

**INFLUENCE, ACCESSIBILITY AND USE OF ELECTRONIC INFORMATION  
RESOURCES AS CORRELATE OF RESEARCH OUTPUT OF LIBRARIANS  
IN FEDERAL UNIVERSITIES IN NORTH CENTRAL NIGERIA**

**BY**

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## **ABSTRACT**

This study x-rayed the influence, accessibility and use of electronic information resources as correlate of research output of librarians in Federal Universities in North Central, Nigeria. Descriptive survey research methodology was adopted for this study, in which total enumeration of the entire population was used for the study. Thus, the entire sample population of the librarians in seven (7) Federal Universities in North Central Nigeria was used as the respondents for this study. A closed-ended questionnaire was used as the instruments for data collection. Descriptive statistics of mean, and standard deviation was adopted to analyse the research questions, while inferential statistics of Pearson Product Moment Correlation (PPMC) analysis was used to test the null hypotheses. The Findings of the study revealed that there was high level of availability, accessibility and use of electronic information resources among librarians in Federal Universities in North Central Nigeria. Furthermore, the result showed that librarians frequently used Internet, E-journal, E-book, Science direct, CD-ROM, and many more. Moreover, Librarians published mostly in professional journals, writing of monographs, writing of book or book chapters, conference proceedings. The major challenge faced by librarians in Federal Universities in the North Central, Nigeria, is lack of time due to library routine. This study concluded that most librarians in Federal Universities in North Central, Nigeria has access to electronic information resources but they do not maximise these resources for their research work. Hence this study recommended that the government at all levels should provide adequate budgetary allocation to enable these Universities involved provide efficient and effective electronic information resources to ensure greater research output. In addition, librarians' routine task should be minimised so that they can have time to embark on research activities using the electronic information resources.

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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.1 Background to the Study**

Research output of librarians is the extent to which librarians engage in their own research and publish articles in refereed journals, conference proceedings, writings of books or book chapters, producing works of artistic and creative nature, gathering and analysing original evidence as primary source, writing of monographs, developing experimental designs, engaging in public debate and commentaries, working with postgraduate students on dissertations and class projects, obtaining research grants, carrying out editorial duties, obtain patents and licenses in terms of inventions. The more research output is published in all formats, the probability of availability, accessibility and use of information is assured. According to Okato, ( 2011). Research output is a means through which librarians contribute new knowledge to the existing body of knowledge. Research output of librarians is worthy of focus as the quality and quantity of their publications are a determining factor in their performance evaluation.

Research output plays a major role in attaining success in the academia as it relates to promotion, tenure and salary of librarians. It has also been reported that the quality of research output by academia in any university system depends largely on the quality and quantity of information resources at their disposal. Powell (2010) maintains that research and publication help individuals to think critically and analytically. Librarians in academic libraries are considered as academic staff, so engaging in research has become an expected activity on their part. Despite the benefits of research output to librarians, they do not conduct enough research and publications.

Librarians when compared with other academic counterpart, record low publication output and this has affected the rate of promotion of many librarians. This may be due to lack of access to adequate electronic information resources, subscription to current journals, lack of time for research work due to the nature of their routine work, insufficient skills in research, poor training programme on research and erratic electric power supply, which may all lead to poor research output of the librarians. Oduwole & Ikhizama (2010) use the survey method to ascertain research output of librarians in Nigerian agricultural research institutes. They found out that the librarians' research output, although generally low, was related to their work routine.

Research provides a good platform for librarians to become successful academics. This is because research develops their knowledge and reinforces the skills needed for effective knowledge transfer. It also inspires librarians towards hard work, fills the gaps of previous research, and creates an opportunity for future research

Research output is one of the criteria that is used for the promotion of librarians in universities and other higher institutions of learning in Nigeria. Research output contributes towards image building for universities as well as ranking, it becomes highly necessary for universities to invest more on access to information resources especially electronic resources. Output is of primary concern to the management of every organisation, including university libraries. Thus, the need to accord high premium to the welfare of the employees have been the major preoccupation of management. Productivity is considered as an output of a staff on the job, measurable in terms of quality and quantity of job performed or done (Oduwole, 2009). The quality of research could be measured by counting the numbers of books published, or journal articles produced over a period of time.

Haridasan and Khan (2009) Maintained that electronic information resources refer to information bearing materials that provide access to users in a digital or in an electronic format. Electronic information resources also have been viewed as a resource in which information is stored electronically and accessed through electronic systems and networks. Electronic information resources have many functions and benefits which can be of immense use to librarians. Once a user is connected to the Internet such user can link up with any part of the world for whatever purpose the user has in mind, Okiki & Asiru, (2011) view electronic resources as the product of information communication technologies which are found relevant to aid librarians' performance and research process in the universities.

Electronic Information Resources has brought about innovation in librarianship where access to information is made possible to library users beyond the physical boundary of the university library. According to Pullinger (2012) the academic information environment has changed for both librarians and patrons, since most of the information resources are now available in electronic format, the electronic information resources have unprecedented contribution on library collections.

The availability of electronic information resources is very important as to the research output of librarians in Federal and other Universities, because it is perceived that when these resources are available, they contribute to greater research output of librarians and the development of the library at large. Hence, it appears that when electronic information resources are available, it may hamper the research output of librarians. This reason informed the need to examine the availability, accessibility and use of electronic information resources on research output of librarians in Federals Universities in North Central Nigeria. Oduwale and Akpati (2013) investigate the availability of electronic information resources at the University of Agriculture library, Markudi

Nigeria. The study revealed that most members of the University community attest to have availability of electronic information resources and it was easy to access and use to satisfy with their research outputs.

The accessibility of electronic information resources according to Nawe and Kiondo (2010) in a study reported that research quality had improved significantly with the accessibility to electronic information resources. Results of the study also revealed that the quality of teaching and learning had improved significantly as a result of information and communication technology (ICT) application in library operation. Foster *et al.* (2009) argue that inadequate access to electronic resources affect the publication outputs of Nigerian universities in international journals is reportedly low, and publication output is a major indicator of productivity; this implies that academic staff in Nigerian universities are not internationally productive.

Internet resources such as online databases, e-books, and e-journals were among the electronic information resources (IR) used for academic purposes. Other resources found to be used were CD-ROMs and OPAC (Online Public Access Catalogue), OARE, science direct and many others. Generally, literature has shown that there is a positive relationship between the availability, accessibility and use of electronic information resources and improvement in the quality and quantity of research output. Nawe and Kiondo (2009) in their study report that research quality had improved significantly with the availability, accessibility and use of electronic information resources. Results of the study also revealed that the quality of teaching and learning had improved significantly as a result of information and communication technology (ICT) application in library operation.

The accessibility to electronic information resources has immense benefit to librarians in Federal Universities in North Central Zone, Nigeria. Electronic information resources assist librarians to produce or publish a good research output which can be added to existing body of knowledge. Electronic information resources provide access according to various literature reviews and these can broaden the mind of librarians when embarking on research that lead to quality research output. The availability, accessibility and use of electronic information resources enhances librarians research output by providing various information needed for research. It also increases access to information materials that will be of immense benefit to librarians in their research work.

The use of electronic information resources and academic performance of university teachers by Sivathaasan and Velnampy (2013) they jointly indicate that usage of electronic information resources has a strong positive association with academic performance in higher institutions of learning. The finding shows that both faculty and students use and like electronic information resources and most readily adopt them if the sources are perceived as convenient, relevant, and time saving to their natural work flow.

Electronic information resources are in digitised format which requires the use of computers and internet connection. Accessibility and Use of these resources is influenced by various factors. However, because of the flexibility of electronic information resources, they have added advantage over print materials in research conduction. Thus, the ease with which electronic information resources is accessed and use needed information significantly to influence publication output of librarians and this in turn has great impact on the research output of librarians in Federal Universities in North Central Zone, Nigeria.

Despite the importance and advantages offered by electronic information resources Madukoma, Onuola and Ikonne (2014) identified a number of problems associated with accessibility and use of electronic information resources, these problems range from lack of or inadequate resources, mainly computers, poor internet connectivity, inappropriate usage of electronic information resources lack of appropriate skills in research among librarians. All these need to be empirically processed, that is why the researcher embarked on this research to see how availability, accessibility and use of electronic information resources could be correlated with research output among librarians in Federal Universities in North Central Zone, Nigeria.

## **1.2 Statement of the Problem**

Research output contributes towards image building for Universities as well as their ranking. Research output is a criterion that is used for promotion and tenure of librarians in Universities and other higher institutions of learning in Nigeria. However, it seems likely that librarians record low research output, this low research output, could be librarians' inability to access and use adequate electronic information resources or could it be that librarians are inadequately accessing and using these electronic information resources on their research output? Therefore, this study sought to examine the availability, accessibility and use of electronic information resources as correlates of research output of librarians in Federal Universities in North Central Zone, Nigeria.

## **1.3 Objective of the Study**

The main objective of this study is to investigate the availability, accessibility and use of electronic information resources towards research output of librarians in Federal Universities in North Central Zone, Nigeria. The specific objectives are to:

1. determine the research output of librarians in Federal Universities in North Central zone, Nigeria.
2. determine the extent of research output of librarians in Federal Universities in North Central Zone, Nigeria.
3. determine the relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria.
4. determine the relationship between accessibility of electronic information resources and research output of librarians in North Central Zone, Nigeria
5. determine the relationship between the use of electronic information resources and research output of librarians in North Central Zone, Nigeria
6. determine the challenges militating against the research output of librarians in Federal Universities in North Central Zone, Nigeria

#### **1.4 Research Questions**

In order to achieve the above objectives of the study, the following research questions was use to guide the study and gather data pertaining the research work:

1. What are the research output of librarians in Federal Universities in North Central Zone, Nigeria?
2. What is the extent of research output of librarians in Federal Universities in North Central Zone, Nigeria?
3. What is the relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria



4. What is the relationship between accessibility of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria?
5. What is the relationship between the use of electronic information resources and research --output of librarians in Federal Universities in North Central Zone, Nigeria?
6. What are the challenges militating against research output of librarians in Federal Universities in North Central Zone, Nigeria?

### **1.5 Hypotheses**

The following null hypotheses were formulated to guide this study, and has been tested at 0.05 level of significance:

1. There is no significant relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria.
2. There is no significant relationship between accessibility of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria.
3. There is no significant relationship between the use of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria
4. There is no significant composite contribution of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in North Central Nigeria

5. There is no significant relative contribution of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in North central Nigeria.

## **1.6 Significance of the Study**

The outcome of this study should help librarians in academic institutions improve their research output through availability, accessibility and use of electronic information resources. Enhance librarians maximum publication output. The finding of this study is of immense assistance to all librarians in Federal Universities to know the importance of electronic information resources that enhance their research output. It also help librarians policy implementation, the government and management board of Federal Universities and libraries who are involved in their research work explore information on electronic information resources. Furthermore, findings and recommendations of this study has added to the existing body of knowledge in the field of library and information technology and related discipline in information and communication technology.

## **1.7 Scope of the Study**

This study is concern with the availability, accessibility and use of electronic information resources on research output of librarians in Federal Universities in North Central Zone, Nigeria. The study cover seven (7) Federal Universities in North Central Nigeria namely: Federal University of Technology Minna, Niger State, University of Agriculture Markudi, Benue State, Federal University Lafia, Nasarawa state, Federal University Lokoja, Kogi State, University of Illorin, Kwara State, University of Jos, Plateau State and University of Abuja, Federal Capital Territory (FCT). However, the professional staff of these Universities library are the subject of the study and the content scope was limited to availability, accessibility and use of electronic information resources as correlate of research output of librarians in Federal Universities in North Central Nigeria. This is due to some constraints which include the spread and distance

of the Universities, shortage of fund required to tour the study area, time within which to complete the study and the delay that was caused by respondents.

### **1.8 The operational terms were defined operationally as discussed in this study**

**Accessibility of electronic information resources:** Easily locate electronic information resources to aid research productivity in academic communities

**Availability of electronic information resources:** Ability to provide, locate or obtain electronic information resource with ease in the conduct of research.

**Electronic information resources:** Information bearing materials that provide access to library users in a digital or electronic format

**Librarians:** Professionally trained persons who possess a bachelor degree, masters or doctoral degree (PhD) in librarianship and works in any library, responsible for managing, organising, evaluating and disseminating information, providing support to members of an academic community including students, researchers and lecturers.

**Research output:** Total number of productivity in terms of research report in professional journals, conference proceedings, number of workshops conducted, and training in emerging technology.

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

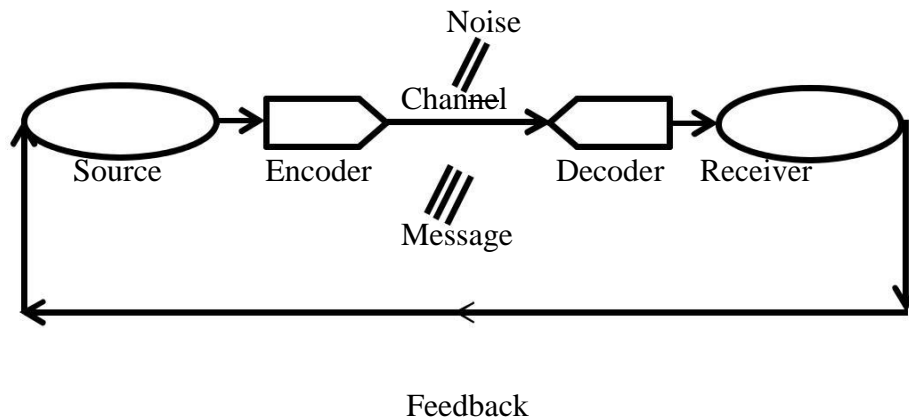
#### **2.1 Conceptual Framework**

In explaining the relationship of conceptual model in Fig.2.1, the arrow show a natural flow among various indicators of the model. The phenomena of the constructs explain the relationship between the dependent and independent variables. The availability, accessibility and use of electronic information resources are the independent variables, while research output is the dependent variable. A positive correlation between two variable is when an increase in one variable leads to an increase in the other variable and a decrease in one variable see a decrease in the other. Research output which is the dependent variable should depend on all the independent variables, while the independent variables would positively impact on the dependent variable. Each of the independent variables has direct relationship with the dependent variable because they would all enhance greater research output for librarians. The conceptual construct of this study is to examine the availability, accessibility and use of electronic information resources on research output of librarians in Federal Universities in North Central Nigeria. The conceptual model shows linkages and relationship among availability, accessibility and use of electronic information resources for greater research output.

