Coverage	33	26.2	38	33.6	30	46.9	25	25.3	126	31.3

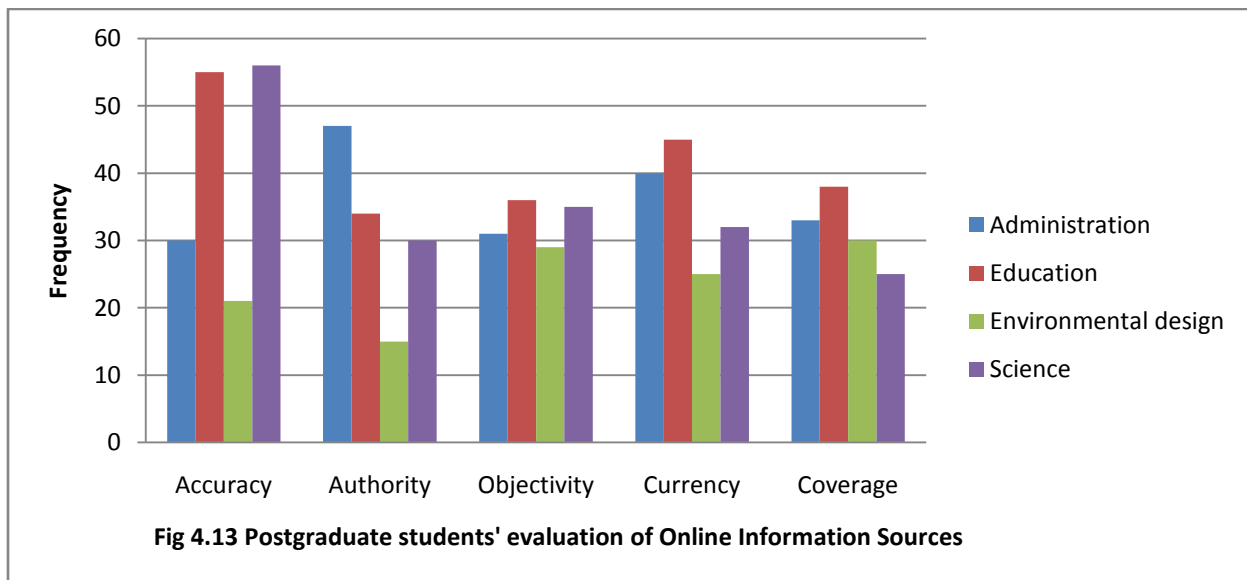


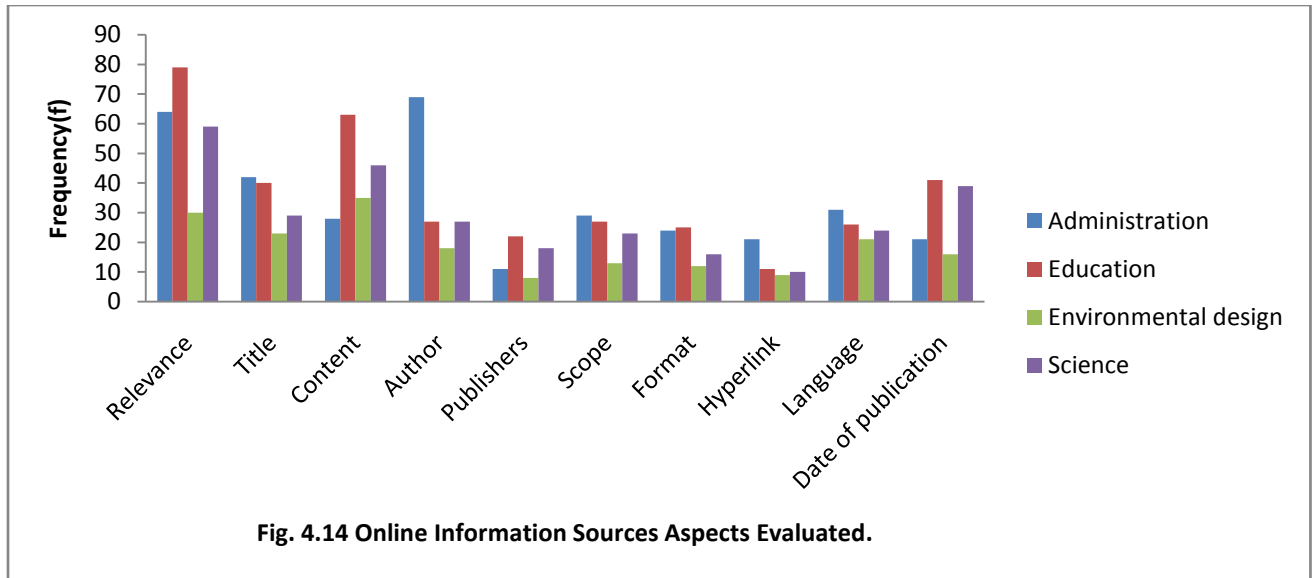
Table 4.13 and Figure 4.13 above revealed that in general, majority of the postgraduate students

studied evaluate the accuracy, authoritativeness, objectivity, currency and coverage of the online information sources they use. From the various Faculties sampled, it was discovered that PG students from the Faculty of Science considered the accuracy of the sources they used 56(56.6%), while PG students in the Faculty of Administration considered the authoritativeness 47(37.3%) of source. With regards to objectivity, currency and coverage of sources used, PG students from the Faculty of Education considered it with 36(31.9%), 45(39.8%) and 38(33.6%) respectively. The reasons why postgraduate students evaluate their information sources is not farfetched. They always want to ensure that the information gotten is accurate and relevant to their research. The study also revealed that evaluation of sources to use was not found to be the same across sampled faculties.

Furthermore Table 4.14 revealed the Criteria of Evaluation of the OIRs by the PG students in Ahmadu Bello University, Zaria.

