INFORMATION LITERACY SKILLS AND AVAILABILITY OF NFORMATION RESOURCES AS FACTORS INFLUENCING RESEARCH PRODUCTIVITY OF ACADEMIC STAFF OF FEDERAL UNIVERSITIES IN NIGERIA

BY

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ABSTRACT

Research productivity requiring information resources is a measure of academic success. The volume of information resources potentially available to academic staff is massive hence there is a need for information literacy skills to access these, evaluate, and effectively utilize available information for research productivity. Several studies have examined academics' research productivity using variables, such as institutional factors, demographic characteristics and information utilization skills. However, these studies have not adequately addressed the influence of information literacy skills and availability of information resources on research productivity of academics. This study, therefore, examined the influence of information literacy skills and availability of information resources on research productivity of academic staff in federal universities in Nigeria.

Descriptive survey research design was adopted. The Multistage sampling technique was used to select 1,057 academic staff members from twelve federal universities in the six geo-political zones of Nigeria. The categories of academic staff covered in the study were from professorial cadre to graduate assistant. The instruments used for data collection were: Information Literacy Skills (r=0.92), Literacy Skills Acquisition (r= 0.83), Availability of Information Resources (r= 0.69) and Research Productivity of Academics (r=0.91). Eight hundred and seventy-three copies of the questionnaire were used for analysis. Seven research questions were answered and three hypotheses tested at 0.05 level of significance. Data were analysed using descriptive statistics, Pearson Product Moment Correlation Coefficient and multiple regression.

Information literacy skills correlated significantly with academics' research productivity (r=0.47; df=87: p<0.05). Information literacy skills and availability of information resources jointly contributed significantly to research productivity of academics (F=139.78; df= (2,872); p<0.05; R^2= 0.24). There was no significant relationship between availability of information resources and academics research productivity. The mean score of overall research productivity of academics was ($\overline{X}$=3.51; SD = 2.64). The mean scores of information literacy skills was ($\overline{X}$= 2.06; SD = 0.38), an indication that information literacy skills of academics in Nigerian federal universities was high. Information literary skills of academic was high in the South South

($\bar{x}$= 151.89; SD = 17.3) and North East ($\bar{x}$=136.21; SD = 19.8). Similarly, research productivity was high in the North East ($\bar{x}$ = 20.69; SD = 31.2) and South West ($\bar{x}$= 21.74; SD = 87.2). Also, the mean score of information resources availability was adequate in Nigerian federal universities libraries ($\bar{x}$=2.41; SD = 0.90) which means that information resources were readily available to academics for research productivity. The following constituted barriers to research productivity of academics in the universities: low Internet bandwidth ($\bar{x}$= 3.793; SD=1.162) and financial constraint ($\bar{x}$=3.543; SD=1.257). These could hinder access to information resources for research capabilities of academic staff in Nigeria universities.

Information literacy skills and availability of information resources positively influenced academic staff's research productivity in Nigerian federal universities. To further sustain academic staff research productivity, there should be continuous training and retraining of academics on information literacy skills acquisition and adequate provision of information resources in their university libraries. Awareness programme on availability of information resources should be given by librarians regularly to increase research productivity of academics.

Key words: Research productivity, Academic staff, Information literacy skills, Information resources, Nigeria universities

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Finally, I declare that this work was made possible only by the grace of God and to Him, I give all glory and honour for He is faithful and His words are ever true.
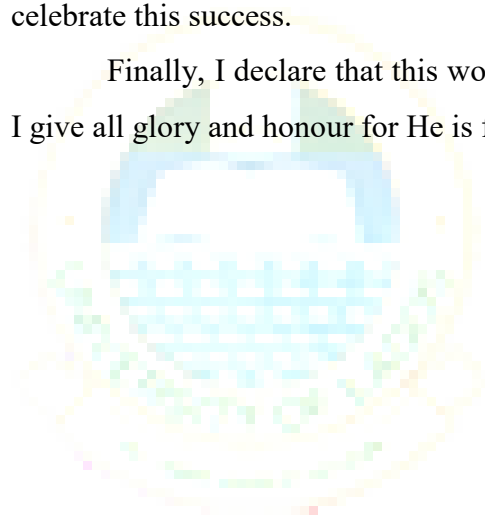
DEDICATION

This thesis is solely dedicated to God the father, the Son and the Holy Spirit.

CERTIFICATION

I certify that this work was carried out by Mr. O. C. OKIKI in the Department of Library, Archival and Information Studies, University of Ibadan, Nigeria.

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CHAPTER ONE

1.0   INTRODUCTION

1.1   Background to the Study

Globally, universities are recognized as the centre of production of knowledge accumulation and knowledge transfer through research and scholarship. Universities all over the world are mandated to perform three core functions, namely teaching, research and community service, with the overall aim to produce trained manpower for essential areas of social development. According to Isani (2005), universities are like greenhouses where various types of seeds grow into plants and are sent out to the world. While there has been a tendency to place teaching over research and community service delivery, it is increasingly clear that research is extremely critical and important if universities are to serve as engines of national development (Adeeb, 1996; Fadokun, 2009; Grigore, Candidatu, and Blideanu, 2009). Nirman (2007) avers that the mission of higher education is to advance knowledge, create knowledge, disseminate knowledge through research and provide service to the community. Universities, through research, make important contributions towards creating innovations for the growth and development of industries and government businesses, thereby promoting wealth and national and global development.

Nigerian higher education began with the establishment of the Yaba Higher College by the colonial government in 1934; and the University College Ibadan, which was established in 1948, and later metamorphosed into the University of Ibadan in 1962. As at 2009 when this study commenced there were ninety-six universities in the country. Presently, there are one hundred and twenty five universities in Nigeria. Of this number, 37 are state-owned 50 are private universities, while 38 are run by the federal government (NUC, 2009 and 2012). Most of the research works in Nigeria occur in the universities. Indeed, research production has become essential for university success and prospects of promotion of academics (Bako, 2005; Aniedi and Effiom, 2011).

Researchers and expert bodies, such as United Nations Educational, Scientific and Cultural Organisation (UNESCO), the World Bank and the Association of African Universities

(AAU) have highlighted the possible functions of universities. Perhaps, the most relevant studies on this matter is from Mosha (1986), who identifies three principal roles for the African universities: the promotion of learning and the pursuit of truth; preparation for service, including training for problem solving; and the fostering of (applied) research and consulting. Universities globally are considered as producers of new knowledge. Hence, the role of academics is not limited to teaching only. Universities are considered as modern entrepreneur engine and generator of knowledge through research.

Most of the research productivity of academics is disseminated via publications. Research publications enable academics to earn recognition in academic circles locally and internationally. In higher education, research productivity often served as a major role in attaining success in academics circles as it is related to promotion, tenure and salary (Bloedel, 2001; Kotrlik, Bartlett, Higgins and Williams, 2002; Bassey, Akuegwu, Udida and Udey, 2007). It is generally accepted that research occupies a critical role in promoting the prosperity of a nation and its citizens' well-being in this knowledge-based era (Abbott and Doucouliagos, 2004). Creswell (2008) reports that research not only aids solving practical problems and brings about material improvements, but it also provides insight into new ideas that improve human understanding of various social, economic and cultural phenomena. Research has always been the main approach to solving problems by all categories of professionals right from the ancient times (Boaduo and Babitseng, 2007). According to Rashid (2001) research is a conscious effort to collect, verify and analyze information. Research can be understood as having two broad components, namely knowledge creation and knowledge distribution.

Ochai and Nedosa (1998) assert that the fruits of research are new knowledge and facts, which are communicated to the academic community through scholarly publications and seminars. In universities, recognition and advancement of individual academic staff members depend largely on the quantity and quality of their research productions, which are communicated in form of journal articles, books, technical reports and other publications.

In economics, productivity is the ratio of what is produced to what is required to produce it. Productivity has been utilised as one of the basic economic variables governing the production process and is operationalized by calculating the ratio of output quantity (the produced goods)

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divided by input quantity (consumed resources) (Tangen, 2002). Research productivity has been defined as the relationship between the output generated by a system and the inputs provided to create those output. It may also include the term "efficiency" and, more importantly, "effectiveness", which measures the total output or results of performance (Turnage, 1990). Williams (2003) defines research productivity in terms of research product and research effort, to the extent of which a researcher produces.

Research productivity includes research publications in professional journals and in conference proceedings, writing a book or a chapter, gathering and analyzing original evidence, working with postgraduate students on dissertations and class projects, obtaining research grants, carrying out editorial duties, obtaining patents and licenses, writing monographs, developing experimental designs, producing works of an artistic or a creative nature, engaging in public debates and commentaries (Creswell, 1986). Research publications in any field provide current information for growth, progress, development and societal improvement. Research production in the academia is reflected in the number and quality of articles in refereed journals, books, chapters in books, conference proceedings published by academic staff members (Akuegwu, Udida and Bassey, 2006; Torchich, 2008).

At the centres of intellectual and scholarly research are academics that are expected to show interest in the creation, dissemination as well as preservation of knowledge. Academics are lecturers ranging from graduate assistant cadre to professorial cadre in Nigerian universities context (Okebukola, 2002). McCabe and McCabe (2000) note that academic staff members in any higher institution, especially universities, are provided the opportunity to focus on an area of inquiry, develop a research programme and later share the knowledge with students and others in the drive to develop professional skills and impact on a field and society, as a whole. Research provides a good platform for academic staff members to become successful academics. This is because research develops academic knowledge and reinforces the skills needed for effective knowledge transfer. It also inspires academics towards hard work, fills the gaps of previous researches and creates an opportunity for future research.

Quality research exposes academics to current information and sharing of research results with others. The significance of research in the academia is that it enables academics to share

insight, demonstrate academic scholarship and gain recognition for creative thinking (Lertputtarak, 2008). Yusuf (2005) notes that "publish or perish" is a popular cliché among academics in the Nigerian university settings. This phrase underscores the importance attached to research and publication in any university.

In measuring research productivity, Blackburn and Bentley (1993) and Blackburn and Lawrence (1995) used three outcome variables: published work, presentations on a national and international level, and conversations regarding research. Some studies have examined the relationship between research productivity and the factors that support academics in their efforts to publish (Hughes, 1999). Several variables have been linked with research productivity. Earlier studies primarily focused on analyzing the association of productivity with variables such as institutional size, academic status, age, gender, and others. More recent studies have incorporated psychological and other latent variables in analyzing productivity (Hughes, 1996; Majid and Abazova, 1999; Eynon, 2004; Agboola and Oduwole, 2005; Renwick, 2005). Blackburn and Lawrence (1995) claim that self-knowledge, self-efficacy, information utilisation skills and availability of information resources variables account for most of the variation encountered in the research productivity of academics and that academic staff members' confidence in their research abilities in terms of information handling skill is closely related to their research output. With requisite information handling skill possessed by academics, conducting research will be motivated with the use of the available information resources at their universities' libraries.

University libraries are established with the primary goal of providing information to the students, staff and workers of the university community. One of the objectives of university libraries in Nigeria is to develop and maintain collections of information resources in all formats-print and non-.print and to make these information resources available and accessible to all. The main goal of a university library is to support the objectives of a university, which are generally in the area of teaching, research and service (Aina, 2004; Mabawonku, 2004; Johnson, 2006). It is pertinent, therefore, that academic libraries facilitate information resources to meet academic staff members' research needs. Supporting this objective, Chisenga (2006) observes that:

> The central purpose of libraries is to provide a service: access
> to information, and modern information and communication

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technologies, especially computers. Information networks and software applications are making it possible for libraries to provide a variety of library and information services to their clients.

To achieve this objective of satisfying the information needs of the user community, the library needs to acquire current and relevant materials in both print and non-print formats. It is the duty of the library to identify the information needs of its users and ensure their availability in libraries for immediate use (Aguolu and Aguolu, 2002; Aina, 2002). Availability, accessibility and use of information resources are indispensable to the teaching, research and community activities of academic staff members in any university system. Information is contained in documents of different types and formats. The information resources and services available in institutional information systems (library, archives, records offices, documentation centers, and data centers) must be capable of supporting research activities (Shokeen and Kaushik, 2002). Agba, Kigongo-Bukenya, and Nyumba (2004) state that the shift from print to electronic information means that both academic staff and students in a university system must use these resources for better quality, efficient, and effective research more than ever. The emergence of electronic information resources (EIRs) has greatly transformed information handling and management in university communities.

Similarly, development of online public access catalogues in libraries of Nigerian universities has provided users an easy tool for retrieving needed information about library collections without wasting time. Imel (1990) contends that only knowing where resources are located is not enough to solve literature acquisition problems. The knowledge of appropriate electronic information sources, supported by adequate searching skills, is desirable to identify and retrieve the needed information. The study emphasised a strong need for end-user education and computer literacy enhancement to benefit from a huge collection of electronic information resources.

Electronic information resources have gradually become a major resource in every university community. Electronic information resources are provided in CD-ROM database, online databases, online journals, OPACs, Internet and other computer-based electronic networks (Ehikhamenor, 2003; Jagboro, 2003; Shuling, 2006; Tsakonas and Papatheodorou, 2006). Academics in developing countries are eagerly embracing the electronic information resources

for teaching and research. Some studies have revealed the use of the Internet, email and search engines for research purposes (Ojedokun and Owolabi, 2003; Oduwole, 2004; Badu and Markwei, 2005; Ani and Ahiauzu, 2008). Electronic information resources, especially Internet services, have become a global source of information resources accessible irrespective of time and space. They facilitate access to a wealth of information on the web for the academic society to support their academic and research activities (Misra and Satyanarayan, 2001).

The growth of information resources has become a phenomenon, most especially in developed societies, owing to technological advancement in information technology (IT). Academics in Nigerian universities now have access to global digital information resources, particularly through the Internet, for their scholarly communication (Ani and Ahiauzu, 2008). One of the biggest changes in the information world among today's users of academic libraries is their reliance on technology, cell phones, photocopiers and computers (Agyen-Gyasi, Lamptey and Frempong, 2010).

As the volume of information is constantly increasing, search skills are required not only in order to gain access to the available information resources, but also to sift from the large quantity and utilise the most appropriate information resources. Pezeshki-Rad and Zamani (2005) assert that the real challenge of our time is not producing information or storing information, but getting people to gain and use information resources. To gain access and use these vast resources effectively, information users must learn to overcome information anxiety in order to explore the available information to enable them interpret and utilise information for rational decision-making. Analysing, interpreting and presenting information for use in any environment is an essential skill users of information resources should possess if their to be relevant (Aurora de la Vega and Puente, 2010). Hence, being information literate is fundamental to the use of information resources in the knowledge society (Braaksma, 2004).

Information literacy (IL) is the set of abilities enabling individuals to "recognise when information is needed and … to locate, evaluate, and use effectively the needed information" (American Library Association (ALA), 1989). Case (2007) refers to Julien (2001) in defining information literacy as the ability to make efficient and effective use of information sources. Information literacy includes having the skills to not only access information, but also to

ascertain its veracity, reliability, bias, timeliness, and context. IL is important in the contemporary environment of rapid technological change and proliferation of information resources. As users of information community, academic staff members are faced with diverse, abundant information choices in their pursuit of knowledge because of the complexity of information sources and formats. Information is available through libraries, community resources, special interest organizations, the media, and the Internet. Information comes to its users through unfiltered channels, raising questions about its authenticity, validity, and reliability. Also, information is available through multiple media, including graphical, aural, and textual modes. This poses new challenges for academic staff members in evaluating and understanding the content. The uncertain quality and expanding quantity of information pose big challenges for any society (Hof, Sluijs, Asamoah-Hassan and Agyen-Gyasi, 2010).

According to Hof, Sluijs, Asamoah-Hassan, and Agyen-Gyasi (2010), the abundance of information is not in itself enough to build the information society. What matters most is having the necessary skills and abilities to effectively use information. Roth (1999) describes the information environment and the pitfalls facing users of information globally thus:

> …explosion of information generated and stored, the unregulated sprawl of the Internet, the shift from a print to an image-based culture, the development of sound and video archives,…of seemingly infinite reproduction of words and pictures through electronic media, the pitfalls …have multiplied geometrically. In the midst of the information explosion, ability to access, retrieve and evaluate information has constituted a significant part of today's definition of literacy.

Based on this assertion, it is obvious that users of information resources must possess requisite skills in order to harness information resources at their disposal. To respond effectively to an ever-changing environment, users of information resources need more than just a knowledge base. They also need techniques for exploring it, which will also connect it to other knowledge bases and thus make practical use of it for rational decision-making or problem-solving. In other words, the information landscape has been transformed, and information resources users are being forced to establish a new foundation called information literacy skills (Owusu-Ansah, 2004). Menou (2002) argues that the average user of information resources needs some skills. These include awareness of the sources of information services, arrangement

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of information in various types of sources, methods of using computers and websites to retrieve information, and being aware of the laws ensuring their rights on use of information resources.

It is important to note that availability and access to information are not sufficient to guarantee that an information user will possess requisite skills to effectively use information resources at his/her disposal. However, the change in the format and organisation of information sources shows that users of information resources need guidance and education in order to achieve realistic expectations.

Information literacy carries various interpretations and conceptual meanings. According to Declaration of Alexandria (UNESCO/NFIL/IFLA, 2005), Information Literacy (IL): comprises the competencies to recognize information needs and to locate, evaluate, apply and create information within cultural and social contexts; is crucial to the competitive advantage of individuals, enterprises (especially small and medium enterprises), regions and nations; provides the key to effective access, use and creation of content to support economic development, education, health and human services, and all other aspects of contemporary societies, and thereby provides the vital foundation for fulfilling the goals of the Millennium Declaration and the World Summit on the Information Society; and extends beyond current technologies to encompass learning, critical thinking and   interpretative skills across professional boundaries and empowers individuals and communities (UNESCO/NFIL/IFLA, 2005).

These points focus on the IL skills that are necessary not only to maximize utilisation of information resources, but also to the achievement of knowledge and extension of knowledge, which is the primary goal of intellectual research. Information literacy enables people to interpret and make informed judgments. It is a prerequisite for participating effectively in the information society and part of the basic human rights of lifelong learning. It also enables them to become producers of information in their own right, and thereby become more powerful participants in society (Webber and Johnston, 2002; Abid, 2004; Cidpeta, 2008). In addition, the components of information literacy can be found in the required skills that an information literate individual possesses. Doyle (1994) describes the abilities that an information literate individual needs to have thus: recognizing that accurate and complete information is the basis for intelligent decision making; recognizing the need for information; formulating questions based on information

needs; identifying potential sources of information; developing successful search strategies; accessing sources of information including computer-based and other technologies; organizing information for practical application; integrating new information into an existing body of knowledge; and using information in critical thinking and problem solving.

The Chartered Institute of Library and Information Professional (CILIP, 2006) states that an information literate person should have the ability to be a lifelong learner and to be able to reflect on what he/she does. The theory of information literacy presupposes that an individual recognises the need for information and knows how to find, evaluate, use and subsequently communicate information effectively to solve particular problems or to make decisions. It is about commitment to value, worth and success. The Quality Assurance Agency for Higher Education (2001) states that information users should achieve a range of "transferable skills", including the ability to "gather and analyse relevant information from a wide variety of sources using appropriate manual and electronic systems".

Undoubtedly, information literacy skills are a key attribute for success, irrespective of gender, age, level or experience. Oman (2001) avers that for a fundamental assessment of information literacy infrastructure, the demographics of employees and information literacy competences must be taken into congnisance. Whether information comes from the Internet, the World Wide Web, online databases, books, journals, government departments, films, conversations, posters, pictures, other images, or any number of other possible sources, the skill to understand and critically evaluate the information is tied to information literacy (Ojedokun, 2007). It can be argued further that users of information resources become information literate when they are comfortable in using all information formats independently. It is on this premise that academics are expected to be literate and comfortable in using the information available in both print and electronic formats.

According to Parang, Raine and Stevenson (2000), information literacy skills (ILS) is a fusion of library literacy, computer literacy, media literacy, technological literacy, critical thinking, ethics and communication, which, when acquired, would enable users of information to become independent lifelong learners. In this context, lifelong learning is understood as the constant search for meaning by the acquisition of information, reflection, engagement and active

application in multiple contexts (NASPA, 2004). Once acquired, ILS enables individuals to recognise not only when information is needed, but also when different kinds of information are needed. It provides users of information resources with methods by which they can cope with the huge quantity of information coming from all directions, through all varieties of information sources. It can then be assumed that information literacy skills are needed by academics for effective use of information resources for quantity and quality research output.

Julien (2002) claims that an information literate person today should possess specific online searching skills such as the ability to select appropriate search terminology, logical search strategy and appropriate information evaluation. However, one barrier to the efficient utilisation of information resources, especially digital resources, in developing countries is the relatively low level of information literacy skill (Julien, 2002; Tilvawala, Myers and Andrade, 2009). Without the ability to manipulate and use information effectively, investments in both print and electronic-based resources may be a waste (Pejova, 2002). The digital divide between the developed and developing world has widened owing to lack of information literacy skills in developing countries (Dewan, Ganley and Kraemer, 2005).

African universities are not left behind in this paradigm shift, as most universities are now witnessing speedy growth in computer networking and the use of computerised databases to access information in their libraries (Rosenberg, 1997). In Nigeria, the National Universities Commission (NUC) has initiated various programmes designed to launch Nigerian universities into information global society. According to Nok (2006), these include automation of university libraries using Management Information Systems (MIS) and Nigerian Universities Network (NUNET), with the aim of developing a viable local and wide area network in each institution. The Nigeria virtual library initiative is another step by the National Universities Commission to provide higher institutions in Nigeria access to relevant and current information resources (Fabunmi, 2009).

Abdullah and Gibb (2006) note that despite these efforts, most users are unaware of the existence of e-books in library collections and, even when they are aware, unfriendly interfaces or usability problems tend to hinder use. Isah (2010) also observes that the potential users of these new information sources are not making use of the valuable resources owing to lack of

awareness or lack of the skills required to navigate the modern technology. Today, most of the academic libraries are providing traditional as well as ICT-based information resources/services. Libraries acquire, process, organize, circulate and disseminate huge information resources with a huge cost. In addition, the deployment of ICT to library services has opened the path for creating and putting information in the forms of e-books and e-journals in the public domain. Thus, for effective utilization of vast information resources, information literacy skills (ILS) are the need of the hour. It is essential that academic staff members acquire necessary information literacy skills if they are to be productive in both teaching and research in an information-based society Idiodi, 2005).

Little is known about academics' information literacy skills, the willingness and ability of academics to engage in the process of information seeking and use for research output in developing countries. Lwoga, Chimwaza, Aronson and Vent (2007) state that information usage culture in African universities and research institutions remains low despite all the efforts by libraries to conduct more information literacy training. Asselin and Lee (2002) stress the need for information literacy skills for teacher education candidates by quoting a student who stated that:

> I wish someone had taught me how to develop my library information literacy skills through... in elementary school. I might not have had such a horrendous time of it when I came to the university.

There is a claim that large numbers of postgraduate students from Nigerian universities are leaving without the necessary information literacy skills to cope in information-based society and some of these postgraduates are in turn recruited by Nigerian universities as academic staff members (Dangani and Zakari, 2009). According to Longe, Uwadia, and Longe (2005), it is the responsibility of our educational system to provide graduates with the background and skills necessary to be successful in their chosen fields of endeavour. Pejova (2002) concludes that, without adequate information literacy skills, users of information resources in developing nations may continue to underutilise information materials especially technology-related resources that are provided for their use. Similarly, Okiy (2005), Adomi (2005), and Oduwole and Sowole (2006) identify challenges facing adoption and use of ICT and e-resources in Nigeria to include lack of adequate ICT skills among staff and users, low basic information literacy levels in the

Nigerian population, and prohibitive cost of information resources especially non-print resources in developing countries.

1.2   Statement of the Problem

The measure of academic success in academia is research productivity which requires information resources. The universities and other higher institutions set up libraries to make information resources available to assist academic staff members in their research quest. However, despite the avalanche of information resources at the disposal of academics the standard of research production has continue to wane in quality and quantity. Therefore, the fundamental question that triggers this research investigation is, "why the fallen standard in research productivity despite the huge information resources available to academic staff members?"

There are two major factors proposed to explain the decline in the standard of research productivity. First, the academic staff needs skills to access the available information resources, evaluate their credibility, find the facts and make sense of them (hereafter, "information literacy skills"). Thus, if an academic staff lacks the relevant information literacy skill the quality of research product will decrease. Second, the volume of information resources (including the Internet resources) at the disposal of academic staff members is massive, hence require time to filter through the volume of information resources given their time constraint to meet academic and administrative commitment. Consequently, the challenges before the academic staff members are requisite information literacy skills compounded with huge information resources to be accessed (hereafter, "availability of information resources").

This research is designed to establish in the literature that information literacy skills and availability of information resources affect quality and quantity of academic staff member's research productivity in Nigerian federal universities.

1.3   Objectives of the Study

The general objective of this study is to investigate the information literacy skills of academics and availability of information resources as factors influencing research productivity of academic staff in Nigerian federal universities. The specific objectives are to:

1. identify the types of information resources available to academics in their university libraries;

2. investigate how academics acquire their information literacy skills;

3. find out the information literacy skills of academic staff members and their socio-demographic characteristics;

4. determine the information literacy skills possessed by academics staff in Nigerian federal universities;

5. examine the level of research productivity of the academic staff in Nigerian federal universities;

6. examine how information literacy skills influence research productivity of academic staff members in Nigerian federal universities;

7. investigate the information literacy skills of academic staff members and their socio-demographic characteristics;

8. find out the inhibitors to academics when embarking on research activities and

9. determine the combined influence of availability of information resources and information literacy skills on research productivity of academic staff members in Nigerian federal universities.

1.4   Research Questions

The study tried to answer the following research questions derived from the general and specific objectives:

1. What are the types of information resources available to academics in their university libraries?

2. What methods do academic staff members use to acquire information literacy skills?

3. What are the information literacy skills possessed by academic staff members in Nigerian universities?

4. What are the information literacy skills of academic staff members and their socio-demographic characteristics (Gender, Designation, Highest Educational Qualification and Experience)?

5. What is the level of research productivity of the academic staff in Nigerian federal universities?

6. In what way does an information literacy skill influence research productivity of academic staff members in Nigerian federal universities?

7. What are the inhibitors to academics when embarking on research activities?

1.5 Hypotheses

The following null research hypotheses guided the conduct of this study and they were tested at 0.05 level of significance:

H_{01} There is no significant relationship between information literacy skills and research productivity of academic staff in Nigerian federal universities.

H_{02} There is no significant relationship between availability of information resources and research productivity of academic staff in Nigerian federal universities.

H_{03} There is no significant combined influence of availability of information resources and information literacy skills on the research productivity of academic staff in Nigerian federal universities.

1.6 Scope of the Study

The study focused on information literacy skills required for effective use of available information resources for research productivity by academic staff members in Nigerian federal universities. The study covered availability of information resources and information literacy skills, such as identification of information needs, ability to locate and access information, evaluation skill and effective use of information skill as factors influencing the research productivity of academic staff members in Nigerian federal universities. The study was limited

to federal universities in Nigeria in the six geo-political zones and only academic staff members who were faculty based and teach were included in the study. The study grouped related faculties together with assumption that they exist in all selected universities. Hence, four faculties were used in each of the selected universities; they are faculties of Social Science, Science, Education and Arts/Humanities.