## 2.2 Theoretical Framework

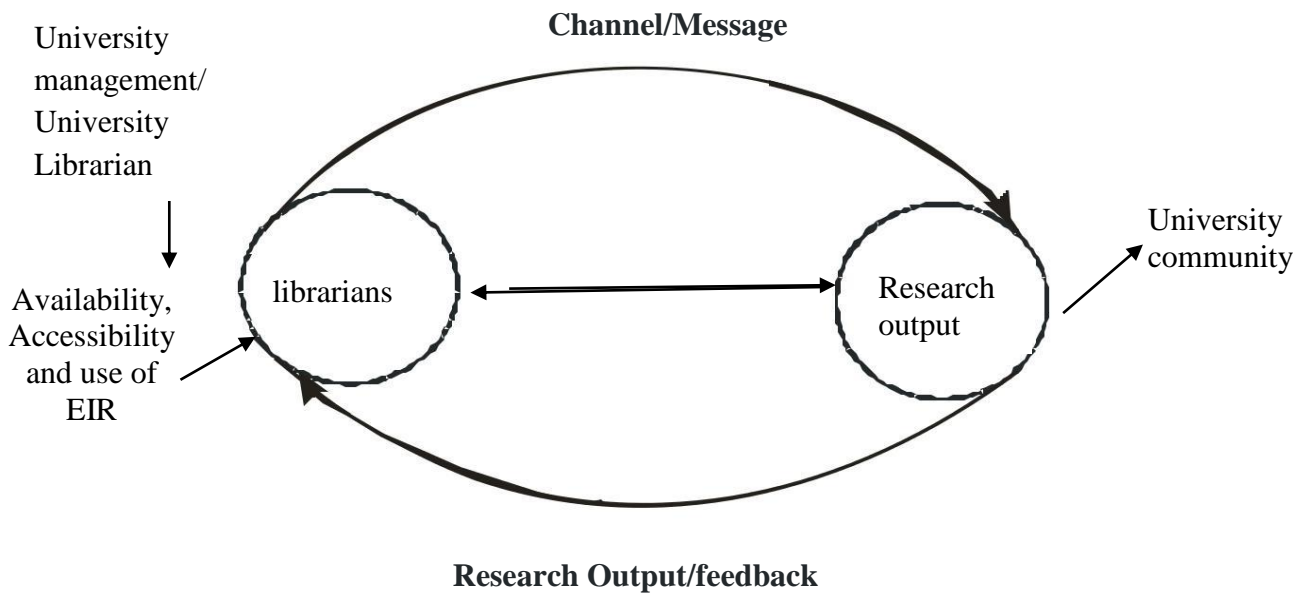
The theoretical framework for this study is based on Shannon Weaver Model of Communication

### Shannon-Weaver Model of Communication



**Figure. 2.1. Shannon-Weaver Model of Communication**

Figure 1. Shannon-Weaver Model of Communication was developed in 1947 by Claude Shannon and Warren Weaver. The model was originally meant to handle effective communication between two people; a sender and a receiver. This sender and receiver can be likened to availability, accessibility and use which when carefully utilised, brings out good research output. Electronic information resources may be available which represent sender but may not be accessible and use, which represent the receiver. When availability is not hindered by accessibility and use that means electronic information resources are available, accessible for use by the librarian, the result would be good research output, because the librarians would make use of these electronic resources to their advantage which is proliferation of research output. The present study is anchored on this theoretical model because of its relevance in explaining the relationship between the availability, accessibility and use of electronic information resources as correlate of research output of librarians in Federal Universities in North Central Nigeria.

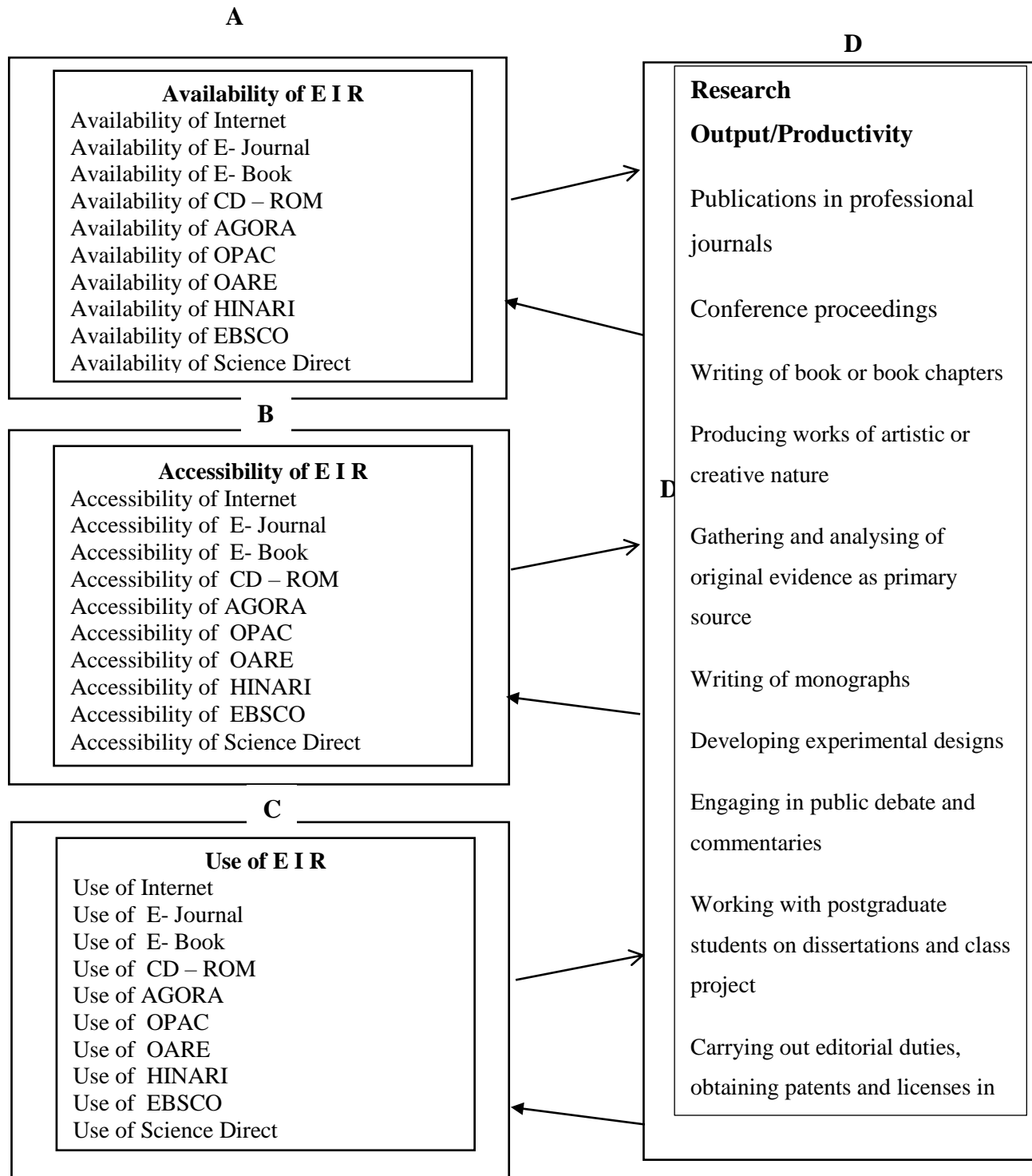


**Figure 2.2: Adaptation of Shannon-Weaver Model of Communication**

Fig. 2 is an adaptation of Shannon-Weaver model of communication, The sender or the originator of the message is the University management/University Librarian who made available, accessible of electronic information resources through the use of Internet, computers, CD-ROMS, software packages to mention but a few to other librarians for their research output. The availability of electronic information resources by the University management/Librarian to the library are the channels of information to the librarians which are in turn use for their research output. The publication output return to the library in the form of books, journal articles and conference proceedings to form part of the research output. In Figure 2, the Sender replaced the Source of information and the message which replaced the Channel in Figure 1. The receiver in the original model is also replaced by librarians in the adaptation while research output replaces the feedback in the Shannon-Weaver original model.

## 2.3 Conceptual Model

### Electronic Information Resources



**Figure 2.3: Conceptual Model for the Study**

**Source:** Developed by Researcher (2019)



### **2.3.1 Research Output of Librarians**

According to Sudhier and Abhila (2011) research output is expressed by the number of papers published by a selected unit in a given time. A well-known research output indicator is the number of publications produced by librarians within a given time. Research output are tangible outputs of research publications in (1) professional journals (2) conference proceedings (3) writing books or chapters in books (4) producing works of artistic or creative nature (5) Gathering and analysing of original evidence as primary source (6) writing of monographs (7) Developing experimental designs (8) Engaging in public debate and commentaries (9) Working with postgraduate students on dissertations and class project (10) Carrying out editorial duties, obtaining patents and licenses in terms of inventions. Research output can be share through publications in professional journal.

Publications in Professional journals According to Ogbomo (2010) who reported that librarians research output is influence by the eagerness to enthusiasm to publish for greater research output. Professional journals are scholarly journal addressed to a particular professional audience such as Doctors, lawyers, teachers, engineers or accountants and published by a professional organisation. They may contain research articles applicable to the profession. In the opinion of Isah,A (2010) It is clear that librarians build and disseminate knowledge in professional journals, through the publication of research and research can provide an important background for librarians to become successful academicians. Research output of librarians can be measured as public count. Another way of sharing research output is by conference proceedings.

Conference proceedings may be published as a book or book series, in a journal, or otherwise as a serial publication. The acts and happening of an academic field, a learned society, or an academic conference. For example, the proceedings of the National

Academy of science of the United State of America is the main journal of the Academy. Conference proceedings are published in house by the organising institution of the conference or via an academic publisher, for example, the lecture notes in computer science by springer take much of their input from proceed. Thomsson Reuters (2011). Publication of electronic information resources for research output of librarians is central to scholarly activity and recognition in academic community. However, conference proceedings is the published record of a conference, congress, symposium, or other meetings sponsored by a society or association, usually but not necessarily including abstracts or report of papers presented by the participants. Another way of sharing research output is by writing of books or book chapters.

Writing of books or book chapter. According to Iqbal and Mahmood (2011) Research publications or indicators of research output such as writing of books or book chapters are channels through which librarians contribute their quota to existing body of knowledge. Publication of electronic information resources for research output by librarians is central to scholarly activity and recognition in academic community. Academic libraries in the 21st century may not function properly without the existence of electronic resources. Tyckoson (2011) affirms that libraries and information centres which fail to adopt appropriate information technology in their services may cease to function and perhaps, close down. Essentially, ICTs are the standpoints that provide access to electronic resources (e-resource). Modern teaching, learning and research purposes are promoted by academic libraries in universities through the use of ICT. Academic libraries are central in higher educational systems, assisting in the improvement of learning and dissemination of knowledge to meet the information needs of the universities and their communities through the provision of timely information.

Another way of exhibiting research output is by producing works of artistic and creative nature.

Producing works of artistic or creative nature such as sculpture's found in museums. In the opinion of Ocholla and Onyancha (2012) librarians carry out research and publish for career related rewards such as status enhancement, promotion, securing tenure or permanent appointment; to gain recognition for creative thinking, visibility and acceptability within and outside the University community; satisfy intellectual curiosity. The research output by individual librarians in academic libraries serves as source of self-esteem, as a requirement for individual promotion, and as indispensable element for obtaining competitive research funds for exceptional performance. According to Terry and Kieran (2016), they study on Research Output of Academic Librarians from Irish Higher Education Institutions 2000–2015: Findings from a review, analysis, and survey. Their findings reveal that very small number of librarians have published regularly and extensively, 50% of those that published have only published once and this is a cause for concern; that promotion or status is not crucial drivers for research activity but career progression more important; library staff working at professional level are much more likely to publish more frequent; time and lack of institutional support remain key barriers to research activity and writing groups and initiatives can have a positive impact on publication rates. Librarians in academic environment are motivated to engage in publication for various reasons one of which could be for promotion or been patented for additional creativity. Research means the careful study or investigation, especially in order to discover new facts or information while output means the total production compared with inputs or consumption over the same period of time, which serves as a measure of whether the producer's production process are working efficiently (Witzel, 2012). Research output occupies a critical role in promoting the

prosperity of a nation and its citizens' well-being. Research output and research productivity is often used interchangeably. Recently, a workshop on e-books was organized by Baobab, a publishing company, on 8th November, 2015. CARLIGH decided to subscribe to e-books by creating a platform for interested academic and research libraries to access e-books at lower cost for greater research output, through analysing original evidence.

Gathering and analysing original evidence as primary source. In the opinion of Nwagwu (2010) information are gathered, analysed and organised before dissemination as research output. He viewed research output as a process that facilitates the contribution of knowledge by scientists towards finding solutions to societal and human problems; Okafor (2011) equally affirmed that the goal of research is to improve the advancement of societal/human knowledge, and this role is basically vested in the academic communities. Essentially, the outcome of research output is the production of new knowledge, which is used in societal development and betterment of human existence. Research means the careful study or investigation, especially in order to discover new facts or information, while output means the total production compared with inputs or consumption over the same period of time, which serves as a measure of whether the producer's production process are working efficiently, these inputs is enhance with the availability and accessibility of electronic information resources for effective output. Research output include writing of monographs.

Writing of monographs are scholarly books on a single subject or a group of related subjects usually written by one person. According to chai and Nedosa (2010) report that the fruits of research are new knowledge and facts, which are communicated to the academic community through scholarly publications and seminars with the aid of electronic information resources.

The importance of publications in the growth and development of research output for the library profession cannot be over-emphasised. Librarians produce different types of publications and products, these include writing of monographs, developing experimental designs.

Developing experimental designs for research output, are mostly developed by engineers as evidence of their research output. Different types of publications have different purposes and a different audience. Journals can usually be divided into three broad categories: scholarly journals, popular magazine and trade publications. In other words, these productivity are indicators of research output and in line with the availability and accessibility of electronic information resources by librarians and they can be accessed in academic institutions to rank librarians. Research output may be seen as the relationship between the outputs generated by a system and the inputs provided to create those outputs. It may also include the term 'efficiency' and more importantly 'effectiveness', which measures the total output or results of performance. Bankole (2012) Librarians publish more in international journals than local journals and, librarians are motivated to publish mostly for promotion. Research output is the outcome of two components which are; (i) knowledge creation (research) and (ii) knowledge distribution (productivity). Another research output include engaging in public debate and commentaries.