Table 4.14 Criteria of Evaluation of Online Information Resources

Criteria of Evaluation of Online Information Resources										
Aspects Evaluated	Administration		Education		Environmental Design		Science		Total	
	f	%	f	%	f	%	f	%	f	%
Relevance	64	50.8	79	69.9	30	46.9	59	59.6	232	57.7
Title	42	33.3	40	35.4	23	35.9	29	29.3	134	33.3
Content	28	22.2	63	55.8	35	54.7	46	46.5	172	42.8
Author	69	54.8	27	23.9	18	28.1	27	27.3	141	35.1
Publishers	11	8.7	22	19.5	8	12.5	18	18.2	59	14.7
Scope	29	23.0	27	23.9	13	20.3	23	23.2	92	22.9
Format	24	19.0	25	22.1	12	18.8	16	16.2	77	19.2
Hyperlink	21	16.7	11	9.7	9	14.1	10	10.1	51	12.7
Language	31	24.6	26	23.0	21	32.8	24	24.2	102	25.4
Date of publication	21	16.7	41	36.3	16	25.0	39	39.4	117	29.1



It was discovered from table 4.14 and Figure 4.14 above that majority of the postgraduate students in ABU, Zaria access online information resources because of its relevance to their work. PG students from the Faculty of Education indicated that they evaluate the relevance, content, publishers, format, and date of publication of online information sources before they put them to use with, 79(69.9%), 63(55.8%), 22(19.5%), 25(22.1%) and 41(36.3%) respectively. Whereas PG students from the Faculty of Administration consider the title 42(33.3%), author 69(54.8%), scope 29(23.0%), hyperlink 21(16.7%), and language 31(24.6%). It is pertinent to note therefore that the studies have revealed the levels and degrees to PG students evaluate online information sources for use. This is a healthy behavior because it ensures that they always have a qualitative and in-depth research.

4.3.6 Level of Satisfaction on the Use of Online Information Sources

This is to ascertain the extent to which the PG students in Ahmadu Bello University satisfy their information needs. Table 4.15 below reveals their level of satisfaction.

Table 4.15: Level of Satisfaction

Categories of Online Information Sources	Levels of Satisfaction									
	Fully Satisfied		Satisfied		Less Satisfied		Dissatisfied		Indifferent	
	f	%	f	%	f	%	f	%	f	%
Research	175	43.5	96	23.9	49	12.2	7	1.7	75	18.7
Scholarship and grants	177	44.0	73	18.2	86	21.4	18	4.5	48	11.9
Collaboration	230	57.2	60	14.9	58	14.4	14	3.5	40	10.0
Health and wellness	186	46.3	87	21.6	34	8.5	15	3.7	80	19.9
Social	178	44.3	115	28.6	43	10.7	5	1.2	61	15.2
Sports	162	40.3	105	26.1	42	10.4	14	3.5	79	19.7
Religious	139	34.6	103	25.6	56	13.9	27	6.7	77	19.2

Table 4.15 above reveals that a majority of the Postgraduate students studied 230(57.2%) in Ahmadu Bello University, Zaria are fully satisfied when they use online information resources that are collaboratively written, 186(46.3%) also show satisfaction in accessing online information resources relating to health and wellness to keep them fit throughout their program in the University. Still on satisfaction, Postgraduate students in A.B.U. Zaria indicated that they are satisfied with accessing information on research, scholarship and grants, social and sports with 175(43.5%), 177(44.0%) and 162(40.3%) respectively.

Furthermore, the study discovered some challenges faced by PG students in A.B.U, Zaria in their quest for information Online. Table 4.16 presented the challenges they encounter.

Table 4.16: Challenges Encountered

Types of Challenges	Levels of Agreement									
	Strongly Agree		Agree		Indifferent		Disagree		Strongly disagree	
	f	%	f	%	f	%	f	%	f	%
Information overload (or too much information)	164	40.8	93	23.1	57	14.2	47	11.7	41	10.2
The need for filter the results from search	122	30.3	131	32.6	53	13.2	35	8.7	61	15.2
Download delay	101	25.1	133	33.1	34	8.5	31	7.7	103	25.6
Credibility of information	121	30.1	82	20.4	79	19.7	49	12.2	71	17.7
Failure to find information	141	35.1	103	25.6	71	17.7	41	10.2	46	11.4
Lack of search skills	152	37.8	110	27.4	42	10.4	79	19.7	19	4.7
High costs of access	142	35.3	93	23.1	61	15.2	63	15.7	43	10.7
Power outages	130	32.3	121	30.1	55	13.7	36	9.0	60	14.9
Inaccessibility of some websites	146	36.3	166	41.3	31	7.7	16	4.0	43	10.7
Difficulties in navigation of some websites	131	32.6	146	36.3	46	11.4	32	8.0	47	11.7

Table 4.16 above reveals that majority of the postgraduate students are faced with the problem of information overload i.e. too much information to contend with when they conduct searches with 164(40.8%). Similarly, some of the postgraduate students indicated that they lack requisite skills to effectively search for information on the web they represent 152(37.8%) of the respondents. Majority of the postgraduate students 101(25.1%) indicated that download delay never constitutes a problem to them when using online information resources on the universities network. The above can be attributed to the fact that the University is now running on fibre optics broadband network which provides internet connectivity at 100 Mbps and is restricted to staff and students who have registered to use the Internet resources. The lack of requisite skills therefore to be able to access internet resources provided for use can be attributed inadequate training for students.

4.4 Inferential Statistical Analysis

This section presents the results of the inferential analysis used to test the five hypotheses raised for this study. Hypotheses 1, 3, 4, and 5, were tested using One Way Analysis of Variance (ANOVA), while hypothesis 2 was tested using t-test. All the hypotheses were tested at 0.05 level of significance. This is for the simple reason that behavioural sciences research deals with human beings and therefore the 0.05 level of significance is generally accepted.

Hypothesis One

There is no significant difference in the type of online information resources needed by the post graduate students of the various faculties in Ahmadu Bello University, Zaria.

Table 4.17 (a): One Way Analysis of Variance (ANOVA) on Types of Online Information Resources Available to Post Graduate Students of the University by Faculties of Students

Sources	Sum of Squares	DF	Mean Square	F	P.	Decision
Between Groups	621.389	3	207.130	8.568	.000	Rejected
Within Groups	9621.012	398	24.173			
Total	10242.400	401				

Table 4.17 (a) has shown the analysis of variance on the types of online information resources available to postgraduate students of the University by faculties of students 0.05 level of significance. From the above Table, the observed F value of 8.568 is greater than the F critical value at the same degree of freedom. Also, the observed level of significance from the test is $P=0.000$. This implies that the null hypothesis is rejected. It can therefore be concluded that there is significant difference in the type of online information resources available to postgraduate students of the University.