1.7   Significant of the Study

This study is significant for many reasons. First, it will provide information on the level of information literacy skills of academics in Nigerian federal universities which will serve as a baseline for appropriate intervention. Second, factors that influence research productivity among academic staff in universities will be of interest to a large number of universities that are currently dealing with ways to retain their academic statuses in the global university community. Third, it is anticipated that findings from this studies will inform the establishment of a set of information literacy skills for academic staff members. Fourth, the findings of this study will be useful in identifying available information resources to academics. Fifth, the outcome of this study will add more to the body of knowledge in the field of library studies. Finally, it will assist the library administrators to consider constant information literacy skills programmes so as to improve information resources use by academics, students and researchers.

1.9 Operational Definition of Terms

The following terms are defined as used in the context of this study for the purpose of clarity and precision:

Academic Staff: This term refers to members of the faculty of a university who teach, do research and community services.

Availability of Information Resources simply refers to the presence of print and non-print materials in university libraries. Such as: textbooks, journals, indexes, abstracts, newspapers and magazines, reports, CD-ROM databases, internet/E-mail, video tapes/cassettes, diskettes magnetic disk, computers, micro forms etc.

Information Literacy Skills: These refer to academic staff competence in identification of information needs, ability to locate and access information, evaluation skill and effective use of information skill.

Information Resources: These refer to print and electronic materials that could be sourced and accessed manually or electronically by users.

Research: This refers to a systematic study carried out by academic staff directed towards a research proposal for a grant, research publication in refereed journals; a research report for an agency or institution, a monograph et cetera.

Research productivity: This refers to output published in chapters in books, co-authored textbooks, patent and certified invention, monographs, occasional papers, articles in learned journals, technical reports, scientific peer-reviewed bulletin, conference papers, patents and working papers.

2.0   **REVIEW OF RELATED LITERATURE**

2.1   INTRODUCTION

A literature review is based on the assumption that knowledge accumulates and that we learn from and build on what others have done (Neuman, 2000). In view of this, the literature relevant to the study has been reviewed under the following sub-headings:

2.2.   Information literacy skills and research productivity

2.3.   Information literacy skills acquisition by academic staff members

2.4.   Availability of information resources and research productivity

2.5.   Access to information resources and research productivity

2.6.   Use of information resources for research productivity by academics

2.7.   Measurement of academic staff members' research productivity

2.7.1.   Demographic Variables

2.7.2.   Professional variables

2.8.   Theoretical framework

2.8.1   Job Performance Theory (JPT)

2.8.2   Information Seeking Behaviour Theories

2.8.2.1   Wilson's model of Information Seeking Behaviour

2.8.2.2   Kuhlthau's model of the Information Search Process (ISP)

2.8.2.3   The SCONUL Seven Pillars of Information Literacy: Core Model

2.9.   Conceptual framework

2.10.   Appraisal of literature review

2.2   Information literacy skills and research productivity

Information Literacy, both as a concept and term, was coined in 1974 by Paul Zurkowski, then President of the Information Industry Association. Zurkowski, (1974) who was president of the United States Information Industries Association during its burgeoning beginnings, describe "information literates" as people who "have learned techniques and skills for utilising the wide range of information tools as well as primary sources in molding information solutions to their

problems" (Bawden, 2001). The first campaigners of information literacy were mainly school librarians in the United States but, in the 1980s the use of the term and the concept became more common across disciplines and professions. Significant events in the lifespan of the concept include the establishment of the American Library Association's (ALA's) Presidential Committee on Information Literacy in 1987 and its subsequent report produced in 1989 (ALA, 1989). This report made a statement about the importance of information literacy and connected it with the goals of lifelong learning and effective citizenship, which is in line with Zurkowski earlier proposition. Since then, several definitions of information literacy exist. Among others, they include the one provided by the United States National Commission on Library and Information Science, which states:

> Information Literacy encompasses knowledge of one's information concerns and needs, and the ability to identify, locate, evaluate, organise and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the information Society, and is part of the basic human right of life-long learning (CILIP, 2005).

Webber and Johnston (2003), who were actively involved in the development of the ClLIP definition of information literacy, earlier have defined information literacy as the "adoption of appropriate information behaviour to obtain, through whatever channel or medium, information well fitted to information needs, together with a critical awareness of the importance of wise and ethical use of information in society." From the definitions provided, it can be argued that information literacy is knowing when and why one needs information, where to find it, and how to evaluate, use and communicate it in an ethical manner.

According to Todd (2003), information literate persons are flexible, can adapt to change and are able to function independently and in groups. An information literate individual knows how to learn and is capable of continuing lifelong learning. Information literacy is the term being applied to the skills of information problem solving (American Library Association, 2000). Information literacy incorporates the abilities to recognize when information is needed and then to initiate search strategies designed to locate the needed information. It includes evaluating, synthesizing, and using information appropriately, ethically, and legally once it is accessed from any information source, including electronic or print sources.

An information literate individual devises strategies for updating self-generated knowledge and recognizes the principles of intellectual freedom and equitable access to information (American Association of School Librarians and Association for Educational Communications and Technology, 1998; Association of College and Research Libraries, 2000). Doyle (2001) defines an information literate person as one who recognises the need for information; recognises that accurate and complete information is the basis for intelligent decision making; formulates questions based on the information needs; identifies potential sources of information; accesses sources of information, including computer and other technologies; evaluates information; organises information to integrate new information into existing body of knowledge and practical application; and uses information in critical thinking and problem- solving.

In the 21st century, information literacy is a key attribute for everyone, irrespective of age or experience. Information literacy is manifest through understanding the ways in which information is created and handled. Various definitions of information literacy (IL) have emerged since the term's inaugural use in 1974. Various authors have described IL as a requisite for lifelong learning (Gee, Hull and Lankshear 1996; Candy, 2002). Others have described it as a natural extension of the concept of literacy in our society (Bruce, 2002; Stern, 2002). Some writers have equated IL with information technology (Mitchell, 1996; Mobley, 1996). Boekhorst (2003) avers that all definitions and descriptions of information literacy presented over the years can be summarized in three concepts:

- The ICT concept: Information literacy refers to the competence to use ICT to retrieve and disseminate information.
- The information (re)sources concept: information literacy refers to the competence to find and use information independently or with the aid of intermediaries.
- The information process concept: information literacy refers to the process of recognizing information need, retrieving, evaluating, using and disseminating information to acquire or extend knowledge. This concept includes both the ICT and the information (re)sources concept and persons are considered as information systems that retrieve, evaluate,

process and disseminate information to make decisions to survive, for self-actualisation and development.

Boekhorst (2003) sees the process of becoming information literate as a lifelong endeavour that should be inculcated right from primary school and be a part of formal training in all phases and all subject areas during the whole education process. He suggests the consideration of information literacy/illiteracy in information-rich versus information-poor context. Audunson and Nordilie (2003) also categorise information literacy into three main groups. The first group, according to them, describes technical capabilities, that is, computer literacy. The second deals with intellectual capabilities as they relate to traditional literacy. Third, communicative competence, presupposes technical as well as intellectual capabilities. For each dimension, the authors distinguish several levels of competence, from basic competence to super-user competence to in-depth competence. They also consider information literacy as the sum of different kinds of literacy.

Dorner and Gorman (2006) take a critical view at various definitions of information literacy skills and emphasise that the Western or developed world's definitions and models may not be operational in the developing world. They assert that:

> There are serious shortcomings with the definition of information literacy when it is applied to developing countries. To begin with, it tends to reduce the process to a group of "skill sets", and more particularly reduces it to a functional technological skill. Further, it does not question the basic assumptions about information, and how it becomes knowledge, assuming the latter to be something external that can be tracked down and captured like small wild animals.

Information literacy in particular must involve the development of a capacity within local communities and local cultures to critique existing knowledge found by means of effective information literacy and to construct new knowledge on the basis of this critique (Dorner and Gorman, 2006). Dorner and Gorman's operational definition of information literacy can be summarized to mean the ability of individuals or groups:

- to be aware of why, how and by whom information is created, communicated and controlled, and how it contributes to the construction of knowledge;

- to understand when information can be used to improve their daily living or to contribute to the resolution of needs related to specific situations, such as at work or school;
- to know how to locate information and to critique its relevance and appropriateness to their context;
- to understand how to integrate relevant and appropriate information with what they already know; and
- to construct new knowledge that increases their capacity to improve their daily living or to resolve needs related to specific situations that have arisen (Dorner and Gorman, 2006).

This definition of information literacy is, however, challenged and contested by other broad approaches which focus on issues concerning the use of information within social contexts. Kaptizke (2003) asserts that concepts which are focused purely on learning "fall short of adequately explaining and providing for present social, cultural and economic conditions". She adds that without explicit recognition of the socio-political and ideological dimensions of information and knowledge consumption and production, understandings of information literacy are potentially insidious. Kaptizke is one of many proponents of an 'information' approach who call for repositioning understandings of information literacy within social information environments (Tuominen, Savolainen, and Talja, 2005; Andersen, 2006; Johnston and Webber, 2006).

Robinson (2001) distinguishes between 'skills-based literacy's,' such as computer and library literacy, which essentially indicates competence in handling information in a particular setting or context or format, and more general capabilities. These wider conceptions of information literacy stress capabilities beyond simple competence in retrieving or communicating information. To deal with the complexities of the current information environment, a complex and broad form of literacy is required. According to Bawden, Devon, and Sinclair (2000), many academic libraries have started to offer information literacy instructions (ILI) via the Internet. The most common online instructional tool is the Web-based guide such as pathfinders, webliographies (Vander Meer, 2000). Another trend that has gained popularity is the information literacy tutorial, which is an interactive, web-based program

designed to introduce users to general information literacy concepts and information resources. These tutorials sometimes replace or supplement in-person library instruction sessions (Donaldson, 2000).

Abolade (2000) observes that the personnel involved in information literacy work have emerged from different disciplines of teaching, educational research and libraries, bringing with them expertise and specialist knowledge from these diverse areas. Information skills should mean skilled behaviour in respect of understanding as a result of successful interaction with a source of information. If this is so, two things come to play. First, information literacy skills cannot be taught in isolation of the context of their operations. Second, we learn to study by studying and because information literacy skills are, in the end, inextricably linked to personal knowledge, there is no set of skills to be acquired as if one has stretched out a hand and taken them from the environment. Instead, they are developed as part of personal developments.

According to Hannesdottir (1999), the training of future users to handle information should start in primary schools. There is no other institution that is in a better position to provide citizens with the information skills and literacy than the school library, which forms part of compulsory education. Abimbola (2002) states that formal learning has advanced to the level of postgraduate studies, which he says commonly involves high levels of self-directedness and independent learning. Formal learning cuts across all levels education, that is, from primary to tertiary institutions. Informal learning occurs in formal settings such as schools, colleges, universities and training centres, but it is not explicitly planned and managed as part of the program of study (Candy, 2002). Information literacy is germane and is viewed as an important skill to be acquired and used in primary and secondary schools, in further and higher education, in business, and in leisure (CILIP, 2006)

What then are information literacy skills? Information literacy is the term being applied to the skills of information problem solving (American Library Association, 2000). Transforming information into knowledge requires information literacy skills. As stated in the UNESCO's World Report "Towards Knowledge Societies" (UNESCO, 2005), information without transformation is only raw data. The use of information requires a mastery of cognitive

skills, including critical thinking. This, in turn depends upon the capacity to locate, evaluate and use information.

Bawden and Nisen (2001) assert that information literacy skills can be conceived as a continuous learning process that encompasses abilities and knowledge, plus the notion of values, with emphasis on several other terms. Different of terms have been used by different authors for information literacy skills. They include: 'info-literacy', 'informacy', 'information empowerment,' 'information competency', 'information literacy skills', 'information literacy and skills', 'skills of information literacy', 'information literacy competency', 'information handling skills', 'information problem solving', 'information problem-solving skills', and 'information fluency'.

Lock (2003) observes that there are two ways to look at information literacy skills in any learning environment. The first part relates to study skills which students, researchers, academics and other information users will need to put to use during their study or research. These include being able to use a library and its resources for advancing one's studies or research, being able to perform literature searches to whatever depth and complexity required for a particular research or discipline area, and being able to demonstrate this to the satisfactory point in whatever form necessary by means of citations and references to reading and information gathering. This approach supports the idea of a competent user, one who is able to function effectively as part of the academic community.

The second strand is about learners being prepared to partake fully in whatever activity they may choose. This strand includes awareness and understanding of the way in which information is produced, some practical ideas of how information is acquired, managed, disseminated and exploited, particularly with knowledge of how appropriate professional groups use information in the workplace, in business, and in the world of culture and the arts. It also includes the critical appraisal of the content and validity of the information (Lock, 2003).

According to Raja, Raja and Kamaruzaman (2011), information literacy skills allow problem-solving, critical and creative thinking, decision making, and cooperative learning that prepare students for the challenges in society. Information literacy leads to skillful, responsible thinking that facilitates good judgment because it relies on criteria, self-correcting and is sensitive to context. It helps growth of individuals through a number of methods, programmes

and techniques. Pasadas (2007) asserts that writing, reading and numerical skills are at the base, followed by ICT and media skills, communication tools and use of networks. Above these strata are IL skills that include identifying an information need, the capability to locate, retrieve, evaluate, and use information, and to respect intellectual property in communicating information and knowledge. All these skills are valid in every society regardless of socio-economic development.

According to Bandura (1977), cited by Kurbanoglu, Akkoyunlu and Umay (2006), success is not only based on the possession of necessary skills, it also requires the confidence to use these skills effectively. In other words, possessing certain information skills is not sufficient; individuals should also develop confidence in the skills that they have acquired. Hence, besides possessing information literacy skills, individuals must also feel competent and confident in the use of these skills. Therefore, attainment of high level efficiency in one's profession is as important as possessing information literacy skills.

In another study, Cheuk (1998) focused on "process face" of information literacy. The research question addressed in this research was "what kind of process do people in the workplace go through in order to seek and use information effectively?" The researcher used a constructivist approach and adopted Dervin's (1994) sense-making assumptions which explain the temporariness of perceptions of people in a particular situation in a specific time and space. The study identified information literacy as executing an information-seeking-and-using process in the workplace. As a result, a dynamic model was presented which consisted of seven critically different situations that refer to perceptions of workers about their experiences in seeking and using information: task initiating situation; focus formulating situation; idea assuming situation; idea rejecting situation; idea confirming situation; idea finalizing situation; and passing on idea situation (Cheuk1998).

In recognition of this imperative, localized models of information literacy were created to meet the needs of specific educational contexts around the world. There are many well tested and well-attested ILS models being applied around the globe. The SCONUL Working Group on Information Literacy published "Information skills in higher education: a SCONUL position paper" (SCONUL 1999), which introduced the Seven Pillars of Information Skills model. Since

then, the model has been adopted by librarians and teachers around the world to deliver information skills to their learners and assess information literacy level of individuals. The model has seven competence components which include the ability to recognise a need for information, the ability to distinguish the way in which the information gap may be addressed, the ability to construct strategies for locating information, the ability to locate and access information, ability to compare and evaluate information obtained from different sources, the ability to organise, apply and communicate information to others in ways appropriate to the situation and ability to synthesise and build upon existing information and contributed to the creation of new knowledge (SCONUL, 2011).

` The Big6 Skills of information problem-solving strategy model was also put forward as skills needed for information. Users are able to handle any problem, assignment, decision or task (Eisenberg and Bob Berkowitz, 1990). According to MacDonald and Darrow (2003, the Big6 Skills model is one of the most well-known models in the field. It is a process model of how people of all ages solve an information problem. It has six stages of the information problem-solving that the students, researchers, and academics apply in their information problem solving process, namely: task definition, information-seeking strategies, location and access, use of information synthesis and evaluation (Eisenberg and Berkowitz, 1990). Lowe and Eisenberg (2005) claim that, although information literacy skill is developed in the field of library and information science, the process can be used in any information situation, work, and everyday information problems, needs and use. This flexibility of the Big6 approach is a result of a number of important characteristics, which include the following:

- Technology skills are perceived as integral to the information problem-solving process
- Includes necessary elements for solving problems and completing tasks
- Encourages variety of alternative strategies rather than being a linear process
- Provides a curriculum for integrating information literacy instruction with all subject areas (Lowe and Eisenberg 2005).

The Information Inquiry model by Pappas and Tepe (2002) includes pathways to knowledge and is meant to encourage users of information resources to continuously explore and reassess as they go about with their information process. The model has six steps: appreciation

and enjoyment, pre-search, search, interpretation, communication and evaluation (Pappas and Tepe, 2002). Another well-known model is the information search process by Kuhlthau. This model shows users' approach to the research process and how users' confidence increases at each stage. The model has seven stages, which include initiation, selection, pre-focus, exploration, formulation, collection, presentation and assessment (Kuhlthau, 1993).

Virtually, all discussed information literacy skills models have similarities. They describe the elements of an information literate person and these characteristics are often comparable. Webber and Johnston (2002) note how different definitions of information literacy skills tend to focus on similar areas, such as need recognition, search formulation, source selection and interrogation, information evaluation, information synthesis and use. In the same vein, Owusu-Ansah (2005) observes how various proponents of information literacy skills tend to agree more than they disagree. Some notable information literacy skills models will be discussed further in the theoretical framework in conjunction with other information seeking processes, such as Ellis's model of information seeking behaviour, Dervin's sense making theory, and Belkin's Anomalous State of Knowledge (ASK) theory.

The relevance of information literacy is based on the amount of information that is available in contemporary society. Simply being exposed to a great deal of information resources, most especially electronic information resources, will not make people informed citizens; they need to learn how to use this information effectively (ACRL, 2000). states that the ever expanding volume of information available through print and digitised formats has the capacity to both stimulate and overwhelm (Wooliscroft, 1997). The avalanche of information resources, referred to as data smog can create a barrier in our lives. Students, academics and the entire society require special skill to handle this fast increasing information resource in order to use their educational and economic purposes more effectively. Information literacy is considered as the solution for data smog (ACRL, 2006).

Bainton (2001) argues that the information in books, journals and other printed forms has been subjected to a variety of quality assurance processes from reputable publishers. Most of them were written by authors with some academic credentials; some texts were recommended by tutors; and there was careful library spending to ensure a match of material to need. But with

digital information resources, none of the quality assurance mechanisms can be assumed. Owing to the expansion of digital information resources, we receive much of the information is not evaluated, unlike the printed sources, hence the authenticity, validity, and reliability of information is in doubt.

Ray and Day (1998) observe that large numbers of students are leaving the university without the necessary transferable skills to cope in information-based society. In the USA, an influential report by the American Library Association (Report of the Presidential Committee, 1989) emphasises the need for all people to become information literate, which means that they are not only able to recognise when information is needed, but also able to identify, locate, evaluate and use effectively the information needed for the particular decision or issue at hand (ALA, 1998). The purpose of general education is to provide a common experience in order to ensure that students acquire skills, knowledge, and the ability to think critically and to perceive interdisciplinary relationships (Chenoweth and Price, 1997). One of the goals of educational institutions is to ensure that graduates are information literate and can identify, locate and evaluate relevant information to satisfy their information needs (Oliver, 2002).

The significance of information literacy skills lies in its potential to encourage deep, rather than surface thinking, and in its potential to transform dependent learners into independent, self-directed, effective users of information and lifelong learners. Without information literacy, people are condemned to lack of information, dependence upon others for access to knowledge and information, and even to acute levels of information anxiety (Wurman, 2001). Hepworth (2000) claims that, in Singapore, the government realizes that these (information) skills are important for the longevity of life. Several reports have emphasized the importance of finding, evaluating, and using information although the term information literacy is not used. Organisation for Economic Cooperation and Development (OECD) discusses the increasing demand for more highly skilled workers and observes that:

> The knowledge-based economy is characterised by the need for continuous learning of both codified information and the competencies to use this information. As access to information becomes easier and less expensive, the skills and competencies relating to the selection and efficient use of information become more crucial... Capabilities for selecting relevant and discarding

irrelevant information, recognising patterns in information, interpreting and decoding information as well as learning new and forgetting old skills are in increasing demand. (OECD, 1996).

The report also expressed concern that many users of information resources lack experience in information handling and in effective independent learning. It encourages schools to develop the learning environment in ways that give students/users a more active role that support the ability to find information and transform it (OECD, 2000). For the new information infrastructure to aid development by the people, for the people and of the people, it seems imperative that people's capacities are developed to ensure that they can participate in shaping the development of the global information society (Karelse, 2000).

2.3 Information literacy skills acquisition by academic staff members

Various information literacy standards such as ALA, 1989; SCONUL, 1999; ACRL, 2000) require that participants who have completed certain levels of education are expected to have a high level of information literacy skills. In other words, individuals with higher education levels are expected to have different information literacy skill levels. In support of this view, Brand-Gruwel, Wopereis and Vermetten (2005) classified participants with higher educational levels as experts and those with lower educational levels as novices in examining their experiences in information problem-solving process and they found differences in their skills.

Access without skills is not useful; so the acquisition of information literacy skills becomes a basic need of every citizen. According to the criteria from the Southern Association of Colleges and Schools (SACS) (2000), libraries and learning resource centres should provide point-of-use instruction, personal assistance in conducting library research, and traditional reference services. This should be consistent with the goal of helping students (information users) to develop information literacy skills. This is paralleled by research that discusses the information needs of information users, needs that can be met by prospective individuals who have acquired information literacy skills

According to Idiodi (2005), information literacy skills acquisition is an aspect of information literacy and may be seen as the process of gaining the tools that assist the development of information literacy in an individual. Information literacy implies the intellectual

capabilities involved in using information, as distinct from the technical know-how required for using information technologies that hold or deliver data. This latter ability can be characterised as information technology literacy. Hargittai (2002), in his study of online skills defines skill as the ability to complete a task and the amount of time spent for completing it. Academics with low information literacy skill may spend too much time retrieving information owing to problems they may encounter when seeking information especially in electronic information resources.

To retrieve information in the open web, not only formal information skills are needed but substantial information skills (Gui, 2007) who observed that sophisticated computer skills do not automatically translate into skills in search and retrieving of information (Thomas, 2004). Majid and Abazova (1999) conducted a study on the relationship between computer literacy of academic staff and their use of electronic information sources. The study revealed that a statistically significant relationship was found between computer literacy and the use of electronic information sources and services. The study further revealed that computer literate academics use electronic information sources more frequently. Similarly, a significant relationship was noted between the age of academics and their use of electronic information sources.

Oberman (1991) argues that bibliographic instruction help users to develop critical-thinking skills to cope with the increased amount of information at their disposal Oberman concludes that the goal of library induction is to enable users community to discriminate between useful and irrelevant information. Furthermore, the retrieval skills of the academics will have to be demonstrated before information can be retrieved from electronic resources. The information literacy skills of the academics can be demonstrated by their ability to recognise their need for information, evaluate bibliographic search strategies, select the right search strategies for the search and evaluate search results. In the same vein, Macgregor and McCulloch (2006) report that librarians and information professionals have lessons to learn from the interactive and social aspects exemplified by collaborative tagging systems, as well as their success in engaging users with information management skills.

Ani and Edem (2010) investigated the level of Internet access, and use by academic staff in the University of Calabar, Nigeria. It was discovered that, although there existed a high level of skills in Internet access and use by the respondents, there is a need to organize regular formal user training by the university library (university management) for all academic staff in the University of Calabar, as well as each Nigerian university. According to Teh (1996) users on the electronic information superhighways are already helplessly thrust into a world where prior knowledge of searching skills are assumed. Considering some of the search engines on the Internet, or more specifically on the World Wide Web, prior knowledge of the prevalent technique of searching using keywords (including the use of Boolean operators) is assumed. It is rather evident that most users are not adequately prepared to comprehend fully this searching mode. Academics need to be guided to acquire these skills so as to cope with the information intensive world. *Wordnet Dictionary* (2004) defines skill as "an ability that has been acquired by training". Therefore, one can refer to acquisition of skills as ability that has been obtained by training. Zaiton (1993) opines that "except for isolated cases, information skills are not formally taught". In Africa, information literacy skills acquisition has not been accorded its position in the higher education curriculum (Ojedokun and Lumande, 2005). However, Gui (2007) posits that there is need to teach information literacy skills. Intensive efforts must be made to teach information skills to meet up with the "hurried pace of information technology development". The utilization of electronic resources and the improvement of information skills require continuous training programmes for end use (Ahmed and Cooke, 2008).

Information cannot be retrieved without appropriate information literacy skill acquisition. Lack of operational skills poses challenges for academics to retrieve information to accomplish their research goals (Saunders, 2007). A study on health care personnel's use of e-information sources in Riyadh governmental hospitals by Ahmed and Cooke (2008) reveal that many of the staff acquired computer skills from colleagues and friends. The analysis showed that 40.2% of the respondents had received computer training which was expected to enhance their use of e-information sources. Baniontye and Vaskevicene (2006) reveal that 89.7% of research libraries and 65% of public libraries in Lithuania provide regular training for their readers. The study revealed that there was immediate increase in the number of users after such training. Skill is

improved through practice and frequent use of information retrieval system. There is need for well-defined development programmes that could help people to be competent in the use of information retrieval system. The provision of appropriate training programmes for users in academic community is imperative for African information searchers (Mutshewa, 2008). Training is often associated with improvement. Training of workers appears to be associated with high level of productivity (Ray and Watson, 2003 cited by Haliso (2006).

Okello-Obura and Magara (2008) report in their study that the majority of their respondents learnt to access electronic resources and they acquired database search skills through self-taught. However, Bates (1979) advises that information providers should assist users in their searches by suggesting or teaching strategies that they could use when their search strategies do not produce the desired results. In order to effectively retrieve information, users should be taught to value and implement information retrieval skills effectively, as this will have an effect on how they find and use information, concepts and ideas for their tasks.

Basri (2003) conducted a study to look at the training needs of the users of three public university libraries with respect to electronic resources. His respondents differed considerably in their abilities to use electronic resources. He concludes that there is a need to design a training programme that will address these differences. In the same vein, Ayoo and Otike (2002) claim that the formulation of an information policy in Kenya is hampered by the lack of information skills, mainly among top policy makers, which results in making the wrong choices of ICTs. Similarly, the quality and efficiency of ICT application in Kenya can only be achieved by means of capacity building through research and development, which are elements of information skills (Kandiri, 2006).

Agbonlahor (2006) examined factors which motivate academics in Nigerian universities to use information technology (IT). The study notes that perceived usefulness (relative advantage) and perceived ease of use (complexity) significantly influence the use of IT by lecturers in Nigerian universities. Furthermore, both training (information literacy skills) and level of access to IT significantly influence the number of computer applications used by lecturers in their research activities. The easy access to the Internet, the explosion of the volume of information, and the predominant use of search engines, such as Google, make information

literacy skills a necessity if academics are to find sources of the best quality with least effort. In the course of carrying out their research activities, academics generate large volume of data and information which culminate in different records. According to Weidenborner (2007) a successful research project is more than collection of information; it requires planning ahead, and determining which sources to consult, what kinds of notes to take, and how to put it all together in to an effective paper.