Engaging in public debate and commentaries According to Hoffman *et al* (2014), independent research requirements for tenure or promotion, is an increasing emphasis on a culture of assessment and evidence-based librarianship which have contributed to greater research output. Certainly, current and up to date information can be found in e-resources which can be beneficial to information seekers. Ani (2013) agrees that the application of information and communication technology in library and information

services helps in the provision of timely information in higher learning institutions to promote academic work and increase research productivity, like working with postgraduate students on dissertations and class project.

Working with postgraduate students on dissertations and class project for effective research output. The fact that one of the major criteria for graduation for postgraduate students is mandatory national or international publications. Okiki (2013) reveals that research output was high in the publishing of journal articles, technical reports, conference papers, working with postgraduate students on dissertations and class project, and occasional papers. The study was in line with Okpe, Simisaye and Otuza (2013) their finding reveals that research output within the studied period, journal articles top the list while conference and workshop papers and seminars for postgraduate students followed respectively. On the other hand, their research output was lower in the publishing of textbooks, book chapters, monographs, carrying out editorial duties, patents in certified inventions. In spite of the value of e-resources in the provision of effective and efficient information for learning and research purposes, available literature shows that usage of e-resources is not up to the level expected. This problem is more peculiar to developing countries. Studies by Fiankor and Akussah (2012) revealed low awareness of e-resources by library users; this has contributed to limited access to relevant and reliable information by users in making decision on their research. Another way of exhibiting research output is by carrying out editorial duties, obtaining patents and licenses.

Carrying out editorial duties, obtaining patents and licenses. In the opinion of Chiemeke, Longe, and Shaib (2011) reveal that the research output from Nigerian tertiary institutions, remained a yardstick for promotion in the academia in Nigeria. Agboola and Oduwale (2013) investigated the publication output by Nigerian academic

librarians. Their study sought information on the status of the librarians, publication requirements for promotion, carrying out editorial duties, obtaining patents and licenses, frequency of staff seminars, role of seminar secretaries, categories of staff involvement, order of paper presentations, and comments on the role of staff seminars in enhancing staff publication output. They claimed that out of the 34 academics in their subject area (Library Science) in Nigeria that had 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 while 11.77% had no publications. Research output, therefore, is expressed by the entirety of researched conducted by academic librarians in universities in their career over a specified time frame. Ahmad and Panda (2013) also added that majority of the faculty members are aware of and use e-resources but some lack knowledge and only access the library's specific resources such as e-theses, patents and CD-ROM databases. Therefore, provision of information resources in libraries by information professionals are not enough until these resources are well marketed and promoted to achieve full utilization by end-users. Editorial duties include laying out, indexing and revising contents of written materials, in preparation for final publication.

### **2.3.2 Availability of Electronic Information Resources for greater research output**

According to Suhail and Quadri (2016) refers to information availability as the ability to make information and related physical and logical resources accessible as needed. The authors explain availability as the capacity of the information system to bear its services to the legitimate users. The Availability of Electronic Information Resources have become important and major tools in carrying out research in the universities by academic staffs. There has been an exponential growth in electronic resources, and

academic libraries have been spending a substantial amount of their annual budgets on subscriptions to online databases. Availability of electronic resources can provide many advantages over traditional print-based resources (Tyner 2014; Ji, Michaels & Waterman (2014). Electronic resources can contain current information because they are able to be updated frequently; they offer advanced search capabilities; they offer flexibility in the storage of search results; and they allow access to information without the restrictions of time and location.

Academic staff access electronic resources right in their university offices/ Laboratory or in the university libraries and off campus for greater research output, this is made possible and available through university management/librarians who had subscribed and made available many of these electronic resources and database accessible free of charge. Some of these electronic resources and databases are available in various forms such like internet, e-journal, e-book, C-ROM, on-line data base like OPAC, OARE, HINARY,EBSCO, science direct among others, this had enabled academic staff to improve on their research output in Federal Universities in North Central Nigeria. Shelton (2011) stated that the accessibility of electronic information resources by academic staff in the UK Universities has shown that 87% of the respondents are accessing e-resources for their academic and research activities through the internet.

Internet as a source of serious subject of the universe of knowledge, has become information superhighway and opened the floodgate for scholarly communication. The internet is described as a worldwide network of computer and people. It is an important tool for global online service. According to Missen *et al* (2012), the Internet poses African Universities to gain equal footing with their sister institutions in the more developed countries. The Internet is very useful as a communications tool in the Universities among librarians and library users. It is the most efficient means of



electronic document delivery (Al Fadhli and Johnson, 2015). Internet is useful for education and can supply many beneficial opportunities to find different resources .Internet has provided a wider access to global information resources such as online databases, e-journals e-prints and other sources of digital information, these resources are not effectively utilized due to varying factors. Huang (2013) emphasises the effects of the Internet as an effective teaching tool in university. It is the most efficient means of electronic document delivery (Al Fadhli and Johnson, 2015). Internet is useful for education and can supply many beneficial opportunities to find different e- resources like e-book, e-journal.

Electronic Journal relatively provide efficient access to information and thus, they are easy to distribute to library patrons than traditional print; in the financial stringent environment of higher education system. Electronic journals may be defined broadly as any journal, magazine, newsletter or type of electronic serial publications which is available over the internet and can be accessed using different technologies such as the world wide web, telnet, e-mail Gopher among others have become a medium which is cheaper than the traditional printed journals (Ellis & Oldman, 2013). According to Rowley (2012) electronic journals take two different forms: journals that are published in print form, available in digital form and electronic journals do not necessarily need a publisher, and which can be managed by an editor and the scholarly community. Electronic journals have added enormous resources to the collection and improved productivity of librarians. It has enhanced access to journal literature and decreased demand for photocopy services as well as document delivery (Madhusudhan & Chirra, 2009, & Madhusudhan, 2010). Baro *et al* (2011), in their study in Delta State University they find that electronic scholarly journal databases were underutilised. Users cited lack of awareness of the existing resources as the primary constraint they had. Ajegbomogun

(2012) posits that, while electronic journals have become essential tools for learning, research, teaching and consultancy, most of scholars and researchers are not fully utilising them while e-book.

E-book according to Letchumanan and Tarmizi (2011) study the rate of accessibility of electronic books among students of mathematics in one of Malaysian Universities, and concluded that most of the respondents have similar reading habits. Falak (2012) report the rapid growth and access to e-books in schools, colleges and universities in developing countries. Ashcroft and Watts (2014) also mentioned the potential advantages of e-books including easier access, speedy publications space-saving and lower costs. Various studies have also been carried out on the access of electronic resources by students, and research staff of institutions of higher learning. Most of these studies reported high usage of internet resources (De Vicente *et al* 2013; Falk, 2014). High usage was attributed to a number of factors including the freely available access, the ease of access and its currency. Another EIR is the CD-ROM.

CD-ROM databases (Compact Disc Read Only memory) allow librarians' access to relevant databases without robust Internet connectivity in libraries. It is therefore cost effective than online databases as information could be accessed off-line without paying for telecommunications fee, Afolabi (2015). Besides, CD-ROM databases are of immense value over print if the system is networked, as librarians at their terminals could access information without coming to the library. CD-ROM databases are important tools for identifying the bibliographic details of potentially useful documents and ensure easy access to large volumes of literature for research. CD-ROM, has been positive, with students enjoying using these sources and finding relatively few problems while accessing them.

Online Databases Online databases are a collection of electronic information sources (e-journals/e-books) by publishers from various fields and disciplines, Afolabi, (2011). It is a web based filing system designed to store information Omotayo (2010) mentioned some examples of electronic database available today in academic libraries they include Journal Storage (JSTOR), HINARI, EBSCO, Science Direct, OARE , MIT Open Courseware and OPAC.

OPAC (Online public access catalogue) Today, advances in Information Technology (IT) have changed the way in which information for academic research is accessed and disseminated (Ndinoshiho 2010). The academic world has reached an era where printed materials for research are being replaced by electronic materials that can be accessed via the internet. Tella, Owolabi and Attama (2009) state that it is no longer surprising that, in this digital age, many libraries in tertiary institutions are connected to the internet or have plans to get connected soon. Academic libraries are increasingly taking advantage of Information and Communication Technologies (ICTs) to provide improved access to EIR to their users. The availability of information in electronic media has, as such, created opportunities for global access to information, enhanced the speed of service, increased the number of users served, increased the quantity and exhaustiveness of information provided, and offered new and exciting opportunities for researchers to find information related to their research areas. Another EIR that enhance effective research output is Access to Global Online Research in Agriculture (AGORA).

AGORA is an internet portal with many links to major scientific journals, bibliographic database and many internet resources related to Agriculture. It is developed by food and Agricultural Organisation (FAO) in collaboration with world health organization (WHO). This one initiative that has given researchers, lecturers and students from this part of the world to have access to a wide range of resources at low cost. Some of the

founding publishers contributing to AGORA journals are Blackwell publishing, CABI publishing, Elsevier, Kluwer Academic publishers among others.

OARE (Online Access to Research in the Environment) it was launched in 2006, and is managed by the United Nations Environment Programme (UNEP) in partnership with Yale University and more than 60 publishers. OARE provides over 2,800 institutions access up to 6,500 journals, and 18,000 e-books, and up to 60 other information resources in a wide range of disciplines contributing to our understanding of the natural environment, including environmental toxicology and pollution, zoology, botany, ecology, environmental chemistry, geology, hydrology, oceanography, meteorology, climatology, geography, environmental economics, environmental law and policy, conservation policy and planning, environmental biotechnology, environmental engineering, energy, and many other disciplines.

HINARI (Health Inter-Network Access to Research Initiative) was set up by the World Health Organisation and major publishers to enable developing countries to access collections of biomedical and health literature. There are up to 13,000 e-journals and up to 29,000 online books available to health institutions in more than 100 countries. The program opened for accessibility in January 2002 with around 1,500 journals from the initial six publishers. As of 2015 there are almost 200 publisher partners providing their online publications through HINARI, a clinical reference tool for physicians and other health care professionals for use at the point-of-care. Another electronic information resources that enhance research output is EBSCO.

EBSCO means (Elton B. Stephens Co.) EBSCO Information Services is a division of EBSCO Industries Inc., a family owned company since 1944. According to Forbes Magazine, EBSCO is one of the largest privately held companies in Alabama and one of

the top 200 in the United States, based on revenues and employee numbers. EBSCO Publishing was established in 1984 as a print publication called Popular Magazine Review, featuring article abstracts from more than 300 magazines. In 1987 the company was purchased by EBSCO industries and its name was changed to EBSCO Publishing.

Databases: EBSCO provides a range of library database services. Many of the databases, such as MEDLINE and ECONLIT, are licensed from content vendors. Others, such as Academic Search, America: History & Life, Art Index, Art Abstracts, Art Full Text, Clinical Reference Systems, Criminal Justice Abstracts, Education Abstracts, Environment Complete, Health Source, Historical Abstracts, History Reference Center, Master File, Net Library, Primary Search, Professional Development Collection, and USP DI are compiled by EBSCO itself. EBSCO provide the following services:

Discovery: According to Nur' Aini (2011) with the development of technology and the vast electronic information resources available librarians feels the increasing need to educate its library customers in locating, evaluating and the accessibility of the library resources effectively. There are several modules that are created based on the standards as set in the "Information Literacy Competency Standards for higher Education" by the American Library Association. The courses are designed to fulfill the following groups: New Students, Undergraduates, Postgraduates, and Academic staff and researchers. This services is deployed to create a unified, customised index of an institution's information resources, and a means of accessing all the content from a single search box. The system works by harvesting metadata from both internal and external sources, and then creating a pre indexed service.

E-books: EBSCO provides e-books and audiobooks across a wide range of subject matter.

DYNAMED product category in the last two reports on clinical decision support resources by KLAS, a research firm that specialises in monitoring and reporting the

performance of healthcare vendors. It provides DRM-protected audio and DRM-protected audiobooks through its subsidiary NETLIBRARY, which was purchased in 2010 from Online Computer Library Center. It competes in this market with Over Drive's Digital Direct Library Reserve. Another e-resources is the science direct.

Science direct as a website which provides subscription-based access to a large database of scientific and medical research. It hosts over 12 million pieces of content from 3,500 academic journals and 34,000 e-books. The journals are grouped into four main sections: Physical Sciences, Engineering, Life Sciences, Health Sciences, and Social Sciences and Humanities. Article abstracts are freely available, but access to their full texts (in PDF and, for newer publications, also HTML) generally requires a subscription or pay-per-view purchase.

Awareness is part of availability and it indicates the extent to which users have information and knowledge of electronic resources being subscribed to. When users of a library have adequate information on the electronic resources being subscribed they are encouraged to use them. Available ICT and e-resources must be known to the users. Madukoma, Onuoha and Ikonne (2014) identified lack of awareness as major contributing factor to non-use of e-resources.

However the use of these resources is likely to be influenced by availability of the resources. This implies that electronic resources must be made available in several brands to it users in their higher institutions for easy accessibility. The Availability of electronic information resources provide access and information that can broaden the mind of librarians when embarking on research that lead to greater research output among librarians in Federal Universities in North Central Zone, Nigeria.

### **2.3.3 Accessibility to Electronic Information Resources for Greater Research Output by Librarians**

Access to information is imperative to successful conduct of research by librarians in universities. Moon, Hossain, Kang and Shin (2012) in discussing the role of access to electronic information resources in research ,they are of the opinion that access to relevant information is necessary for librarians to take efficient decision for their research. This view is affirmed by Adeloye (2013) that access to electronic information resources is needed “for problem solving and decision making” by librarians for greater research output. There is need to have access to relevant information resources in institutional libraries and make effective use of them to improve the teaching and effectiveness of academics. Electronic information resources like internet, e-journal, e-book, CD ROM, OPAC, AGORA, OARE, HINARY, EBSCO, Science direct among others.