In order to determine the region of difference among postgraduate students in the type of online information resources available for their use, a post HOC Scheffe test was carried out.

Table 4.17 (b): Multiple Comparison post HOC Scheffe Result Showing the Faculty Students That Were Significantly Different From the Others on the Types of Online Information Resources

(I) Faculty	(J) Faculty	Mean Difference (I-J)	Std. Error	Sig.
Administration	Education	-2.51945(*)	.63701	.002
	Environmental Design	.43353	.75469	.954
	Science	-2.06205(*)	.66032	.022
Education	Administration	2.51945(*)	.63701	.002
	Environmental Design	2.95299(*)	.76918	.002
	Science	.45741	.67683	.928
Environmental Design	Administration	-.43353	.75469	.954
	Education	-2.95299(*)	.76918	.002
	Science	-2.49558(*)	.78860	.019
Science	Administration	2.06205(*)	.66032	.022
	Education	-.45741	.67683	.928
	Environmental Design	2.49558(*)	.78860	.019

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

Table 4.17(b) above indicates the multiple comparison tests of the postgraduate students on the types of online information resources available to them and their faculties. The table reveals that there is a significant difference among the types of online information resource on Administration, Education, Environmental Design and Sciences. The first comparison shows there is difference among PG students in the Faculty of Administration, Education and Sciences. The second comparison shows that there is a significant difference among the types of online information resources sought by PG students in the Faculty of Education, Administration, Environmental Design and Sciences. From the foregoing, therefore, it can be concluded that there is significant difference among PG students in the faculty of Administration, Education, Environmental Design and Sciences on the type of online information resources they use.

Hypothesis Two

There is no significant difference between the male and female post graduate students in the various faculties in Ahmadu Bello University on the sources of online information resources available for their use.

Table 4.18: Comparing Male and Female Scores for the Sources of Online Information Resources

Gender	N	Mean	Std. Deviation	Std. Error	t-value	DF	P	Decision
Male	285	2.76	1.006	0.060	0.861	400	0.390	Accepted
Female	117	2.66	1.105	0.102				

Table 4.18 above has shown the hypothesis that was tested. In order to test the hypothesis, the data generated were subjected to t-test. When comparing the gender of the postgraduate students on the sources of online information resources, a t-value of 0.861 was obtained at the degree of freedom of 400 and α 0.05. The value of the analysis showed that there is no significant difference between the male and female PG students in Ahmadu Bello University on the sources of online information resources available for their use. The null hypothesis is therefore accepted and the alternate hypothesis rejected. The reason for the acceptance of the hypothesis could be attributed to the fact that both the male and female postgraduate students have access to the same online information resources without discrimination.

Hypothesis Three

There is no significant difference among the post graduate students of various faculties in Ahmadu Bello University on the information search pattern they adopted for accessing online information resources available for their use.

Table 4.19: One Way Analysis of Variance (ANOVA) on Pattern of Search for Online Information Resources Available to Postgraduate Students of the University by Faculties of Students

Sources	Sum of Squares	DF	Mean Square	F	Sig.	Decision
Between Groups	.738	3	.246	.224	.879	Accepted
Within Groups	436.570	398	1.097			
Total	437.309	401				

Table 4.19 has shown that there is no significant difference among the post graduate students of the various faculties in Ahmadu Bello University on the information search patterns used for accessing online information resources available for their use. Here the null hypothesis is accepted. It can therefore be deduced that postgraduate students in Ahmadu Bello University, adopt almost the same pattern for searching for information resources on the web. The alternate hypothesis is therefore rejected.

Hypothesis Four

There is no significant difference among post graduate students of various faculties of the Ahmadu Bello University in their level of satisfaction with online information resources available for their use.

Table 4.20(a): One Way Analysis of Variance (ANOVA) on Satisfaction with Online Information Resources Available for their Use by Faculties of Students

Sources	Sum of Squares	DF	Mean Square	F	Sig.	Decision
Between Groups	39.615	3	13.205	10.137	.000	Rejected
Within Groups	518.472	398	1.303			
Total	558.087	401				

Table 4.20(a) above has shown the significant difference on levels of satisfaction of the PG students of the University studied in their level of satisfaction with online information resources for their use at 0.05 level of significance. The observed F value of 10.137 is greater than the F critical value of 3.00 at the same degree of freedom. The observed level of significance from the test is 0.000. This implies that the null hypothesis which states that there is no significant difference among students of the various faculties studied in Ahmadu Bello University in their level of satisfaction with the online information resources available for their use is rejected.

However, a post hoc Scheffe test carried out on the mean of scores of the different selected faculties is presented in table 4.20(b) below.

Table 4.20(b): A Post HOC Scheffe result showing the faculty students that were significantly different from the others in their satisfaction with the online information resources

(I) Faculty	(J) Faculty	Mean Difference (I-J)	Std. Error	Sig.
Administration	Education	.36863	.14788	.103
	Environmental Design	-.43743	.17520	.103
	Science	-.36632	.15329	.128
Education	Administration	-.36863	.14788	.103
	Environmental Design	-.80606(*)	.17856	.000
	Science	-.73495(*)	.15712	.000
Environmental Design	Administration	.43743	.17520	.103
	Education	.80606(*)	.17856	.000
	Science	.07111	.18307	.985
Science	Administration	.36632	.15329	.128
	Education	.73495(*)	.15712	.000
	Environmental Design	-.07111	.18307	.985

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

The post hoc Scheffe Table 4.20(b) above showed that the responses from the selected faculties on their level of satisfaction were significantly different with their level of satisfaction on the use of online information resources. The alternate hypothesis is hereby retained.

Hypothesis Five

There is no significant difference among the Postgraduate students of the various faculties in Ahmadu Bello University in the challenges they faced in search for online information resources in the University.

Table 4.21 (a): One Way Analysis of Variance (ANOVA) on Challenges Faced by PG Students in their Search for Online Information Resources in the University

Sources	Sum of Squares	DF	Mean Square	F	Sig.	Decision
Between Groups	9.039	3	3.013	3.151	.025	Rejected
Within Groups	380.516	398	.956			
Total	389.555	401				

Table 4.21(a) above shows the significant difference among PG students on the challenges faced in their search for online information resources in the University at 0.05 level of significance.