Bruce (1997) examined how information literacy was experienced amongst higher education professionals including lecturers, counsellors, and staff developers in Australia. She conducted 16 semi-structured interviews, and the rest of the data was collected via electronic mail and written data during workshops. Altogether, more than 60 participants contributed. During the interviews, participants were asked to focus on their experiences of information literacy at work. She identifies seven different ways of experiencing information literacy in any working environment which she calls "seven faces of information literacy":

1. Using information technology
2. Finding information from appropriate sources
3. Executing a process
4. Controlling information
5. Building up a personal knowledge base in a new area of interest
6. Working with knowledge and personal perspectives adopted in such a way that novel insights are gained
7. Using information wisely for the benefit of others.

She concludes that information literacy should be considered as a significant part of the character of learning organizations and being a key characteristic of organization's employees (Bruce, 1997).

Research process involves three essential operations. The first is searching; users of information resources must search harder for a good topic. Rarely can anyone find a topic merely by thinking about the matter. As an information user, you must learn how to find the information you need, starting with the library's catalogue of sources. The second is reading. This has to do with more than understanding the materials you are reading; you must learn how

to recognize what information is likely to be truly relevant to your research goals. The third is writing. Since academics will be dealing with a great many ideas and pieces of information, most of which come from many sources, the ability to organize intelligently may count as much as, if not more than, a fine writing style (Weidenborner, 2007).

Dangani and Mohammed (2009) study on assess the Information and Communication Technology Literacy among academics in A.B.U., Zaria; report that 249(48.8%) of the academics in Ahmadu Bello University (ABU) Zaria are not fluent in web navigation. On word processing skills, 82(16.1%) of the academics were very fluent with word processing. This shows that 359 (70.4%) of the academics were familiar with word processing and therefore could use it effectively to enhance their teaching and research.

Boon, Johnston and Webber (2007) investigated the conceptual understanding and the variation of experiencing information literacy among academics. The researchers interviewed 20 English teaching academics of different universities across the UK. During the interviews, the participants were asked about how they conceive and how they teach information literacy. The study identified four major conceptions of information literacy:

1. Accessing and retrieving textual information: which corresponds primarily to the printed matter as information source
2. Using IT to access and retrieve information: accessing mainly non-textual information through various non-traditional means (that is, the Web)
3. Processing basic research skills and knowing how and when to use them
4. Becoming confident autonomous learners and critical thinkers (Boon et al., 2007)

The researchers compared their findings with Bruce's (1997) study of the seven faces of information literacy and other literacy standards. One of the differences was the lack of recognizing "information need" concept in Boon and colleagues' findings. The participants did not mention how their information need was conceived but moved directly to the concept of accessing and retrieving information. Another difference was the concept of "becoming confident autonomous learners and thinkers" found in this study was not strongly addressed in earlier information literacy frameworks of Task Force on Information Skills SCONUL's seven pillars of information literacy (SCONUL,1999).

Al-Daihani and Rehman (2007) claim that Web search capabilities of respondent officers in Kuwait were found generally weak. Similarly, Talja (2005) examined computer and information technology competence of academic researchers by using discourse analysis method to systematically capture the differences in participants' interpretations and understanding of computer skills. He argues that computer self- efficacy has positive impact on IT use and competence and success. Brodshow (2002), in a research titled "Internet researches: the method of using Internet for main and secondary researches", polled 377 researchers about the cause of their use of the Internet. The findings of his research showed that few percentages of academics use the Internet in order to collect research information, although they intended to use the Internet more for their main researches in future years. Investigation of questionnaires number showed that they tend to reply to post questionnaire more than electronic questionnaires owing to low literacy skills in information handling. Alizadeh (2009) also obtained similar results; he found that the level of Tehran education organization staff general literacy was lower than the average limit. Moreover, the results of Salehi and Haji Zad's (2009) research indicated that professors' knowledge level in the use of the Internet was also low and only 4% of them used Internet resources. Khodajoui (2001) claims that only 13% of faculty members have Internet access in their home and often use this technology by using the trial-and-error method.

Allehiabi (2001) cited by Yasinian (2011), investigated the use of Internet technology in Saudi Arabian universities by academic members. The findings indicated that most of the respondents used the Internet for their research activities. More than half of the users had earlier started using network two years before and others had been using the Internet more than two years. Moreover about one fourth of them did not use the Internet. Yasinian (2011b) in his study on general literacy of computer in Islamic Azad University reported that the computer general literacy of Islamic Azad University' academic staff in Tehran province is less than average.

Al-Ansari (2006) conducted a study on the use of the Internet by the academics particularly purpose of use, impact on teaching and research, Internet resources used and the problem faced while using the Internet. It was discovered that the majority of them have been using the computer and the Internet for more than five years. The Internet had helped them save

time, find up-to-date information and compare with their colleagues. Almost all of the academics wanted to improve their Internet use skill through formal training.

2.4 Availability of information resources and research productivity.

Information society is currently undergoing drastic change in terms of information collections and services. In an information society, it is the right of individuals to get access to information in pursuits of higher quality of life. Information resources refer to print and electronic materials that could be sourced and accessed manually or electronically by users. The accessibility of information resources are now made possible in both print and non-print formats and it is crucial that this is known and subsequently utilized. Adequate and appropriate information resources provide opportunities for individuals to get the access which has depended on the availability of emerging technologies as means for creating, storing, and distributing, retrieving, and using information resources the existing literature, such as Udoudoh (2009) and Popoola (2008) suggest that the library is central to the provision of relevant information resources and services for adequate support of teaching, learning and research in any academic environment.

Popoola and Haliso (2009) define information resources as those information-bearing materials that are in both printed and electronic formats, such as textbooks, journals, indexes, abstracts, newspapers and magazines, reports, CD-ROM databases, the Internet/E-mail, video tapes/cassettes, diskettes magnetic disk, computers, micro forms and so on. These information materials are the raw materials that libraries acquire, catalogue, stock, and make available to their patrons. According to Hanif, Ahmed, and Nasir (1997a), a good library should be well equipped with books and periodicals in all subjects to advance study and research. The duty of a university library is to collect, organise and disseminate information to academics, research scholars and students, and support the generation of new knowledge.

The up-to-datedness of contents in courses, the continuous academic growth and competence of academic staff members and the quality of learning environment depend on how

effective the academic library is in identifying and connecting information on current developments in various subject fields with the concerned academic community. Hanif et al (1997b) claim that:

> In order to satisfy the diverse information needs and interests of the academic community, the library collection must be adequate in terms of quantity, quality and currency. The collection must also be accessible to the community. The provision of quality information will invariably have positive impact on the learning environment; on the contrary, if the quality of the information provided leaves much to be desired, the result would be worse.

Hanif et al (1997c) report that there was inadequacy of recent publications and current journals. Besides, the information needs of the faculty members were not adequately met by the existing library services. Ray and Day (1998) observe that traditional library and informational services (LIS) can no longer adequately meet academic needs, because of the cost of printed materials, the ever-increasing number of academic publications, and changes in learning and teaching methods. As a result of these limitations and owing to rapidly developing technology, academics must utilize electronic information resources effectively. They enumerated the advantages of electronic resources over printed resources to include:

1. obtaining information from the most appropriate source;
2. the possibility for the user to re-specify his/her needs dynamically;
3. compiling information "just in time" rather than "just in case";
4. searching for specific information for specific needs;
5. accessing more information faster;
6. the ability to save and print information for use at a later time;
7. the possibility of updating earlier sources; and
8. the availability of resources from outside the library by dial-up access (Ray and Day, 1998).

To reap the benefits of electronic resources, academics must acquire the necessary information literacy skills.

It is common knowledge that the availability of online information, improved Internet connectivity and changes in scholarly publishing techniques have all contributed to more

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information being available to more researchers. According to Agulu and Aguolu (2002), resources may be available in the library and even identified bibliographically as relevant to one's subject of interest, but one may not be able to lay one's hands on them. One may identify citations in indexes, but may not have access to the sources containing the relevant articles. The more accessible information sources are, the more likely they are to be used. Users tend to use information sources that require the least effort to access. Availability of an information source does not necessarily imply its accessibility, because the source may be available but access to may be prevented for one reason or the other.

Leelavathi and Doraswamy (2007) observe that use of electronic information resources is still inadequate among the engineering faculty of the universities in developing countries. They present the findings of a survey on knowledge and use of digital resources by academics in Indian universities through CD-ROM databases, online databases, online journals, OPAC and so on available in the engineering college libraries. Most of academics (45%) said that they acquired the skills to use digital resources through the 'self-study' method (reading books/journals, tutorials and so on. The majority of the faculty members (49.37%) opined that the information available in the digital resources is always 'adequate'. Also, (50.62%) and (41.25%) of the faculty members saw 'lack of training' and 'lack of time', respectively, as the main problems in securing access to digital resources.

Magara (2002) opines that CD-ROM and online retrieval services were the most utilized electronic resources in Uganda. The availability of the Internet in that country enhanced communication and resource sharing among the communities. Okello-Obura and Magara (2008) claim that users of electronic information at Makerere University, Uganda derived a lot of benefits from electronic resources which helped them in gaining access to a wider range of information, leading to improved academic performance. The major objectives of the adoption of e-resources in the university were to facilitate access to Internet-based information resources as well as timely dissemination of local and international research output. Swain and Panda (2009) observe that faculty members prefer using e-articles over electronic theses and dissertations (ETDs). Some online databases, like Emerald Management Xtra (EMX), EBSCOHOST, and PROQUEST, are fairly in use while other online databases are not of high demand.

Information utilization assists managers in organizations to build their own boundaries of thinking and to have more unique perceptions and cognitions in order to enhance their level of creativeness. One can, therefore, argue that the ability of academics to select, acquire and utilise appropriate and relevant information sources may improve their creative thinking and consequently their research performance (Akinboye, 2003). Information is an inevitable tool in the process of creativity; and that acquiring, processing and utilizing of relevant and timely information should be channelled through the development of perspectives (technical and human relations skills) among workers to produce novelty, new designs, new realities and new experiences (Okwilagwe and Opeke, 2002). Creativity is the ability to make connections from various pieces of information in a novel way and to bring these ideas to a fruitful result (Hammed and Ayantunji, 2002).

Oduwole and Akpati (2003) carried out a research on the accessibility and retrieval of electronic information at the library of the University of Agriculture, Abeokuta, Nigeria. The study revealed that the usage of electronic information resources cuts across all members of the university community. There was an increase in library use in the university. The increase was a result of the introduction of The Essential Electronic Agriculture Library (TEEAL) that has 130 journal titles on CD-ROM. Furthermore, Sani and Tiamiyu (2005) reported the availability and use of OPACs in University of Agriculture Abeokuta. Anasi, (2005) claims that some of the Nigerian universities, like University of Ibadan, University of Ilorin, University of Jos, University of Lagos and Ahmadu Bello University, Zaria subscribed to ISI (Institute for Scientific Information) and EBSCOHOST database. However Igbeka and Okpala (2004) posit that, since the 1995 introduction and availability of CD-ROM literature search into the University of Ibadan library system, the number of users of the CD-ROM facility was small to the number of registered library users. This, according to them might be a result of lack of current awareness or dissatisfaction of users owing to low information literacy skill.

Jagboro (2003) in his study on Internet use at Obafemi Awolowo University, Ife (OAU), revealed that Internet access was provided to students and staff who do not have access in their various offices. Also, Sanni and Idiodi (2004) claim that residential quarters at University of Benin were being networked for Internet access. They add that there is a cybercafé where staff

and students can access the Internet. Likewise, their library collection can be accessed through the Online Public Access Catalogue (OPAC). Egberongbe (2011) asserts that there are e-resources in the library University of Lagos and that respondents in the study had become familiar with e-resources and accessed maximum relevant materials from e-journals for research purposes. Ojokoh (2005) argues that Internet access was provided to the Federal University of Technology Akure community through the university cybercafé. None of the respondents in his research work used e-mail to communicate with lecturers. Oduwole (2005) writes on the increasing number of universities connected to the Internet but he asserts that the services were plagued with problems ranging from limited number of work stations, inadequate help support services, queues, space problems and lack of proper co-ordination.

The University of Ibadan official bulletin special release (2009) claims that the following electronic resources; AGORA, HINARI, LANTEEL, EBSCOHOST, EGRANARY and DIGITAL LIBRARY, are available in Kenneth Dike Library. There are also on-line journal resources such as, HIGHWIRE, ARCHIVE, AFRICAN JOURNALS online, POPLINE, BIOMED CENTRAL and others acquired through journal donation projects. Also, the University of Lagos Library has about 483,483 volumes of books and about 703,528 volumes of journals. For the reporting period, the Library acquired 13,232 volumes of books and 7,528 volumes of journals (6,834 volumes were foreign and 694 volumes were national journals). The databases currently available include: AGORA, EBSCOHost, Oxford Journal Online, JSTOR, OARES, Law Pavilion, Legalpedia, Laws of the Federation of Nigeria (LFN), MetaPress and HINARI. The databases can be accessed on computer systems in the libraries and on the library's website.

The availability of efficient information systems and services and proper utilization of information by government and the people can improve the life and activities of the citizens and also the quality of the country's development. The availability of information supports decision-making processes at all levels (Nair, 2006). For the library to perform its role adequately, its resources must be effectively utilized (Okiy, 2000). There is the need to have access to relevant information resources in institutional libraries and make effective use of them to improve the teaching effectiveness of academics (Okiy, 2000). Oduwole et al. (2002) confirm that students,

academic staff, administrative personnel and the public made use of available Online Public Access Catalogue in University of Agriculture, Abeokuta, Nigeria for report writing, lesson preparation, research methodology and class assignments. Adeleke (2005) posits that if the library is to contribute to the advancement of knowledge, it must not only provide the resources only but also ensure effective use of the resources by its clienteles.

Iyoro (2004) finds out that availability of serials at the University of Ibadan was 94 percent, with 242 of 256 respondents agreeing that serial publications were available and readily accessible. Ajayi and Akinniyi (2004) identify frustration among information seekers owing to the non-availability of sources. Popoola (2001) carried out a study on academics' awareness of library information products and services in Nigerian universities. He reported that there was a significant difference in academic staff members' awareness of available library information products and services. In addition, it was revealed that faculty members did not have sufficient knowledge of information products and services pertinent to their teaching and research activities. This shows that library information products and services remain grossly underutilized by faculty members in Nigerian universities.

2.5   Access to information resources and academics research productivity

Ability to find and retrieve information effectively is a useful skill for positive and successful use of information resources in whatever format. Information resources comprise both print and non-print resources. The non-print resources provide more advantages compared to traditional print-based resources. Such advantages include easy access, speedy access, more varieties, and regular update. Electronic information resources are information resources provided in electronic form. These include CD-ROMs, information resources available on the Internet such as e-journals, e-print, and other computer-based electronic networks (Klobas, 1995; Tsakonas and Papatheodorou, 2006).

The availability of relevant information resources affects how frequently academic staff use them (Abels, Liebscher, and Denman, 1996 and Eason,, Richardson, and Yu, 2000). The provision of information resources varies among disciplines. They are mostly available in science and medicine, and least in social science and humanities (Borgman, 2000). It is clear that

it is not the feature of a discipline, but also the availability of electronic information resources and their use that would bring great differences.

Finholt and Brooks (1999) studied the effect of the availability of electronic journal collections ("JSTOR") on social sciences academic staff members in higher education institutions in Michigan. One notable finding was that faculty members from the smaller institutions had a tendency to use the electronic collections more frequently than their colleagues at the resource-rich University of Michigan. With the increasing emphasis on using technology to access information, there was a great potential for academic staff members to become more reliant on both librarians and information technology specialists.

Neelameghan (1985) remarks that one of the prerequisites of information resources utilization is accessibility. Accessibility refers to ease of locating and proximity to information resources. Access to information is important because except an information source is available to users, it cannot be used. Arif and Meadows (1994) argue that once users become aware of an information source, they tend to use it. Accessibility is about being able to use what is available when it is required and is much more than availability. In fact, access to information and the ability to harness and exploit the vast store of relevant information buried in diverse formats hold the key to individual empowerment in every part of the world (Jimba, 2000). Unfortunately, unfettered access to information does not exist in any society, either in the developed or developing ones (Johnson, 1997). Access to information is not equal to all classes, and the capacity for effective use of it differs markedly among individuals, classes and nations (Neelemaghan, 1985). Access to information carries with it the implication that access can be widened or restricted. This implies action either on the part of the person seeking access or on the part of a person authorized to allow access (Harris, 1992).

With the over-abundance of information in almost all subjects, without information access tools, a user would be frustrated by not knowing if the information required exists and where to find it. Based on this, Ojedokun (2007) argues that the research process which requires a user to find information on a particular subject/topic depends on the users' skillful use of the appropriate access tools. Access tools include indexes and abstracts, bibliographies, OPAC, public catalogues and web search tools. Jenkins (1997) says further access to library catalogues,

finding aids and uses of technology makes the research process easier, faster and more up-to-date, and thus, increase research productivity.

2.6.   Use of information resources for research productivity by academics

There are evidences which indicate that academics are readily using online databases made available by their libraries in Nigerian universities (Ehikhamenor, 2003; Aduwa-Ogiegbaen and Stella, 2005; Adogbeji and Toyo, 2006; Ureigho, Oroke and Ekruyota 2006; Osunade, Phillips and Ojo 2007; and Popoola 2008). Shokeen and Kaushik, (2002) hint that social scientists of Haryana universities in India most frequently use current journals, textbooks and reference books. Agba, Kigongo-Bukenya, and Nyumba (2004) claim that the shift from print to electronic information implies that both academic staff and students in a university system use these resources for better quality, and efficient and effective research more than ever.

As academics get more access to the Internet, ways to communicate with peers and other experts in their fields and colleagues have grown. There are many networked services such as electronic mail (email), distribution lists, bulletin boards and news groups which extend the invisible college of academics and researchers to anywhere in the world, whereas communication is almost instantaneous. Abels, Liebscher and Denham (1996) say networked services can benefit smaller institutions in particular, because academics and students have access to peers worldwide. They also have access to news and discussion groups, library catalogues of large research libraries, datasets (aggregated services) and databases and even public domain software packages for teaching and research.

Popoola (2000) argues that social scientists in the Nigerian universities utilise the library information services such as current awareness, photocopying, referencing, statistical data analysis, E-mail, selective dissemination of information and online database searching, to support their research activities. These sources have contributed immensely to the research productivity of academic staff. There have been many studies of users of electronic journals in the professional literature in the last few years. In a recent exhaustive review of the literature on the subject, Tenopir (2003) gives an analysis of the results of over 200 studies of the use of electronic resources in libraries published between 1995 and 2003. The main conclusion of this

review is that electronic resources have been rapidly adopted in academic spheres, although the behaviour varies according to the discipline.

Bar-Ilan and Fink (2005) summarize the users' surveys of electronic information resources as follows:

• use of electronic journals increases with time;

• age or academic position is inversely related to the use of electronic media and journals;

• there is a gradual reduction in the use of printed journals as users prefer and use the electronic format more;

• with increased use, users access the electronic format more frequently; and

• the use of a journal is not necessarily an indication of the preference of users.

The disadvantages of electronic journals mentioned most often include lack of back issues, and problems with reading a text from the computer screen. These findings are in consonance with the work of other researchers, who have averred that academics are enthusiastic users of information resources in whatever formats (Rowley, 2001; Kidd 2002; Hiller 2002; Dillion and Hahn, 2002; Tenopir, 2003). Also, Korobili, Tilikidou and Delistavrou (2005) examined the use of library resources, focusing on e-sources, by the members of the faculty of a higher educational institute. The study reveals that most of academics use printed sources more than e-sources, but they also use e-sources quite frequently. However, what they use mostly are books, websites and printed journals. There is greater use of e-sources among younger members of the academic staff. Also, the results indicate that the use of e-sources is positively influenced by the respondents' perceived usefulness of resources to their research productivity and the convenience of access to the sources.

However, Baro, Endouware, and Ubog (2011) assert that their respondents rarely use electronic resources such as MEDLINE, HINARI, the Cochrane Library, and EbscoHost. This could be because of lack of awareness and skills necessary to search databases. They recommend that, in order to enhance the retention of the knowledge and skills in information literacy and lifelong learning, skills should be integrated and taught throughout the entire medical education. Tenopir (2003), in her assessment of user studies, concludes that, in an academic environment, both faculty and students use and like electronic resources and they use them if the resources are

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seen to be convenient. Lam and Lee (2003) aver that lacks of information retrieval skills is a barrier to using electronic resources.

Curtis, Weller and Hurd (1997) observe that academic staff prefer to access electronic databases from their offices to doing so from the library. Zhang (1998) surveyed the use of electronic resources by academic staff at Rollins College in the United States and observed that 69% of the academics sampled used the online catalogue, 53% used UMI's ProQuest direct online databases, 35% used the OCLC First Search package and 35% used the ProQuest CD-ROM databases made available through the campus network. Bonzi (1992) indicates that access to databases and computer support facilitated academic staff's research productivity.

Okiy (2000) submits that students and academics in Delta State University, Abraka, Nigeria make use of book materials, such as journals, newspapers, textbooks, magazines, dictionaries, projects, encyclopedias and government publications. In the same vein, Kenoni (2002) carried out a study on the utilisation of archival information by researchers in the University of Nairobi, Kenya and reports that academics made use of maps and atlases, gazettes, theses and dissertations, newspapers, statistical abstracts, video films, political records, journals and conference papers, books for their research activity.

Lazinger, Bar-Ilan and Peritz (1997), examined the use of the Internet among groups of academics and found that science researchers use information resources more than researchers in the humanities and social sciences. They also report an inverse association between the rank of the faculty members and use of electronic resources in both the sciences and humanities groups. Academic staff members in all disciplines perceive the primary relevance of Internet use as improved access to databases and updates in research. Age also plays an important role in usage; the younger the faculty members are, the more they use electronic sources. Gender and academic rank have only a minor influence on the usage of e-sources and the Internet (Bar-Ilan et al., 2003). It has also been reported that men are heavier users of the Internet and they make most use of the more complicated services (Teo, 2001; Cheong, 2002).

Studies have demonstrated varying effects of Internet applications on the research productivity of scientists. Bonzi (1992) asserts that, in scholars' opinions, access to databases and computer support are facilitators to research productivity. A study by oceanographers shows

a positive relationship between productivity and application of computer based technologies (Hesse, Sproull, Kiesler, and Walsh, 1993). Ehikhamenor (2003) aver that Nigerian academic scientists heavily dependent on printed information sources, especially journals, indexes and abstracts. The study reveals that 64.4 per cent of academic scientists sampled each had a computer while 50 per cent had access to and were using Internet facilities.

A study undertaken by Bruce (1995) suggests the Internet connectivity improved faculty collaboration and facilitated supervision of distance education and external research students. Bane and Milheim (1995) surveyed how academics have been using Internet services and resources. They note that 100 per cent of the United States' universities are connected to the Internet. Academics were among the first set of people to participate in Internet activities. Summers (1995) emphasises the importance of the Internet as a learning tool, saying it provides easy and quick access to almost unlimited global information as well as easy and fast communication. Berman (1996) notes that discussion groups on the Internet might be the best forum for information exchange. He observes that academics are the most represented part of the society within Internet discussion groups, as they have greater access to the Information Superhighway through university settings.

In addition, Barjak (2005) claims that information retrieval from electronic journals and full-text databases correlate positively with the number of journal articles, conference presentations, and reports published. Searching on peers' Websites was associated with the number of working papers and conference presentations published. Thus, those scientists who used electronic resources published more journal articles and other reports than their peers who did not use Internet-based tools as much. Vakkari (2008) explored how the use of electronic information resources has influenced scholars' opinion and its effect on publication productivity. Similarly, Kumar and Kumar (2008) examined the perception and use of e-resources and the Internet by the engineering, medical and management academics in Bangalore City, India. The results of the studies show that the students and faculty, who participated in this survey, are aware of e-sources and the Internet. Even though the majority of the academic community uses information sources for their academic-related work, most of them prefer print to electronic

information sources. The study further revealed that many of the students and faculty learnt about the electronic information sources either by trial and error or through the advice of friends.

The study carried out by Idiodi (2005) reveals that, despite the advent of information and communication technology in Nigerian universities, and automation of library systems, very few users have the capability to use information technology effectively in the libraries. He concludes a high level of computer illiteracy among librarians is one of the major factors militating against promoting higher level of information literacy of library users. Kinengyere (2006) examined the effect of IL on the usage of electronic information resources in academic and research institutions in Uganda. The paper reports that availability of information does not necessarily mean actual use. The study shows that some of the available resources had not been utilized at all. This means that the users were not aware of the availability of such resources. they did not know how to access them, or they do not know what the resources offer. All this calls for continued information literacy programmes. IL is very vital in influencing utilization of information resources. Information professionals are needed to pass on IL skills to library users. Library users too should endeavour to find out what information is available online for their consumption.

Dadzie (2005) conducted a study on the use of electronic resources by students and academic staff members of Ashesi University, Ghana, in order to determine the level of use, the type of information accessed, and the effectiveness of the library's communication tools for information research. The study found a high level of general computer usage for information access, and a high usage of some Internet resources, compared to a low use of scholarly databases. The low percentage was attributed to inadequate information about the existence of these library resources. The study recommends the introduction of information competency within the curriculum and introduction of computer courses to be taught at all levels and the provision of more personal computers.

Almquist (1992) claims that scientists use information technology in the subject identification, proposal development stages of research and to acquire familiarity with the literature outside their own specialties. The relationship of Internet usage to publishing productivity has also been studied directly (Cohen, 1996; Kaminer and Barunstein, 1998) and a

positive association has been found. Madhusudhan (2007) conducted a study on the Internet use by research scholars in University of Delhi and the results show that researchers, like others elsewhere, are beset with the problems of inadequate computers with Internet facilities, slow Internet connection, and lack of skills and training. The survey also reveals that 57 per cent of the respondents are facing retrieval problems. It also reports that some scholars lack research techniques and training. A national survey conducted by the Pew Internet and American Life Project, entitled "Information Searches that Solve Problems, found that 63% of those who used the Internet were successful in finding the information they needed, but only 57% of the users seeking information specifically about health-related matters were successful (Estabrook, Witt, and Rainie, 2007).

2.7   Measurement of academic staff members research output

Research productivity in Nigerian universities cannot be studied in isolation. One of the strategies for determining research productivity is to assess the quantity of publication which researchers communicated through primary or other sources. Research productivity and research activity are interrelated. Research involves collecting, analyzing data. Productivity means writing, reading and publication of research reports in professional refereed journals, displaying on the web or to making it known to the public through any other means, in shape of books, or making its presentation on the television or radio. According to Creswell (1986), research productivity include research publication in professional journals and in conference proceedings, writing a book or a chapter, gathering and analysing original evidence, working with postgraduate students on dissertations and class projects, obtaining research grants, carrying out editorial duties, obtaining patents and licences, writing monographs, developing experimental designs, producing works of an artistic or creative nature and engaging in public debates and commentaries.

Academic staff members conduct research and their productivity is measured in various ways. Academic institutions primarily measure research productivity based on published work, externally funded grants, and the number of citations the published work received (Middaugh, 2001; Porter & Umbach, 2001).The most common productivity measures look at publications that are submitted, accepted (in press), or published. The published works could be journal

articles (refereed and non-refereed), books (including edited books, textbooks), book chapters, monographs, conference papers, and research proposals written to receive external and internal grants (Middaugh, 2001).