The internet provides a wide range of wireless services and facilitate online access as it is inter-connectivity of computer from different geographical locations. Databases are created via internet by different organisations on different subject fields, each of which is installed on a computer, once such a system is connected to the network, a user from any part of the world can have access to such information applying the necessary procedures. Internet provides accessibility to different electronic information network resources on teaching and research. In University of Jos Nigeria, according to Nwezeh (2010) reveals high level of accessibility to electronic information resources particularly the internet by the academic staff, as 73.9% of them made regular use of the internet in their research activities. According to scholars (Ani & Edem, 2012) the trend towards the provision of access to electronic information resources through ICT and other e-resources in the university libraries gathered momentum in Africa in the early 2000s. Thus, the widespread access of electronic information resources in research and possible impact on research output of librarians in Nigerian universities could be traced to the

period 2005 and 2012, hence the choice of this period for the study. Another reason is the need to harmonise the period of productivity measure in the study for all categories of librarians, in order to see how they are fare within certain period (2005-2012), rather than determining the productivity from the point of entry into research in a continuous form, in which long serving academic staff would seemingly have relative advantage. Shukla and Mishra (2011) found that the postgraduate students access e-resources effectively, 76% of the respondents access e- resources daily, while 88% of the respondents access e- resources for their research work by research scholars at Institute of Technology, Banaras Hindu University. Ojo and Akande (2011) in a survey of 350 respondents examined student's access, and awareness of electronic information resources at the University College Hospital (UCH) Ibadan, Nigeria. The study reveals that the level of accessibility of electronic information resources is not high. A major problem however identify is lack of information retrieval skills for medical students to be very low.

Suseela (2011) concluded in his survey on application of usage statistic for assessing the access to e-journal in university of Hyderabad that the accessibility reports and the significance of usage or accessibility of the e-journals in the library cannot be over emphasised. Electronic information resources such as e-journals. According to Parmar Seema (2012) studied the use of e- journal, e- book and CD ROM data bases by fraternity of CCCHAU, Hisar India. Findings of the study shows that faculty members can access e-journal, e-book and CD ROM. Agwu, (2013) studied assessment of online resources usage by Agricultural science lecturers of tertiary institutions in Benue State, Nigeria. The study reveals the main type of EIR frequently access by respondents includes e-journal.



According to Hoq (2012).Electronic journal relatively provide efficient access to information and easy to distribute to users than the traditional print. Electronic journals and e-book has become a medium which is cheaper than the traditional print journals and books. Rowley(2012) also view accessibility of electronic information such OPAC, AGORA, OARE, HINARI, EBSCO, science direct among others as been vital in efficient research process with the aid of the internet backup. Aina (2012) in his discourse argued that access to information is critical in research in Africa.

E-book is an organised collection of information of a particular subject or multi-disciplinary subjects. The data is typically organised by the model aspects of reality in a way that support processes requiring information. Data-base are mostly characterized by the kind of data they contain in word, numbers or by their subject matter for easy access of required information. Ajiboye and Bankole (2013).Another EIR that is accessible is the C-D ROM.

C-D ROM database (Compact Disc Read Only Memory) However, a report by Foster, Heppensta, Lazarz and Broug (2010) has reveals a low level to access of emerging electronic resources by academic staff in Nigerian universities which are critical to effective research in universities around the world. Foster *et al.* (2012) argue that inadequate access to electronic information resources (CD-ROM) affects the research outputs of librarians in Nigerian universities in international journals. Since, research output of academic staff in Nigerian universities in international journals is reportedly low, and publication output is a major indicator of productivity; this implies that academic members of staffs in Nigerian universities are not internationally productive.

OPAC (Online Public Access Catalogue). A study by kaminer (2010) have advocate the need to assess the extent to access to electronic information resources in research.

According to him, scholars have not only began to discuss how to measure and evaluate the accessibility of electronic information resources in research but emphasized to know about the nature to access of these vital resources in research activities with the use of OPAC and other resources like AGORA in Agricultural research.

AGORA (Access to Global Online Research in Agriculture) Okello Obura and Magara (2011) investigate that users derived a lot of benefits from electronic information resources gaining access to a wider range of information and improved academic performance and productivity as a result of access to quality information. Oduwole and Akpati (2013) investigate the accessibility and retrieval of electronic information at the University of Agriculture Library, Abeokuta, Nigeria. The 425 participants responded out of a survey population of 1,000, giving a response rate of 53.87 percent. The study reveals that electronic information resources cuts across all members of the University community, this include AGORA science direct, that it was to a greater extent easy to access and were satisfied with their research outputs.

OARE (Online Access to Research in the Environment) Candela Olle and Angel Borrego (2010) analysed on Librarians' perceptions on the accessibility of electronic resources at Catalan academic libraries and found that academics' perceptions of the usefulness of bibliographic management software have increased dramatically during the last few years, especially among librarians for greater research output.

HINARY (Health Inter-Work Access to Research Initiative) was set up by the World Health Organisation and major publishers to enable developing countries to access collections of biomedical and health literature.

EBSCO (Elton B. Stephens Co). EBSCO Publishing was established in 1984 as a print publication called Popular Magazine Review, featuring article abstracts from more than

300 magazines. In 1987 the company was purchased by EBSCO industries and its name was changed to EBSCO Publishing. Databases: EBSCO provides access to a range of library database services. Many of the databases, such as MEDLINE and ECONLIT, are licensed from content vendors. Others, such as Academic Search, America: History & Life, Art Index, Art Abstracts, Art Full Text, Clinical Reference Systems, Criminal Justice Abstracts, Education Abstracts, Environment Complete, Health Source, Historical Abstracts, History Reference Center, Master File, Net Library, Primary Search, Professional Development Collection, and USP DI are compiled by EBSCO itself.

Science direct as a website which provides subscription-based access to a large database of scientific and medical research. It hosts over 12 million pieces of content from 3,500 academic journals and 34,000 e-books. The journals are grouped into four main sections: Physical Sciences, Engineering, Life Sciences, Health Sciences, and Social Sciences and Humanities. Article abstracts are freely available, but access to their full texts (in PDF and, for newer publications, also HTML) generally requires a subscription or pay-per-view purchase.

#### **2.3.4 Use of Electronic Information Resources for Greater Research Output of Librarians**

The importance and wide ranging scope for the use of electronic information resources for general communication, information retrieval and instructional delivery to support teaching and research output in tertiary educational institutions is acknowledged worldwide. Gakibayo, Odongo and Obura (2013), reveal that the use of electronic information resources (EIR) have brought a tremendous change in nature, boundaries and structure of information. Consequently, perceived usefulness of the internet, is considered to be an important influence on the use of electronic information resources

such as e-journal, e-book, CD ROM, AGORA, OPAC, OARE, HINARY, EBSCO, Science direct and many more.

Internet, through the use of internet, researchers and students; now have access to global information resources, particularly the Internet for their scholarly intercourse. Candela Olle and Angel Borrego (2010) analysed on Librarians' perceptions on the use of electronic information resources at Catalan academic libraries and found that academics' perceptions of the usefulness of bibliographic management software have increased dramatically during the last few years, especially among postgraduate students. The Internet represents different things to different people depending on what is being sought. In the academia, it facilitates the extension of the frontiers of knowledge and constantly enhances the drive to keep abreast of scholarly publications. Internet is useful for education and can supply many beneficial opportunities to find different resources. Another important electronic information resources is the e-journal.

Electronic journals. The use of electronic journal have added enormous resources to the collection and improved productivity of librarians. It has enhanced access and use of journal literature and decreased demand for photocopy services as well as document delivery. Baro et al. (2011), in their study in Delta State University they found out that electronic scholarly journal databases were underutilised, users cited lack of awareness of the existing resources as the primary constraint they had. Thus, they are easy to distribute to library patrons than traditional print. Another useful EIR is the e-book

E-book is an on-line organised collection of information on a particular discipline or multi-discipline subjects. Letchumanan and Tarmizi (2011) study the rate of use of electronic books among students of mathematics in one of Malaysian Universities, and concluded that most of the respondents have similar reading habits that facilitate the

rapid growth and use of e-books in schools, colleges and universities in developing countries. The potential advantages of e-books include easier access, speedy publications space-saving and lower costs. CD-ROM is another useful electronic information resources that contribute to greater research output of librarians.

CD-ROM (Compact Disc Read Only Memory). According to a study by Sivathaasan and Velnampy (2013) on the use of electronic information resources and academic performance of University teachers, they jointly indicate that usage of electronic information resources (CD-ROM) has a strong positive association with academic performance ( $r = 0.623$ ,  $p < 0.01$ ) and it has an impact on academic performance at the rate of 38.8% ( $R^2 = 0.388$ ). Besides, most academic libraries in Africa continue to populate their web sites/home pages with intellectual works such as postgraduate students' theses/dissertation, journal articles of faculties, inaugural lectures, annual reports, and past questions. These are to promote accessibility and use of intellectual knowledge in African universities to varied users. Therefore, most universities have made it obligatory that postgraduate students submit their academic work in both print and electronic formats on CD-ROM. Another e-resources that is very vital for research output of librarians is Access to Global Online Research in Agriculture (AGORA).

Access to Global Online Research in Agriculture (AGORA). AGORA is an internet portal with many links to major scientific journals, bibliographic database and many internet resources related to Agriculture. It is developed by food and Agricultural Organisation (FAO) in collaboration with world health organization (WHO). AGORA is use as an internet portal with many links to major scientific journals, bibliographic database and many internet resources related to Agriculture. It is developed by food and Agricultural Organisation (FAO) in collaboration with world health organization (WHO). Egberongbe (2011) found out in a study of use and impact of electronic

resources, that the majority of scholars were not trained in the use of e-resources. The study also revealed that the level of IT skills among lecturers, scholars and library staff varied and was low. Informal methods of training; one on one consultations, was used to inform users. On-Line Public Access Catalogue (OPAC) is another electronic information resources that is useful in public libraries.

On-line Public Access Catalogue (OPAC).The OPAC function as a marketing devices by advertising the presence of a library and it services. In a study done by Sivathaasan and Velnampy (2013), on use of electronic information resources and academic performance of university teachers, they jointly indicate that usage of electronic information resources such as OPAC has a strong positive association with academic performance. Another e-resources that has positive effect on research output is (OARE) Online Access to Research on Environment.

Online Access to Research on Environment (OARE). (Rosenberg, 2010). These organisations have contributed immensely to the availability, accessibility and use of e-resources in African universities. According to Aina (2014) Awareness, accessibility and use of electronic database among academic staff of Babcock University business school revealed that only 40 (47.1%) and above of respondents had fully accessibility and use to academic journal, Ebsco host and JSTOR databases. AJOR, Electronic Resources for Research Methods and International Research Journals were averagely accessible to the respondents 30 (35.3%), 36 (42.4%) 38 (44.7%) respectively. It was also revealed that the following databases were not accessible and use to respondents with Bookboon 19 (22.4%). Dissertation and Theses 19 (22.4%), DOAJ 55 (64.7%), HINARI 20 (20.5%), SAGE 22 (27.1%), World Bank Open Knowledge Repository 31 (36.5%) and National Virtual Library databases 25 (29.4%). This implies that despite the fact that these resources were subscribed to and respondents were aware of them still

they are not all fully accessible and use, due to one challenge or the other such as inadequate internet facility and electricity supply. Another e-resources that is useful to enhance research output is HINARI.

HINARI (Health Inter-Network Access to Research Initiative) was set up by the World Health Organisation and major publishers to enable developing countries to access collections of biomedical and health literature. There are up to 13,000 e-journals and up to 29,000 online books available to health institutions in more than 100 countries. The program opened for accessibility and use in January 2002 with around 1,500 journals from the initial six publishers. As of 2015 there are almost 200 publisher partners providing their online publications through HINARI, a clinical reference tool for physicians and other health care professionals for use at the point-of-care. Ahmad and Panda (2013) also added that majority of the faculty members are aware of and use e-resources but some lack knowledge and only use the library's specific resources such as e-theses, patents and CD-ROM databases. Therefore, provision of information resources in libraries generally by information professionals are not enough until these resources are well marketed and promoted to achieve full utilization by end-users.

EBSCO (Elton B. Stephens Co). EBSCO Publishing was established in 1984 as a print publication called Popular Magazine Review, featuring article abstracts from more than 300 magazines. In 1987 the company was purchased by EBSCO industries and its name was changed to EBSCO Publishing databases: EBSCO provides access and use to a range of library database services. Many of the databases, such as MEDLINE and ECONLIT, are licensed from content vendors. Others, such as Academic Search, America: History & Life, Art Index, Art Abstracts, Art Full Text, Clinical Reference Systems, Criminal Justice Abstracts, Education Abstracts, Environment Complete, Health Source, Historical Abstracts, History Reference Center, Master File, Net Library,

Primary Search, Professional Development Collection, and USP DI are compiled by EBSCO itself. Another e-resources that enhances greater research output is the Science Direct.

Science Direct as a website which provides subscription-based access to a large database of scientific and medical research. It hosts over 12 million pieces of content from 3,500 academic journals and 34,000 e-books. The journals are grouped into four main sections: Physical Sciences, Engineering, Life Sciences, Health Sciences, Social Sciences and Humanities. Pandurangaswamy & Kishore (2013) argued that users do not have enough time to browse through the page of printed materials and this fact induces users such as postgraduates to increase their use of e-resources for research, course work and teaching.

The National Universities Commission (NUC), a government agency in Nigeria, subscribed to a number of international and local journals and made them accessible for use in Nigerian Universities through its URL link ([www.nigerianvirtuallibrary.com](http://www.nigerianvirtuallibrary.com)) on the internet. Also, NUC, NULIB (Nigerian University Libraries Consortium) and eifl.net (Electronic Information for Libraries Network) are partnering to provide electronic resources towards teaching, learning and research in Nigerian Universities (Okiki, 2012). National Information Technology Development Agency (NITDA), according to Egbe (2014), is developing ICT in Nigerian tertiary institutions through the National Virtual Library Project by setting up virtual libraries and donation of computers and other internet facilities.

### **2.3.5 Concept of Electronic Information Resources**

Shim *et al.*, (2011) define electronic information resources as those resources that users access electronically via a computing network from inside the library or remote to the



library. According to Tsakonas *et al* (2010) electronic information resources are information resources provided in electronic form, and these include resources available on the Internet such as e-books e-journals, online database, CD-ROM databases and other computer –based electronic networks, among others. Electronic information resources as materials consisting of data and computer program(s) encoded for reading and manipulation by a computer, such as CD-ROMs drive or remotely via network such as the internet by use of a peripheral device directly connected to the computer.

Ekwelem, Okafor and Ukwoma (2012) describe Electronic information resources as information sources that are available and can be accessed electronically through such computer networked facilities as online library catalogues, the internet, the World Wide Web and digital libraries. The Internet which is the most prominent of these sources has made possible, access to electronic books, electronic journals, various databases and search engines. All these resources constitute the electronic information resources. Librarians are expected to publish quality research output, communicate ideas within the profession, thereby contributing to the available knowledge base. Electronic information resources are important research tools that complement the print-based resources in a traditional library setting, electronic information resources are easily accessible in the remote areas and solve storage problems and control the flow of information. (Munira Nasreen Ansari & Bushra, 2010).