The observed value of F 3.013 is greater than the critical value of 3.00 at the same degree of freedom. Also, the observed level of significance from the test is 0.025. This implies that the null hypothesis is rejected. It can therefore be deduced that students face different kinds of challenges when searching for information on the web. The alternate hypothesis is hereby retained.

A post hoc Scheffe test carried out on the mean scores of the different faculties is presented in table 4.21(b) below

Table 4.21(b): A Post HOC Scheffe Result Showing the Faculty Students that Were Significantly Different From the Others in the Problems Faced in Searching for Online Information Resources.

(I) Faculty	(J) Faculty	Mean Difference (I-J)	Std. Error	Sig.
Administration	Education	.31566	.12668	.104
	Environmental Design	-.03242	.15009	.997
	Science	.24964	.13132	.308
Education	Administration	-.31566	.12668	.104
	Environmental Design	-.34808	.15297	.161
	Science	-.06602	.13460	.971
Environmental Design	Administration	.03242	.15009	.997
	Education	.34808	.15297	.161
	Science	.28205	.15683	.358
Science	Administration	-.24964	.13132	.308
	Education	.06602	.13460	.971
	Environmental Design	-.28205	.15683	.358

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

The table 4.21(b) above shows a Post HOC Scheffe comparison on the problems faced by PG students in searching online information resources in the University. The Table above reveals that there is a significant difference in the problems faced in searching for information in the online information resources available for the students. The Table also reveals the differences that exist among the faculties sampled. They all differ significantly from each other.

Therefore, it is concluded that there is significant difference among students of different faculties of Ahmadu Bello University in the challenges faced with searching for online information resource on the University's web. The alternative hypothesis is therefore retained.

REFERENCE

Kuhlthau, C. (2004). *Seeking Meaning: A Process Approach to Library and Information Services*. London: Libraries Unlimited ISBN 1-59158-094-3

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the findings of the study. Conclusions were drawn as well as steps to follow to ensure proper search techniques by Postgraduate students in Ahmadu Bello University. This is to ensure that they build a proper online information seeking behavior to help them in their academic pursuit.

5.2 Summary of the Study

This study was carried out to investigate the online information seeking behavior of postgraduate students in Ahmadu Bello University, Zaria. To do this, five research questions were formulated and five hypotheses were tested. Review of related literature was also done. A survey method was used for the study. The population of the study was made up of the twelve faculties in Ahmadu Bello University, Zaria. The subjects of the study were the Postgraduate students of the University. Proportional stratified random sampling method was used to select respondents to accommodate the different strata of the subjects involved in the study. The instrument used to generate the data needed to answer the research questions and hypotheses was the questionnaire. The first part of the analysis was done descriptively using tables, frequency distributions and simple percentages, while the second part which was the inferential statistics was done using t-test and ANOVA as the case may be. Questionnaire was the method used for collating the data. They were distributed to the postgraduate students that formed the sample of the study. The postgraduate lecture halls were the centres of distribution and collection of the questionnaires.

5.3 Summary of the Findings

The major findings under descriptive analysis were that:

1. Majority of the postgraduate students are aware of and access the web as an online information resource which they frequently put to use. They are also aware of e-journals, e-books and Electronic Theses and Dissertations.
2. Majority of the postgraduate students in Ahmadu Bello University, Zaria indicated the following as the sources of OIRs they put to use: e-journals, e-books, Science Direct, JSTOR, HINARY, AGORA, OARE, DOAJ, AJOL, eGranary, TEEAL, Portal, OPAC, electronic theses and dissertations, Databases, www, Blogs, Social networking sites, and specialized databases.
3. Majority of the postgraduate students use search engines to look for information on the web. They also make use of Boolean operators to refine their search. It was also discovered that in cases where their search did not yield satisfactory results, they applied alternative search methods. Most of the respondents were extraverted and enthusiastic when conducting online information search. The study also revealed that PG students of different faculties possess different online information search skills. Furthermore, to improve on their techniques, the study revealed that PG students of ABU, Zaria attended some kinds of training.
4. The study revealed that PG students in ABU, Zaria evaluate the accuracy, authority, objectivity, currency and coverage of the OIRs they use. The above facets of evaluation differ from faculties. Furthermore, PG students in ABU, Zaria evaluate aspects of the OIRs they use, based on the relevance, title, content, author, publishers, language, and date of publication etc.

5. Majority of the PG students in ABU, Zaria were fully satisfied with the OIRs they use that are collaboratively written. However, on the aspect of challenges encountered, information overload (i.e. too many information to contend with after a search) is the major challenge confronting postgraduate students in Ahmadu Bello University, Zaria. In the contrary, download delay is the least among the problems faced by Postgraduate students when accessing online information resources. This could be due to the fact that the University network now runs on a 100.0 Mbps fibre optics Internet connectivity.

5.3 Conclusion

From the analysis and the summary of the findings, it could be concluded that Postgraduate students in Ahmadu Bello University, Zaria made adequate use of online information resources and services available for use on the university's portal and web. It could also be concluded that Postgraduate students in Ahmadu Bello University have realized and have come to terms with the web knowing fully well that it is packed full with resources that they need for their academic advancement and research productivity. However, many of the Postgraduate students have developed poor online information seeking behavior making them lack information in a rich online information environment. This could be attributed to their inability to properly harness the resources available for them online by understanding in-depth the areas of their research interest and performing a careful and yet successful online information search to yield required results. It is not enough for the postgraduate students to be in the habit of going direct to search engines when seeking for information, but they are to also visit libraries and information centres to help build up good online information seeking behavior.

There is no doubt that if this is done it will go a long way in helping postgraduate students in their quest for information in the online environment.

5.4 Recommendations

Based on the findings and conclusion of this study, the following recommendations were made: -

1. The University Library should intensify the existing training programme for postgraduate students on how to effectively search for information on online information resources.
2. The university management should look into the postgraduate curriculum and consider including a course that has to do with effective utilization of all e-resources provided by the university. It is suggested that this course should be taken by all Postgraduate students and it should be anchored the academic library.
3. With the presence of two visible electronic bill boards on campus, the university management should mandate those people manning the board to design on the go simple training how to build a good and proper online information search skills for fruitful results when searches are performed.
4. More awareness should be created on the availability on Ahmadu Bello University's institutional repository and how to effectively search for information therein.
5. In order to build good and proper online information seeking behavior it is recommended that students attend training sessions organized by the university management or library to keep themselves abreast of latest skills and technologies available.
6. There is need to maintain gender equity in postgraduate admission in the University.
7. The researcher suggests that Ahmadu Bello University should engage in exchange programmes with other Universities abroad to help bridge the gap of information literacy.