Weidenborner (2007) argues that successful research activity is more than mere collection of information. It requires planning ahead, deciding which sources to consult, determining what kinds of notes to take, and determining how to put it all together into an effective paper. Research process involves three essential operations.

- Searching—You must search harder than most people do for a good topic, hardly can you find a topic merely by thinking about the matter. Then you must learn how to find the information you need, starting with the library's catalogue of sources.
- Reading –This operation involves more than understanding the materials you are reading; you must learn how to recognize what information is likely to be truly relevant to your research goals.
- Writing—Since you will be dealing with a great many ideas and pieces of information, most of which will have come from your sources, the ability to organize intelligently may count as much as, if not more than, a fine writing style. But that does not mean that style does not count (Weidenborner, 2007).

Karani (1997) notes that, in terms of quality and quantity of research output, Nigerian academics are rated the best in sub-Saharan Africa up to the late 1980s before it thereafter declined. Okebukola (2002) summarizes the factors which contributed to the decline between the late 1980s and 1996 before its subsequent collapse from 1997 to date. These factors include:

- Lack of research skills in modern methods;
- Lack of equipment for carrying out state-of-the art research;
- Overloaded teaching and administration schedules which leave little time for research;
- Difficulty in accessing research funds; and
- Diminishing ability of seasoned and senior researchers to mentor junior researchers owing to brain drain.

Uzun (2002) also observes a sharp decline in the research productivity of academics in terms of the number of articles published in Nigeria from 1980-1989 and 1990-1999 in an analysis of

21 core Nigerian Library and Information Science (LIS) journals indexed in Social Science Citation Index database. Aina and Mabawonku (1998) observe that Nigeria has the highest proportion of rejected papers in Africa out of the papers submitted to the African Journal of Library, Archives and Information Science (AJLAIS) for publication. While reporting on research productivity in developing countries, Arunachallam (1992) cited by Nwagwu (2007), opines that South Africa and Nigeria are the only two African countries whose scholarly works dominate developing countries' 13 per cent contributions in the 140,000 periodicals' titles listed in Ulrich's Directory of Science Serials. In Nigeria, there is no reliable local statistics about science production.

Ali (1990) cites the UNESCO Statistical Yearbook which reports that 55 titles are being published per one million readers in the developing world as against the 487 titles per one million readers in the developed world. World Education News and Review (2006) states that Nigerian academics' research output is relatively low. The report shows that, out of over 70 universities in the country as at the time of the study, only 20 were found to have performed creditably well in terms of academic research production. In fact, in 2005, Nigeria was ranked next to the least of the countries in the world with the evidence of scientific research (Agarin and Nwagwu, 2006).

A few studies have been conducted on the research productivity of academic staff members in Nigeria. Nwagwu (2006) carried out a bibliometric and documentation analysis of biomedical authors' literature in Nigeria between 1967 and 2002, using Lotka's law. Lotka predicates his analysis on the power of relation. The law is generally useful for understanding the productivity patterns of an author in a bibliography (Gupta, 1987). Nwagwu (2006) avers that only the co-author category differs from the inverse power of the law, while the other categories do not. In the same vein, Chiemeke, Longe, Longe and Shaib (2009) conducted an an empirical appraisal research on research output from Nigerian tertiary institutions and found out that publication remains a yardstick for promotion in the academia in Nigeria. Braimoh (1999) also reviews the role of African universities in national and continental developments. He emphasizes the significance of research and publication efforts among university lecturers in improving their

teaching and demonstrating their abilities to create and disseminate knowledge for so of solving societal problems.

Agboola and Oduwole, (2005) investigate publication output of Nigerian academic librarians. The study sought information on the status of the librarians, publication requirements for promotion, frequency of staff seminars, role of seminar secretaries, category of staff involved, order of presentation of papers, and comments on the role of staff seminars in enhancing staff publication output. They claim that out of the 34 academics in their subject area (Library Sciences) in Nigeria that responded, 2.94% had more than twenty publications, 8.82% had between ten and fifteen publications, 17.56% had between six and nine, 58.82% had between one and five publications, whilst 11.77% had no publications. These findings are in line those of Ramsden (1994) and Athey and Plotnicki (2000).

Most of the methods for measuring research productivity involve measuring the number of journal articles published. Research productivity has been mentioned in several studies relating to higher education. The most pervasive issue regarding the measurement of research productivity is the confusion of quantity of publications with quality of publications, either in the publications themselves or in the publication outlets (Lawrence and Green 1980). Print and Hattie (1997) highlight the value of publications as the most direct measure of research performance. These are ranked as follows: articles in refereed journals, commercially published peer reviewed books, major refereed conference presentations, paper in refereed conference proceedings, articles weighed by journal citation impact, chapters in commercially published peers refereed journals, competitive peer reviewed grants, postgraduate research degrees supervised to completion, and editor/editorial board of recognized journals. They categorise research productivity into three major groups - research grants, research students and publications over the past three years.

According to McGuire, Richman, Daly and Jorjani (1988) the debate over the most appropriate measure of productivity revolves around quantity and quality of research output. The most frequently used measure of the quantity of research productivity is a numerical publication count or the journal article count over a certain period of time. Rotten (1990) notes that a common approach to measuring research productivity is to count the number of books, articles,

technical reports, bulletins and book reviews published , presentations given, and grants received through reviewed curriculum vitae or other print materials.

Armstrong and Hubbard (1991) investigated whether a prolific research outcome will be useful to the scientific community. They claim that published papers are not useful unless they are read and applied. Due to numerous barriers to publication, they suggest that citations may be a better measure of scholarly productivity than publication counts. The most common approach is bibliometrics, a research method using quantitative analysis to measure research output and impact within or between a given subject or discipline (Macauley, Evans, Pearson   and Tregenza,   2005). Bibliometrics had been used as far back as 1917, but only gained popularity after the introduction of the Science Citation Index in 1961. The measurements of individual and departmental research accomplishments are often based, at least in part, on the number of publications produced over a specific period (Moed, Glänzel, and Schmoch, 2004).

Measuring institutional research outcomes with the use of bibliometric indicators is also an activity with a long tradition. The most commonly used measure of individual and departmental research productivity are the number of faculty publications in selected outlets, such   as academic journals, counts of   conference papers,   accredited journal publications; and books (Creamer, 1999; Perry, Clifton, Menec, Struthers, and Menges, 2000; and   Porter and Umbach, 2001). Weinberg (1989) identifies the three external criteria for measuring research output efficacy, viz: technological   merit,   social   merit   and   scientific merit.   He   explains   that technological merit measures the degree at which research advances technology. He views social merit as the degree at which the research helps to achieve various social goals, such as better health, better schools, better international relations; and scientific merit as the degree at which the research illuminates the neighbouring scientific fields on which the proposed research is embedded.

2.7.1. Demographic Variables

Demographic variables have generally been associated with research productivity. The following variables will be discussed: age, gender and marital status. Age has been studied in numerous works, with conflicting results. Many studies about productivity have indicated that the relationship between career publication and age is not linear, although the overall rate of

publication generally declines with age (Finkelstein, Seal and Schuster 1998; Teodorescu 2000). According to Over (1982), research productivity of academics slightly decreases with age. Bland and Berquist (1997) observe that the average productivity of academic member's drops with age but many senior academics remain active and that there is no significant evidence that age determines a drop in productivity. Teodorescu (2000) investigated faculty publication across 10 countries and discovered that age significantly influences research productivity in the United States. Kotrlik et al. (2001), in a study using a random sampling of 228 colleges' and universities' agricultural education academic members in the United States, found that age does not significantly affect research productivity, while Williams, Bartlett, Kotrlik, and Higgins (2001) found similar results among faculty members of United States Academy of Human Resource Development (AHRD).

Gender has been assessed in numerous studies, with mixed results. Blackburn, Bieber, Lawrence, and Trautvetter (1991) state that the relationship between gender and researcher productivity has been addressed in many studies. The findings are sometimes contradictory and sometimes show correlation. Many researchers insist that men have had higher levels of research productivity than women. Most results submit that female researchers are less productive than their male counterparts (Bartlett, Kotrlik, Higgins, and Williams, 2001). Smith, Anderson and Lovrich (1995), also assert that women are lagging behind men. However, some studies reveal that there is no difference in productivity as a result of gender (Teodorescu, 2000; Kotrlik et al. 2001 and Williams et al. 2001).

Gender difference in scientific productivity is another line of attention of researchers. Several studies have found that female scientists publish at lower rates than male scientists. Bassey et al (2007) report a higher level of research productivity by male faculty members. Other researchers have noted that female faculty members are lagging behind their more experienced male faculty members in research productivity (Riahinia and Azimi, 2008; Ogbogu, 2009); while Ogbogu (2009) categorically states that the relationship between gender and research productivity has been addressed in many studies, adding that little, if any, and sometimes, contradictory correlations have been found. Riahinia and Azimi (2008) also carried out a study which shows that that there is a significant relationship between female academics' use of the

Internet and their social ranking. The finding reveals that as users navigate through the Internet, they find more hidden threats and vague contents.

In a related study, Tuner and Mairesse (2003) analysed the impact of research productivity relative to age, gender and education of French physicists. They found out that there is a quadratic relation between the age of the scientists and the number of publications, with researchers' productivity increasing before 50 and then declining after 51. The results using citations are not significantly different from those obtained with publications. Finally, the results suggest that graduates from the French Grande Ecoles publish more, and that a woman publishes in average of almost 0.9 papers less than a man per year. Obibuaku (2005) views research productivity from monetary position. According to him, research entails a lot of efforts and it is capital intensive. He argues that if an academic staff member is to carry out a research with the purpose of publishing it in reputable journals outside the country, there is the need to have financial resources and laboratory equipment required to accomplish the purpose.

2.7.2. Professional variables

Vasil (1992) and Pfeffer and Langton (1993) argue that total years in the profession had a major impact on total research, but an insignificant effect on recent research productivity. Vasil (1992) and Teodorescu (2000) want academic rank to be a significant determinant of research productivity. Ramsden (1994) found seniority of academic ranks to be correlated with research performance. However, Williams et al. (2001) did not find ranks to be a significant decider of research productivity.

2.8. Theoretical Framework

A theoretical framework helps in making logical sense of the relationships of the variables and factors that have been deemed relevant to the problem (Hussey and Hussey 1997). In other words, it is a conceptual model of how the researcher makes logical sense of the relationships among the several factors that have been identified as important to the problem. This study examines information literacy skills and availability of information resources as determinants of research productivity ofacademics in Nigerian federal universities. The

theoretical framework discusses the interrelationships among the variables that are considered germane to this study.

2.8:1 Job Performance Theory (JPT)

The job performance theory was developed by Campbell (1990). The theory stated that core task proficiency, demonstrating effort, and the maintenance of personal discipline are components of every job. The models posit that the existences of core sets of performance dimensions which exist across a broad range of jobs are appealing for a number of reasons. Campbell defines performance as behavior. It is something done by the employee. This concept differentiates performance from outcomes. Outcomes are the result of an individual's performance, but they are also the result of other influences. In other words, there are more factors that determine outcomes than just an employee's behaviors and actions.

The difference between individual controlled action and outcomes is best conveyed through an example. Research productivity can be high or not, depending on the behavior of employees (academics). However, certain factors other than academics' behavior influence research productivity. In other words, effectiveness is the ratio of outputs to inputs—those inputs being level of information literacy skills and availability information resources, etc. Also, job performance theory suggested determinants of performance components. Individual differences on performance are a function of three main determinants: declarative knowledge, procedural knowledge and skill, and motivation (Campbell, 1990).

1. Declarative knowledge refers to knowledge about facts, principles, objects, etc. It represents the knowledge of a given task's requirements. For instance, declarative knowledge includes knowledge of principles, facts, ideas, etc.

2. The third predictor of performance is motivation, which refers to "a combined effect from three choice behaviors—choice to expend effort, choice of level of effort to expend, and choice to persist in the expenditure of that level of effort"

3. If declarative knowledge is knowing what to do, procedural knowledge and skill is knowing how to do it. For example, procedural knowledge and skill includes cognitive skill, perceptual skill, interpersonal skill, etc. (Campbell, 1990).

2.8.2. Information Seeking Behaviour Theories

Information theorists have critically reviewed the processes undertaken by people when they approach a system (a library, a database) for information resources. Ellis (1989) identified a list of characteristic actions within information seeking behavior and these are:

1. Starting

2. Browsing / chaining / monitoring

3. Differentiating

4. Extracting

5. Verifying

6. Ending

2.8.2.1.   Wilson's model of Information Seeking Behaviour

Wilson's (1981) model used Ellis' list as characteristics of information seeking behaviour, which he placed within the context of information need arising out of a situation (of the person's environment, social roles and individual characteristics). In his model, Wilson shows how the information need arises, the actual searching process for information and the testable information behaviour; for example, the information needs differ depending on the work roles or personal characteristics. Therefore, this model can be viewed a well-established theory (Wilson 1999). This model reflects the survey questions asked about how the academics' information need arises once an assessment task is given and how their searching method and behaviour differ depending on their personal characteristics. This is shown in Figure 2. 1.
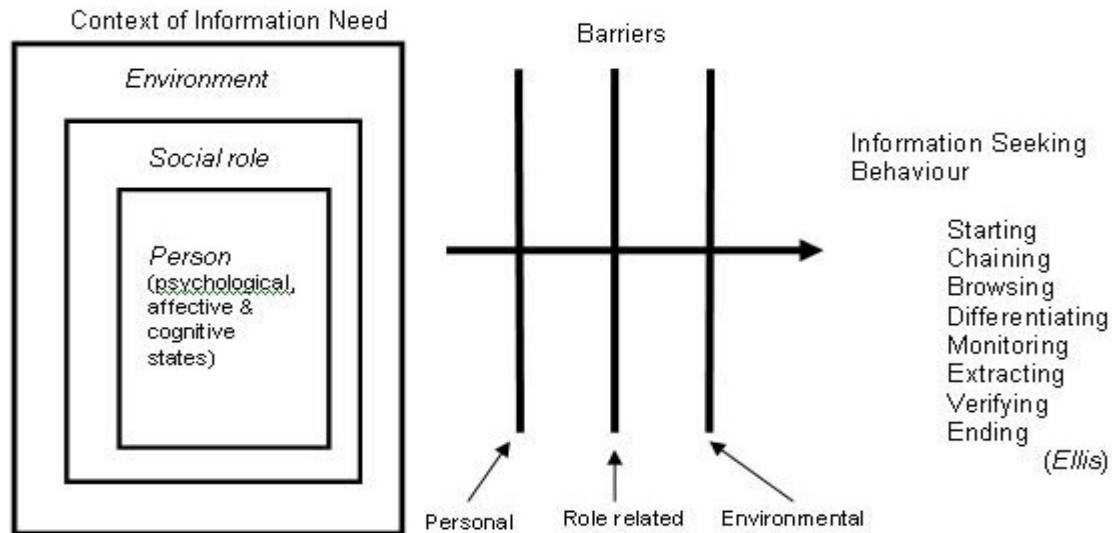
Figure 2.1 - Wilson's Model

2.8.2.2.   Kuhlthau's model of the Information Search Process (ISP)

The Information Search Process (ISP) presents a view of information seeking from the user's perspective in six stages: task initiation, selection, exploration, focus formulation, collection and presentation. Kuhlthau describes the experiences as "a series of thoughts, actions and feelings accompanying the information seeker" (Kuhlthau 2010). The process of information search usually starts with the feelings of uncertainty, vague, ambiguity, doubt and general thoughts of the problem area. Therefore, the information seeker takes action to collect relevant information to the general topic of the problem, then as the process progresses, the information seeker starts to collect more specific information that answers his/her specific questions in the problem area. The six stage model of the ISP incorporates three realms of experience: the affective (feelings) the cognitive (thoughts) and the physical (actions) common to each stage. The model of ISP describes the various experiences that the information seeker goes through from the early stages of the information search process, until the end. As presented in figure 2. 2.
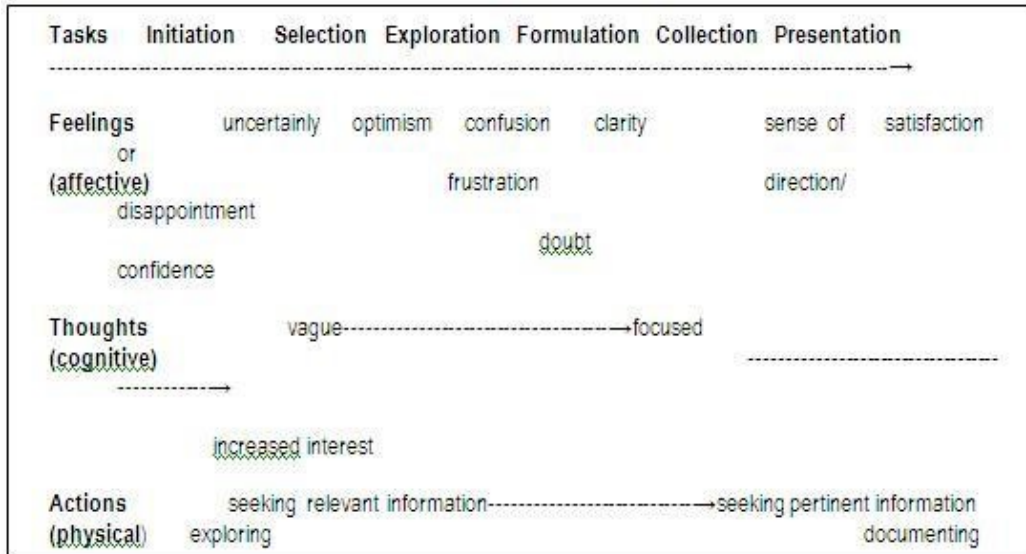
Figure 2 - Kuhlthau's Model

2.8.2.3.   The SCONUL Seven Pillars of Information Literacy: Core Model (1999)

In 1999, The Society of College, National and University Libraries (SCONUL) on Information Literacy published "Information skills in higher education: a SCONUL position paper" (SCONUL, 1999), introducing the Seven Pillars of Information Skills model. Therefore, to understand the influence of information literacy skills on academics' research productivity; there is the need for conceptual and theoretical abstractions for a clear and deeper comprehension of the utility of this study. The reason for this model is based on what information users (students, academics and others) experience in their daily information processes and use. Each skill is reviewed and compared with the stages of other information seeking behaviours models as they relate to effective use of available information resources.

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The model defines the core skills and competencies (ability) and attitudes and behaviours (understanding) at the heart of information literacy development in any organisation.
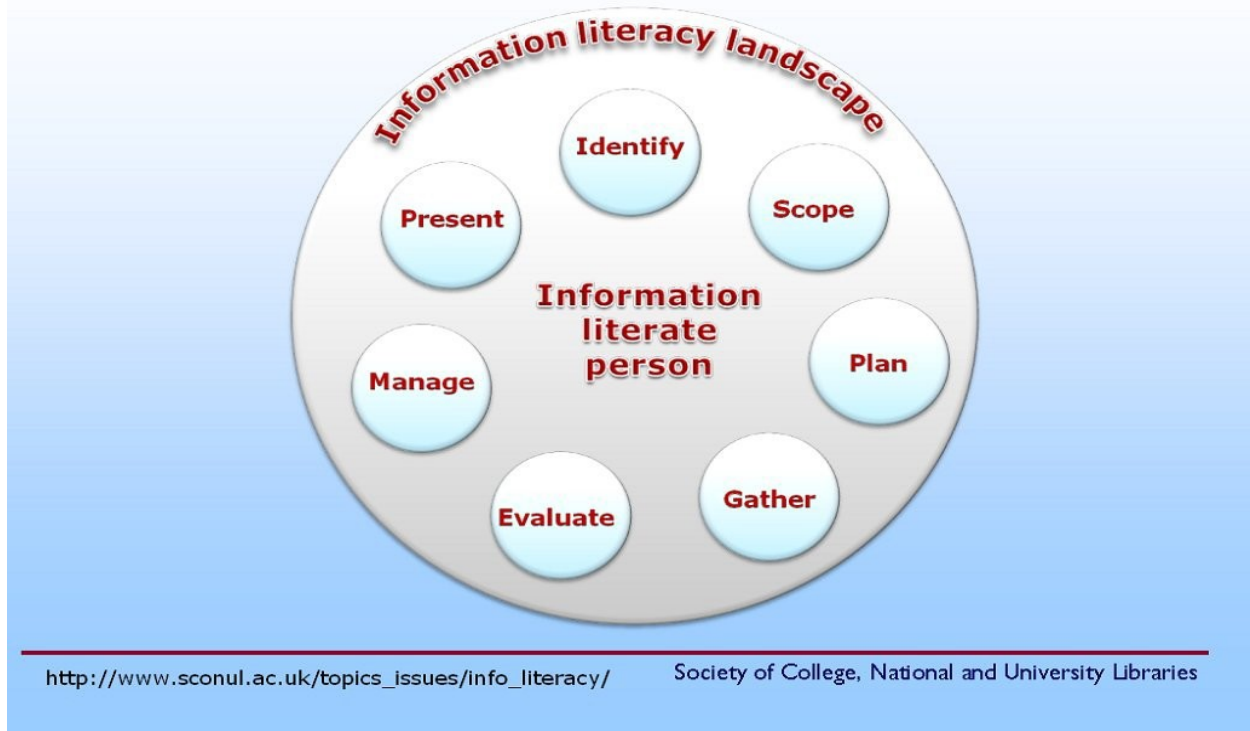
Figure 2.3

Each pillar is further described by a series of statements relating to a set of skills/competencies and a set of attitudes/understandings. It is expected that as a person becomes more information literate they will demonstrate more of the attributes in each pillar and so move towards the top of the pillar. The model is conceived as a three dimensional circular "building", founded on an information landscape which comprises the information world as it is perceived by an individual at that point in time.

On the ability to identify a need for information is a stage where a user is considered to be blank in terms information needs. Mostert (2004) describes the term 'need' as a fact of or feeling of the lack of something. According to Belkin (1980) cited by Kituyi-Kwake (2007), an information need is present when a gap, uncertainty or deficiency in a person's cognitive state is

recognised. Belkin notes that the deficiency prevents a person from making sense of the surrounding world and, to this end; it is described as "Anomalous State of Knowledge" (ASK). In his ASK model, Belkin outlines a framework for information retrieval (IR) that is centred on a system of communications. He asserts that the IR systems help people through knowledge that is communicated in a "human-human (text)" relationship. MacDonald and Darrow (2003) compare this stage to task definition in the Big6 skills, and initiation and selection in Kuhlthau's information-seeking process.

The Big6 skills (Eisenberg & Berkowitz, 1990) give the application stages of information literacy skills model. In this model, a user determines exactly what the problem is and the specific information needs related to the problem. In other words, the stage asks what information is needed in order to solve the problem at hand; it involves questioning. This relates to task initiation and selection by which an individual first becomes aware of a lack of knowledge to accomplish an assignment; feelings of uncertainty and apprehension ensue. At this stage, the task is to recognise a need for information. A person is determined to seek information in order to address the problem perceived by him. An information seeker, for instance, discusses with others, including peers and experts, and browses different sources to identify a research topic, or other information need. This leads the researcher to exploring general information resources to increase familiarity with the subject at hand. This involves brainstorming, discussing, thinking about possible topics and tolerating uncertainty. An information user then selects the topic for a research and need to weighing which subjects would best suit the information user's research interests.

The awareness that information is required to solve problems in the workplace is the first component of IL. This awareness of need is not a static capacity but one that needs to be applied to each and every situation as it arises. Of necessity academics choose to accept some information as given, while recognising that other claims need to be questioned and tested by seeking additional information or confirming the accuracy of that information supplied. In their model, Pappas and Tepe (2002) consider the ability to recognise a need for information stage as appreciation and enjoyment. Appreciation and enjoyment involve questioning the information need. Appreciation fosters curiosity and imagination, which lead to discovery in an information-

seeking activity. Academics and other information users go through the stages of information seeking by observing, browsing, listening, reading and sensing. The pre-focus exploration stage in Kuhlthau's Information Search Process Model also fits in this first stage of the Seven Pillars Model (SCONUL, 1991). The thoughts involve becoming informed about the general topic, identifying several possible focuses and inability to express the exact information needed.

The second step of information process in the Seven Pillars of Information Literacy Skills model entails scope of information. This means that user can assess current knowledge and identify gaps. Baker (2005) relates this stage to focus formulation in Kuhlthau's Information Search Process Model, formulating questions to guide research and plan for research production in Pitts and Strippling Research Process Model, and the pre-search stage in the Pathways to Knowledge model of Pappas and Tepe.

The Third stage is the ability to construct strategies for locating information skill model, which implies articulating information needs to match against information sources, developing a systematic method appropriate for the information need and understanding the principles of construction and generation of databases. According to Wilson (1999), it refers to chaining and browsing. Chaining could be forward or backward. According to him, forward chaining identifies and follows up on other sources that refer to an initial information source or document and it is less commonly used. Backward chaining, on the other hand, occurs when references from an initial information source are followed in their information seeking. This is where an individual simplifies browsing by looking through table of contents, lists of titles, subject headings, name of organisations or persons, abstracts and summaries, and so on. Browsing takes place in situations in which related information has been grouped together according to subject affinity, or when the user views displays at an exhibition, or scans a book on a shelf.

The fourth stage is the ability to gather information resources. By this an information user, irrespective of class, should be able to develop an appropriate searching technique, such as the use of the Boolean operators, communication and information technologies tools, appropriate indexing and abstracting services, citations indexes and databases, and to use current awareness methods to keep up to date. Other models that support these include the Big6 skills' location and access; find, analyse and evaluate resources in the Pills and Strippling Research Process Model,

information location in Kuhlthau's Information Search Process; and search in the Pathways to Knowledge model. Ojedokun (2007) refers to this stage as locating and accessing information. Belkin (1980) stressed further that problems arise whenever a person realizes that 'his or her state of knowledge' is not sufficient in quantity and quality to make decision or attain a certain goal. It is difficult for user to request for assistance. When an academic staff member realises that his/her state of knowledge is not sufficient to achieve his/her goal in terms of information literacy skill, seeking ways to solve the solution by seeking assistance.

The ability to compare and evaluate may ensure the information obtained from different sources, which is the fifth model connotes that information users should be aware of bias and authority issues. This skill is compared to evaluation in the Big6 skills model; search closure, in Kuhlthau' information Search Process, evaluating evidence and compiling bibliography in the Research Process Model; and interpretation in Pathways to Knowledge model. Eisenberg and Berkowitz (1990) observe that an information user assesses the quantity, quality, and relevance of the search results to determine whether alternative information access tools should be utilised. The information user summarises the main ideas extracted from the information gathered. He/she should be able to recognise the cultural, physical, or other context within which the information was created and should understand the impact of in context interpreting the information. The academics or researcher's thoughts are engrossed in identifying whether there is any need for additional information, increasing redundancy and exhausting resources.

In addition, the skill to organise, apply and communicate information to others hinge on academic's to cite bibliographic references in their research activities, construct a personal bibliographic system, apply information to the research at hand, communicate information effectively using the appropriate medium and to understand issues pertaining to copyright and plagiarism (SCONUL, 1999). In sharing knowledge, the searcher composes designs, edits, revises and uses the most effective medium, such as video, report, and animation, and conveys the information.