Electronic information resources play vital roles in helping librarians' in their quest to support the teaching and learning process at university level and to provide quality assistance in writing research. Shuling (2011), reveals that electronic information has gradually become a major resource in every university library. An electronic information resource provides easier and wider access to information for librarians' as it makes coordination and collaboration easier. Electronic information resources have

many functions and benefits which can be of immense important to librarians in universities.

However, a basic rule should be considered while using the internet for successful learning and research, that is, how the resources should be properly accessed by the librarians'. The Internet helps transfer information between different points, therefore this facility makes the Internet a very powerful information system through MIT Open Courseware(MIT OCW) is an initiative of the Massachusetts Institute of Technology (MIT) to put all of the educational materials from its undergraduate- and graduate-level courses online, freely and openly available to anyone, anywhere. MIT Open Course Ware is a large-scale, web-based publication of MIT course materials. The project was announced on April 4, 2001 and uses Creative Commons Attribution-Noncommercial-Share Alike license. MIT Open Course Ware grew out of the MIT Council on Education Technology, which was charged by MIT provost Robert Brown in 1999 with determining how MIT should position itself in the distance learning/e-learning environment. MIT Open Course Ware was then initiated to provide a new model for the dissemination of knowledge and collaboration among scholars around the world, and contributes to the "shared intellectual commons" in academia, which fosters collaboration across MIT and among other scholars.

Some of these databases are provided free of charge to libraries in developing countries by their publishers or vendors. Some of these include: NARI, <http://www.healthininternet.org/scipub.php>, GORA: <http://www.agininternet.org/en/>. Others require subscription fee such as emerald database, <http://www.emeraldinsight.com> and Blackwellsynergy: <http://www.blackwell-synergy.com> among others. Adeyemi, (2011) note that "online databases contain information on specific subject which vary in format"; with the organisation of the resources contained in these online databases according to

their various subject and disciplines, the librarians face less challenge of large recall and low precision. Access to these databases provides researchers and students with thousands of scholarly articles in their fields of specialization or research, Fatoki, (2012). Singh and Gautam (2013) focus on access to information through online or CD-ROM media that has remained a challenging effort for both the user and the intermediary. It further reveals that many of the e-databases are being created and made available today in India for use both within the country and outside. Akinade (2015) also affirms that the usage of electronic database aids provide easy access and reduces the time spent while searching for materials compared to traditional service method. She added that availability of Information Technology (IT) has revolutionised operations and services.

### **2.3.6 Challenges Faced by Librarians in Research productivity**

Challenges to publication efforts of librarians include lack of fund to facilitate robust and reliable internet connectivity affect research output negatively, exorbitant publication fees by journal outfits, and indiscriminate rejection of manuscripts by journals. The degree of access to electronic information resources is low among librarians in Nigerian Universities. Despite the benefits of publication to librarians, their publication output is low. According to Onohwakpor and Tiemo (2011) they summarise the limitations as ignorance on where to publish and the acceptable journals. Moahi (2012) identifies lack of time and inadequate publications skills as part of the problem. Majority of librarians are faced with time constraints and poor data interpretation skill is another problem faced by librarians in the process of making publication especially journal articles. Many studies attribute the low research output of librarians to lack of training, which hinders the acquisition of adequate research and writing skills and identification of research problems. The effect to this seems to be lack of efficient availability and accessibility to electronic information resources for research output. The constraints identified included the insufficient number of terminals example: High Definition Multimedia Interface (HDMI) available and accessible despite high demand and inadequate electricity supply.

Availability, accessibility and use of electronic information resources provides a better platform and more opportunities for librarians because it has advantages over the print resources. Some of the advantages of accessibility to electronic information resources when compared with print information resources includes the conservation of space and time. The librarians can have quick access to available information by making a combination of likely key words related to their search. The speed in retrieval of needed information is a major merit that electronic information resources have over print

resources. Other advantages of electronic information resources include currency, the ease of multiple accesses. Despite the availability of these electronic information resources and their benefits to university education, their effective accessibility in universities are being hampered by varying factors. Inadequacy of facilities to access was mentioned as one of the biggest problems librarians faced, leading to congestion, Low bandwidth leading to poor accessibility of these resources.

Damilola (2013) find that poor electricity supply greatly hindered the access of electronic information resources. This was represented by 117(46.8%) of the respondents and poor internet connectivity was another hindrance which greatly affected the access of electronic information resources, this was confirmed 100(40%) of the respondents. It was also gather that electricity was needed for resources to be accessed at any time from any part of the world, and the web servers that host locally digitised contents and proxy server that provide authentication and remote access of digitization and uploading of content and maintenance of the software also depended on the availability of electricity.

Other factors were insufficient skills, poor training programme and excessive library routine work that affect librarians in research output. Asheroft and Watts (2014) note that high cost of hardware, software and particularly internet service providers were significant barriers to the provision of electronic information resources.

According to Harle (2010), substantial barriers to electronic information resources access include lack of research culture. In addition, other factors such as heavy teaching load were also highlighted and supported by recent research (Hepworth & Duvigneau, 2012). Every institution faces problems whenever new services are introduced and policies are implemented Jayaprakash and Balasubramani, (2011) survey some of the

barriers to access electronic information resources available at the Medical Library of College of Medicine, University of Nigeria, Nsukka. Their findings expose that lack of adequate ICT (information and communication technology) infrastructure and affordable online access, absence of in-depth ICT skills and information searching skills among librarians and cost of accessing the cybercafé are barriers to the accessibility of electronic information resources.

Okiy (2015) points out poor and inadequate electronic information resources; poor level of computer literacy, even within the academic community; poor level of computer facilities; poor level of awareness of Internet facilities among policy makers, government officials and the ruling class in general; and minimum involvement of academic institutions in network building in Africa as challenges militating against the accessibility of EIR. Harle (2012) further indicate that “although connectivity is steadily beginning to improve, good reliable high-speed broadband connections are still not assured in all countries or in all parts of the countries”. Studies have reveal that these factors include poor funding of universities, high cost of IT equipment, high rate of foreign exchange, poor telecommunication infrastructures, and so on. All these factors affect the availability, accessibility and use of electronic information resources on research output of librarians in Federal Universities in North Central Nigeria.

## **2.4 Review of Related Empirical Studies**

This section deals with empirical studies related to this research work conducted by different authors. Okonedo (2015) examined research output and publications of librarians in public Universities in South –West, Nigeria. A descriptive survey research method was employed for the study. The purposive sampling method was used to select 11 out of 16 public Universities in the South-West Nigeria. All the librarians in the 11 public Universities were covered using total enumeration method. The sampled public

Universities comprises 6 Federal and 5 state Government Universities in South-West, Nigeria. Questionnaires was used to collect data from respondents. One hundred and sixty-six (166) copies of the questionnaires were administered and 144 were collected retrieved given a response rate of 85.5%.

However, the research only covered Universities in South-West, Nigeria. This prompted the research work at hand as it seek to study the availability, accessibility and use of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria. This findings is in direct contrast with the study of Oni and Eziam (2014) who reported that publication output of librarians in University libraries in Edo and Delta State which are: Universities of Benin library, Igbinedion University library, Benson Idahosa University library, Delta State University library and Novena University library. The total number of academic librarians in these Universities is fifty five (55) and the population for the study is few and as a result, the researchers decided to study the entire population.

The research is very relevant to the study at hand, though they differs in terms of coverage as it covered just two (2) State Edo and Delta, while the research at hand intends to cover 7 Federal Universities in North Central Nigeria, because it is justifiable to replicate a similar study in other part of the country.

Okiki (2012) conducted a related study that dwells on research output of faculty members in Nigeria Federal Universities. The study adopted descriptive survey design called correlation type. It established the relationship between socio-demographic characteristics and research output of faculty members in Nigeria Federal Universities. The population of the study consisted of academic staff working in all Federal Universities in Nigeria. The population of the study was 10,573. A sample sampling

frame of 10% of academics in each of the Universities was selected, giving a total of 1,057, an equivalent of 10% of the legitimate population. In order to generate the 10% of the sample, an average of 10% of the academic in each of the Universities selected were sampled, covering four faculties.

On the level of research output of the academic staffs, findings revealed that 600 (68.7%) of the respondents had articles published in learned journals. This findings strongly confirmed the culture of published or perish in academic institutions. 531 (60.8%) had conference papers. 236(27%) had textbooks.320 (36.7%) had patents in terms of invention. What this means is that copyright inventions were low among academics in Nigeria Universities. In other words, the research output of the academic staffs in the 12 Federal Universities in Nigeria is very good in publishing of journal articles, technical report, conference papers, working or occassional papers. Their publications is good in the publishing of books chapters, scientific peer-reviewed bulletins and patents. But their productivity is rather poor in the publishing of textbooks or co-author textbooks, monographs, patients or certified inventions. This research is related to the study at hand as both aim at carrying out research output of academic staffs in Federal Universities in Nigeria both adopted descriptive survey design of correlation type, though they differs in area of coverage; the authors coverage was 12 Federal Universities. The population of the study was 10,573, a sampling frame of 10% of academics in each of the Universities was selected, giving a total of 1,057 an equivalent of the legitimate population. While the research work at hand seek to cover 7 Federal Universities in North Central Geo-political Zone, Nigeria. Another disparity is that the population of the study consist of 1,057,an equivalent to 10% of all the academic staffs working in Federal Universities in Nigeria; while the present study



seek to cover 138 professional librarians in 7 Federal Universities in North Central Nigeria.

In another related study by Ngeme Franca (2013), on Accessibility, Use of Electronic Information Resources and Research Output of Librarians in Universities in Ekiti, Ondo and Osun State, Nigeria. The survey research method was adopted for the research. The population of the study was 160 librarians from 18 Universities in Ekiti, Ondo, and Osun State. Census was used to include all the 160 librarians that participated in the study. Cronbach's alpha reliability test was used to validate the instrument with value ranging from 0.7 to 0.81. 89.4% (143) was the return rate of the questionnaire. Data collected were analysed using descriptive statistics (frequency count, tables, percentages, standard deviation and means) for research questions while inferential statistics (Pearson's Product Moment Correlation Coefficient and ANOVA) were used for the hypotheses. However the research covered 18 Universities in Ekiti, Ondo, and Osun States and the population of the study was 160 librarians that participated in the study. The research is very relevant with the research at hand, though they differ in terms of number of Universities involved, as the research at hand will cover mainly seven (7) Federal Universities in North Central Nigeria and the populations of 138 professional librarians as respondents from these Universities under study.

According to the study carried out by Terry and Kieran (2016), on Research Output of Academic Librarians from Irish Higher Education Institutions 2000–2015: the findings of These researchers reveals that very small number of librarians have published regularly and extensively, 50% of those that published have only published once and this is a cause for concern; that promotion or status is not crucial drivers for research activity but career progression more important; library staff working at professional level are much more likely to publish more frequent; time and lack of institutional

support remain key barriers to research activity and writing groups and initiatives can have a positive impact on publication rates. This prompts the research at hand to find out the extent of research output of librarians in Federal Universities in North Central Nigeria.

## **2.5 Summary of the Review**

The review of the literature is mainly based on documentary sources, most of which consists of journal articles, textbooks, conference proceedings, articles from the internet and other relevant publications.

Electronic information resources play a vital role in research output of librarians in Nigerian Universities, due to the value of electronic information resources, in terms of speed, error free, and saves time not tedious as well as more economical. In view of this, the study intends to investigate the issues related to availability, accessibility and use of electronic information resources on research output of librarians in seven (7) federal Universities in North central geo- political zone, Nigeria. The various major areas the study examined were grouped under conceptual, theoretical frameworks and review of empirical studies. The conceptual review includes overview of the variables under study, availability, accessibility and use of electronic information resources on research output of librarians in Federal Universities in North Central Nigeria. A conceptual model was also constructed for the study by the researcher. The theoretical framework centered on Shannon-Weaver Model of Communication. This theory discussed the relationship with the present study shown. To understand the availability, accessibility and use of electronic information resources to successfully explain the paradigm that necessitate the need for electronic information resources from

availability, accessibility and use to research output of librarians. The theory explains how information (knowledge) is made available, received, interpreted and transformed for better productivity, feedback and output when it get to it destination.

The review of literature showed an appreciation and acceptance of electronic information resources as important source that enhance librarian's research output and productivity through the benefit it's offered. There is a strong indication of availability, accessibility and use of electronic information resources in Federal Universities in North Central Nigeria. Having reviewed the related literature, it is apparent that know research have been carried out on the exact topic within the geo-political scope of this research study. As a result there is need for a research aimed at discovering the relationship between availability, accessibility and use of electronic information resources and research output of librarians. This study is necessary in order to provide a reference work for future studies. It is also the gap of knowledge observed which this study is meant to fill.

## **CHAPTER THREE**

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Research Design**

Research design is most suitable for this study because it described the availability, accessibility and use of electronic information resources and research output of librarians in Federal Universities in north central Nigeria. The study adopted descriptive survey research method called correlation. Sharma (2017) stated that descriptive survey research method deals with describing the situation of a given population using some characteristics or features common among them. It is a process that involves a number of steps: (a) planning the survey (b) questionnaire design (c) sampling (d) data collection (e) data processing and (f) drawing conclusion.

Similarly, Hale (2011) reported that descriptive research methods could be observational, case-study or survey. Consequently, in descriptive survey research method, participants answer questions administered through interviews or questionnaires, thereafter, the researcher describe the responses given and analysed them accordingly. Moreover, descriptive survey research could be qualitative or quantitative, and it attempts to establish the range and distribution of some social characteristics, such as education, occupation and gender, and to discover how these characteristics may influence some certain behavioral patterns or attitudes.

### 3.2 Population of the Study

The population of the study is one hundred and fifty (150), comprising academic librarians. The breakdown is shown in Table 3.1 below:

**Table 3.1: Population of the study`**

<b>S/n</b>	<b>Name of University</b>	<b>Number Of Academic Librarians</b>
1.	University of Ilorin	25
2.	University of Jos, Plateau State	25
3.	Federal University of Technology, Minna	29
4.	Federal University of Agriculture, Makurdi	20
5.	University of Abuja	20
6.	Federal University Lafia	11
7.	Federal University Lokoja	20
<b>Total</b>		<b>Total 150</b>

**Source:** 2019 Research Survey.

### 3.3 Sample and Sampling Technique

The research adopted the total population for this research work. This means that the researcher used total enumeration also known as census study. The rationale behind this adoption is because the population of the study is not too enormous. This is in conformity with Benard (2012) who asserted that if the population of a study is less than two hundred (200), the researcher should adopt the entire population without sampling. Hence, the researcher used the entire population since it is manageable without sampling. Since census population was used, there is no sampling technique employed.