5.5 Suggestions for Further Studies

1. Online Information Seeking Behaviour of Undergraduate Students in Ahmadu Bello University, Zaria.
2. Design and Implementation of Online Information Systems for Ahmadu Bello University, Zaria.
3. Comparative analysis of Online information Seeking Behaviours among the various faculties in Ahmadu Bello University, Zaria.

BIBLIOGRAPHY

- Abdulkadir, Aliyu (2011). Information Anxiety Among Internet Users in Ahmadu Bello University, Zaria. (Unpublished Thesis).
- Aguolu, C.C. (1983). The Future of Library and Information Services in Nigeria. *Nigerian Libraries* Vol. 20 p 58.
- Aina L. O. (2004). *Library and Information Science Text for Africa*. Ibadan: Third World Information Services Limited.
- American Library Association Presidential Committee on Information Literacy: Final Report. (Chicago: American Library Association, 2010). Thoughtful Summary of the Deliberations of leaders in Education and Librarianship on the Importance of Information Literacy to Individuals, Business and Citizenship with Recommendations For Implementing the Information Age School.
- Best, J.W. & Kahn, J.V. (2006). *Research in Education*. Boston: Pearson Education Inc.
- Belkin, N.J. Oddu, R. and Brooks, H. (1982). Information Retrieval: Pt 1 Background Theory. *Journal of Documentation* 8(2) 61 -71.
- Bond, C. S., Fevyer, D. & Pitt, C. (2006). Learning to Use the Internet as a Study Tool: A Review of Available Resources and Exploration of Students' Priorities. *Health Information and Libraries Journal*, 23(3), 189-196. Retrieved from <http://dx.doi.org/10.1111/i.1471-1842.2006.00656.x> on 12/05/2012
- Borgman, C.L. Smart, L. J. Millwood, K. A. Finley, J. R. Champeny, L. Gilliland, A.J. & Leazer, G. H. (2005). Comparing Faculty Information Seeking in Teaching and Research: Implications for the Design of Digital Libraries. *Journal of the American Society for Information Science & Technology*, 56 (6), 636-656. Available at: http://www.sandia.gov/itg/newsletter/decOO/article_information_foragers.html (Accessed 20/08/10)
- Bos, N. (2000). High School Students' Critical Evaluation of Scientific Resources on the World Wide Web. *Journal of Science Education and Technology*, 9(2), 161-173. Retrieved from <http://dx.doi.org/10.1023/A:1009426107434> on 16/01/2011
- Brophy, P. (1993). "Network in British Academic Libraries" *British Journal of Academic Librarianship*, Vol. 8 No. 1:49-60
- Case, D. (2002). *Looking for Information: A Survey of Information Seeking Behaviour*. London: Academic Press.

- Chava, F.N. (1992). *Research Methods in the Social Science* 4th Ed London: J.W. Arrow smith Ltd. p. 117.
- Choo, C.W. Detlor, B. & Turnbull, D. (2000). *Web Work: Information Seeking and Knowledge Work on the World Wide Web*. Dordrecht: Kluwer Academic Publishers.
- Chu, S. K. W. & Law, N. (2008). The Development of Information Search Expertise of Research Students. *Journal of Librarianship and Information Science*, 40(3), 165-177. Retrieved from <http://dx.doi.org/10.1177/0961000608092552> 06/02/2012
- Dadzie, P.S. (2009). "Electronic Resources: Access and Usage at Ashesi University College". *Campus-Wide Information Systems*. Vol. 22. No. 5:1065-0741. <http://www.emeraldinsight.com/insight/viewcontentsei^let?filename=PublishedVEmeraldfulltextarticle/articles/1650220504.htm>
- Debowski, S. (2001). Wrong Way: Go Back! An Exploration of Novice Search Behaviours While Conducting an Information Search. *The Electronic Library*, 19(6), 371-382. Retrieved from <http://dx.doi.org/10.1108/02640470110411991> 12/01/2011
- Dervin, B. & Nilan (1986). *Information Needs and Users*. Annual Review of Information Science and Technology, 22:3-33. Knowledge Industry Publication Inc. New York.
- Dias, P., Gomes, M. J. & Correia, A. P. (1999). Disorientation in Hypermedia Environments: Mechanisms to Support Navigation. *Journal of Educational Computing Research*, 20(2), 93-117. Retrieved from <http://dx.doi.org/10.2190/G8C5-342V-DJX3-Q53F> 03/06/2012
- Fleischer, D. M. & Posel, N. H. (2003). Development of an Undergraduate Medical Curriculum: The McGill Experience. *Academic Medicine*, 78(3), 265-269. Retrieved from <http://journals.lww.com/academicmedicine/pages/articleviewer.aspx?year=2003&issue=03000&article=00005&type=abstr> act on 03/02/2011
- Fortin, M. G. (2000). Faculty Use of the World Wide Web: Modeling Information Seeking Behaviour in a Digital Environment. Available at: <http://digital.library.unt.edu/permalink/meta-dc-2723:1>
- Fourie, I. (2006). Learning from Web Information Seeking Studies: Some Suggestions for LIS Practitioners. *The Electronic Library*, 24 (1), 20-37. Available at: www.emeraldinsight.com/0264-0473.htm (Accessed 06/09/12)
- Francis, H. (2008). The Information-Seeking Behaviour of Social Science Faculty at the University of the West Indies, St. Augustine Campus. *The Journal of Academic Librarianship*, 31 (1), 67—72. Available at:

http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6W504_FBFR0D11&_cdi=6556&_user=1378591&_orig=search&_coverDate=01%2F01%2F2005&_sk=99689998&view=c&wchp=dGLbVzWzSkzS&md5=7ef476520fecafad331a8d8abfd58e54&ie=/sdarticle.pdf

Gbaje, E.S. (2004). ICT and its Implication in Learning and Teaching. School of Library and Information Management, Emporia State University, Kansas. USA

Gbaje, S.E. (2007). Implementing a National Virtual Library for Higher Institutions in Nigeria. Retrieved from _____ on 03/04/2012.