In addition, academics need to note security in both the print and electronic environments, identify and articulate issues in relation to free versus fee-based access to information identify and discuss issues in relation to censorship and freedom of speech; and

demonstrate an understanding of intellectual property, copyright and fair use of copyright materials. To avoid issues of plagiarism, the student should acknowledge the use of information sources by selecting an appropriate citation style in project reports and theses (Cidpeta, 2008).

Finally, the ability to synthesise and build upon existing information, contributes to the creation of new knowledge. In synthesising information, according to Eisenberg and Berkowitz (1990), the academic brings available information resources together, and chooses a communication medium and format that best supports the purposes of the product and the intended audience. He/she does these by writing a draft which links various pieces of information into a coherent piece and revises the draft a number of times for a better understanding before submitting it for publication.

The skills discussed in the model were used to investigate the academics' ability to handle various aspects of information such as using information resources ethically by writing citations and references in their research works, to determine whether academics are able to independently search and retrieve the information at their disposal. The competencies were also used to find out whether the academics under study have incorporated literacy skills in their research activities thereby affecting their research productivity. Therefore, for this study conceptual model was developed by the researcher, taking into cognizance the variables identified in the literature review and the theoretical framework.

2.9.   THEORETICAL FRAMEWORK

CONCEPTUAL MODEL

Independent variables	Dependent Variable

INFORMATION LITERACY SKILLS
- Recognizing information needs skill
- Information-seeking strategies skill
- Location and access skill
- Use of information skill
- Synthesis skill
- Evaluative skill
- Communicative skill

AVAILABILTY OF INFORMATION RESOURCES

RESEARCH PUBLICATIONS OUTPUT
- Textbooks
- Chapters in Books
- Co-authored textbooks
- Patent and certified invention
- Monographs
- Articles in learned journals
- Occasional papers
- Technical Reports
- Scientific peer-reviewed bulletin
- Working papers

Figure 2.4: Information literacy skills and availability of information in relation to academic research productivity

Fig 1 shows the conceptual framework for this study. The model indicates how the independent variables, that is, information literacy skills and availability of information resources interact to affect academics' research productivity in Nigerian Federal universities. Information literacy skills (recognizing information needs, information seeking strategies, location and access, use of information, synthesis and communication skills) and information availability is about information being accessible as needed, when needed, where needed. The objective of availability is to enable access to authorised information resources and without appropriate information literacy skills the available information resources maybe underutilised or not used at all. In other words, if information resources are available, academics with requisite

information literacy skills may use it for their research activities effortlessly, while those without information literacy skills may use or not use.

Information literacy skills and availability of information resources are independent variables while research productivity is the dependent variable. Research is not complete until the findings are disseminated. There are many outlets for disseminating finding and these are: seminar paper, conference paper, technical report, journal article, book, patent, etc. Publications are output of research and the most visible evidence. It is presumed that if academic staff members are information literate owing to acquired skill, there is a possibility that they will use available information resources at their disposal and these will influence their research productivity in terms of quality and quantity.

2.10   Appraisal of Literature Review

The literature explored the information literacy skills and availability of information resources through subheadings like concept of information literacy skills, information literacy skills acquisition and availability and use of information resources in academic environment, research productivity in Nigerian universities, use of information resources and academics research productivity and so on. The literature further points out that information literacy skill are required for effective use of available information resources. The literature further shows that skills can be acquired through formal or informal training.

Some previous studies have found that an information literate individual will contribute gainfully to his or her environment. In addition to giving models and standards, the review included the research done in the workplace context for conceptual understanding of information literacy. However, it is clear from this literature review that much research has not been conducted on the relationship between information resources availability, information literacy skills and academic research productivity. It was also revealed from the review that there is need for scholars in library science to conduct studies on information literacy skills, availability of information resources and research productivity of academics in Nigeria. Therefore, this work is necessary to fill the gap and to provide a reference point for future studies.

CHAPTER THREE

3.0   **RESEARCH METHODOLOGY**

3.1   Introduction

This chapter describes the research design, the study population, sample size and sampling procedure, research instruments, method of data collection and analysis.

3.2   Research Design

The study adopted the descriptive survey design of correlation type. A correlation study is a scientific investigation of the associations between variables. According to Akinsola (2005), correlation studies are used to quantify the magnitude of the relationship between variables being studied. Against this backdrop, the study establishes the relationship between information literacy skills, availability of information resources and research productivity of academics in Nigerian federal universities. This research design was selected because it allowed inference to be made from the results obtained from the field survey. The independent variables in this study are information literacy skills and availability of information resources while the dependent variable is research productivity of university academic staff.

3.3   Population of the study

The legitimate population of this study is all academic staff working in all the federal universities in Nigeria. As at 2009 when this study commenced, there were twenty seven federal universities spread across the six geo-political zones of Nigerian federation. The six geo-political zones are: North Central, North East, North West, South East, South West and South South (*NUC Bulletin,* 2009). Federal universities were chosen for the study because they are the largest government funded tertiary institution in Nigeria and so it is assumed that information resources are more likely to be available at these universities. The distribution of the population of the study is presented in Table 3.1.

TABLE 3. 1. Population of Study

S/N	GEO-POLITICAL ZONES	UNIVERSITIES	ACRONYM	ACADEMIC STAFF NO.
1.	North Central	University of llorin, llorin	UNILORIN	780
		University of Technology, Minna	FUTM	569
		University of Agriculture, Markurdi	MAKURDI	350
		University of Jos	UNIJOS	842
		University of Abuja	UNIABUJA	360
2.	North East	University of Maiduguri	UNIMAID	845
		Federal University of Technology, Yola	FUTY	340
		Abubakar Tafawa Balewa, Bauchi	ATBU	416
3.	North West	Nigerian Defence Academy, Kaduna	NDA	143
		Usman Danfodio University, Sokoto	UDU	467
		Ahmadu Bello University, Zaria	ABU	1125
		Bayero University, Kano	BUK	581
4.	South East	NnamdiAzikiwe University, Awka	NAU	756
		Michael Okpara University of Agriculture, Umudike	UMUDIKE	352
		University of Nigeria, Nsukka	UNN	1211
		Federal University of Technology, Owerri	FUTO	549
5.	South South	University of Calabar, Calabar	UNICAL	846
		University of Benin, Benin	UNIBEN	898
		University of PortHarcourt	UNIPORT	860
		University of Uyo, Uyo.	UNIUYO	912
		Fed. Univ. of Petroleum Resources, Effurun	FUPR	NA
6.	South West	Obafemi Awolowo University, Ile-Ife	OAU	1064
		University of Ibadan, Ibadan	U.I	1173
		Federal University of Technology, Akure	FUTA	442
		National Open University of Nigeria	NOUN	49
		University of Agriculture, Abeokuta	UNAB	295
		University of Lagos, Akoka, Lagos	UNILAG	1200
			TOTAL	17,425

Source: NUC Weekly Bulletin, vol.4. No 9. October, 2009. P. 9-10. (*With slight modification from solicited data from Records Units of selected Universities*)

3.4   Sampling technique and sample size

The study adopted a multi- stage sampling procedure. First, the universities were grouped into the existing six geo-political zones in Nigeria, namely, North West, North East, North Central, South South, South East, and South West. Secondly, two universities were randomly selected from each of the six geo-political zones. The selection resulted in twelve (12)

universities. The population of the study was ten thousand, five hundred and seventy-three (10,573) of only academic staff members who teach. Third, a sampling frame of 10% of academics in each of the universities was selected giving a total of one thousand and fifty-seven (1,057) an equivalent of 10% of the legitimate population. In order to generate the 10% the sample an average of 10% of the academics in each of the universities selected were sampled covering four faculties. The sample selected was considered adequate for generalization based on Nwana (1981), who affirmed that if a population is in many hundreds, one needs a sample size of 20%. But if a population is in few thousands, one needs a sample size of 10%, and for a population of several thousands, one needs a sample size of 5% or less. This is indicated in Table 3.2.

Table 3.2   Population Selected for the Study

Zones	No of Universities	No. of Uni. Selected	University	Population	Sample
North Central	6	2	University of Ilorin	780	78
			University of Jos	842	84
North East	3	2	University of Maiduguri	845	85
			Abubakar Tafawa Balewa, Bauchi	416	42
North West	4	2	Ahmadu Bello University, Zaria	1125	113
			Usman Danfodio University, Sokoto	467	47
South East	4	2	University of Nigeria, Nsukka	1211	121
			Nnamdi Azikiwe University, Akwa	756	76
South South	5	2	University of Port-Harcourt	898	90
			University of Benin, Benin	860	86
South West	5	2	University of Ibadan, Ibadan	1173	117
			University of Lagos, Akoka, Lago,	1200	120
	27	12	TOTAL	10, 573	1, 057

Four, the instrument was distributed equally among the four grouped faculties in the selected universities on the basis that they were available in all the selected universities. They are Arts/Humanities, Social Science, Education and Science. The selection of the respondents was

based on quota sampling of 10% of sample size as shown in Table 3.3.Finally, the accidental (availability) sampling technique was employed to select each of the respondents from the quota allotted to each of the faculties in the selected universities.

Table 3.3: Selection according to universities and faculties

Universities	Population	Faculties				Sample
		Humanities	Social Sci.	Education	Science	
ABU	1125	28	28	28	28	112
ATBU	416	-	21	10	21	42
NAU	756	19	19	19	19	76
UDFU	467	12	12	12	12	48
UNIBEN	860	21	21	21	21	84
UI	1173	29	29	29	29	116
UNILORIN	780	19	19	19	19	76
UNIJOS	842	21	21	21	21	84
UNILAG	1200	30	30	30	30	120
UNIMAD	845	22	22	21	22	87
UNN	1211	30	30	30	30	120
UNIPORT	898	23	23	23	23	92
TOTAL	10, 573	254	275	263	275	1,057

ABU= Ahmadu Bello University,   ATBU= Abubakar Tafawa Balewa, Bauchi

NAU= Nnamdi Azikwe University,   UDFU= Usman Dan Fodio University

UNIBEN= University of Benin,   UI= University of Ibadan

UNILORIN= University of Ilorin,   UNIJOS= University of Jos

UNILAG= University of Lagos,   UNIMAD= University of Maiduguri

UNN= University of Nigeria,   UNIPORT= University of Portharcourt

N.B. Faculties in the selected university were grouped based on similarity with exception of ATBU that has no faculties of humanity.

3.5　　　Research Instrument

The instrument used to collect data for this study was a questionnaire tagged the Information Literacy Skills and Research Productivity of Academics (ILSRPQ). There are five sections in the questionnaire (Appendix A).

Section A elicited information on the background of the respondents, with items such as name of institution, designation, nature of job, experience, and gender.

Section B collected data on respondents' availability of information resources (AOIR). The section contained question on availability of information resources in university library and they were rated on a four point scale of available, readily available, very readily available and not available.

Section C was on information literacy skills acquisition (ILSA). This section contained question on acquisition of information literacy skills. There was a question on whether respondents' institutions libraries organized information literacy training with the option of Yes or No; and if Yes, how frequent. Also, respondents were asked to indicate if they considered information literacy training necessary with the option of Yes or No. In addition, respondents were to indicate how they acquire basic information literacy skills.

Section D investigated respondents' information literacy skills for research productivity (ILSRP). This section was adapted from the Information Literacy Skills (ILS) developed by Kurbanoglu, Akkoyunlu and Umay (2004). The ILS was adapted to suit the study. The main categories of information literacy skills were measured, namely: a. Ability to recognise a need for information resources; b. Ability to identify potential sources of information; c. Ability to construct strategies for locating information; d. Ability to organise, apply and communicate information appropriately; e. Ability to locate and access information; f. Ability to synthesize & build on existing information; and g. Ability to compare and evaluate information obtained from different sources. These were rated on a four-point scale of strongly agree, agree, disagree, and strongly disagree.

Section E collected data on research productivity of academic (RPOA). The section contained question on factors that influence research productivity. This had a four-point scale of strongly

agree, agree, disagree, strongly disagree. Also, respondents were asked to indicate how information literacy skills had influenced their research output on a four-point scale of strongly agree, agree, disagree, strongly disagree. This section further elicited information on the respondent's number of research output within a period of three years based on listed items. Finally, there was a question on constraints faced by respondents when embarking on research activities. This was also rated on a four-point scale of strongly agree, agree, disagree, strongly disagree.

3.6   Validity and reliability of the instrument

To ensure content validity and reliability of the instrument, the questionnaire was given to the researcher's supervisor and some lecturers within and outside the Department of Library and Information Science for face validity. Thereafter, the instrument was corrected and pilot- tested with the administration of 30 copies of the questionnaire to some selected academics at the Lagos State University, Ojo Lagos. The research instrument was validated using the Cronbach Alpha Reliability Test. The scales for availability of information resources (AOIR) had the value of 0.69, information literacy skills acquisition (ILSA) had alpha coefficient of 0.83, information literacy skills for research productivity (ILSRP) had alpha coefficient of 0.92 and research productivity of academic (RPOA) had alpha coefficient of 0.91.

3.7   Data Collection Procedure

A letter of introduction from the researcher's department facilitated the distribution and collection of data. Copies of the questionnaire were personally administered to the academic staff members with one research assistant per selected university making twelve research assistants who were trained on the administration of the questionnaire. In all, one thousand and fifty-seven (1, 057) copies of the questionnaire were administered. The collection exercise lasted for five month (May – September, 2011).

3.8   Method of Data Analysis

The data gathered were analyzed using descriptive and inferential statistics. Correlation and multiple regression analysis were used because the study is a multivariate one that seeks to determine the influence and relative effects of the independent variables (information literacy skills and availability of information resources) on the dependent variable (research productivity). The research questions were analyzed using descriptive statistics, such as mean, standard deviations and variance, while the hypotheses were tested with Pearson Correlation Coefficient, Analysis of Variance (ANOVA) and multiple regression analysis at 0.05 level of significance.

CHAPTER FOUR

RESULTS AND DISCUSSION OF FINDINGS

4.0 Introduction

In this chapter, data collected were analysed, based on the objectives, research questions and hypotheses in respect of information literacy skills and availability of information resources as factors influencing research productivity of academic staff in Nigerian federal universities were presented and the results discussed. A total of 1,057 copies of the self- designed questionnaire were administered and a total of 873, which represented 83% of the total number of questionnaire returned were found usable for the analysis (Table 4.1).

4.1. Demographic profile of respondents

A breakdown of the number of respondents used for this study based on university and faculty is indicated in Table 4.2. The target population comprises of academic staff members who teach in Nigerian federal universities. Twelve universities were selected using the six geo-political zones in Nigeria. UNILAG had the highest number of respondents (116) when compared with other universities in the study. The oldest universities in Nigeria, UI had the second highest number of respondents (101) and UDFU had the lowest number of respondents (33). The number of respondents in the selected universities was highest for Faculties of Science. Out of the selected universities (i.e. ABU, ATBU, NAU, UDFU, UNIBEN, UI, UNILORIN, UNIJOS, UNILAG, UNIMAD, UNN and UNIPORT), ABU had the highest number of respondents from faculty of science representing 38.7% of the respondents from the university. And UDFU had lowest number of respondents from faculty of science with representing percentage of 24.2%, however; in UDFU number of respondents was highest for the Faculty of Humanities-Arts (33.3%) while in UNILAG the number of respondents from the four faculties listed in the study were the same (29, representing 25%). Also, across the universities used in this study except UNIMAD and UNILAG, faculty of education had the lowest number of respondents. Overall the total number of respondents from each faculty were 23.7% from Faculty

85

of Humanities, 24.4% from Faculty of Social Science, 19.5% from Faculty of Education and 32.4% were from Faculty of Science.

Table 4.1. Questionnaire distribution and response rate

University	Copies of questionnaire			Response Rate (%)
	Distributed	Returned	Usable	%
ABU	112	99	93	88
ATBU	42	41	35	83
NAU	76	73	64	84
UDFU	48	37	33	70
UNIBEN	84	81	73	85
UI	116	104	101	86
UNILORIN	76	71	69	88
UNIJOS	84	68	62	74
UNILAG	120	118	116	97
UNIMAD	87	79	70	82
UNN	120	103	96	80
UNIPORT	92	72	61	68
TOTAL	**1,057**	**946**	**873**	**83**

ABU= Ahmadu Bello University,   ATBU= Abubakar Tafawa Balewa, Bauchi

NAU= Nnamdi Azikwe University,   UDFU= Usman Dan Fodio University

UNIBEN= University of Benin,   UI= University of Ibadan

UNILORIN= University of Ilorin,   UNIJOS= University of Jos

UNILAG= University of Lagos,   UNIMAD= University of Maiduguri

UNN= University of Nigeria,   UNIPORT= University of Portharcourt

Table 4.2: Distribution of Respondents according to universities and faculties

University	Faculties				
	N %	N %	N %	N %	N %
	Humanities	Social Sci.	Education	Science	Total
ABU	20 (21.5%)	23 (24.7%)	14(15.1%)	36(38.7%)	93(10.7%)
ATBU	-	13 (37%)	7 (20%)	43 (100%)	35 (3.8%)
NAU	15 (23.4%)	18(18.1%)	10 (15.6%)	21(32.8%)	64 (7.3%)
UDFU	11 (33.3%)	8 (24.2%)	6 (18.2%)	8 (24.2%)	33 (3.8%)
UNIBEN	18 (24.7%)	18 (24.7%)	17 (23.3%)	20(27.4%)	73 (8.4%)
UI	26 (25.7%)	24 (23.8%)	23 (22.8%)	28(27.7%)	101 (11.6%)
UNILORIN	17 (24.6%)	17 (24.6%)	16 (23.2%)	19 (27.5%)	69 (7.9%)
UNIJOS	14(22.6%)	17 (27.4%)	11(17.7%)	20(32.3%)	62 (7.1%)
UNILAG	27(23.0%)	29(25.0%)	30(26.0%)	30 (26.0%)	116 (13.3%)
UNIMAD	16 (22.9%)	18 (25.7%)	16 (22.9%)	20(28.6%)	70 (8.0%)
UNN	24 (24.5%)	25 (25.5%)	20 (20.4%)	29 (29.6%)	98 (11.2%)
UNIPORT	17 (27.9%)	16 (26.2%)	8 (13.1%)	20 (32.8%)	61 (7.0%)
TOTAL	207(23.7%)	213(24.4%)	170(19.5%)	283(32.4%)	873(100%)

From the twelve (12) selected universities considered, senior lecturer had the highest respondents of 228 (26%) followed by lecturer I and II with response rate of 213 (24.3%) and 214 (24.4%) respectively. While assistant lecturer and professor/associate professor had a response rate of 101 (11.6%) and 87 (10%) respectively. (Table 4.3).

Table 4.3 Designation of the academic staff.

Designation	No	Percent (%)
Professor/Ass. Prof	87	10
Senior Lecturer	228	26
Lecturer I	212	24.3
Lecturer II	213	24.4
Assistant Lecturer	101	11.6
Graduate Assistant	32	3.7
Total	873	100

For the twelve universities studied, male respondents were higher than female respondents (Table 4.4). Overall, male respondents were 66.9% compared to 33.1% female respondents. Given that the distribution of the questionnaire at each university used in this study was random, the results indicate that a considerably higher number of male were employed in Nigeria federal universities. Across the universities, the proportion of male to female 73.8% to

26.2% for Faculty of Humanities- Arts, 64.3% to 35.7% for Social Sciences, 60.8% to 39.2% for Education and 66.8% to 33.2% for Science.

Table 4.4: Distribution of respondents according to gender

	Gender		
	Male	Female	Total
UNIVERSITY	**N %**	**N %**	**N %**
ABU	61 (65.6%)	32 (34.4%)	93(10.7%)
ATBU	21 (63.6%)	12 (36.4)	33 (3.8%)
NAU	42 (65.6%)	22 (34.4%)	64 (7.3%)
UDFU	23 (69.7%)	10 (30.3%)	33 (3.8%)
UNIBEN	43 (58.9%)	30 (41.1%)	73 (8.4%)
UI	75 (74.3%)	26 (25.7%)	101 (11.6%)
UNILORIN	45 (65.2%)	24 (34.8%)	69 (7.9%)
UNIJOS	42 (67.7%)	20 (32.3%)	62 (7.1%)
UNILAG	73 (62.9%)	43 (37.1%)	116 (13.3%)
UNIMAD	48 (68.6%)	22 (31.4%)	70 (8.0%)
UNN	71 (72.4%)	27 (27.6%)	98 (8.0%)
UNIPORT	40 (65.6%)	21 (34.4%)	61(11.2%)
TOTAL	584 (66.9%)	289 (33.1%)	873 (100%)

The educational qualification of the academic staff of federal universities in Nigeria based on the respondents used in this study was quite varied. PhD, M. Phil, Masters, PGD, and Bachelor degree were used to measure the level of education qualification of the respondents. Across the universities, the ratio of Ph.D holders were higher than others educational qualifications. Ph.D holders represent 51.3% of the respondents and those with other certificate had the lowest number of respondents (3, representing 0.3% of the respondents). Overall, 8.7% had M. Phil, 35.2% had Masters, 1.4% had PGD and 3.1% had Bachelor degree. This is presented in Table 4.5.

Table 4.5: Distribution of respondents according to educational qualification

University	N % PhD	N % M. Phil	N % Masters	N % PGD	N % Bachelor degree	N % Others	N % Total
ABU	35(37.6%)	2 (2.2%)	51(54.8%)	0 (0%)	5(4.4%)	0 (0%)	93
ATBU	18(54.5%)	1 (3%)	11(33.3%)	0(0%)	3 (9.1%)	0 (0%)	33
NAU	42(65.6%)	3 (4.7%)	14(21.9%)	4(6.3%)	1 (1.6%)	0 (0%)	64
UDFU	20(60.6%)	3 (9.1%)	10(30.3%)	0 (0%)	0 (0%)	0 (0%)	33
UNIBEN	42(57.5%)	5 (6.8%)	19(26.0%)	3(4.1%)	4(5.5%)	0 (0%)	73
UI	64(63.4%)	5 (5.0%)	27(26.7%)	0(0%)	3 (3%)	0 (0%)	101
UNILORIN	33(47.8%)	7(10.1%)	28(40.6%)	0 (0%)	1 (1.4%)	0 (0%)	69
UNIJOS	27(43.5%)	12(19.4%)	19(30.6%)	2 (3.2%)	2 (3.2%)	0 (0%)	63
UNILAG	51(44%)	13(11.2%)	50(43.1%)	1(0.9%)	1 (0.9%)	0 (0%)	116
UNIMAD	31(44.3%)	10(14.3%)	22(31.4%)	0 (0%)	7(10%)	0 (0%)	70
UNN	45(45.9%)	7(7.1%)	44(44.9%)	1(1.0%)	0 (0%)	1 (0%)	98
UNIPORT	40(65.6%)	8(13.1%)	12(19.7%)	1(1.6%)	0 (0%)	0 (0%)	61
TOTAL	448(51.3%)	76 (8.7%)	307(35.2%)	12(1.4%)	27(3.1%)	3(0.3%)	873

The experience of the academic staff members were measured by the years of service in the universities. And it was classified into 5 years interval groups. The years in service ranged from 1 to more than 30 years. Almost half of the respondents had worked for 1 to 5 years (287, representing 32.9%). The second highest number of respondents was those that had served for 6 to 10 representing 28.1% of the respondents. Across each of the university, years of experience of those had worked for 1 to 10 years was more than half of the respondents from each university except for ATBU. Only UI and UNILAG had respondents that had worked for over 30 years. As shown in Table 4.6.

Table 4.6: Distribution of respondents by Work experience

University	N % 1-5 years	N % 6-10 years	N % 11-15 years	N % 16-20 years	N % 21-25 years	N % 26-30 years	N % 31 years and above	N % Total
ABU	28 (30.1%)	46 (49.5%)	5 (5.4%)	8 (8.6%)	6 (6.5%)	0 (0%)	0 (0%)	93
ATBU	8 (24.2%)	8 (24.2%)	0 (0%)	9 (27.3%)	8 (24.2%)	0 (0%)	0 (0%)	33
NAU	24 (37.5%)	20 (31.3%)	16 (25.0%)	4 (6.3%)	0 (0%)	0 (0%)	0 (0%)	64
UDFU	6 (18.2%)	16 (48.5%)	6 (18.2%)	3 (9.1%)	2 (6.1%)	0 (0%)	0 (0%)	33
UNIBEN	18 (24.7%)	11 (15.1%)	18 (24.7%)	8 (11.0%)	16 (21.9%)	2 (2.7%)	0 (0%)	73
UI	31 (30.7%)	30 (29.7%)	19 (18.8%)	11 (10.9%)	3 (3.0%)	4 (4.0%)	3 (3.0%)	101
UNILORIN	26 (37.7%)	13 (18.8%)	5 (7.2%)	14 (20.3%)	8 (11.6%)	3 (4.3%)	0 (0%)	69
UNIJOS	15 (24.2%)	8 (12.9%)	9 (14.5%)	8 (12.9%)	18 (29%)	4 (6.5%)	0 (0%)	63
UNILAG	51 (44.0%)	32 (27.6%)	9 (7.8%)	12 (10.3%)	7 (6%)	2 (1.7%)	2 (1.7%)	116
UNIMAD	16 (22.9%)	17 (24.3%)	9 (12.9%)	12 (17.1%)	13 (18.6%)	3 (4.3%)	0 (0%)	70
UNN	41 (41.8%)	25 (25.5%)	14 (14.3%)	8 (8.2%)	2 (2.0%)	4 (4.1%)	4 (4.1%)	98
UNIPORT	23 (37.7%)	19 (31.1%)	2 (3.3%)	14 (23.0%)	3 (4.9%)	0 (0%)	0 (0%)	61
TOTAL	287 (32.9%)	245 (28.1%)	112 (12.8%)	111 (12.7%)	86 (9.9%)	22 (2.5%)	10 (1.1%)	873

4.2   Analysis of Research Questions

This section provides answers to the seven research questions in the study.

4.2.1 Research Question 1: What are the types of information resources available to academics in their university libraries?

In order to answer the first research question, the information resources available to academic staffs of Nigeria federal universities is defined by 14 components and they were measured with a scale of 4 items (1= Not available, 2= Available, 3= Readily available, 4= V. Readily available) in order to determine their level of availability. Descriptive statistics was used to analyse the data collected and the results are presented below in Table 4.7.

The overall result shows that books were mostly available in Nigerian federal universities with a mean scores of (M = 2.74), followed by journals (M=2.48) then the Internet (M=2.54), search engine (M=2.54), e-journals (M =2.14), e-books (M = 2.01), references sources (M=2.48) and OPAC (M = 2.14). CD-ROM had the lowest mean score of M=1.86. This implies CD-ROM databases were less available resources when compared to other information resources considered in for this study. Based on the analysis of the mean scores obtained it could be

deduced that journals, books, websites, search engines, e-journals, e-books and so on were the most available information resources to the academic staff members in Nigerian federal universities.