### **3.4 Instruments for Data Collection**

The research instrument used for this study was questionnaires and observation checklist due to the nature of the subjects study. The purpose of using questionnaire and observation checklist is to collect data on the availability, accessibility and use of electronic information resources as correlate of research output of librarians in Federal Universities in North Central Nigeria.

A self-designed closed ended structured questionnaire titled “Availability, Accessibility and Use of Electronic Information Resources as Correlate of Research output of Librarians in Federal Universities in North Central Zone, Nigeria. Questionnaire was the most appropriate instruments used for the study because it was easier to administer and data was collected within a very short time frame (Ibrahim, 2013). Respondents were offered set of answers in order to choose the ones that represents their views.

### **3.5 Validation of Research Instrument**

The questionnaire for this study was validated with the help of the researcher’s supervisor and two (2) lecturers in the department of library and information technology for their inputs, observation and comments to arrive at a valid measure on all the relevant concepts of the study. Their criticism was necessary for the improvement of items in the format of the research instrument. This is because the researchers aim is to enable the questionnaire address urgent and emerging issues of electronic information resources as correlate of research output of librarians.

### **3.6 Reliability of Research Instruments**

A pilot study was conducted using the librarians in Ibrahim Badamasi University, Lapai (IBBUL) Niger State, where 30 copies of the questionnaires were administered to determine the level of its reliability. The overall reliability of the tested questionnaires was 0.81 indicating that the instrument is reliable. According to Pallant (2010) Cronbach's Alpha coefficient is a universally accepted measure of reliability and scores should be above 0.5, whereas when scores is over 0.8 shows good internal consistency levels. Availability of electronic information resources (AEIRQ). Accessibility of electronic information resources (AEIRQ). Use of electronic information resources (UEIRQ). Research output (ROQ). Reliable cronbach alpha method was used for this study. The result is attached as Appendix D.

### **3.7 Procedure for Data Collection**

The research instrument (questionnaire) was administered directly by the researcher with the aid of research assistants from each of the universities under study. This was conducted on different occasions within the span of six (6) weeks. In addition, the research assistants were trained and guided on the techniques of administering the copies of the questionnaire prior to its distribution. Thus, the research assistants help the researcher in the administration and collection of copies of the questionnaire.

### **3.8 Method of Data Analysis**

The generated data from the questionnaire was analysed based on research questions and hypotheses. The socio- demographic information of the respondents was analysed using simple frequency counts, the research questions was analysed using descriptive statistics, specifically mean, mode, standard deviation and percentages, while the inferential statistics of Pearson Product Moment Correlation (PPMC) was used to

determine the relationship between the variables and multiple regression was used to predict the effect of the independent variables to the dependent variable.



## CHAPTER FOUR

### 4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION

#### 4.1 Data Presentation

**Table 4.1: Demographic Characteristics of the Respondents (N= 112)**

Response		Frequency	Percent
Age	21-30	15	13.4
	31-40	74	66.1
	41-50	17	15.2
	51-60	6	5.4
Gender	Female	50	44.6
	Male	62	55.4
Religion	Christianity	62	55.4
	Islam	50	44.6
Highest Acd Qua	PhD	10	8.9
	MLS	71	63.4
	BLIS	31	27.7
Rank	senior Librarian	47	42
	Librarian	26	23.2
	library assistant	39	34.8
Year of Service	5-Jan	47	42
	10-Jun	43	38.4
	15-Nov	17	15.2
	16-20	5	4.5

The result from the above table shows the demographic characteristics of the respondents on the availability, accessibility and use of electronic information resources towards research output of librarians in Federal Universities in North Central Nigeria. The table constitutes name of University library, gender of the respondents and highest education qualification of the respondents. From the table we observe that larger percentage of the respondents are male with 55.4% and females 44.6%. Based on age group we have 66.1% of the respondents age as 31-40. And base on educational qualification we have 63.4% of the respondents to be MSc/Mtech/MA/MLS/MLIS holders followed by 27.7% of the respondents having BSc/BTECH/BA/BLS/BLIS and 8.9% holding PhD.

## 4.2 Response Rate of the respondents

This chapter focuses on analysis and presentations of result table and graphs on the topic availability, accessibility and use of electronic information resources towards research output of librarians in Federal Universities in North Central Nigeria. SPSS 23 and MINITAB 17 Statistical package was utilised in this work.

A total of one hundred fifty (150) copies of questionnaires were administered to librarians from seven selected Federal Universities in north central Nigeria. Out of the one hundred fifty (150)

copies of the questionnaires administered one hundred and twelve (112) were properly filled, retrieved and valid for the purpose of the research. This represent 75% returned rate; that is  $[(95/121)*100 = 74.6667\%]$ . Table 4.1 below shows the breakdown of the return rate.

**Table 4.2: Return Rate by Institutions**

Universities	Copy of Questionnaire Administered	Number of returned Questionnaire	Percentage Returned
Fed. Uni. Lafia	11	10	8.9
Fed University Lokoja	20	11	9.82
University of Agric Makurdi	20	12	10.7
University of Illorin	25	23	20.5
Fed. Uni. Of Technology Minna	29	25	22.3
University of Jos	25	20	17.9
University of Abuja	20	11	9.82
Total	150	112	100

The result from this table shows the return rate of the institutions. From the table we observed that Federal University of technology Minna have the highest return rate of 22.3% this could be attributed to present of the researcher and the institution where the

research is carried out. We observed that there are more than average return rates based on the number of questionnaires administered to each institution.

**Table 4.3: What are the research output of librarians in Federal Universities in North Central Zone, Nigeria?**

Statement	SA 4	A 3	D 2	SD 1	FX	$\bar{X}$	STD	Decision
I enhance my research output by publications in professional journals	79(70.5)	33(29.5)	0(0.0)	0(0.0)	415	3.71	0.46	Accept
I enhance my research output by participating in conference proceedings	77(68.8)	35(31.3)	0(0.0)	0(0.0)	413	3.69	0.47	Accept
I enhance my research output by writing in books and contributing in book chapters	64(57.1)	48(42.9)	0(0.0)	0(0.0)	400	3.57	0.50	Reject
I enhance my research output by producing works of artistic and creative nature	61(54.5)	49(43.8)	2(1.8)	0(0.0)	395	3.53	0.54	Reject
I enhance my research output by gathering and analysing original evidence as primary source	82(73.2)	30(26.8)	0(0.0)	0(0.0)	418	3.73	0.44	Accept
I enhance my research output by contributing in writing of monographs	78(69.6)	31(27.7)	3(2.7)	0(0.0)	411	3.67	0.53	Accept
I enhance my research output through experimental designs	63(27.7)	46(41.1)	3(2.7)	0(0.0)	396	3.54	0.55	Reject
I enhance my research output by engaging in public debate and commentaries	53(47.3)	48(42.9)	11(9.8)	0(0.0)	378	3.38	0.66	Reject
I enhance my research output by working with postgraduate students on dissertations and class project	79(70.5)	31(27.7)	2(1.8)	0(0.0)	413	3.69	0.50	Accept
I enhance my research output by carrying out editorial duties, obtaining patent and licences in terms of inventions	68(60.7)	38(33.9)	6(5.4)	0(0.0)	398	3.55	0.59	Reject
<b>Overall Mean</b>					<b>3.61</b>			

**From this table, values in the parenthesis are percentages of the frequency counts. SA= Strongly Agree, A= Agree, D= Disagree and SD= Strongly Disagree. Decisions are made to each response base on the overall mean 3.61.**

**Note:** *Decision Rule: mean values less than 3.61 are rejected, while those greater than or equal to 3.61 are Accepted.*

The result from Table 4.4 shows the frequency of research output of librarians in Federal Universities in North Central Nigeria. From the table, the researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; I enhance my research output by publications in professional journals, I enhance my research output by participating in conference proceedings, I enhance my research output by gathering and analysing original evidence as primary source, I enhance my research output by contributing in writing of monographs and I enhance my research output by working with postgraduate students on dissertations and class project. While they Rejected the following statement I enhance my research output by writing in books and contributing in book chapters, I enhance my research output by producing works of artistic and creative nature, I enhance my research output through experimental designs, I enhance my research output by engaging in public debate and commentaries and lastly I enhance my research output by carrying out editorial duties, obtaining patent and licences in terms of inventions.

**Table 4.4: What is the extent of research output of librarians in Federal Universities in North Central Zone, Nigeria?**

Statement	VH 4	M 3	L 2	VL 1	FX	$\bar{X}$	STD	Decision
I published 10 scholarly journals in a year	79(70.5)	15(13.4)	18(16.1)	0(0.0)	397	3.54	0.76	Accepted
I published 5 scholarly journals in a year	76(67.9)	28(25.)	8(7.1)	0(0.0)	404	3.61	0.62	Accepted
I published 3 scholarly journals in a year	20(17.9)	71(63.4)	21(18.1)	0(0.0)	335	2.99	0.61	Rejected
I published 1 scholarly journal in a year	14(12.5)	57(50.9)	21(18.1)	20(17.9)	289	2.58	0.93	Rejected
<b>Overall Mean</b>					<b>3.18</b>			

**From this table, values in the parenthesis are percentages of the frequency counts. VH = Very High, M = Moderate, L = Low and VL= Very Low. Decisions are made to each response base on the overall mean 3.18.**

**Note:** *Decision Rule: mean values less than 3.18 are rejected, while those greater than or equal to 3.18 are Accepted.*

The result from table 4.5 shows the frequency of the extent of research output of librarians in Federal Universities in North Central Nigeria. From the table, the researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accepted the following statement; I published 10 scholarly journals in a year and I published 5 scholarly journals in a year. While they Rejected the following statement I published 3 scholarly journals in a year and also comments like, I published 1 scholarly journal in a year.

**Table 4.5: What is the relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria?**

	SA 4	A 3	D 2	SD 1	FX	$\bar{X}$	STD	Decision
Availability of electronic information resources enhances research output of librarians	99(88.4)	13(11.6)	0(0.0)	0(0.0)	435	3.89	0.32	Accepted
Availability of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output	92(82.1)	20(17.9)	0(0.0)	0(0.0)	428	3.82	0.39	Accepted
Availability of electronic information resources provide access to current information, save time and able to update frequently	110(98.2)	2(1.8)	0(0.0)	0(0.0)	446	3.98	0.13	Accepted
Availability of electronic information resources offers search capability, flexibility and result for greater research output	95(84.8)	17(15.2)	0(0.0)	0(0.0)	431	3.85	0.36	Accepted
The availability of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output	101(90.2)	11(9.8)	0(0.0)	0(0.0)	437	3.90	0.30	Accepted

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**From this table, values in the parenthesis are percentages of the frequency counts. SA= Strongly Agree, A= Agree, D= Disagree and SD= Strongly Disagree. Decisions are made to each response base on the overall mean 3.89.**

**Note:** *Decision Rule: mean values less than 3.89 are rejected, while those greater than or equal to 3.89 are Accepted.*

The result from table 4.6 shows the frequency on relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria. From the table, the researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; Availability of electronic information resources enhances research output of librarians, Availability of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output, Availability of electronic information resources provide access to current information, save time and able to update frequently, Availability of electronic information resources offers search capability, flexibility and result for greater research output. The availability of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output. The respondents have high rate of Acceptance to Availability of electronic information resources provide access to current information, save time and able to update frequently and the availability of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output. Since the both have larger mean of 3.98 and 3.90 as compared with the overall mean. While they fail to Rejected other statements with their mean slightly less than the overall mean 3.89 with insignificant decimal figures.



**Table 4.6: What is the relationship between Accessibility of Electronic Information Resource and research output of librarians in North Central Zone, Nigeria?**

Statement	SA	A	D	SD	FX	$\bar{X}$	STD	Decision
	4	3	2	1				
Accessibility of electronic information resources enhances research output of librarians	87(77.7)	25(22.3)	0(0.0)	0(0.0)	423	3.78	0.42	Accepted
Accessibility of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output	90(80.2)	22(19.6)	0(0.0)	0(0.0)	426	3.80	0.40	Accepted
Accessibility of electronic information resources provide access to current information, save time and able to update frequently	92(82.1)	13(11.6)	7(6.3)	0(0.0)	421	3.76	0.56	Accepted
Accessibility of electronic information resources offers search capability, flexibility and result for greater research output	84(75.0)	23(20.5)	5(4.5)	0(0.0)	415	3.71	0.55	Rejected
The accessibility of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output	78(69.6)	34(30.4)	0(0.0)	0(0.0)	414	3.70	0.46	Rejected
						3.75		

**From this table, values in the parenthesis are percentages of the frequency counts.**

**SA= Strongly Agree, A= Agree, D= Disagree and SD= Strongly Disagree. Decisions are made to each response base on the overall mean 3.75.**

**Note:** *Decision Rule: mean values less than 3.89 are rejected, while those greater than or equal to 3.75 are Accepted.*



The result from table 4.7 shows the frequency on the relationship between Accessibility of Electronic Information Resource and research output of librarians in North Central Nigeria. From the table, the researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; Accessibility of electronic information resources enhances research output of librarians, Accessibility of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output, Accessibility of electronic information resources provide access to current information, save time and able to update frequently. The respondents have high rate of Acceptance to Accessibility of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output. Since it have the largest mean of 3.80 as compared with the overall mean. While they Rejected the following statements; Accessibility of electronic information resources offers search capability, flexibility and result for greater research output and the accessibility of electronic information resources provide access to information that can broaden the mind of librarians when embarking on research that leads to greater research output.