Gleeson, A. C. (2001). Information-Seeking Behaviour of Scientists and Their Adaptation to Electronic Journals. Available at: <http://ils.unc.edu/MSpapers/2672.pdf>

Hargittai, E. & Hinnant, A. (n.d). Toward a Social Framework for Information Seeking. Available at: <http://www.eszter.com/research/pubs/hargittaihinnantinfoseeking.pdf> (Accessed 20/08/12)

Hider, P. (2005). Coding Online Information Seeking. *The Australian Library Journal*. Available at: <http://www.accessmylibrary.com/coms2/summary> 0286- 14429600ITM

Hill, J. R. (1999). A Conceptual Framework for Understanding Information Seeking in Open-ended Information Systems. *Educational Technology Research and Development*, 47(1), 5-27. <http://dx.doi.org/!0.1007/BF02299474>

Ikoja-Odongo, R. and Ochalla, D.N. (2004). Information Seeking Behaviour of Formal Sector Entrepreneurs. The Uganda Experience. *Libri Vol. 54* pp 54-66.

Ingwersen, P. (2008). Information and Information Science in Context. In J. Olaisen, E. Munch-Petersen, P. Wilson (eds.). *Information Science. From the Development of the Discipline to Social Interaction*. Oslo: Scandinavian University Press pp 69-111.

Jansen, B. J. & Spink, A. (2004). *Web Search: Public Searching of the Web*. Dodrecht: Kluwer Academic Publishers.

Jarvelin, K. & Ingwersen, P. (2004). Information Seeking Research Needs Extension Towards Tasks and Technology. *Information Research*, 10 (1), paper 212. Available at: <http://InformationR.net/ir/10-1/paper212.html> (Accessed 03/02/13)

Kakai, M., Ikoja-Odongo, R. and Kigongo-Bukeny, I.M.N. (2004). A Study of the Information Seeking Behaviour of Undergraduate Students of Makerere University Uganda, *World Libraries* 14(1), 544-564.

- Kari, J. & Savolainen, R. (2001). Web Searching in the Context of Information Seeking in Everyday Life: The Cases of Civic and Spiritual Action. A Research Proposal. Retrieved from <http://www.uta.fi/csiakar/kari-savolainen.pdf>.
- Kingrey, K.P. (2002). Concepts of Information Seeking and Their Presence in the Practical Library Literature. *Library Philosophy and Practice*, 4 (2), 1-14. Available at: <http://www.webpages.uidaho.edu/~mbolin/kingrey.pdf> (Accessed 01/10/11)
- Krejcie, R.V. & Morgan, D.W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30, 607-610.
- Krikelas, J. (1983). Information Seeking Behaviour: Patterns and Concepts. *Drexel Library Quarterly*, 19, 5-20.
- Kuhlthau, C. (2004). *Seeking Meaning: A Process Approach to Library and Information Services*. London: Libraries Unlimited ISBN 1-59158-094-3
- Kuhlthau, C. (1993). *Seeking Meaning, a Process Approach to Library and Information Services*. Norwood, N.J. Ablex, Publishing.
- Lallimo, J. Lakkala, M. & Paavola, S. (2004). How to Promote Students' Information Seeking. Available at: http://www.eun.org/insight-pdf/ernist/Q5_1_%20Long_%20answer_%20How_%20to%20promote_%20students_%20information%20seeking.pdf. (Accessed 19/12/12)
- Laxman, K. (2009). A Baseline Study on the Internet Information Search Proficiencies of Polytechnic Students in Singapore. *International Journal of Education and Development using ICT*, 5(3). <http://ijedict.dec.uwi.edu/viewarticle.php?id=936>
- Laxman, K. (2010). A Conceptual Framework Mapping the Application of Information Search Strategies to Well and Ill-structured Problem Solving. *Computers & Education*, 55(2), 513-526. <http://dx.doi.Org/10.1016/i.compedu.2010.02.014>
- Levine, A. E., Bebermeyer, R. D., Chen, J. W., David, D. & Harty, C. (2008). Development of an Interdisciplinary Course in Information Resources and Evidence-based Dentistry. *Journal of Dental Education*, 72(9), 1067-1076. <http://vwww.identaled.Org/content/72/9/1067.full.pdf>
- Lines, A.D. (2003). Communicating Information Accross Cultures: Understanding How Others Work. *The Pantaneto Forum*, (9). Available at: <http://www.pantaneto.co.uk/issue9/andersen.htm> (Accessed 13/05/10) Loose, R.M. Jr. & Worley, K.A. (1994). *Research and Evaluation for Information professionals*. London:

Academic Press Inc.

- Majid, S., Aozova, A.F. (1999). " Computer Literacy and Use of Electronic Sources by Academics: a Case Study of International Islamic University of Malaysia, Asian libraries". Vol. 8, No. 4. 100-111. <http://www.emeraldinsight.com/insight/viewcontentservlet?Filename=published/EmeraldFullTextArticle/Articles/1730080401.html>. accessed (8th December, 2011)
- Marchionini, G. (1995). *Information Seeking in Electronic Environments*. New York: Cambridge University Press.
- Marchionini, G. & Komlodi, A. (n.d). Design of Interfaces for Information Seeking. Available at: <http://ils.unc.edu/~march/arist/DRAFT.htm>
- McGreevy, P., Shaw, T., Burn, D. & Miller, N. (2007). OLIVER: An Online Library of Images for Veterinary Education and Research. *Journal of Veterinary Medical Education*, 34(4), 510-516. <http://dx.doi.Org/10.3138/jvme.34.4.510>
- Meho, L.L. & Haas, S.W. (2001). Information Seeking Behaviour and Use of Social Science Faculty Studying Stateless Nations: a Case Study. *Library and Information Science Research*, 23, 5-25. Available at: doi: 10.1016/S0740-8188(00)00065-7 (Accessed 01/10/11)
- Meriwether, N. (2001). *12 Easy Steps to Successful Research Papers* (second ed.). Lincolnwood IL: National Textbook Co.
- Nel, J.G. (n.d). The Information Seeking Process: Is There a Sixth Sense? *Mousaion*, 19 (2), 23-32. Available at: http://journals.sabinet.co.za/WebZ/images/ejour/mousaion/mousaion_v19_n2_a3.pdf?sessionid=01-57831-140272018&format=F Networking Services Unit (University of Zululand).
- Nkomo, N. (2009). A Comparative Analysis of the Web Information Seeking Behaviour of Students and Staff at the University of Zululand and the Durban University of Technology, (unpublished thesis).
- Osuala, E. C. (1993). *Introduction to Research Methodology*. Onitsha: Africana FEP publishers Ltd. p. 180.
- Patitungkho, K. & Deshpande, N. J. (2005). Information Seeking Behaviour of Faculty Members of Rajabhat Universities in Bangkok. *Webology*, 2 (4), Article 20. Available at: <http://www.webology.ir/2005/v2n4/a20.html> (Accessed 05/07/12)