Table 4.7: Availability of information resources in Nigerian federal university libraries

S/N	Information Resources	Mean	Mode	Std. Deviation
1	Books	2.7468	2	0.8759
2	Journals	2.4822	2	0.8127
3	E-Book	2.0137	2	0.8984
4	E-Journals	2.1489	2	0.8925
5	OPAC	2.1489	2	0.9253
6	CD-ROM databases	1.8648	4	0.9873
7	Internet	2.5418	2	0.8599
8	References Sources	2.4868	2	0.8931
9	Electronic Databases	2.1604	2	0.8723
10	Search engines	2.5567	2	0.9482
11	Websites	2.4937	2	0.8701
12	Library catalogue	2.6804	2	0.9224
13	Photocopy	2.7068	2	0.9560
14	Newspaper/magazines	2.7537	2	0.9422

N = 873

4.2.1.1   Users opinion on availability of information resources by universities

The ranking of these information resources in terms of percentage of respondents affirmed that availability of information resources varied with universities. To most of the respondents from ABU on the basis of percentage, CD-ROM databases were readily available

when compared to other universities. However, the result from University of Jos (UNIJOS) indicated low availability since the universities had the lowest number of respondents indicating availability of CD-ROM databases when needed. Across the universities, the distribution of the respondents on percentage basis was nearly uniform across availability of E-books with respondents from University of Benin (UNIBEN) having highest percentage of 97.2% while respondents from University of Lagos (UNILAG) had the highest percentage E-Journals (94.8%) followed by ABU (92.5%) while UNIJOS had the lowest percentage (77.4%). The implication is that e-Journals were not always available to respondents from UNIJOS when needed.

On availability of electronic database, ATBU had the second highest number of respondents indicating that it was available in their institution library (32, representing 97.0% of respondents from ATBU). This result shows that Internet services and reference sources were readily available in all the twelve federal universities. UNIMAD had the highest number of respondents indicating that electronic databases were available for used in their institution, (97.1%) while NAU had the lowest number of respondents.

In each of the twelve universities used in this study, search engines were available for used. All the respondents indicated the availability of search engines in their institutions library except UNIJOS which had low percentage of 51.3%. UDFU had the highest number of respondents in availability of search engines and OPAC in their institution (28, representing 84.9%; 31 representing 93.8%), in line with this fact, the institution websites were readily available than other universities base on the percentage. However, UNIJOS had the lowest number of respondents on the availability of websites and OPAC in their institutions library for research activities.

Based on the responses of the respondents, Internet service was common and readily available resources in their institution for research activities with ATBU having the highest percentage of 94% and surprisingly, UNILAG and UNN had the lowest number of respondents when compared to other universities used in this study 77.6%. Also, all the respondents from ATBU indicated that reference sources were available for use in their research activities. This implies that in ATBU reference sources were easily attainable at any time since 100% of the respondents from the universities indicated its availability in the university. However, UNIBEN

had the lowest percentage of respondents' affirmation of availability of reference sources in their library with 69.8% of respondents.

With exception of ABU, other selected federal universities in this study indicated that books were available for use with UNIPORT having the highest percentage of 90.8%. The implication is that most of the academic staff of federal universities of Nigeria made use of books during the course of research. Similarly, respondents from UNIPORT also had the highest percentage in availability of Journals with 95.1% of the respondents from UNIPORT) and UNIJOS had the lowest percentage.

The library catalogue (LC) was readily available in ATBU when compared to other selected universities. This is because all respondents (100%) from ATBU indicated that LC was available in their institution library for research purpose. However, UNIJOS had the lowest number of respondents. The two least available information resources based on percentage were photocopy and newspaper/magazines. ATBU had the highest number of respondents indicating that photocopy was readily available in their institution library for research purpose with (97%) while UNILAG and UNIJOS had the lowest percentage (46.9%) each. Similarly, ATBU had the highest number of respondents indicating that newspaper/magazines were readily available in their institution library for research activities with 30 respondents representing 90.9% (Table 4.8).

Table.4.8: Availability of Information Resources in the Libraries

Information resources		N% ABU	N% ATBU	N% NAU	N% UDFU	N% UNIBEN	N% UI	N% UNILORIN	N% UNIJOS	N% UNILAG	N% UNIMAD	N% UNN	N% UNIPORT	N% TOTAL
Books	Avail Not avail	35(37.7%) 58(62.4%)	29(87.8%) 4(12.1%)	43(64.1%) 23(35.9%)	1(87.8%) 4(12.2%)	50(68.5%) 23(31.5%)	79(77.3%) 22(21.8%)	61(88.4%) 8(11.6%)	45(56.5%) 27(43.5%)	99(85.7%) 17(14.7%)	58 (82.9%) 42(17.1%)	68(69.3%) 30(30.6%)	4(90.8%) 6(9.8%)	639(73.2%) 234(26.8%)
Journals	Avail Not avail	86(92.5%) 7(7.5%)	54(84.9%) 5(15.2%)	51(79.7%) 13(20.3%)	31 (94%) 2 (6.1%)	53(72.7%) 20(27.4%)	88(87.1%) 13(12.9%)	65(94.2%) 4(5.8%)	36(58%) 26(41.9%)	108(93.1%) 8(6.9%)	60(85.5%) 10(14.3%)	80(81.6%) 18(18.4%)	58(95.1%) 3(4.9%)	744(85.2%) 129(14.8%)
E-books	Avail Not avail	87(93.5%) 6 (6.5%)	31(94.0%) 2(6.1%)	58(90.7%) 6(9.4%)	30(90.9%) 3(9.1%)	71(97.2%) 2(2.7%)	92(91.1%) 9 (8.9%)	63(91.3%) 6 (8.7%)	60 (96.7%) 2 (3.2%)	110(94.9%) 6 (5.2%)	63 (90.1%) 7 (10%)	80(81.6%) 18 (18.4%)	53 (86.8%) 8 (13.1%)	798(91.3%) 75 (8.6%)
E-journals	Avail Not avail	86(92.5%) 7 (7.5%)	31(94.0%). 2(6.0%)	57(89.1%) 7(10.9%)	30(90.9%) 3 (9.1%)	61(83.5%) 12(16.4%)	91(90.1%) 10(9.9%)	62(89.8%) 7(10.2%)	48(77.4%) 14(22.6%)	110(94.8%) 6(5.2%)	61(87.1%) 9 (12.9%)	88(89.8%) 10(10.2%)	81 (90.0%) 10 (10.0%)	776(88.8%) 97 (11.2%)
CD ROM databases	Avail Not avail	92(99.2%) 1(1.1%)	46(93.8%) 2(6.2%)	61(95.3%) 3(4.7%)	32(96.9%) 1(3.0%)	67(91.8%) 6(8.2%)	90(89.2%) 11(10.9%)	63(91.3%) 6(8.7%)	62(62.9%) 8(12.9%)	107(92.2%) 9(7.8%)	67(95.8%) 3(4.2%)	33 (82.7%) 17(17.3%)	61(85.2%) 9(14.8%)	797(91.3%) 76(8.7%)
Internet	Avail Not avail	79(80.7%) 18(19.3%)	31(94.0%) 2(6.0%)	90(82.9%) 11(17.2%)	29(87.9%) 4(12.1%)	53(72.6%) 20(27.4%)	84(83.2%) 17(16.8%)	64(92.7%) 5(7.2%)	35(46.4%) 27(43.5%)	90(77.6%) 26(22.4%)	58(82.8%) 12(17.1%)	76(77.6%) 22(22.4%)	56(91.8%) 5(8.2%)	704(80.7%) 169(19.3%)
Reference sources	Avail Not avail	87(93.5%) 6(6.5%)	33(100%) 0(0%)	49(76.7%) 15(23.4%)	31(94.0%) 2(6.1%)	51(69.8%) 22(30.2%)	92(91.2%) 9(8.9%)	65(94.2%) 4(5.8%)	35(56.5%) 27(43.5%)	6(91.4%) 10(8.6%)	58(82.9%) 12(17.1%)	78(79.6%) 20(20.4%)	57(93.4%) 4(6.6%)	742(84.8) 131(15.2%)
Electronics databases	Avail Not avail	77(82.8%) 16(17.2%)	32(97.0%) 1(3.0%)	52(71.2%) 12(18.8%)	30(90.9%) 3(9.1%)	66(90.3%) 7(9.6%)	90(89.2%) 11(10.9%)	62(89.9%) 7(10.1%)	57(91.9%) 5(8.1%)	107(92.3%) 9(7.8%)	68(97.1%) 2(2.9%)	88(89.8%) 10(10.2%)	45(73.8%) 16(26.2%)	774(88.7%) 99(11.3%)
Search engines (e.g. yahoo, google etc.)	Avail Not avail	71(76.2%) 22(23.7%)	28(84.9%) 5(15.1%)	51(79.7%) 13(20.3%)	31(94.0%) 2(6.1%)	55(75.3%) 18(24.7%)	78(77.2%) 23(22.8%)	62(89.8%) 7(10.1%)	38(51.3%) 24(38.7%)	98(84.5%) 18(15.5%)	61(87.1%) 9(12.9%)	75(76.5%) 23(23.5%)	45(73.7%) 16(26.2%)	693(79.4%) 180(20.6%)
Websites	Avail Not avail	75(80.6%) 18(19.4%)	28(69.7%) 5(15.2%)	60(93.8%) 4(6.3%)	32(97%) 1(3.0%)	48(65.7%) 25(34.2%)	82(81.9%) 19(18.8%)	65(94.2%) 4(5.8%)	33(53.2%) 29(46.8%)	101(87.1%) 15(12.9%)	5(84.3%) 11(15.7)	77(78.6%) 21(21.4%)	57(93.5%) 4(6.6%)	717(82.1%) 156(17.9%)
OPAC	Avail Not avail	86(92.5%) 7(7.5%)	25(75.8%) 8(254.2%)	60(93.8%) 4(6.3%)	32(96.9%) 1(3.0%)	61(83.5%) 12(16.4%)	88(87.2%) 13(12.9%)	62(89.8%) 7(10.2%)	47(75.8%) 15(24.2%)	104(89.7%) 12(10.3%)	63(90.0%) 7(10.0%)	80(81.6%) 18(18.4%)	55(90.2%) 6(9.8%)	763(87.4%) 110(12.6%)
LC	Avail Not avail	50(53.8%) 43(46.2%)	33(100%) 0(0%)	42(65.6%) 22(34.4%)	31(94.0%) 2(6.0%)	42(57.5%) 31(42.5%)	90(89.1%) 11(10.9%)	60(87.0%) 9(13.0%)	29(46.8%) 33(53.2%)	98(84.4%) 18(15.5%)	49(70.0%) 21(30.0%)	79(80.6%) 19(19.4%)	50(82.0%) 11(18.0%)	653(74.8%) 220(25.2%)
Photocopy	Avail Not avail	54(58.1%) 39(41.9%)	32(97%) 1(3.0%)	44(68.8%) 20(31.3%)	28(84.8%) 5(15.2%)	42(57.6%) 31(42.5%)	42(57.6%) 24(23.8%)	61(88.4%) 8(11.6%)	29(46.9%) 33(53.2%)	29(46.9%) 28(24.1%)	48(68.6%) 22(31.4%)	48(68.6%) 27(27.6%)	55(86.9%) 8(13.1%)	627(71.8%) 246(28.2%)
Newspaper/ magazine	Avail Not avail	49(52.7%) 44(47.3%)	30(90.9%) 3(9.1%)	42(65.6%) 22(34.4%)	28(84.8%) 5(15.2%)	42(57.5%) 31(42.5%)	81(80.2%) 20(19.8%)	58(84.1%) 11(15.9%)	28(45.2%) 34(54.8%)	91(78.5%) 25(21.6%)	91(68.5%) 25(21.6%)	77(74.5%) 22(31.4%)	49(80.3%) 12(19.7%)	619(70.9%) 254(29.1%)

4.2.2 Research Question 2: What method do academic staff members use to acquire information literacy skills?

The result in Table 4.9 shows that the academics in Nigerian universities acquired information literacy skills through attending workshops/seminars (N=853; 98%), self-taught (N=744; 85%), assistance from other colleagues (N=714; 82%), trial and error (N=645; 74%), guidance from library staff (N=1050; 73) and faculty/departmental training (N=610; 70%). Hence, it could be inferred that academic staff acquire information literacy skill mostly through attending workshops/seminars, self-taught, assistance from other colleagues, trial and error, guidance from library staff and faculty/departmental training, which was the least.

Table 4.9: Method of acquiring of information literacy skills in the universities

S/N	How do acquire information literacy skill?	Yes	No
1.	By trial and error	645 (97.8%)	19 (2.2%)
2.	Assistance from my colleagues	714 (81.8%)	159 (18.2%)
3.	Guidance from library staff	633 (72.5%)	240 (27.5%)
4.	Self-study (user's guide)	744 (85.2%)	129 (14.8%)
5.	Training offered by my faculty/department	610 (69.9%)	263 (30.1%)
6.	Formal education	873 (100%)	Nil
7.	Attending workshops/seminars	853 (97.7%)	20 (2.3%)
8.	Attending IT programme	853 (97.7%)	20 (2.3%)

N = 873

4.2.2.1 Method of Acquiring of Information Literacy Skills by universities and status

Further analysis shows that across the universities based on the status of the respondents, the professor and associate professor ranked self-study first as the method of acquiring ILS in this study. All professors and associate professors representing (100%) in each of the universities selected acquired ILS through self-study. Most of the senior lecturer and lecturer I in all the university used in this study acquired ILS through guidance from library staff while most of the lecturer II and below indicated trial and error except for those from ABU and NAU. The proportion of the total number of respondents that used trial and error across the universities were, 30.3% in ATBU, 17.2% in UDFU, 24.6% in UNIBEN, 43% in UI, 33.9% in UNIJOS, 58.6% in UNILAG, 21.4% in UNIMAD, 39.8% in UNN and 18.0% in UNIPORT. The

implication is that respondents prefer to acquire ILS through other ways listed than by trial and error or training offered by faculty/department (Appendix B).

4.2.3 Research Question 3:   What is the information literacy skill possessed by academic staff members in Nigerian universities?

Information literacy skills of the academics in the study was measured by seven components, namely: ability to recognise a need for information resources (Ability 1), ability to distinguish potential information resources (Ability 2), ability to construct strategies for locating information (Ability 3), ability to compare and evaluate information obtained from different sources (Ability 4), ability to locate and access information resources (Ability 5), ability to organise, apply and communicate information (Ability 6) and ability to synthesize and build on existing information (Ability 7). In order to determine the information literacy skill of the respondents, the mean scores on a scale of 1 to 4 for the items in each of the seven components were computed based on the institutions. A further detail of the descriptive statistics of all the items in this section is in Appendix C.

Table 4.10:   Information literacy skills

S/N	Information literacy skills	Mean	Mode	Std. D
1	Ability to recognise a need for information resources.	2.93	3	0.271
2	Ability to distinguish potential information resources.	3.14	4	0.425
3	Ability to construct strategies for locating information	2.85	2	0399
4	Ability to compare and evaluate information obtained from different sources.	2.98	3	0.467
5	Ability to locate and access information resources	3.01	3	0.463
6	Ability to organize, apply and communicate information	2.83	3	0.376
7	Ability to synthesize and build on existing information	2.98	3	0.383

N=873

As indicated in table 4.10 the response to information literacy skills shows that respondents with ability to distinguish potential information resources skill had the highest

number of mean score of 3.14. This is closely followed by respondents with ability to locate and access information resources (3.01), while respondents with ability to synthesize and build on existing information obtained from different sources have mean score of 2.98.

However, respondents with skills to organize, apply and communicate information have the lowest mean of 2.83. The finding, however, shows that the mean scores of each of the seven components tested under the information literacy skills is higher than the mid-point scores of 2.5 on a scale of five. Therefore academics in Nigerian federal universities possessed high information literacy skills based on the overall mean scores.

4.2.3.1   Information literacy skills according to respondents' universities and status

In order to determine the perceived information literacy skill of the respondents, the mean scores on a scale of 1 to 4 for the items in each of the seven components were computed based on universities and status. The mean scores for the ability to locate and access information resources ranged from 46.50 to 73.00. In this ability, Nnamdi Azikwe University academics had the lowest mean score, implying that they possessed the lowest level of ability to locate and access information compared to others while University of Jos had the highest mean score on ability to locate and access information (see Appendix D).

The grand mean score for ability to construct strategies for locating information was next highest (40.47). The mean scores of the universities in this ability was second highest and it ranged from 34.50 to 45.50 and professor/Associate professor from NAU had the lowest mean score of 34.50 in this ability, professor/Associate professor from UDFD had the highest mean score of 45.50. The third largest grand mean score was in the ability to distinguish potential information resources (M= 30.86) with professor/Associate professor from UNIJOS having high level of the ability more their other respondents (M= 35.00). However, Professor/Associate professor from UNILORIN had low mean of the ability to distinguish potential information resources (M=28.40).

The mean scores of the respondents in each of the universities on the ability to compare and evaluate information from different sources was low when compared to mean score in ability to locate and access information resources and ability to construct strategies for locating information. The grand mean score of the respondents in ability to compare and evaluate information obtained from different sources was 30.21. The mean scores ranged from 24.50 to

33.53. Professor/Associate professor from NAU had the lowest mean score in ability to compare and evaluate information obtained from different sources (24.50) while Professor/Associate professor ATBU had the highest mean score of 33.53.

The least ability possessed by the respondents based on their mean scores across the universities according to their status were ability to recognise a need for information resources with grand mean equal 20.50, ability to synthesize and build on existing information with grand mean score of 15.83 and ability to organise, apply and communicate information with a mean of 13.63. The mean score of ability to synthesize and build on existing information ranged from 13.00 to 18.00 while ability to organize, apply and communicate information ranged from 12.00 to 14.75 and ability to recognise a need for information resources ranged from 19.09 to 22.56.

Lecturer II and below from NAU had the lowest level of ability to recognise a need for information resources and Senior lecturer and lecturer II from UDFD had the highest level of ability to recognise a need for information resources. Professor/Associate professor from UNILORIN possessed low level of ability 6 while Senior lecturer and lecturer II from FUTY possessed highest level of ability 6. However, professor/Associate professor from NAU had the lowest level of ability to synthesize and build on existing information based on their mean score while Professor/Associate professor from UNIJOS had the highest level of this ability.

4.2.4 Research Question 4: What are the information literacy skills of academic staff members and their socio-demographic characteristics **(Gender, Designation, Highest Educational Qualification and Experience)?**

The result shows that female academic staff had more information literacy skills (34.20) more than their male counterparts (33.94). However, Senior lecturer in the Nigeria universities with a mean score of 33.94 exhibit more information literacy skills than their counterparts while Professors with a mean scores of 32.67 had the least information literacy among the academic staff of universities. However, the information literacy skills across the years of experience among the academic staff of the Nigeria universities were almost similar as shown in the Table 4.11 below. In addition, academic staff with P.hD and M.Phil degree with a mean scores of 34.10 and 34.55 respectively exhibit higher information literacy skills more than their counterparts.

Table 4.11: Information Literacy Skills of Academics & based on their Socio-Demographic Characteristics

Gender	Mean	Std. Dev
Male	33.94	3.88
Female	34.20	3.81
Qualification		
Professor	32.67	4.12
Assistant Professor	34.04	4.04
Senior Lecturer	33.94	3.76
Lecturer 1	34.34	3.95
Lecturer 11	33.92	3.95
Ass. Lecturer	34.11	3.41
Graduate Assistant	34.28	3.86
Years of Experience		
1-5yrs	34.30	3.88
6-10yrs	34.13	3.99
11-15yrs	33.75	3.75
16-20yrs	34.32	3.90
21-25yrs	32.72	3.48
26-30yrs	33.80	3.25
31yrs and Above	34.02	3.86
Qualification		
Ph.D	34.10	3.87
M.Phil	34.55	4.06
M.Sc	33.90	3.80
PGD	33.83	5.04
B.Sc	33.07	2.96
Others	32.67	5.50

4.2.5 Research Question 5: What is the level of research productivity of the academic staff?

In order to determine the level of research productivity of the respondents within a 3 years period (2007-2010), average score of their productivity was computed. In Nigeria, university regulations state that academic staff members are to be evaluated for promotion every three years. The result shows that six hundred (600) representing (65%) of the respondents had articles in learned journals. This result strongly confirms the culture of publish or perish that is a popular cliché among academics in Nigerian university settings. Five hundred and thirty-one representing (60.8%) had conference papers. Also, two hundred and thirty six (236) respondents

representing (27%) three hundred and twenty (320) respondents representing (36.7%), had chapters in books, while three hundred and twelve (312) representing (35.7%), had working papers. However, only sixty-four (64) respondents (7.3%) had patents, in terms of invention. What this means is that copyrighted inventions were low among academics in Nigeria.

Thus, the analysis establishes the fact that the research productivity of the academic staff in Nigerian federal universities is higher in journal publications, technical reports, conference papers, working papers and occasional papers. Furthermore, the research productivity of the academic staff in Nigerian federal universities is on the average in chapters in books, scientific peer-reviewed bulletins and patents. However, the research productivity of the academic staff in Nigerian federal universities is lower in textbook publications, monographs, patents and certified inventions. See Table 4.12.

Table 4.12: Research productivity of the academic staff within three-year period

S/N	Publication	Frequency N %	Mean	Median	Mode	Std. Dev.
1.	Textbooks	236 (27.0%)	1.94	2.00	1.00	1.51
2.	Chapters in books	320 (36.7%)	3.56	2.00	1.00	2.92
3.	Co-authored textbooks	259 (29.7%)	2.23	2.00	1.00	1.65
4.	Patent & certified invention	73 (8.4%)	2.63	2.00	1.00	2.25
5.	Monographs	120 (13.8%)	2.93	2.00	1.00	2.62
6.	Occasional papers	301 (34.5%)	4.21	4.00	1.00	2.82
7.	Articles in learned journals	600 (68.7%)	4.99	5.00	2.00	2.30
8.	Technical reports	229 (26.2%)	4.26	4.00	8.00	3.18
9.	Scientific peer-reviewed	162 (18.6%)	3.33	2.00	2.00	2.65
10.	Conference papers	531 (60.8%)	4.79	4.00	4.00	3.51
11.	Patents	64 (7.3%)	3.18	3.00	1.00	2.60
12.	Working papers	312 (35.7%)	4.05	3.00	2.00	3.64

N=873

4.2.5.1 Research productivity of the academics by universities and status

The results indicated that professor/associate professor from ABU published the highest number of textbooks within the period of three years. This is because they had the highest mean score (M= 6.14) followed by senior lecturer and lecturer I from ATBU (M=5.00) while lecturer II and below published the lowest number of published textbooks within the three years period. The highest number of chapters of books published by the respondents within the period of three years was attained by the professor/associate professor from ABU, however across the remaining eleven universities senior lecturer and lecturer I and lecturer II and below published the highest

number of chapters in books. On number of co-authored books published, lecturer II and below had the highest mean scores (7.00) and thus they published the highest number of co-authored books among others; professor/associate professors from ABU had the second highest number of published co-authored books (M= 6.00) followed by UNIMAD (M=4.00) and UI were in fourth position with mean score of 3.33. The lowest mean score obtained for co-authored books was 1.00 indicating that some respondents were able to publish just one co-authored books within the period of three years.

The professors/associate professors from ABU had the highest mean score in the number of patent and certified invention published within the stated three years period. This implies that when compared to other respondents, they published the highest number of patent and certified invention. However, lecturer II and below from UI had mean score of 1.00 indicating that respondents were able to publish one patent and certified invention. On the number of monograph published by the respondents, professors/associate professors from UNILORIN had the highest mean score (M=9.00) indicating that they had highest number of monograph published within the three years period followed by those from ABU and ATBU with mean score of 7.00 each.

The results further indicated that out of the research productivity in this study, occasional papers, working papers and conference papers were most published publications by the respondents. This is because the respondents exhibited high mean scores across the universities and status. The proportion of their mean scores ranged from 1.00 to 10.00 for occasional papers, 2 to 10.29 for conference papers, 1.00 to 15.00 for working papers. Professor/associate professor from ATBU had the highest number of published working papers within the stated three years period. The highest number of patent published were by the professor/associate professor from ATBU (M= 10.000) and the lowest number published were by senior lecturer and lecturer I and Lecturer II and below across the universities. Based on the mean score obtained, technical reports were highly published by the respondents from ABU and ATBU. The mean score for ATBU ranged from 8.70 to 6.50, for ABU, it ranged from 3.00 to 9.14 and the highest mean for technical reports was 9.14, therefore, highest numbers of technical reports were published in ABU by the professors/associate professors.

On the basis of mean scores result, scientific peer-reviewed bulletin was also one of the most published publications by the respondents. The mean scores ranged from 1 to 10.00; with

lecturer II and below NAU having highest mean score of 10.00, indicating that they had the highest number of publications in scientific peer-reviewed bulletin and the lowest number of scientific peer-reviewed bulletin were published in UNIBEN, USFD, UNIJOS and UNN by lecturer II and below (M=1.00). Articles in learned journals were highly published by the respondents. The average mean scores obtained by the respondents across the universities ranged from 3.00 to 8.00. For details see Appendix E

2.4.6   Research Question 6: In what ways do information literacy skills influence research productivity of the academic staff members?

The study presents the influence of information literacy skills on research output of the academic staff members. The table reveals that the mode score is 3 for all of the variables. This implies that most of the respondents agreed with the statements in Table 4.13. From the study, it was found that 96% of the respondents indicated that ability to recognise a need for information and use of information resources have greatly influenced their research output with the highest mean score of 3.381, and 364, respectively, followed by 94.6% respondents, with a mean score of 3.351, who indicated that their ability to locate and access information has greatly influenced their research output. However, 77.4% respondents, with (M=2.978) agreed that knowledge of appropriate kinds of resources in both print and non-print had greatly influenced their research output. Also, 74% of the respondents, with (M=2.952), agreed that adequate training on use of information resources has significantly influenced their research output. Based on the results obtained, it could be inferred that information literacy skill has greatly influenced research output of the academic staff members. This result corresponds with the finding of information literacy skills of academics that have earlier been reported to be high.

Table 4.13: Influence of information literacy skills on research output

S/N	Statements	Strongly agree	Agree	Disagree	Strongly disagree	Mode	Mean	SD
1.	Ability to recognise a need for information has greatly influenced my research output.	384 44.0%	454 52.0%	19 2.2%	16 1.8%	3.00	3.381	0.624
2.	Knowledge of appropriate kinds of resources, both print and non-print has greatly influenced my research output.	218 25.1%	457 52.3%	159 18.2%	39 4.5%	3.00	2.978	0.782
3.	Use of information resources has greatly influenced my research output.	373 42.7%	465 53.3%	15 1.7%	20 2.3%	3.00	3.364	0.636
4.	Ability to locate and access information has greatly influenced my research output.	367 42.0%	459 52.6%	33 3.8%	14 1.6%	3.00	3.351	0.632
5.	Adequate training on use of information resources has significantly influenced my research output.	227 26.0%	416 47.7%	191 21.9%	39 4.5%	3.00	2.952	0.810
6.	Ability to synthesise and build upon existing information, has greatly influenced my publications output.	245 28.1%	444 50.9%	151 17.3%	33 3.8%	3.00	3.032	0.778
7.	Accessibility to information resources has greatly influenced my publications output.	295 33.8%	478 54.8%	72 8.2%	28 3.2%	3.00	3.191	0.716

N = 873

2.4.7 Research Question 7: What are the inhibitors to academics when embarking on research activities?

The study presents the constraints encountered by academic staff members when embarking on research activities. The result shows that one hundred and ninety-five (195) (22.3%) respondents agreed that they found it difficult to locate information resources in their university library catalogues. However, five hundred and ninety-six (596) (68.3%) respondents agreed that uncooperative attitude of library personnel was not a constraint. Also, four hundred and three (403) constituting (46.2%) of the respondents disagreed that they lacked knowledge of search techniques to retrieve information effectively when embarking on research. In the same vein, four hundred and fifteen (415) of the respondents strongly disagreed that they retrieved records with low recall and low precision. These submissions on knowledge of searching skills and low recall and low precision are in agreement with the result on the perception of information literacy skills of academic staff in Nigeria federal universities which recorded a moderately high level.