**Table 4.7: What is the relationship between the use of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria?**

Statement	SA	A	D	SD	FX	$\bar{X}$	STD	Decision
	4	3	2	1				
Use of electronic information resources enhances research output of librarians	85(75.9)	25(22.3)	2(1.8)	0(0.0)	419	3.74	0.48	Rejected
Use of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output	98(87.5)	6(5.4)	8(7.1)	0(0.0)	426	3.80	0.55	Rejected
Use of electronic information resources helps in providing greater research output	104(92.9)	8(7.1)	0(0.0)	0(0.0)	440	3.93	0.26	Accepted
Use of electronic information resources offers search capability, flexibility and result for greater research output	105(93.8)	7(6.3)	0(0.0)	0(0.0)	441	3.94	0.24	Accepted
The Use of electronic information resources provide information that can broaden the mind of librarians when embarking on research that leads to greater research output	91(81.3)	21(18.8)	0(0.0)	0(0.0)	427	3.81	0.39	Rejected
<b>Overall Mean</b>						<b>3.84</b>		

**From this table, values in the parenthesis are percentages of the frequency counts.**

**SA= Strongly Agree, A= Agree, D= Disagree and SD= Strongly Disagree. Decisions are made to each response base on the overall mean 3.84.**

**Note:** *Decision Rule: mean values less than 3.84 are rejected, while those greater than or equal to 3.84 are Accepted.*

The result from table 4.8 shows the relationship between the use of electronic information resources and research output of librarians in Federal Universities in North

Central Nigeria. From the table, the researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accepted the following statement; Use of electronic information resources helps in providing greater research output and Use of electronic information resources offers search capability, flexibility and result for greater research output. While they Rejected the following statement: Use of electronic information resources enhances research output of librarians. Use of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output and the use of electronic information resources provide information that can broaden the mind of librarians when embarking on research that leads to greater research output.

**Table 4.8: What are the challenges militating against the research output of librarians in Federal Universities in North Central Nigeria?**

Statement	SA	A	D	SD	FX	$\bar{X}$	STD	Decision
	4	3	2	1				
Lack of fund to facilitate robust and reliable internet connectivity affect research output negatively	102(91.1)	10(8.9)	0(0.0)	0(0.0)	438	3.91	0.286	Accepted
Lack of adequate power supply is one of the factor militating against research output	104(92.9)	8(7.1)	0(0.0)	0(0.0)	440	3.93	0.259	Accepted
Lack of telecommunication infrastructure slow down research output	96(85.7)	16(14.3)	0(0.0)	0(0.0)	432	3.86	0.351	Accepted
Poor level of utilization of internet facilities among policy makers, Government officials and the rulling class have an effect on research output	94(83.9)	18(16.1)	0(0.0)	0(0.0)	430	3.84	0.369	Rejected
Lack of time and adequate publication skills affect librarians research output	88(78.6)	24(21.4)	0(0.0)	0(0.0)	424	3.79	0.412	Rejected
Overall Mean						3.86		

From the table, values in the parenthesis are percentages of the frequency counts.

Decisions are made to each response base on the overall mean 3.86. SA=Strongly Agree, A=Agree, D=Disagree, SD=Strongly Disagree, FX= Weighted Sum and  $\bar{X}$  = Mean

**Note:** Decision Rule: mean values less than 3.86 are regarded as low level of awareness, while those equal to 3.86 are regarded as award and those greater than 3.27 are highly awarded.

The result from table 4.8 shows the challenges militating against the research output of librarians in Federal Universities in North Central Zone, Nigeria. From the table, the researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; Lack of fund to facilitate robust and reliable internet connectivity affect research output negatively, Lack of adequate power supply is one of the factor militating against research output and lack of telecommunication infrastructure slow down research output. While they Rejected the following statement Poor level of utilization of internet facilities among policy makers, ruling class have an effect on research output and Lack of time and adequate publication skills affect librarians research output.

### 4.3 Discussion of Findings Based on Tested Hypotheses

Four null hypotheses were tested for this study. The hypotheses were tested at 0.05 level of significance.

**Table 4.9: Hypotheses 1**

Product moment Correlation Analysis showing relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria

Variables	N	Mean	Std. Dev	DF	R	P-Value
Research output	112	45.2796	4.73508	110	0.622**	0.002
Electronic information resources	112	30.0753	3.24452			

\*\*. Correlation is significant at  $P < 0.05$  level (2-tailed).

The result from this table shows the relationship between availability of electronic information resources and research output of librarians. From the table it can be observed that the result of PPMC shows that there is significant relationship between availability of electronic information resources and research output of librarians. Since the p-value = 0.002 is less than 0.05 level of significance. R is the correlation coefficient. It is a value that shows the degree of association between two variables. From the table, it can be observed that  $R=0.622$ , infers a strong positive influence (correlation) of electronic information resources on Research output. This infers that, predatory journals have  $(0.622*100) = 62.2\%$  positive influence on research output of librarians in Federal Universities in North Central. Thus we reject the null hypothesis ( $H_{01}$ ) in favor of the alternative ( $H_{11}$ ) and conclude that there is significant relationship between electronic information resources and research output of librarians in Federal Universities in North Central Nigeria.

**Table 4.10: Hypotheses 2**

Product moment Correlation Analysis showing relationship between accessibility of electronic information resources on research output of librarians in Federal Universities in North Central Zone, Nigeria

	N	Mean	Std. Dev	DF	R	P-Value
Research output	112	60.2796	4.73508	110	0.322**	0.000
Availability, accessibility and use of electronic information resources	112	21.3368	2.17143			

\*\*. Correlation is significant at  $P < 0.05$  level (2-tailed).

The result from this table shows the relationship between accessibility of electronic information resources and research output of librarians. From the table it can be observed that the result of PPMC shows that there is significant relationship between accessibility and use of electronic information resources since the p-value = 0.000 from

the table is less than 0.05 level of significance and  $R$  (Correlation coefficient) = 0.322 infers a weak positive association (correlation) of accessibility of electronic information resources on research output. It infers that, accessibility of electronic information resources is poor to enhance research output from the sampled Universities in North Central. Thus we reject the null hypothesis ( $H_{02}$ ) in favor of the alternative ( $H_{12}$ ) and conclude that there is significant relationship between accessibility of electronic information resources on research output of librarians in Federal Universities in North Central.

**Table 4.11: Hypotheses 3**

Regression Analysis showing relative contribution of the use of electronic information resources on the research output of librarians in Federal Universities in North Central Nigeria

Model	Sum of Squares	Df	Mean Square	F	Sig.
Rgression	11.743	3	3.914	3.071	.000 <sup>b</sup>
Residual	99.328	108	.9197		
Total	126.071	1			

a. Dependent Variable: Research output

b. Predictors: (Constant), availability, accessibility and use of electronic information resources

The result from table 4.12 shows the relative contribution of the use of electronic information resources on the research output of librarians in Federal Universities in North Central Nigeria. From the table p-value (significant value) = 0.000 infers significance. Thus it implies that there is a significant influence on all of the

independent variables availability, accessibility and use of electronic information resources on the research output of librarians.

**Table 4.12: Hypotheses 4**

Composite contribution of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in North Central Nigeria

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta	Rank		
(Constant)	2.744	.031			88.446	.000
Availability	.030	.022	.055	3 <sup>rd</sup>	1.336	.012
Accessibility	-.054	.011	0.232	1 <sup>st</sup>	-5.065	.000
use of electronic information	.101	.022	.192	2 <sup>nd</sup>	4.496	.000

a. Dependent Variable: Assault

Table 4.14 shows the coefficients of the predictor variables. From the table predictor variables with p-value (sig value) less than 0.05 infers a significant influence on the research output of librarians in Federal Universities in North Central Nigeria. Thus from the table, we observed that the three variables availability, accessibility and use of electronic information resources with p-value = 0.000, strongly influenced the research output of librarians in Federal Universities in North Central Nigeria. The composite contribution of each independent variables to the dependent variable (research output) in the model is evaluated using the standardized regression coefficient. From the table we observed that Beta = 0.232, t = -5.065 and p-value = 0.000 have the highest potent

contribution to the dependent variable (Research output). The result of  $\text{Beta} = 0.232$  shows that accessibility is high and have a positive contribution to research output. Based on the rank, it follows that use of electronic information have the second high composite contribution to research output with  $\text{Beta} = 0.192$ ,  $t = 4.496$  and  $p\text{-value} = 0.000$ . And lastly Availability have the least composite contribution based on the research findings in the study area. With  $\text{Beta} = 0.055$ ,  $t = 1.336$  and  $p\text{-value} = 0.012$ .

#### **4.4 Summary of Major Findings**

The major findings of the study are as follows:

1. The study revealed that larger percentage of the respondents Accept that they enhance research output by publications in professional journals, by participating in conference proceedings, by gathering and analysing original evidence as primary source, by contributing in writing of monographs and by working with postgraduate students on dissertations and class project.
2. The result shows that larger percentage of the sampled respondents strongly and Accept the following statement; I published 10 scholarly journals in a year and I published 5 scholarly journals in a year. Based on the extent of research output of librarians in Federal Universities in North Central Nigeria.
3. The result based on frequency of relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria. It was observed that larger percentage of the sampled respondents Strongly Agreed and Accept that; Availability of electronic information resources enhances research output of librarians, Availability of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output, availability of electronic information resources provide access to current information, save time and able



to update frequently, availability of electronic information resources offers search capability, flexibility and result for greater research output and The availability of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output.

4. Base on frequency of the relationship between accessibility of Electronic Information Resource and research output of librarians in North Central Nigeria. The result show that, larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; accessibility of electronic information resources enhances research output of librarians, accessibility of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output, accessibility of electronic information resources provide access to current information, save time and able to update frequently.
5. The result on relationship between the use of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria. Shows that, larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; Use of electronic information resources helps in providing greater research output and Use of electronic information resources offers search capability, flexibility and result for greater research output.
6. Based on challenges militating against the research output of librarians in Federal Universities in North Central Nigeria. The researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; Lack of fund to facilitate

robust and reliable internet connectivity affect research output negatively, Lack of adequate power supply is one of the factor militating against research output and Lack of telecommunication infrastructure slow down research output

7. The result shows that there is significant strong and positive relationship between availability, accessibility and use of electronic information resources since the p-value = 0.000 from the table is less than 0.05 level of significance.
8. Based on relative contribution of the availability, accessibility and use of electronic information resources on the research output. The result shows that there is strong positive relative contribution of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in North Central Nigeria. Since the table p-value (significant value) = 0.000 is less than 0.05.

#### **4.5 Discussion of the findings**

##### **4.5.1 What are the research output of librarians in Federal Universities in North Central Nigeria?**

The aim of this study is to investigate the availability, accessibility and use of electronic information resources towards research output of librarians in Federal Universities in North central Nigeria. Research question one was designed to determine research output of librarians in Federal Universities in North Central Nigeria. The study revealed that larger percentage of the respondents Accept that they enhanced their research output by publications in professional journals, by participating in conference proceedings, by gathering and analysing original evidence as primary sources, by contributing in writing of monographs and by working with postgraduate students on dissertations and class project. This is in agreement with Sudhier and Abhila (2011) that research output is

expressed by the number of papers published by a selected unit in a given time. A well-known research output indicator is the number of publications produced by librarians within a given time. Research output are tangible outputs of research publications in (1) professional journals (2) conference proceedings (3) writing books or chapters in books (4) producing works of artistic or creative nature (5) Gathering and analysing of original evidence as primary source (6) writing of monographs (7) Developing experimental designs (8) Engaging in public debate and commentaries (9) Working with postgraduate students on dissertations and class project (10) Carrying out editorial duties, obtaining patents and licenses in terms of inventions. Research output can be share through publications in professional journal.

#### **4.5.2 Research question 2: What is the extent of research output of librarians in Federal Universities in North Central Nigeria?**

The second research question sought out to analyze the extent of research output of librarians in Federal Universities in North Central Nigeria. The result shows that larger percentage of the sampled respondents strongly agreed and Accept they publish much scholarly journals in a year as agreed by Deng 2010 who opined that electronic information resources help in research output prolificness. Based on the extent of research output of librarians in Federal Universities in north central Nigeria, and according to Terry and Kieran (2016) research output of Academic Librarians from Irish Higher Education Institutions 2000–2015: the findings of these researchers reveals that very small number of librarians have published regularly and extensively, 50% of those that published have only published once and this is a cause for concern; that promotion or status is not crucial drivers for research activity but career progression more important; library staff working at professional level are much more likely to publish more frequent; time and lack of institutional support remain key barriers to

research activity and writing groups and initiatives can have a positive impact on publication rates. This prompts the research at hand to find out the extent of research output of librarians in Federal Universities in North Central Nigeria.

#### **4.5.3: Research Question 3: What is the relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria?**

The result based on frequency of the relationship between availability of electronic information resources and research output of librarians in Federal Universities in north central Nigeria. We observed that larger percentage of the sampled respondents Strongly Agreed and Accept that; Availability of electronic information resources enhances research output of librarians, availability of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output, availability of electronic information resources provide access to current information, save time and able to update frequently. According Letchumana and Tarmizi (2011) availability of electronic information resources offers search capability, flexibility and result for greater research output. The availability of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output.

#### **4.5.4: Research Question 4: What is the relationship between Accessibility of Electronic Information Resource and research output of librarians in North Central Nigeria?**

The relationship between Accessibility of electronic information resource and research output of librarians in North Central Nigeria. The result shows that, larger percentage of the sampled respondents Strongly Agreed and Accept the following statement;

Accessibility of electronic information resources enhances research output of librarians, accessibility of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output. Adeloye (2013) affirmed that accessibility of electronic information resources provide access to current information, save time and able to update frequently. They Rejected the following statements; Accessibility of electronic information resources offers search capability, flexibility and result for greater research output and The accessibility of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output.

Ibrahim (2014) identified inadequate funding as a major barrier to the acquisition of information resources, training and application of information technology facilities in academic libraries in Nigeria. The author also stated that it is sad to note that even recently most librarian lack adequate financial support for their operations.

#### **4.5.5 Research Question 5: What is the relationship between the use of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria?**

Research question five sought to find out the relationship between the use of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria. The result shows that, larger percentage of the sampled respondents Strongly Agreed and Accept the following statement; Use of electronic information resources helps in providing greater research output of librarians and it offers search capability, flexibility and result for greater research output. Sivathaasan and Velnampy (2013) both agreed that the use of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output and it provide

information that can broaden the mind of librarians when embarking on research that leads to greater research output.

#### **4.5.6 Research Question 6: What are the challenges militating against the research output of librarians in Federal Universities in North Central Nigeria?**

This research question seeks to reveal the challenges militating against the research output of librarians in Federal Universities in North Central Nigeria. The researcher observed that in each case of the statement, a larger percentage of the sampled respondents Strongly Agreed and Accepted the following statement; Lack of fund to facilitate robust and reliable internet connectivity affect research output negatively, Lack of adequate power supply is one of the factor militating against research output and Lack of telecommunication infrastructure slow down research output. Hale, J. (2011) is of the opinion that substantial barriers to electronic information resource access and use include lack of research culture. It is equally necessary to note that it is important for libraries to develop and maintain adequate and standard information resources like e-books, e-journals, ICT facilities as well as audio-visual collection and computer technologies in order to support their services and to ensure the availability of adequate, proper and balanced resources that meets the knowledge and information needs of the institutions and its community of users. This however becomes the condition that enables professional librarians take up the responsibility of planning and monitoring the development of their library collection for efficient and effective research output.