- Phelps, R., Fisher, K. & Ellis, A. (2006). Organisational and Technological Skills: The Overlooked Dimension of Research Training. *Australasian Journal of Educational Technology*, 22(2), 145-165. <http://www.ascilite.org.au/ajet/aiet22/phelps.html>
- Reiterer, H. MuBler, G. & Mann T. M. (2001). A Visual Information Seeking System for Web Search. Available at: http://hci.uni-konstanz.de/downloads/hr-gm_tm_mc_2001.pdf (Accessed 12/05/10)
- Reitz, J.M. (2004). Dictionary of Library and Information Science and Technology. Boston: Academic.
- Rieh, S.Y. (2004). SI 551: Information Seeking Behaviour 2004 School of Information University of Michigan, Ann Arbor
- Shuling, W. (2007). "Investigation and Analysis of Current Use of Electronic Resources in University Libraries". *Library Management*. Vol, 28 No. 1 / 2 72-88. <http://www.emeraldinsight.com/insight/viewcontentservlet?Filename=published/EmeraldFullTextArticle/Articles/0150280107.html>. accessed (13th January, 2012)
- Siatri, R. (1999). The Evolution of User Studies. *Libri*, 49, 132-141. Available at: [http://www.librijournal.org/pdf/1999-3pp 132-141 .pdf](http://www.librijournal.org/pdf/1999-3pp%20132-141.pdf)
- Stenmark, D. & Jadaan, T. (2006). Intranet Users' Information-Seeking Behaviour: An Analysis of Longitudinal Search Log Data. Available at: [http://eprints.rclis.org/archive/00008102/01 /dt02.pdf](http://eprints.rclis.org/archive/00008102/01/dt02.pdf) (Accessed 13/03/10)
- Swain, D.K, and Panda, K.C. (2009). "Use of Electronic Resources in Business School Libraries of an Indian: A study of Librarians' Opinion", *The Electronic Library*, Vol. 27, No. 1, pp 74-85.
- Taylor, D. & Proctor, M. (2005). The Literature Review: A Few Tips on Conducting it. Available at: <http://www.utoronto.ca/writing/pdf/litrev.pdf> (Accessed 13/04/12).
- Taylor, R.S. (1991). Information Use Environment.: In Brenda, Dervin & Melvin J. Voigt (Eds). *Progress in Communication Sciences*, Norwood, NJ: Ablex 10.
- Tekinarslan, E. (2008). Blogs: A Qualitative Investigation into an Instructor and Undergraduate Students' Experiences. *Australasian Journal of Educational Technology*, 21(4), 402-412. <http://www.ascilite.org.au/ajet/aiet24/tekinarslan.html> 894 *Australasian Journal of Educational Technology*, 2012, 28(5)
- Tibbo, H. R. (n.d). Information Seeking Behaviours. [PowerPoint Presentation] Available at: <http://www.delos.info/files/pdf/events/2004Sett610/Tibbo-Information-Seeking-behaviors.pdf>

- Tsai, M.J. (2009). The Model of Strategic e-Learning: Understanding and evaluating student e-Learning from Metacognitive Perspectives. *Educational Technology and Society*, 12(1), 34-48. http://www.ifets.info/index.php?http://www.ifets.info/abstract.php?art_id=908
- Tsai, M.J. & Tsai, C.C. (2003). Information Searching Strategies in Web-based Science Learning: The role of Internet Self-efficacy. *Innovations in Education and Teaching International*, 40(1), 43-50. <http://dx.doi.org/10.1080/1355800032000038822> (Accessed 12/08/2012)
- Walraven, A., Brand-gruwel, A. & Boshuizen, P. A. H. (2008). Information-problem solving: A review of problems students encounter and instructional solutions. *Computers in Human Behavior*, 24(3), 623-648. <http://dx.doi.Org/10.1016/i.chb.2007.01.030>
- Weiler, A. (2005). Information-Seeking Behaviour in Generation 4 Students: Motivation, Critical Thinking and Learning Theory (Electronic Version). *Journal of Academic Librarianship*, 31, 3-15.
- Wilson, T. D. (2000). Human Information Behaviour. *Special Issue on Information Science Research*, 13 (2), 49-55. Available at <http://inform.nu/Articles/Vol3/v3n2p49-56.pdf>. (Accessed 11/03/13)
- Wilson T. D. (1999). Models in Information Behaviour Research. *Journal of Documentation*, Page 249-270. Retrieved from <http://www.information.net> on 06/03/2012.
- Wilson T.D. (1981). On User Studies and Information Needs. *Journal of Librarianship*. Vol. 37, 3-15. Retrieved from <http://www.information.net/tdw/pub/papers/1981infoneeds.html>.
- Wilson, T.D. (1997a). Information Beahviour. An Interdisciplinary Perspective. In P. Vakkari, R. Savolainen & B. Derkin (Eds). *Information Seeking in Context of Proceedings of an International Conference on Research in Information Needs, Seeking and Use in Different Contexts* 14-15, August, 1996. Tampere, Findland. London: Taylor Graham.

APPENDIX
QUESTIONNAIRE ON ONLINE INFORMATION SEEKING BEHAVIOUR OF
POSTGRADUATE STUDENTS IN AHMADU BELLO UNIVERSITY, ZARIA.

Department of Library and Information Science,
Faculty of Education
Ahmadu Bello University, Zaria.
11th February, 2014.

Dear Respondent,

I am a Postgraduate student in the above named department conducting a research on the topic “Online Information Seeking Behaviour of Postgraduate Students in Ahmadu Bello University, Zaria”.

This research is purely meant for academic purpose. The identity of the respondent is not required. Your honest response to the questions provided is highly welcomed. All the information provided will be treated with utmost confidentiality.

Thanks in anticipation for your cooperation.

Yours sincerely,

Esew, Michael.

Questionnaire Section A: - Background Information

Instruction: - Please tick where appropriate.