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The major constraints encountered were low internet bandwidth and finance to carry out research with 76.2% and 68%, respectively indicating this. Therefore, based on the results obtained, it could be deduced that financial constraint and low bandwidth (slow connectivity) were major constraints encountered by academic staff members of Nigerian federal universities when embarking on a research activities (Table 4.14).

Table 4. 14: Inhibitor to research activities

S/N	Statements	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	Mode	Mean	SD
1.	I find it difficult to locate the most appropriate information resources in my university library catalogue	256 29.3%	373 42.7%	49 5.6%	195 22.3%	Nil	2.00	2.210	1.096
2.	Too much of information resources	228 26.1%	376 43.1%	89 10.2%	180 20.6%	Nil	2.00	2.253	1.064
3.	Lack of knowledge of search techniques to retrieve information effectively	224 25.7%	403 46.2%	54 6.2%	192 22.0%	Nil	2.00	2.245	1.067
4.	Uncooperative attitude of library personnel	199 22.8%	397 45.5%	157 18.0%	120 13.7%	Nil	2.00	2.227	0.950
5.	Financial constraint	97 11.1%	108 12.4%	74 8.5%	412 47.2%	182 20.8%	4.00	3.543	1.257
6.	Too much time necessary to retrieve the needed information	95 10.9%	399 45.7%	77 8.8%	245 28.1%	57 6.5%	2.00	2.737	1.169
7.	I retrieve records with low recall and low precision	106 12.1%	309 35.4%	210 24.1%	191 21.9%	57 6.5%	2.00	2.753	1.122
8.	Low bandwidth (slow internet connectivity)	58 6.6%	83 9.5%	102 11.7%	370 42.4%	260 29.8%	4.00	3.792	1.162

4.3.: Hypotheses Testing

This section presents the results of the testing of the null hypotheses formulated for the research work. Three null hypotheses were formulated and tested at 0.05 level of significance. The results are presented in sequence below.

4.3.1   Hypothesis 1: There is no significant relationship between information literacy skills and research productivity of academic staff in Nigerian federal universities.

In order to test the relationship between information literacy skills and academics research productivity a sum of the mean scores of the seven components of information literacy skills was computed and correlated with the twelve (12) items in research productivity.

The test of the hypothesis therefore revealed that there was a significant positive relationship between information literacy skills (ILS) and research productivity of academic staff

members. The result on Table 4.15 shows a Pearson Correlation Coefficient (r) is =.473; df = 871; (P<0.05) calculated, which revealed a significant relationship between information literacy skills and academics research productivity. Consequently the hypothesis which states that there is no significant relationship between information literacy skills and academics research productivity is rejected.

Table 4. 15: The relationship between information literacy skills and research productivity of the respondents

Variables	Mean	Std. Dev.	N	df	r	P	Remark
Information literacy skills	140.718	19.374	873	871	0.473	.000*	Significant.
Research productivity	40.9233	6.36215					

** Correlation is significant at the level of 0 .05 (2-tailed)

As a further test, Scheffe post hoc analysis was conducted, the table shows the summary of multiple regression of relationship of the seven components of information literacy skills on research productivity of academic staff (See Table 4.16, and Table 4.17). The seven components of information literacy skills were therefore relevant towards the determination of academic staff members' research productivity. The ANOVA source test in Table 4.17 revealed that the F-ratio for the regression is significant (F= 62.743; P< 0.05). This means that the R value of 0.581 is not due to chance.

Table 4.16: Summary of Multiple Regression of influence of the seven components of information literacy skills on research productivity of academic staff

R	R Square	Adjusted R Square	Std. Error Of the Estimate
0.581	0.337	0.332	5.290096

Table 4.17: ANOVA for the Regression of Research productivity

Source of Variance	Sum of Squares	Df	Mean Square	F	Sig
Regression	11897.632	5	1699.662	62.834	0.000*
Residual	23398.226	865	27.050		
Total	35295.858	872			

*Significant at p < 0.05

Further statistic shows the correlation matrix of each of the information literacy skills components to research productivity of the respondents. Table 4.18 shows that a significant and positive relationship exists between research productivity and ability to distinguish potential resources (r=0.45,p=0.00).Similarly, a significant and positive relationship exists between research productivity and ability to synthesize and build on existing information (r=0.370, p=0.00), ability to recognize a need for information resources (r= 0.324,p=0.00), ability to evaluate information obtained from different sources (r=0.44,p=0.00), ability to construct strategies for locating information   (r=0.26,p=0.00)and ability to organize apply and communicate information (r=0.192, p=0.00). Based on the overall result, the null hypothesis is hereby rejected. Therefore, there is a significant relationship between information literacy skills and research productivity of academic staff in Nigerian federal universities.

Table 4.18: Relative Contribution of Information Literary Skills to Research Productivity

	Research Productivity	Ability 1	Ability 2	Ability 3	Ability 4	Ability 5	Ability 6	Ability 7
Research Productivity	1.0	0.324 (0.00)	0.454 (0.00)	0.261 (0.00)	0.442 (0.00)	0.33 (0.00)	0.192 (0.00)	0.37 (0.00)
Ability 1		1.0	0.358 (0.00)	-0.025 (0.46)	0.168 (0.00)	0.150 (0.00)	0.188 0.00	0.126 (0.00)
Ability 2			1.0	0.411 (0.00)	0.565 (0.00)	0.436 (0.00)	0.445 (0.00)	0.481 (0.00)
Ability 3				1.0	0.515 (0.00)	0.612 (0.00)	0.454 (0.00)	0.290 (0.00)
Ability 4					1.0	0.440 (0.00)	0.348 (0.00)	0.373 (0.00)
Ability 5						1.0	0.525 (0.00)	0.538 (0.00)
Ability 6							1.0	0565 (0.00)
Ability 7								1.0

Key :

Ability 1: Ability to recognise a need for information resources

Ability 2: Ability to distinguish potential information resources

Ability 3: Ability to contruct strategies for locating information

Ability 4: Ability to evaluate information obtained from different sources

Ability 5: Ability to locate and access information resources

Ability 6: Ability to recognise apply and communicate information

Ability 7: Ability to synthesize and build on existing information

4.3.2   Hypothesis 2: There is no significant relationship between availability of information resources and research productivity of academic staff in Nigeria federal universities. To test this hypothesis, data collected on availability of information resources and research productivity was subjected to Pearson product moment correlation analysis.

The result is presented in table 4.19.

Table 4.19: Correlation between availability of information resources and research productivity of academic staff in Nigeria federal universities

Variables	Mean	Std. Dev.	N	Df	R	P	Remark
Availability of Information resources	27.454	8.665	873	871	0.047	0.162	Not Significant
Research Productivity	40.923	6.362					

Significant at p< .05

The study shows that there was no significant relationship between availability of information resources and research productivity of academic staff (r = 0.162, df =871, P> 0.05). This implies that there is no significant relationship between the two variables under consideration, availability of information resources does not necessarily determine research productivity. Since the relationship tested is not significant. The hypothesis was therefore accepted.

4.3.3   Hypothesis 3: There is no significant combined influence of information literacy skills and information resources availability on the research productivity of academic staff in Nigerian federal universities.

The result shows that there is a positive multiple relationship between information literacy skills possessed by academic staff members and information resources availability on research productivity (r=0.493). Hence, level of information literacy skills and information resources availability at academics' disposal could be used to determine research productivity. In addition, the adjusted R square value of 0.241 implies that 24.1% of the total variance in research

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productivity is accounted for by combined influence of information literacy skills and availability of information resources (see Table 4.20).

Table 4.21 tests for the significance of the R value. The ANOVA source test reveals that the F-ratio for the regression is significant (F=139.779; p<.05). The null hypothesis is hereby rejected. Therefore, there is significant interactive effect of information literacy skills possessed and availability of information resources on research productivity of academic staff in Nigerian federal universities (F=139.779; p<.05).

Table 4..20: Summary of Multiple Regressions of combined influence of information literacy skills and availability information resources on research productivity of academic staff

R	R Square	Adjusted R Square	Std. Error Of the Estimate
0.493	0.243	0.241	5.54111

Table 4.21: ANOVA for the Regression of information literacy skills possessed and availability information resources on research productivity

Source of Variance	Sum of Squares	Df	Mean Square	F	Sig
Regression	8583.493	2	4291.747	139.779	0.000*
Residual	26712.365	870	30.704		
Total	35295.858	872			

*Significant at p < .05

4.4. Discussion of Findings

The discussion section is organized in line with the major findings from the research questions and research hypotheses. Understanding and making the best use of the huge amount of information resources available is one of the key challenges facing today's users of information resources. The world is currently loaded with an abundance of information choices ranging from print, electronic, image, sound, visual, to numeric. The issue is no longer one of not having enough information; it is just the opposite—too much information, in various formats. The ability to act confidently (and not overwhelmed by information overload) is critical to academics research productivity success. Thus, this research explored the relationship between information literacy skills (ILS) and availability of information resources as factors influencing research productivity of academic staff in Nigerian universities.

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In this study, UNILAG had the highest number of respondents (116) when compared with other universities in the study. The oldest universities in Nigeria, UI had the second highest number of respondents (101) and Usman Dan Fodio University, Sokoto had the lowest number of respondents (33). The study revealed that male respondents were higher than female respondents. The overall result shows that male respondents were 66.9% compared to 33.1% female respondents.

4.4.1   Information resources available to academics in Nigerian federal universities

In all the universities studied, the level of availability of information resources was high. Journals, books, the Internet, websites, search engines, e-journals, e-books, reference sources and e-catalogues were readily available to academics. These information resources were available in different locations on their campuses, such as university libraries, offices and cybercafes. The number of the available information resources was found to be adequate, with the exception of CD-ROM databases. Across the universities selected, the distribution of the respondents on percentage basis was nearly uniform in terms of availability of books, e-books, e-journals, electronic database, search engines, OPAC, Internet service, reference sources, journals, library catalogue, photocopy and newspaper/magazines. This result of this study was lined with Sharma (2009), who identified library resources at Guru Gobind Singh Indraprastha University (India) to include journals, data archives, manuscripts, maps, books, magazines, theses, newspapers, e-mail, research reports, and bibliographic databases.

Ibrahim (2004) in his study on use and user perception of electronic resources in the United Arab Emirates University, grouped library websites as online catalogues, and online reference works, while Aramide and Bolarinwa (2010) list audio visual resources, instructional audio tapes, instructional video tapes, VCD/DVD, radio, television, multimedia projectors, e-resources-electronic databases, for example, JSTOR, ERIC, e-documents, Internet/e-mail facility, CD-ROMS, computers, telephone facility (GSM/Landline), VSAT, printers, and digital cameras as being available in Nigerian university libraries. Other studies carried out within Nigerian university libraries which were in lined with the findings of the study are Abolade (2000); Jagboro (2003); Oduwole and Akpati, (2003); Iyoro (2004); Ani and Ahiazu (2008); and Popoola and Haliso (2009).

Furthermore, the unavailability of CD-ROM databases, as reported in the finding, is at variance with some studies. Idowu and Mabawonku (1999), claim that 77% of university libraries in Nigeria had CD-ROM databases. Anasi (2005) asserts that some of the universities, like University of Ibadan, University of Ilorin, University of Jos, University of Lagos and Ahmadu Bello University, Zaria, subscribe to ISI (Institute for Scientific Information) and Silver Platter Ebscohost CD-ROM databases. Similarly, Obaje and Camble (2008) reported that CD-ROMs are mostly used for literature searches during project/dissertation and thesis writing as well as personal research by staff. However, based on these submissions, it could be inferred that most of the respondents were not aware of the existence of CD-ROM databases in their libraries. Hence, there is need for libraries to create awareness/enlightenment campaign programmes on availability of information resources in libraries.

The results on availability of information resources on research productivity further revealed that the respondents did better research because of availability of information resources with the highest mean (4.73769). This is in agreement with Abels, Liebscher, and Denman, (1996); and Eason, Richardson, and Yu (2000) who argued that availability of relevant information resources affects how frequently academic staff use them. The study revealed further that the respondents agreed that information resources needed are now online with the next highest mean value of 4.09 of the respondents. Also, 70% of the academic staff members agreed that it is not difficult to find the needed information while using online resources. These two results were in lined with information literacy skills models of SCONUL (1999) ACRL (2000), Kuhlthau's information search process (ISP) Model (1993) and ANZIIL (2004) on the ability of information users to recognise a need for information and extent of the information needed. Likewise, the study of Zhang (1998) on the use of electronic resources by academic staff at Rollins College in the United States found that 69% of the academics sampled used the online catalogue, while 53% used UMI's ProQuest direct online databases and other online resources for their research activities. In the same vein, Jagboro (2000) found that academic staff in Obafemi Awolowo University, Ile-Ife, Nigeria used subject catalogue in the library to locate and retrieve their needed information materials. Thus, the ability of academics to recognise and use online resources was in lined with this study.

In addition, on preference of print format to electronic format53.4% of the academic staff agreed that they preferred electronic information resources. But on the contrary, Salaam (2007)

in a study carried out on users' preference of journal format, print materials, CD-ROM or online, conducted at the University of Agriculture, Abeokuta; reported that the users preferred the CD-ROM databases and other online resources, to other media. The finding reveals further that 54.3% of the respondents disagreed that they had to rely on library assistants when searching electronic information resources. Thus, the perception of academic staff towards availability of information utilization in Nigerian universities libraries was very high. The finding of this work negates the study of Al-Daihani and Rehman (2007), which reported that Web search capabilities of respondent officers in Kuwait are generally weak.

4.4.2 Academic staff information literacy skills acquisition

The findings of this study reveal that 61% of the respondents claimed that their institution libraries did not organise information literacy skill training. This could be considered to be too high. Out of the 39% that reported that their libraries organised information literacy skill training, 26% stated that the training was done occasionally, 6.8% indicated that it was done annually; and 3.9% indicated that it was done quarterly. This result shows that most of the academic staff did not acquire information literacy skills through the training organized by their institution libraries. This finding is inconsistent with the position of Macgregor and McCulloch (2006) who reported in their finding that the goal of library training is to enable users' community to discriminate between useful and irrelevant information as well as engaging users with information management. In addition, the University of Auckland Academic Plan 2005-2007 (2004) canvassed that the university (library) aims are to provide its users with key, high-level generic skills like the capacity for lifelong critical, conceptual and reflective thinking, and attributes such as creativity and originality. Thus, it is the duty of library management to constantly organise information literacy skills programme in order to develop information literate users.

Furthermore, the findings show that 97.8% of the respondents were of the view that they acquire basic information literacy skills by trial and error and 81.8% through the help of their colleagues; and 85.5% through self-study. Also, with exception of UI, UNILAG and UNIJOS, self-study was ranked first in the remaining universities while across the twelve selected universities based on the status of the respondents, the professor/ associate professor ranked self-study first as the mode of acquiring ILS. This finding aligns with Okello-Obura and Magara

(2008), who reported that the majority of their respondents at Makerere University in Uganda learnt to access electronic resources and acquired database search skills through trial and error and self-taught.

Also, 73% of the respondents claimed that they acquired skills through the guidance of library staff. This view was at variance with Ojedokun and Lumande (2005) assertion that, information literacy skills acquisition has not been accorded its position in Nigerian tertiary institutions. However, it is in agreement with the study of Kumar and Kumar (2008) in the colleges of Bangalore City on the perception and use of e-resources and the Internet by the engineering, medical and management argued that many of the students and faculty learn about the electronic information sources use either by trial and error or through the advice of friends.

In the same vein, Ray and Day's (1998) study indicated that 78.7% of the students sampled acquired skills to use electronic resources through trial and error; 79% through guidance from others, while 54.2% received guidance from library staff. This result is discouraging because the academics teaching the skills to their other colleagues may not have an in-depth knowledge of what they are teaching. Also academics who were in the category of self-taught may not understand some applications and why they are designed so. However, the present findings show more similarities with those reported by Mookoh and Meadows (1998) in South Korean universities. They reported that academic staff members were having difficulty in using information technology due to lack of suitable training staff.

On acquisition of information literacy skill through formal education, all the respondents indicated the affirmative. Workshops/ seminars and IT programmes with 98% of the respondents were ways they acquired information literacy skills while 70% acquired information literacy skill through training offered by their departments/faculties. The finding is line with the study of Baniontye and Vaskevicene (2006), which reported that 90% of research libraries and 65% of public libraries in Lithuania provide regular formal training for their users.

4.4.3. Information literacy skills of academics

Based on the seven elements of information literacy skills model as hypothesised by Society of College, National & University Libraries (SCONUL) (1999) the level of the information literacy skills possessed by the academic staff members of federal universities in Nigeria is high. This is because academics sampled possessed high ability to recognize a need for

information resources, distinguish potential information resources, and could construct strategies for locating information among other things. The outcome of the level of information literacy skills among academics is in agreement with earlier position of Kurbanoglu, Akkoyunlu and Umay (2006) who reported that in any human society, the attainment of high level efficiency in one's profession is as important as possessing information literacy skills. The academic staff members in Nigerian federal universities did not fall short of this requirement as established in the finding of this study.

However, Adomi (2005) and Oduwole and Sowole (2006) identified problems in the adoption and use of ICT and e-resources in Nigeria. Their conclusion was based on lack of adequate ICT skills among academic staff and low basic information literacy levels in the Nigerian population. In addition, Boon, Johnston and Webber (2007) examined the conceptual understanding and the variation of experiencing information literacy among academics. They interviewed twenty English teaching academics of different universities across the UK. They reported lack of recognizing "information need" among the academics but affirmed high skills in other elements of information literacy skills. Also, Brodshow (2002) in a research titled "Internet researches: the method of using Internet for main and secondary researches", in which he shows that researchers/academics tend to reply to post questionnaires (print format) more than electronic questionnaires owing to low information literacy skills in information handling. In addition, Yasinian (2011), in his study on computer literacy in the Islamic Azad University reported that the computer literacy skill of Islamic Azad universities academic staff in Tehran province is less than average. The finding of this study negates the positions of Yaninian (2011) as reported in literature.

4.4.4. Influence of information literacy skill on academics' research productivity

Most of the respondents (96%) agreed that they possessed the skill to recognise a need for information and that their ability to use of information resources has greatly influenced their research output. This finding aligned with the study of Chandraiah, Reddy and Madhusudan (2011) who opined that academics are in the habit of using e-resources for their teaching and learning and also for research activities.

Also, the outcome shows that ability to locate and access information resources has greatly influenced the research output of academic staff members in Nigerian universities. This finding aligns with Idiodi (2005), who noted that ability to locate and access information will

enable users to succeed in an increasingly competitive work environment. The finding of this study further reveals that availability of information resources in the library and adequate training on use of information resources will significantly influence research output. However, this claim is contrary to Aguolu and Aguolu (2002) who noted that availability of an information source does not necessarily imply its accessibility and use, because the source may be available but access to it may be prevented for one reason or the other.

4.4.5   Socio-demographic variables of Academics and their information literacy skills

In this study, both mean scores and standard deviation statistical analyses indicated important findings with respect to the effects of socio-demographic variables of academic staff members on their perceptions about information literacy skills (ILS). The findings showed that socio-demographic variables play an important role in shaping ILS scores of academic staff members. Various studies conducted in different contexts were also focused on demographic variables (Stefl-Mabry, 2005; Ren, 1999; Kurbanoglu, 2003).

4.4.11. Level of research productivity of academics

The outcome of this study establishes that the research productivity of the academic staff in Nigerian federal universities, as influenced by availability of information resources and information literacy skills is higher in journal publications, technical reports, conference papers, working papers and occasional papers. These findings correspond with those of Ramsden (1994), Athey and Plotnicki (2000) and Agboola and Oduwole (2005). According to Ramsden (1994), who examined the requirements for promotion and evidence of individual and institutional excellence, the critical indicator of research productivity is publication in referred journals.

Athey and Plotnicki (2000) assert that many authors in the Information Technology field in the United States of America published between 11 and 23 articles during their five-year period of study. Furthermore, Agboola and Oduwole (2005) study on staff seminars and publications productivity reported that out of the thirty-four academics in their subject area (Library Sciences) in Nigeria, 2.94% had more than twenty publications, 8.82% had between ten and fifteen publications, 17.56% had between six and nine and 58.82% had between one and five publications during the years under review. This implies that academics in Nigerian universities are not slack in terms of knowledge communication.

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This finding is in agreement with Arunachallam (1992), cited by Nwagwu (2007), while reporting on research productivity in developing countries. He opines that South Africa and Nigeria are the only two African countries whose scholarly works dominate developing countries. According to him, 13% contributions in the 140,000 periodicals' titles listed in Ulrich's Directory of Science Serials are from South Africa and Nigeria. But Aina and Mabawonku, (1998) differ. According to them, Nigeria has the highest proportion of rejected papers in Africa out of numerous papers submitted to the African Journal of Library, Archives and Information Science (AJLAIS) for publication.

However, the research productivity of the academic staff in Nigerian federal universities is lower in textbooks publication, chapter in books, monographs, patent and certified inventions. The reasons for low productivity in these listed items may be due to finance and time constraints as indicated in problem faced by academics when embarking on research activities earlier in this study. In line with this, the acquisition record of University of Lagos library shows that 68% of the library collections of both books and serials were foreign collections.

4.4.12. Inhibition to academics when embarking on research activities

The finding of this study shows that 78% of the respondents affirmed that they have no problem in locating the most appropriate information resources in their university library catalogues. This is in support of Zhang (1998) study on the use of electronic resources by academic staff at Rollins College in the United States. In that study 69% of the academics sampled used the online catalogue comfortably.

This study further reveals that financial constraint with mean scores of 3.543 was major constraints encountered by the sampled academic staff members of Nigeria federal universities when embarking on research activities. This was in line with Obibuaku (2005) who views research productivity from monetary perspective. According to him, research entails a lot of efforts and it is capital intensive. He argued that if academic staff members are to carry out a research with the purpose of publishing it in reputable journals outside the country, there is the need to have financial resources. Similarly, Ehikhamenor (2002) carried out a study on Nigerian print media. He avers that even with the provision of ICT facilities, low income level would still hinder ICT use. But with the availability of research grants from both local and foreign donors, this has been adequately taken care of if only academics can take necessary steps to access them.

Also low bandwidth (slow connectivity) was reported by the respondent as a constraint with a mean score of 3.792. This corroborates Madhusudhan (2007), who conducted a study on Internet use by research scholars in University of Delhi. The results indicated that researchers at University of Delhi are beset with the problems of inadequate computers with Internet facilities, slow Internet connection. Finance and low bandwidth ought not to be a constraint to academic staff members in Nigerian universities with availability of research grants from both local and foreign bodies. Also, the development in ICT, especially in the provision fast Internet connectivity, as a result of various Internet service providers (ISP) in the country, such as MTN, GLO, Etisalat and others have taken care of slow connectivity in Nigeria.

4.4.13. Relationship between information literacy skills and research productivity of academics

The result of this hypothesis, using Pearson's Correlation Coefficient showed that the relationship between information literacy skills and research productivity of academic staff members of Nigerian federal universities is strong, positive and significant (r = 0.473., df =871: p< .05). This indicates that academics information literacy skills significantly correlate with academics' research productivity. The finding aligns with the study of Ani and Edem (2010) who reported that there exist high levels of information literacy skills possessed by academic staff members in the University of Calabar, Nigeria. The implication of this result is that ILS positively affects their research productivity. Vakkari (2008) explored how the use of electronic information resources has influenced scholars' opinion and its effect on publication productivity

4.4.14. Correlation of Availability of Information Resources and Research Productivity of academic staff

The finding of this study reveals that the relationship between availability of information and research productivity of academic staff members of Nigerian federal universities is positive but not significant (r = 0.162, df =871: p> .05). This shows that availability of information resources does not correlate significantly with research productivity. This result implies that, although there existed a relationship between the two variables under consideration, availability of information resources does not necessarily determine research productivity. This is in agreement with Kinengyere (2006), who opines that availability of information does not necessarily mean actual use.

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4.4.10 Combined influence of information literacy skills and availability of information resources on research productivity

The finding shows that there is a positive multiple combined relationship between information literacy skills possessed by academic staff members and availability information resources on research productivity (r=0.493). The regression table on level of information literacy skills possessed by academic staff members and information resources availability indicated that the R-value of 0.241 is significant, confirming that information literacy skills and information resources availability has a positive significant effect on research productivity of the respondents. This findings aligns with Kinengyere(2007), who conducted a study on the effect of information literacy on the utilization of electronic information resources in selected academic and research institutions in Uganda. The study reveals that information literacy skill is very vital in influencing utilization of available e-resources.

Similarly, Popoola (2000) argues that social scientists in Nigerian universities make use of the available library information resources and services, such as current awareness, photocopying, referencing, statistical data analysis, E-mail, selective dissemination of information and online database searching, in support of their research activities. According to him, these sources have contributed immensely to the research productivity of academic staff.

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter presents the summary of the findings of the study, implications of the research, contribution to knowledge, conclusion, recommendations, limitation of the study and suggestions for further research**.**

5.2.   Summary of findings

The study investigated the influence of ILS and availability of information resources as determinant of academics' research productivity in Nigerian federal universities. From the analysis of data and subsequent testing of the research hypotheses, the following findings and conclusion were reached:

1. Information resources were available in different locations such as university libraries, offices and cybercafés. The number of the available information resources is being adequate, with exception of CD-ROM databases.

2. Availability of information resources at the disposal of the academics in this study was found to be significant to research productivity of academics.

3. Information literacy skill acquisition was reported low in Nigerian academic libraries and, where there is ILS training, it comes up occasionally.

4. Academics acquired basic information literacy skills through attending workshops/seminars, trial and error, through the help of their colleagues, and through the guidance from library staff.

5. Academics possessed high information literacy skills, which include ability to recognise a need for information resources, distinguish potential information resources, construct strategies for locating information, compare and evaluate information obtained from different sources, locate and access information resources, organise, apply and communicate information, and ability to synthesize and build on existing information.

6. Academics carried out better research because of availability of information resources.

7. The academic staff members agreed that it was not difficult to find the needed information while using electronic information resources.

8. World Wide Web, books, journals, e-journals, search engines, and the Internet were the most available information resources frequently used by academics.

9. The skills to recognise a need for information and ability to use information resources had greatly influenced their research productivity of academics in Nigerian federal universities.

10. Ability to locate and access information resources had greatly influenced the research productivity of academic staff members in Nigerian universities.

11. Socio-demographic variables have significant contributed to academics' information literacy skills, although the mean scores vary.

12. Financial constraint and low bandwidth (slow connectivity) were major inhibitions to academic staff members of Nigerian federal universities when embarking on research activities.

13. Academics' research productivity was high in journal publications, technical reports, conference papers, working papers and occasional papers.

14. Research productivity of the academic staff in Nigeria federal universities was lower in textbook publications, chapters in books, monographs, patents and certified inventions.