#### **4.6 Discussion of Findings based on Tested hypotheses**

Five null hypotheses were tested for this study. The hypotheses were tested at 0.05 level of significance.

### **Hypotheses Testing**

**HO<sub>1</sub>. There is no significant relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Nigeria.**

The test result of the hypothesis testing revealed that there is significant relationship between availability of electronic information resources and research output of librarians. Since the p-value = 0.002 is less than 0.05 level of significance.

**HO<sub>1.2</sub> There is no significant relationship between accessibility of electronic information resources of librarians in Federal Universities in North Central Nigeria**

The result shows that there is significant relationship between availability, accessibility and use of electronic information resources since the p-value = 0.000 from the table is less than 0.05 level of significance.

**HO<sub>1.3</sub> There is no significant relationship between the use of electronic information resources and research output of librarians in Federal Universities in north central Nigeria.**

The test result of the hypothesis revealed that there is a significant use of electronic information resources as correlate of research output of librarians in Federal

Universities in north central zone, Nigeria since the p-value =0.001 from the table is less than 0.5 level of significance.

**HO<sub>1.4</sub> There is no significant composite contribution of the availability, accessibility and use of electronic information resources as correlate of research output of librarians in Federal Universities in north central Nigeria.**

Base on the composite contribution of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in North central Nigeria. The table p-value (significant value) = 0.000 is less than 0.05.

**HO<sub>1.5</sub> There is no significant relative contribution of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in North Central Nigeria.**

The result shows that there is a significant relative contribution of the of the availability, accessibility and use of electronic information resources on the research output of librarians in Federal Universities in north central Nigeria since the p-value = 0.001 which is less than 0.05 level of significance.



## **CHAPTER FIVE**

### **5.0 CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Conclusion**

From the findings of the study, it could be concluded that librarians in Federal Universities published their research output in professional journals, conference proceedings, writing of monographs, writing of book or book chapters, in analysing original evidence as primary source, working with postgraduate students on dissertations and course work, exhibiting editorial duties, obtaining patent and licenses in terms of inventions and many more. Within the recent knowledge-based society, the need for universal access and use of electronic information resources is imperative for librarians to redefine their stands in terms of research output. The study revealed some of the benefit of Electronic Information Resources as it shows that it; enhances research output of librarians, offers search capability, shows flexibility and result for greater research output, equally provide information that can broaden the mind of librarians when embarking on research that leads to greater research output. It is obvious from the finding of this study that most librarians in Federal Universities in north central Nigeria have access to electronic information resources but they are not adequately using these resources on their research output.

In addition to the findings of this study, quite a lot of electronic information resources were made available, accessible and frequently used in Federal Universities in north central Nigeria. In spite of this fact, the study documented some challenges facing librarians research output; lack of fund to facilitate robust and reliable internet connectivity affect research output negatively, lack of adequate power supply is one of the factor militating against research output, poor level of utilization of internet facilities among policy makers, Government officials and the rulling class have an effect on

research output, lack of time and adequate publication skills affect librarians research output. As deduced in this study, the librarians have access to electronic information resources but their inability to use these resources effectively slow down their research output, lack of adequate time due to library routine, these are some of the challenges affecting effective and efficient research output of librarians in Federal Universities in north central Nigeria. However, if obstacles affecting the effective research output are removed no doubt, there will be a positive turn- around in research output of librarians in Federal Universities in north central Nigeria.

## **5.2 Recommendations**

Based on the findings of the study, the following recommendations are made:

1. Availability, Accessibility: librarians in the study area should liaise with university management to make available access to electronic information resources through online subscription of data for browsing, increase in interest bandwidth, constant electricity, paying utilities bills as when due and provision of conducive environment for research work.
2. Use: librarians in Federal Universities in north central Nigeria should make judicious use of electronic information resources that are available, accessible in their universities to enhance quality research publications which lead to effective and efficient research output.
3. Librarians' routine task should be minimize by the Federal university management in north central Nigeria, so that they can have time to embark on research activities which in turn boost other universities research output and productivity in Nigeria.

4. Librarians in Federal universities in north central Nigeria should try as much as possible to exhibit editorial duties, obtain patent and license in terms of inventions and scientific peer-reviewed.
5. International publication on journal should be given more attention and monograph publication should be encouraged by Federal Universities in north central Nigeria.
6. The librarians and Universities management studied should provide adequate interest services and facilities for effective research output and productivity.
7. Librarians need to be encouraged by providing the necessary electronic information resources that should improve their research output

### **5.3 Contribution to Knowledge**

The finding provides a roadmap that should assists the university management to identify the key factors that affect research output of librarians in the study area. Also with review of various studies, it was found that availability accessibility and use of electronic information resources do not significantly influence much on librarians' research output as most of them use the electronic information resources for other library routine task. Empirically, this study provide the chance for researchers and librarians to make effective and efficient use of electronic information resources in their research activities.

This research should contributed to knowledge in the following ways:

1. This study should contribute to knowledge by exposing the benefits of electronic information resources to librarians and the management of the Universities studied.

2. The study should establish a greater relationship between research output and electronic information resources of librarians in the Universities studied.
3. The study establishes the relationship between electronic information resources and research output of librarians in Federal Universities in north central Nigeria.
4. The study establishes the relationship between the application of electronic information resources (EIR) and research output of librarians and information dissemination in the Universities studied.
5. The study should also contribute to efficient and effective research output and productivity of librarians in the Universities studied.

#### **5.4 Suggestion for Further Research**

This study examined the availability, accessibility and use of electronic information resources as correlate of research output of librarians in Federal Universities in north central Nigeria. It is therefore necessary, for one to suggest a similar research on availability, accessibility and use of electronic information resources as correlate of research output of librarians in both Federal, state and private Universities in Nigeria. The findings of such similar research would be of great importance and benefit to librarians and other University management in Nigeria at large.

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## APPENDIX A

### Appendix A

#### FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY (SICT)

DEPARTMENT OF LIBRARY AND INFORMATION TECHNOLOGY

VICE – CHANCELLOR:

Prof. Abdullahi Bala PhD, FSSN

REGISTRAR:

Mr. A. N. Kolo, B.Sc., MSc., ACIPM

HEAD OF DEPARTMENT:

Dr. K. A Saka, NCE, BLIS (ABU), MLS (BUK), Ph.D (UniMaid)



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Telegram: FUTECH, Minna

E-mail: s.katamba@futminna.edu.ng

Tel: 07038706880

30<sup>th</sup> October, 2019

#### TO WHOM IT MAY CONCERN

LETTER OF INTRODUCTION: MOSES, DAVID

M.Tech/SICT/2017/6945

The above named is a postgraduate student of the Department of Library and Information Technology, Federal University of Technology, Minna.

He is writing a project: "AVAILABILITY, ACCESSIBILITY AND USE OF ELECTRONICS INFORMATION RESOURCES AS CORELATE OF RESEARCH OUTPUT OF LIBRARIANS IN FEDERAL UNIVERSITIES IN NORTH CENTRAL ZONE, NIGERIA".

I therefore request you to kindly give him necessary assistance he requires for the success of his assignment/ research work.

Thank you for your anticipated co-operation.

Yours sincerely,

Dr. K. A. Saka  
HOD/ LIT

## **APPENDIX B**

School of Information and Communication Technology  
(ICT)

Department of library and Information Technology,  
Federal University of Technology Minna,  
Niger State.

September 30th, 2019.

Dear Respondent,

### **LETTER OF INTRODUCTION**

I, Moses David is a postgraduate student of Federal University of Technology Minna, Niger State with the matriculation number M/TECH/2017/6945

I am currently working on a research topic “Availability, Accessibility and Use of Electronic Information Resources as Correlate of Research output of Librarians in Federal Universities in North Central Zone, Nigeria”

I will appreciate if you kindly complete the attached questionnaire as it will be instrumental to the completion of my research program. The information requested for is purely for academic research purpose and shall be treated with strict confidentiality. Please help to respond honestly to the questions as the identity of each respondents will not be required.

Thanks for your anticipated cooperation

Yours sincerely

Moses, David

M/TECH/2017/6945

## **APPENDIX C**

### **QUESTIONNAIRE**

#### **AVAILABILITY, ACCESSIBILITY AND USE OF ELECTRONIC INFORMATION RESOURCES AS CORRELATE OF RESEARCH OUTPUT OF LIBRARIANS IN FEDERAL UNIVERSITIES IN NORTH CENTRAL ZONE, NIGERIA**

**RESEARCHERS INSTRUCTIONS:** please tick (✓) the appropriate box where applicable

##### **SECTION A: DEMOGRAPHIC INFORMATION**

Name of the Institution: .....

Age: 21 -30 ( ) 31- 40 ( ) 41 – 50 ( ) 51 – 60 ( ) 61 and Above

Gender: Female ( ) Male ( )

Religion: Christianity ( ) Islam ( ) Traditional ( ) Others specify.....

Highest academic qualification: PhD ( ) MLS ( ) BLIS ( )

Designation/ Rank .....

Years of Service: 1-5 ( ) 6- 10 ( ) 11 – 15 ( ) 16 – 20 ( ) 21 and Above

##### **Research Question 1.**

**What are the research output of librarians in Federal Universities in North Central Zone, Nigeria?**

## SECTION B

**NOTE:** Kindly tick appropriately your level of agreement or disagreement with the following statements in the table below: (**Strongly Agree (SA) = 1, Agree (A) = 2, Disagree (D) = 3, Strongly Disagree (SD) = 4.**)

S/N	Statement	SA 1	A 2	D 3	SD 4
1.	I enhance my research output by publications in professional journals				
2.	I enhance my research output by participating in conference proceedings				
3.	I enhance my research output by writing in books and contributing in book chapters				
4.	I enhance my research output by producing works of artistic and creative nature				
5.	I enhance my research output by gathering and analysing original evidence as primary source				
6.	I enhance my research output by contributing in writing of monographs				
7.	I enhance my research output through experimental designs				
8.	I enhance my research output by engaging in public debate and commentaries				
9.	I enhance my research output by working with postgraduate students on dissertations and class project				
10.	I enhance my research output by carrying out editorial duties, obtaining patent and licences in terms of inventions				

**Research Question 2:** What is the extent of research output of librarians in Federal Universities in North Central Zone, Nigeria?

### Section C

NOTE: (Very High (VH) = 1, Moderate (M) = 2, Low (L) = 3 Very Low

S/N	Statement	VH 1(100%)	M 2(50%)	L 3(30%)	VL 4(10%)
1.	I published 10 scholarly journals in a year				
2.	I published 5 scholarly journals in a year				
3.	I published 3 scholarly journals in a year				
4.	I published 1 scholarly journal in a year				

### Research Question 3

What is the relationship between availability of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria

### Section D

NOTE: Strongly Agree (SA) = 1, Agree (A) = 2, Disagree (D) = 3, Strongly Disagree (SD) = 4.)

S/N	Statement	SA 1	A 2	D 3	SD 4
1.	Availability of electronic information resources enhances research output of librarians				
2.	Availability of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output				
3.	Availability of electronic information resources provide access to current information, save time and able to update frequently				

4.	Availability of electronic information resources offers search capability, flexibility and result for greater research output				
5.	The availability of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output				

#### Research Question 4

What is the relationship between Accessibility of Electronic Information Resource and research output of librarians in North Central Zone, Nigeria?

#### Section E

**NOTE: Strongly Agree (SA)=1, Agree(A)=2, Disagree(D)=3;Strongly Disagree(SD)=4**

S/N	Statement	SA	A	DA	SD
1	Accessibility of electronic information resources enhances research output of librarians				
2.	Accessibility of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output				
3.	Accessibility of electronic information resources provide access to current information, save time and able to update frequently				
4.	Accessibility of electronic information resources offers search capability, flexibility and result for greater research output				
5.	The accessibility of electronic information resources provides access to information that can broaden the mind of librarians when embarking on research that leads to greater research output				

### Research Question 5

**What is the relationship between the use of electronic information resources and research output of librarians in Federal Universities in North Central Zone, Nigeria?**

#### Section F

**NOTE: Strongly Agree (SA)=1, Agree(A)=2, Disagree(D)=3;Strongly Disagree(SD)=4**

S/N	Statement	SA	A	DA	SD
1	Use of electronic information resources enhances research output of librarians				
2.	Use of electronic information resource is an essential tool for learning, research, teaching and consultancy for greater research output				
3.	Use of electronic information resources provide access to current information, save time and able to update frequently				
4.	Use of electronic information resources offers search capability, flexibility and result for greater research output				
5.	The Use of electronic information resources provide information that can broaden the mind of librarians when embarking on research that leads to greater research output				



### Research Question 6

What are the challenges militating against the research output of librarians in Federal Universities in North Central Zone, Nigeria

#### Section G

**NOTE:** Please tick (✓) appropriately your level of agreement or disagreement with the following statement: **Strongly Agree (SA) =1, Agree (A) =2, Disagree (D) = 3, Strongly Disagree (SD)=4.**

S/N	Statement	SA	A	D	SD
		1	2	3	4
1	Lack of fund to facilitate robust and reliable internet connectivity affect research output negatively				
2	Lack of adequate power supply is one of the factor militating against research output				
3	Lack of telecommunication infrastructure slow down research output				
4	Poor level of utilization of internet facilities among policy makers, Government officials and the rulling class have an effect on research output				
5	Lack of time and adequate publication skills affect librarians research output				

## APPENDIX D

### Cronbach Alpha Reliability Analysis Result

#### Notes

Output Created		21-SEP-2019 21:02:11
Comments		
Input	Data	C:\Users\dell\Desktop\DEFAULT BACKUP\ ANALYSIS\DAVID.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	24
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax		RELIABILITY  /VARIABLES=SB1 SB2 SB3 SB4 SB5  /SCALE('ALL VARIABLES') ALL  /MODEL=ALPHA.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

**Scale: ALL VARIABLES**

**Reliability Statistics**

Cronbach's Alpha	N of Items
.91	10

**Reliability Statistics**

Cronbach's Alpha	N of Items
.82	5

**Reliability Statistics**

Cronbach's Alpha	N of Items
.71	5

$$\text{Average} = \frac{0.91+0.82+0.71}{3} = \frac{2.44}{3} = 0.81$$

The result of the analysis shows that the instrument is fit for study.