1 Faculty

- (a) Administration []
- (b) Education []
- (c) Environmental Design []
- (d) Science []

2. (a). Department _____

3. Programme: -
- (a). Postgraduate Diploma []
 - (b). Master []
 - (c). M.Phil []
 - (d). Doctorate []

4. Gender
- (a). Male []
 - (b). Female []

SECTION B:- Identification of Online Information Resources and Services.

5. Indicate the type of online information resources available for postgraduate students in A.B.U. zaria

- (a) e-journals []
- (b) e-books []
- (c) Science Direct []
- (d) JSTOR []
- (e) Hinary []
- (f) Agora []
- (g) Oare []
- (h) DOAJ []
- (i) AJOL []
- (j) Egranary []
- (k) Teeal []
- (l) Electronic theses and dissertations []
- (m) Web []
- (n) Portal []
- (o) Others Specify _____

6. Indicate the type of online information services available for postgraduate students in A.B.U. Zaria
- (a) Online Public Access Catalogue []
 - (b) Virtua []
 - (c) Electronic newsletters and journals []
 - (d) Current awareness services []
 - (e) Blogs []
 - (f) Online reference service []
 - (g) Online tutorials []
 - (h) Online charging in and charging out []
 - (i) Electronic theses and dissertation []
 - (j) Web portal []
 - (h) Other Specify _____

SECTION C : - Identification of Sources of Online Information

7. Indicate the degree of usefulness of the following online information.
Please Note: - [Most Useful =1, Quite Useful =2, Useful =3, Not Useful =4, Never Useful =5] Pick as many as applicable

	Sources of Online Information	1	2	3	4	5
a.	Portal					
b.	e-journal					
c.	e-book					
d.	OPAC					
e.	Electronic Theses and Dissertation					
f.	Databases					
g.	WWW					
h.	Blogs					
i.	Social networking sites					
j.	Specialized Databases					

8. Indicate the format you prefer to access Online Information Resources.
Please Note: - [Most Preferred=1, More Preferred =2, Preferred =3, Not Preferred =4, Never Preferred =5] Pick as many as applicable

	Format of Online Information source	1	2	3	4	5
a.	HTML					
b.	PDF					
c.	MS-WORD					
d.	Power point					

9. What determines your choice of Online Information Resources in your area of research?

Pick as many as possible.

- (a) Accuracy []
- (b) Reliability []
- (c) Relevance []
- (d) Convenience []
- (e) Accessibility []
- (f) Proximity []
- (g) Timeliness []
- (h) Speed []
- (i) Authority []
- (j) Others Specify _____

SECTION D: - Online Information Search Techniques

10. What kind of search techniques do you use when seeking for online information?

Please Note: - [Never apply=1, Rarely apply=2, Often apply=3, Quite often apply=4, Very often apply=5] Pick as many as applicable

		1	2	3	4	5
a.	One Key word					
b.	More than one keyword					
c.	Directly to URL					
d.	Boolean operators (AND, OR, NOT)					
e.	Truncation (e.g library*)					
f.	Search Within Results					
g.	Find similar results					
h.	Use of hyperlinks					
i.	Subject searching					
j.	Author/ Title search					
k.	Use of search engines e.g. Google, AltaVista etc					

11. If your techniques in 10 above does not return satisfactory results, how do you modify your search ?

Please Note: - [Not Relevant=1, Less Relevant =2, Relevant =3, More Relevant =4, Most Relevant =5] Pick as many as applicable

		1	2	3	4	5
a.	I choose different key word(s)					
b.	I choose different information source (e.g. Search engine, database, journal etc)					
c.	I change initial search technique (e.g.) I use Boolean operators, truncation, search phrase instead of key words etc					
d.	I suppose that there are no satisfactory results and stop the search process.					

12. How will you describe yourself when searching/ retrieving \online information?

Please Note: - [Strongly Disagree=1, Disagree=2, Indifferent=3, Agree=4, Strongly Agree=5]. Pick as many as applicable

		1	2	3	4	5
a.	Extraverted, enthusiastic					
b.	Critical, quarrelsome					
c.	Dependable, self-disciplined					

d.	Anxious, easily upset					
e.	Open to new experiences, complex					
f.	Reserved, quite					
g.	Sympathetic, warm					
h.	Disorganized, careless					
i.	Calm, emotionally stable					
j.	Conventional, uncreative					

13. Which of the following skills do you adopt when searching for online information?

- (a) Navigational Skills []
- (b) Filtering Skills []
- (c) Advanced Search Skills []
- (d) None of the above []

14. What training or orientation do you possess on how to use online information?

- (a) Library organised Internet training []
- (b) Computer Appreciation course []
- (c) Workshop and seminar on Internet use by faculties []
- (d) External training in other institutions or centres []
- (e) Foreign training abroad []

SECTION E: - Evaluation of Online Information Resources

15. How do you evaluate online information resources?

- (a) Accuracy []
- (b) Authority []
- (c) Objectivity []
- (d) Currency []
- (e) Coverage []

16. Do you evaluate the quality of information you retrieve?

- (a) Yes []
- (b) No []

17. What aspect of the information do you evaluate?

- (a) Relevance []
- (b) Title []
- (c) Content []
- (d) Author []
- (e) Publishers []
- (f) Scope []
- (g) Format []
- (h) Hyperlink []
- (i) Language []
- (j) Date of publication []

18. What is your level of satisfaction when you use the following types of information?

Please Note: - [Fully Satisfied=5, Satisfied=4, Moderately Satisfied=3, Dissatisfied=2, Indifferent=1].

		5	4	3	2	1
a.	Research					
b.	Scholarships and grants					
c.	Collaboration					
d.	Health and Wellness					
e.	Social					
f.	Sports					
g.	Religious					

Please Turn Over.

19. Problems encountered while using online information resources and services.

Please Note: - [Strongly Disagree=1, Disagree=2, Indifferent=3, Agree=4, Strongly Agree=5]. Pick as many as applicable

		Options				
		1	2	3	4	5
a.	Information overload (or too many information)					
b.	The need to filter the results from search					
c.	Download delay					
d.	Problem with credibility of information					

e.	Failure to find information					
f.	lack of search skills					
g.	High cost of access					
h.	Power outages					
i.	Inaccessibility of some websites					
j.	Difficulties in navigation of some websites					