15. The relationship between information literacy skills and research productivity of academic staff members of Nigerian federal universities was strong, positive and significant.

16. The relationship between availability of information and research productivity of academic staff members of Nigeria federal universities was positive but not significant.

17. There was significant combined influence of information literacy skills possessed and availability of information resources on research productivity of academic staff in Nigerian federal universities.

5.3   Implications of the research

Information literacy is considered an important element in educational and professional settings in particular, the academic environment. The result of this research study has raised some implications for implementation of information literacy skills programmes to improve quality and quantity of academics research productivity in Nigerian universities. Based on the findings of this study, it is clear that availability of information resources and information

literacy skills is central to academics' research productivity. Thus, academics should be encouraged to use available information resources. This can be done through constant and consistent information literacy skills training programmes by library managers. The study reveals the academics' ability to recognise a need for information resources; distinguish potential information resources; construct strategies for locating information, compare and evaluate information obtained from different sources; locate and access information resources; organise, apply and communicate information and synthesize and build on existing information resources as a contributing factor to research productivity.

The practical implications include various suggestions for library awareness, education and training programmes of academic staff members. The reported average ILS score was relatively high; however, the lowest ILS was reported in academics' designations and educational qualifications. This result implies that, in order for academics in these categories to feel confident about their information literacy skills, there is the need to constantly organise ILS training. The findings serve as an empirical evidence to justify the assumption that the research productivity of academic staff members in Nigerian universities will certainly improve if they are information literate and utilize relevant and up-to-date available information resources. The study highlights the dependence of academics' research productivity on ILS and utilisation of available information resources.

5.4   Conclusion

From the findings of this study, it could be concluded that Nigerian academics possess information literacy skills. They could recognize a need for information resources, distinguish, potential information and deploy the resources appropriately. The availability and accessibility of information resources aid research productivity of academics in Nigerian federal universities.

Besides, the research shows that Nigerian federal universities have information resources. The predominant ones are books, journals, e-journals, internet, electronic databases, and so on. The availability of these resources has positively influenced research productivity of Nigerian academics. Most of them have journal publications, technical reports, conference papers, working papers and occasional papers. However, not many of them have textbooks, chapters in books, monographs, patents and certified inventions. They encounter some challenges in the area

of low bandwidth. In the area of research productivity, insufficiency of funds to execute research activities poses a serious challenge to them.

5.5   Recommendations

Based on the findings of this study, the following recommendations were suggested.

1. There should be constant awareness programme in university libraries to inform academics on availability of information resources especially on e-resources.

2. There should be organized training of the staff in the libraries on the use of information resources so as to efficiently assist academics in accessing and retrieving information for research productivity.

3. University administrations should provide more computers with Internet access in their universities. The bandwidth for Internet connectivity should be increased to improve the speed of accessing information from the Internet.

4. Academics are always in need of updating their knowledge and research skills. Therefore, they need a computerized library system that is up-to-date and well equipped to enhance effective and efficient research productivity. Such progressive measures will assist them in developing a more robust research culture, resulting in the advancement of knowledge creation and dissemination.

5.6   Contributions of the study to knowledge

Hitherto, there were no research investigations that address information literacy skills of academics in Nigeria universities vis-a-vis availability of information resources as it relates to academics research productivity. This study fills this gap. Specifically, the study has provided the following in the literature of library and information science in these areas.

1. It has provided data on information literacy skills of academics in Nigerian federal universities. Now, stakeholders in tertiary education can find appropriate intervention strategies to address the areas that need urgent attention for improvement.

2. Nigerian academics can assess the general level of their information literacy skills through this study. This will assist them in taking steps to maintain and improve on their academic statuses.

3. This study has also shown the strengths and weaknesses of Nigerian academics in terms of their research output. It has shown where their productivity tilts to. Federal government through its agency such as Nigerian universities commission (NUC), universities governing council and other educational intervening agencies can use the findings of this study to adjust the imbalance.

4. Information regarding factors that influence research productivity of academic staff in universities is of interest to a large number of institutions that are currently dealing with ways to retain their academic status in the face of global university community challenges and this study has addressed that.

5. Through the findings of this research, librarians can assess their performance and put in place necessary measures that will enable academics to avail themselves of the services of university libraries.

5.7   Limitation of the Study

This research has some limitations that could impact the accuracy and validity of the study. The focus of this study is information literacy skills and information resources availability on research productivity of academic staff members in Nigeria federal universities. There are other forms of faculty productivity (teaching, scholarship, and service). However, this study examined only the research productivity of academics in relation to the influence of information literacy skills and information resources availability. One possible limitation of this study is that the participants might have presented their skills higher than normal. This is in the nature of human beings. Academic staff members might have reported their information skills higher and research productivity than normal because they might have thought that if they had reported lower information literacy skills and lower research productivity that would have implied negative image on their personalities. The tendency of the participants to answer in the desirable direction is also called social desirability bias (Fowler, 2002).

In addition, in relation to research productivity of academic staff members, this study is a self-reported measure of productivity. The number of their publication and other research activities reported were dependent on how much academic staff members could recall the number of their published works and other research activities within the last three years. They only reported the quantity of their published works not the quality. There was no way of

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verifying the number of publications. The number of published work by academic does not tell us about the quality of the published work (Layzell, 1999).

The response rate of the survey is another limitation of this study. Previous studies show that there is low response rate of surveys from African scholars (Teferra 2003). This study distributed the survey to academic staff members individually and not through heads of department. Academic staff members were visited more than two times to remind them to complete the survey. Despite these limitations, the empirical results of this study were theoretically consistent with the given combined conceptual models.

5.8   Suggestions for Further Research

The study cannot claim to be exhaustive as it did not cover all aspects of information literacy skills and availability of information resources on academics' research productivity in Nigerian federal universities. The following areas are therefore suggested for further research:

1. The influence of information literacy skills and availability of information resources on academics research productivity in state and private university is suggested for further study.
2. By applying a cross-sectional survey, the findings of this study give insights about respondents' information literacy skills at one point in time. The study can be replicated in the future and the results of the studies can be compared with these findings.
3. Information literacy process model was applied to only academics' research productivity. The model can be applied in more specific tasks in educational context by narrowing down the focus of the non-teaching staff, undergraduates and postgraduates.
4. An exploratory study of information literacy skills acquisition and use of information resources by rural academics' in Nigerian universities.
5. A study on factors inhibiting information resources availability, accessibility and use as predictors of academics' research productivity in Nigerian universities. Such a study would highlight in detail, some of the factors not unveiled by this study.

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DEPARTMENT OF LIBRARY, ARCHIVAL AND INFORMATION STUDIES, UNIVERSITY OF IBADAN

Dear Sir/Madam,

QUESTIONNAIRE ON INFORMATION LITERACY SKILLS AND RESEARCH PRODUCTIVITY OF ACADEMICS IN UNIVERSITIES

This questionnaire is designed to collect data for a doctoral degree study on the information literacy skills and research productivity of academics in Nigerian universities.

Kindly complete the questionnaire to enable me complete the study. All answers will be treated confidentially and used for educational purpose only. The anonymity of the respondent will also be guaranteed.

Thank you for your cooperation.

Yours sincerely,

O. C. Okiki

Research Student

SECTION A

DEMOGRAPHIC VARIABLES

1.   Name of your University:………………..………….……………..……….

2.   Faculty/ Department:………………………………………………

3.   Sex: (a) Male   (   )   (b) Female   (   )

4.   What is your designation?

(a) Professor   (   )   (b) Reader   (   )

(c) Senior Lecturer   (   )   (d) Lecturer I   (   )

(e) Lecturer II   (   )   (f) Assistant Lecturer (   )

(g) Graduate Assistant   (   )

5.   Nature of your job: (a) Full-time (   )   (b) Part-time (   )   (c) Contract (   )

6.   What is your highest educational qualification?

(a) PhD   (   )   (b) M. Phil   (   )   (c) Masters Degree   (   )

(d) PGD   (   )   (e) Bachelors Degree   (   ) (f) Others, Please Specify----------

7. How long have you been teaching/working in the University?

    a.   1 – 5 years   [ ]   b. 6 – 10 years [ ]   c.   11 – 15 years [ ]

    d.   11 – 20 years   [ ]   e. 21 – 25 years [ ]   f.   26 – 30 years   [ ]

    g.   31 years above   [ ]

SECTION B
AVAILABILITY OF INFORMATION RESOURCES (AOIR)

8. Please indicate the information resources available in your institution library or office for your research activities by ticking as appropriate.

S/N	Information Resources	Available	Readily Available	V. Readily Available	Not Available
9	Books				
10	Journals				
11	E-books				
12	E-journals				
13	CD-ROM databases				
14	Internet				
15	Reference sources				
16	Electronic Databases				
17	Search engines				
18	Websites				
19	Online Public Access Catalogue				
20	Library catalogue				
21	Newspapers/magazines				

SECTION C

INFORMATION LITERACY SKILLS ACQUISITION (QILSQ)

N.B: Information literacy skill is the ability to recognize needed information, locate, understand, evaluate and use needed data effectively

22. Does your institution library organize information literacy training on use of information resources for academic staff member?

    a.   YES   [   ]   b.   NO [   ]

23. If 'yes' how regularly?

    (a) Quarterly [   ] (b) Annually [   ]   (c) Biannually [   ] (d) Occasionally [   ]

24. Do you consider the training necessary?

    a.   YES   [   ]   b.   NO [   ]

How do you acquire basic Information literacy skills? (Kindly tick √ as many as applicable)

S/N	How do your acquire information literacy skills?	√
25	By trial and error	
26	Assistance from my colleagues	
27	Guidance from library staff	
28	Self-study (user's guide)	
29	Training offered by my faculty/department	
30	Training offered by my university library	
31	Formal education	
32	Attending workshops/seminars	
33	Attending IT programme	

SECTION D

Information literacy skills for research productivity scale (ILSRP)

This scale has been prepared to determine your level of information literacy skills in relation to your research activities. **The notations shall be referred to as SA = Strongly Agree, A = Agree, D = Disagree, and SD= Strongly Disagree.**

A. Ability to recognise a need for information resources.

	As an academic:	SA	A	D	SD
34	I understand the need to use information resources to undertake research				
35	I recognized a need for information and data to achieve a specific end.				
36	I cannot define my specific information resources needs.				
37	I can define concepts of a topic for a research presentation.				
38	I lack the needed skill to recognise appropriate reference sources.				
39	I can redefine/modify the information sought on basis of material found for a research activity.				
40	I am unable to manage time effectively when using information sources.				

B. Ability to distinguish potential information resources.

	As an academic:	SA	A	D	SD
41	My understanding of the use both print and electronic resources is low.				
42	I understand the characteristics of information resources: for example: primary, secondary, journal literature, print versus electronic.				
43	I can identify a variety of potential sources of information.				
44	I am able to select resources which 'best fit' my research task.				
45	My ability to select the most appropriate print and electronic sources for research activities is high.				
46	I am able to identify different formats in which information may be stored				
47	I lack the skill to identify which information sources will best meet my research need.				
48	I have ability to select a range of appropriate subject resources.				
49	My understanding of issues affecting accessibility of information sources is low.				
50	I can identify when information need has not been met				

C. Ability to construct strategies for locating information

	As an academic:	SA	A	D	SD
51	I have understanding of everyday search tools.				
52	My skill on the use appropriate search tools is low.				
53	I can initiate search strategies by using keywords and Boolean logic				
54	I have understanding of the library catalogue as a list of the institution's holdings.				
55	My understanding of the web as complex mix of free and fee based material is very low.				
56	I have understanding of limitations of web materials located by search engines.				
57	I am skillful enough to determine information gateways and how they differ from search engines.				
58	I can search information resources from databases by subject, language and date.				
59	I have understanding of the makeup of a database and an ability to transfer a subject into a keyword search				
60	My ability to select the most appropriate search tool, distinguishing between indexes, online databases, collections of online databases, and gateways is low.				
61	I have ability to choose a range of electronic databases, printed abstracts to undertake a research.				
62	I have the skill to choose a wide range of web search engines and search gateways to find material for a research				
63	My ability to choose a full range of print and electronic search tools to undertake a major research is low.				
64	I am able to articulate information need to match against information resources.				

D. Ability to compare and evaluate information obtained from different sources

	As an academic:	SA	A	D	SD
65	I can select, retrieve and summarize information resources to suite my research need.				
66	I am aware of currency, bias and authority of information resources.				
67	My understanding of concept of accuracy, relevance and comprehensiveness of information resources is relatively low.				
68	I understand the nature of information available on the internet.				
69	I can choose range of materials on topics, taking into account currency, bias, authority, accuracy, relevance and comprehensiveness.				
70	I have ability to sift information resources obtain from internet.				
71	I lack the ability to read, analyse and evaluate a wide range of materials.				
72	My awareness of peer review process of scholarly publishing is low.				
73	I possess critical skill in assessing a wide range of materials taking into account bias and other factors				
74	I can assess the quality, accuracy, relevance, bias, reputation and credibility of resources found.				

E. Ability to locate and access information resources

	As an academic:	SA	A	D	SD
75	I can decide where and how to find the information I need.				
76	I possess the requisite skill to use the university library catalogue to search for specific books.				
77	I lack the ability to navigate around the web using live links.				
78	I have ability to use keywords to search for material on a research topic.				
79	My ability to use a library catalogue to find specific books, journal titles or books on a subject is high.				
80	I have ability to use information gateways and search engines to locate material for an essay topic.				
81	I possess requisite skills to use databases and full-text services via				

		SA	A	D	SD
	OneLog to locate material for an essay topic.				
82	I do not know how to use the classification scheme system to locate print materials in the library.				
83	I lack the skill to use help screens to search for information.				
84	I have ability to use truncation and Boolean search techniques.				
85	My awareness and use of different levels of searching on databases is low.				
86	I can use controlled vocabulary.				
87	I have ability to limit searches by fields.				
88	I have ability to use variety of search engines.				
89	I have no understanding of interlibrary loan and access to other libraries				
90	I have ability to construct complex searches and search across a range of databases, using different user interfaces, redefining terms and repeating searches as required				
91	I lack the searching skill using comprehensive range of databases as well as many different user interfaces.				
92	I am able to use appropriate indexing and abstracting services, citation indexes and databases.				
93	I am able to use current awareness methods to keep up to date.				

F. Ability to organise, apply and communicate information

	As an academic:	SA	A	D	SD
94	I am unable cite bibliographic references in research reports				
95	I can apply information resources to the problem at hand				
96	I cannot construct a personal bibliographic system				
97	I can communicate effectively using appropriate medium				
98	My understanding issues of copyright and plagiarism is low.				

G. Ability to synthesize and build on existing information

	As an academic:	SA	A	D	SD
99	I do understand that existing information can be combined with original thought, experiment and analysis to produce new information				
100	I lack the needed skill to create new knowledge in a research.				
101	I can synthesize newly gathered information with previous information				
102	I have ability to reflect on problems encountered				
103	I am able to select appropriate publication and dissemination outlet in which to publish.				

SECTION E

RESEARCH PRODUCTIVITY OF ACADEMICS SCALE (RPOA)

Which of the following best describes your opinions of influence of information literacy skills on research output? **SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree**

S/N	Statements on influence of information literacy skills on research output	SA	A	D	SD
104	Ability to recognise a need for information has greatly influenced my research output.				
105	Knowledge of appropriate kinds of resources in both print and non-print has greatly influenced my research output.				
106	Use of information resources has greatly influenced my research output.				
107	Ability to locate and access information has greatly influenced my research output.				
109	Adequate training on use of information resources has significantly influenced my research output.				
110	Ability to synthesise and build upon existing information, has greatly influenced my publications output.				
111	Accessibility of information resources has greatly influenced my publications output.				

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Kindly rate your research publications within the period of 3 years (2007 – 2010)

S/N	Publication	No. of Publications from 2007-2010
112	Textbooks	
113	Chapters in books	
114	Co-authored textbooks	
115	Patent and certified invention	
116	Monographs	
117	Occasional papers	
118	Articles in learned journals	
119	Technical Reports	
120	Scientific peer-reviewed bulletin	
121	Conference papers.	
122	Patents	
123	Working papers	

What constraints do you face when embarking on research activities? **Where SD = Strongly Disagree, D=Disagree, NS= Not Sure, A = Agree, SA =Strongly Agree**

S/N	constraints faced when embarking on research activities	SD	D	NS	A	SA
124	I find it difficult to locating the most appropriate information resource in my university library catalogue.					
125	Too much of information resources					
126	Lack of knowledge of search techniques to retrieve information effectively					
127	Uncooperative attitude of library personnel					
128	Financial constraint					
129	Too much time necessary to retrieve the needed information					
130	I retrieve records with high recall and low precision					
131	Low bandwidth (slow internet connectivity)					

Thank you very much for taking time to complete this questionnaire.

Appendix C

Frequencies of level of information literacy skills of the academic staff

S/N	Items	Strongly agree	Agree	Disagree	Strongly disagree	Mean	Std. Dev.
	Ability to recognise a need for information resources						
1	I understand the need to use information resources to undertake research	713 81.7%	149 17.1%	10 1.1%	1 0.1%	1.20	0.43
2	I recognized a need for information and data to achieve a specific end	700 80.2%	141 16.2%	25 2.9%	7 0.8%	1.24	0.54
3	I cannot define my specific information resources needs	39 4.5%	85 9.7%	451 51.7%	298 34.1%	3.15	0.77
4	I can define concepts of a topic for a research presentation	553 63.3%	287 32.9%	20 2.3%	13 1.5%	1.42	0.62
5	I lack the needed skill to recognise appropriate reference sources	47 5.4%	107 12.3%	421 48.2%	298 34.1%	3.11	0.82
6	I can redefine/ modify the information sought on basis of material found for a research activity	437 50.1%	299 34.2%	135 15.5%	2 0.2%	1.66	0.74
7	I am unable to manage time effectively when using information sources	21 2.4%	282 33.4%	474 54.3%	86 9.9%	2.72	0.67
	Ability to distinguish potential information resources						
8	My understanding of the use both print and electronic resources is low	13 1.5%	116 13.3%	451 51.7%	293 33.6%	3.17	0.71
9	I understand the characteristics of information resources for example primary, secondary, journal literature, print versus electronic	526 60.3%	303 34.7%	35 4.0%	9 1.0%	1.46	0.63
10	I can identify a variety of potential sources of information	494 56.6%	338 38.7%	41 4.7%	-	1.48	0.59
11	I am able select resources which 'best fit' my research task.	578 66.2%	231 26.5%	35 4.0%	29 3.3%	1.44	0.73
12	My ability to select the most appropriate print and electronic sources for research activities is high	400 45.8%	328 37.6%	96 11.0%	49 5.6%	1.76	0.86
13	I am able to identify different formats in which information may be stored	445 51.0%	297 34.0%	79 9.0%	52 6.0%	1.70	0.87
14	I lack the skill to identify which information will best meet my research need	270 30.9%	117 13.4%	231 26.5%	255 29.2%	2.54	1.21
15	I have ability to select a range of appropriate subject resources	462 52.9%	357 40.9%	50 5.7%	4 0.5%	1.54	0.63
16	My understanding of issues affecting accessibility of information sources is low	156 17.9%	182 20.8%	396 45.4%	139 15.9%	2.59	0.96
17	I can identify when information has been met	515 59.0%	328 37.6%	28 3.2%	2 0.2%	1.45	0.58
	Ability to construct strategies for locating information						
18	I have understanding of everyday search tools	460 52.7%	320 36.7%	80 9.2%	13 1.5%	1.60	0.72
19	My skill on the use of appropriate search	65	197	384	227	2.89	0.88

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	tools is low.	7.4%	22.8%	44.0%	25.0%		
20	I can initiate search strategies by using keywords and Boolean logic	215 24.6%	459 52.6%	161 18.4%	38 4.4%	2.03	0.78
21	I have understanding of the library catalogue as a list of the institution's holdings	458 52.5%	240 27.5%	100 11.5%	75 8.6%	1.77	0.97
22	My understanding of the web as complex mix of free and fee based material is very low.	145 16.6%	232 26.6%	390 44.7%	106 12.1%	2.52	0.91
23	I have understanding of limitations of web materials located by search engines	349 40.0%	400 45.8%	85 9.7%	39 4.5%	1.79	0.80
24	I am skilful enough to determine information gateways and how they differ from search engines	336 38.5%	321 36.8%	153 17.5%	63 7.2%	1.93	0.92
25	I can search information resources from information databases by subject, language and date	375 43.0%	372 42.6%	126 14.4%	-	1.72	0.70
26	I have understanding of the makeup of a database and ability to transfer a subject into keyword search	310 35.5%	320 36.7%	231 26.5%	12 1.4%	1.94	0.82
27	My ability to select the most appropriate search tool, distinguishing between indexes, online databases, collections of online databases and gateways to find materials for a search	104 11.9%	464 53.2%	287 32.9%	18 2.1%	2.25	0.68
28	I have ability to choose a range of electronic databases, printed abstracts to undertake a research	192 22.0%	394 45.1%	277 31.7%	10 1.1%	2.12	0.76
29	I have the skill to choose a wide range of web search engines and search gateways to find materials for a research	274 31.4%	349 40.0%	245 28.1%	5 0.6%	1.98	0.79
30	My ability to choose a full range of print and electronic search tools to undertake a major research is low	92 10.5%	182 20.8%	373 42.7%	226 25.9%	2.84	0.93
31	I am able to articulate information need to match against information resources	263 32.4%	334 38.3%	74 8.5%	182 20.8%	2.18	1.10
Ability to compare and evaluate information obtained from different sources							
32	I can select, retrieve and summarize information resources to suite my research need	510 58.4%	335 38.4%	28 3.2%	-	1.45	0.56
33	I am aware of currency, bias and authority of information resources	436 49.9%	279 32.0%	151 17.3%	7 0.8%	1.69	0.78
34	My understanding of concepts of accuracy, relevance and comprehensiveness of information resources is relatively low	100 11.5%	286 32.8%	438 50.2%	49 5.6%	2.50	0.77
35	I understand the nature of information available on the internet	341 39.1%	474 54.3%	57 6.5%	1 0.1%	1.68	0.60
36	I can choose range of materials on topics, taking into account currency, bias, authority, accuracy, relevance and comprehensiveness	340 38.9%	355 40.7%	176 20.2%	2 0.2%	1.82	0.75
37	I have ability to sift information resources	225	474	125	49	2.00	0.79

#	Statement					Mean	SD
	obtain from internet	25.8%	54.3%	14.3%	5.6%		
38	I lack the ability to read, analyse and evaluate a wide range of materials	206 23.6%	136 15.6%	283 32.4%	248 28.4%	2.66	1.12
39	My awareness of peer review publishing is low	213 24.4%	192 22.0%	310 35.5%	158 18.1%	2.47	1.05
40	I possess critical skill in assessing a wide range of materials taking into account bias and other factors	273 31.3%	484 55.4%	90 10.3%	26 3.0%	1.85	0.72
41	I can assess the quality, accuracy, relevance, bias, reputation and credibility of resources found	360 41.2%	438 50.2%	66 7.6%	9 1.0%	1.68	0.66
	Ability to locate and access information resources						
42	I can decide where and how to find the information I need	571 65.4%	275 31.5%	21 2.4%	6 0.7%	1.38	0.57
43	I possess the requisite skill to use the university library catalogue to search for specific books	536 61.4%	256 29.3%	62 7.1%	19 2.2%	1.50	0.72
44	I lack the ability to navigate around the web using live links	175 20.0%	156 17.9%	464 53.2%	78 8.9%		
45	I have ability to use keywords to search for materials on a research topics	437 50.1%	358 41.0%	68 7.8%	10 1.1%	1.60	0.68
46	My ability to use a library catalogue to find specific books, journal titles or books on a subject is high	536 61.4%	221 25.3%	107 12.3%	9 1.0	1.53	0.75
47	I have ability to use information gateways and search engines to locate material for an essay topic	464 53.2%	348 39.9%	50 5.7%	11 1.3%	1.56	0.66
48	I possess requisite skill to use databases and full-text services via One Log to locate material for an essay	272 31.2%	386 44.2%	104 11.9%	111 12.7%	2.06	0.96
49	I do not know how to use the classification scheme system to locate print material in the library	104 11.9%	169 19.4%	281 32.2%	319 36.5%	2.93	1.01
50	I lack the skill to use help screens for information	292 33.4%	170 19.5%	337 38.6%	74 8.5%	2.22	1.00
51	I have the ability to use truncation and Boolean search techniques	239 27.4%	402 46.0%	168 19.2%	64 7.3%	1.60	0.68
52	My awareness and use of different levels of searching on databases is low	268 30.7%	242 27.7%	310 35.5%	53 6.1%	2.17	0.94
53	I can use controlled vocabulary	316 36.2%	431 49.4%	122 14.0%	4 0.5%	1.79	0.69
54	I have ability to limit searches by fields	321 36.8%	451 51.7%	93 10.7%	8 0.9%	1.75	0.67
55	I have ability to use variety of search engines	337 38.6%	432 48.5%	86 9.9%	27 3.1%	1.77	0.75
56	I have no understanding of interlibrary loan and access to other libraries	261 29.9%	228 26.1%	180 20.6%	204 23.4%	2.38	1.14
57	I have ability to construct complex searches and search across a range of databases, using different user interfaces, redefining terms and repeating searches as required	301 34.5%	340 38.9%	130 14.9%	102 11.7%	2.04	0.98
58	I lack the searching skill using	148	444	269	12	2.17	0.711

	comprehensive range of databases as well as many different user interfaces	17.0%	50.9%	30.8%	1.4%		
59	I am able to use appropriate indexing and abstracting services, citation indexes and databases	258 29.6%	425 48.7%	126 14.4%	64 7.3%	2.00	0.86
60	I am able to use current awareness methods to keep up to date	300 34.4%	456 52.2%	103 11.8%	14 1.6%	1.81	0.700
Ability to organise, apply and communicate information							
61	I am unable to cite bibliographic references in research reports	312 35.7%	144 16.5%	290 33.2%	127 14.5%	2.27	1.10
62	I can apply information resources to the problem at hand	367 42.0%	362 41.5%	110 12.6%	34 3.9%	1.78	0.81
63	I cannot construct a personal bibliographic system	89 10.2%	182 20.8%	365 41.8%	237 27.1%	2.86	0.93
64	I cannot communicate effectively using appropriate medium	417 47.8%	347 39.7%	96 11.0%	13 1.5%	1.66	0.73
65	My understanding issues of copyright and plagiarism is low	104 11.9%	165 18.9%	409 46.8%	195 22.3%	2.80	0.92
Ability to synthesize and build on existing information							
66	I do understand that existing information can be combined with original thought, experiment and analysis to produce new information	581 66.6%	228 26.1%	38 4.4%	26 3.0%	1.44	0.72
67	I lack the needed skill to create new knowledge in a research	19 2.2%	157 18.0%	583 66.8%	114 13.1%	2.91	0.62
68	I can synthesize newly gathered information with previous information	368 42.2%	459 52.6%	25 2.9%	21 2.4%	1.66	0.65
69	I have ability to reflect on problems encountered	422 48.3%	430 49.3%	17 1.9%	4 0.5%	1.55	0.56
70	I am able to select appropriate publication and dissemination outlet in which to publish	452 51.8%	328 37.6%	63 7.2%	30 3.4%	1.62	0.77