

**ASSESSMENT OF ELECTRONIC INFORMATION RESOURCES ON
POSTGRADUATE ENGINEERING STUDENTS ACADEMIC ACTIVITIES
IN FEDERAL UNIVERSITIES IN SOUTH-WEST, NIGERIA**

BY

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ABSTRACT

The study investigated the assessment of electronic information resources on postgraduate engineering students' academic activities in federal universities in South-West, Nigeria. The study was guided by six objectives, six corresponding research questions and two null hypotheses. Among the objectives of the study were to: determine the extent of awareness on electronic information resources available for the academic activities of post graduate engineering students in federal universities in South-West, Nigeria, determine the types of electronic information resources available for postgraduate engineering students academic activities in federal universities in South-West, Nigeria, determine the challenges faced in the utilisation of electronic information resources among postgraduate engineering students for their academic activities in federal universities in South-West, Nigeria to mention but a few. Survey research design method was adopted for the study. The target population of the study was 16,855 engineering postgraduate students in the Faculty/School of Engineering in the six federal universities in South-West, Nigeria. The sample size for the study was 375 drawn using Krejcie and Morgan Sample Table. Questionnaire was the only instrument used for data collection. Out of the 375 copies of questionnaire administered, 307 copies were filled, returned and used for data analysis. Descriptive statistical tool involving frequency counts and percentages, mean and standard deviation were used to analyse the data. Pearson Product Moment Correlation (PPMC) analysis was also used to test the two null hypotheses at 0.05 level of significance. The findings of the study revealed that the types of electronic information resources available for academic activities of engineering postgraduate students were: e-books, e-journals, e-newspapers, e-conference papers, emagazines, e-theses/dissertations, e-monographs, Web Public Access Catalogue and online databases.

Similarly, engineering postgraduate students indicated that poor ICT infrastructure, outdated electronic information resources, erratic power supply, lack of subscription, lack of fund, lack of proper ICT knowledge, low bandwidth and lack of user orientation are seen as challenges faced in the use of electronic information resources among engineering postgraduate students for their academic activities. The study concluded that that 21st century has created a need where postgraduate students can access information resources beyond printed format because of the nature of information generated or provided in electronic formats which they can access through their phones and laptops. The study recommended among others that the management of federal universities in South-West, Nigeria should strive to provide adequate information resources that can support the academic activities of engineering postgraduate students, the management of federal universities in South-West, Nigeria should create avenue through seminars, workshops and library user education programmes for engineering postgraduate students so as to improve and keep them abreast on the use of electronic information resources for their academic activities.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

The university is an institution of higher learning which provides facilities for teaching, learning, and research and community service. The university is authorized institution to award academic degrees ranging from Diplomas, First Degrees, Masters and Doctor of Philosophy (PhD) respectively (Merriam-Webster, 2010). However, it is important to understand that universities are not set up merely as degree mills to produce students in learning centers, but primarily to do research, and disseminate outcomes and propagate innovation through the society (Ibidapo-Obe 2012).

Thus, the university is dedicated to providing academic staff and students with an environment and infrastructure that promote scholarship, creative work, professional

realization, and services that culminate in its objectives of building a total man through impacting knowledge, skills and capacity building and ability to solve emerging problems in the society (Obayan, *et al.*, 2012). To achieve the enormous objectives of the university, different category of staff are recruited and retained to discharge required assignments which also involve libraries.

One singular objective of establishing university libraries is to provide information resources to support teaching, learning and research (academic activities) of students and lecturers. For this objective to be achieved, university libraries provide variety of information resources both in print and non-print formats. In this information age,

Information and Communication Technology (ICT) facilities are made available and use, not only for information service delivery but also used for academic activities, to conduct researches, and publications as well as conducting practical lessons for researchers.

Postgraduate engineering students and researchers in any higher institution, especially universities are provided the opportunity to focus on the area of inquiry, develop a research program and later share the knowledge in order to develop their professional skills and the society as a whole. Academic activities provide a good platform for research among engineering postgraduate students to become successful. This is because academic activities develop academic knowledge and reinforces the skills needed for effective knowledge transfer.

Academic activities inspire engineering postgraduate students towards hard work, fill the gaps of previous researches, and create an opportunity for future research (Okiki, 2012). Most of the academic activities in the form of theses and dissertations carried out by engineering

postgraduate students are disseminated via publications such as journals, conference proceedings to mention but a few. Academic activities are essential and central part of learning and research by creating avenue for students to interact in order to ensure or enhance knowledge acquisition. It provides opportunities for students to visit university libraries for scholarly and scientific information resources needed for the extraction of ideas, guides and principles to meet their information needs.

The rewards for academic activities are measured in grades and award of certificate be it in primary, secondary and tertiary levels. Every academic activity is associated with grade for every level of performance. In order word, every failure or success associated with academic activities is dully rewarded as specified in curriculum of education or as outlined in educational code of conduct or academic rules and regulations. Academic activities such as research, assignment, project and project writing, test, quiz, examination are designed to provide students with academic credit, which can be knowledge, certificate or success in passing tests and examinations as well as successful completion of project/thesis/dissertation writing. Teaching activities give students equal chance and opportunities to prove their commitments and dedication to learning as well as their readiness to demonstrate high knowledge and skills for future responsibilities. Students are expected to read and consult wide range of high impact literature, acquired and disseminated by academic libraries.

Postgraduate engineering students need to be aware of the available and existing ICT facilities such as Internet, projectors, computers, teleconferencing facilities to mention but a few for teaching, research, publication and seminar presentation to be effectively carried out using ICT facilities. The advent of information and communications technology (ICT) and

electronic information resources has changed the landscape of research at university library. ICT has brought about the migration of information from print media to electronic format. Information in electronic format is referred to simply as an electronic information resource.

Ani *et al.* (2014) described electronic resource as information resource which is accessible through ICT facilities: computers, CD-ROMs, the Internet, and other digital networks (such as digital libraries). Basically, electronic resources are widely accessible through the Internet, a global information infrastructure, which allows electronic publishing. Over the years, electronic publishing has significantly revolutionized the mode of access and use of information in research at university.

Books and journals are now being published on the Internet and are referred to as e-books and e-journals. Hence, electronic information resources predominantly used by postgraduate students in their academic activities are e-books, e-journals, online databases, CD-ROM databases, e-conference papers, e-theses/dissertations, and e-newspapers/emagazines. Electronic resources provide efficient access to research information beyond institutional boundaries. Uzuegbu, *et al.* (2012) have listed online databases in Nigerian universities to include Science Direct, SCOPUS, PROQUEST, AGORA, ECONLIT, ERIC, LANTEEL, LEXIS NEXIS, and MEDLINE.

Digital libraries or institutional repositories have been developed in universities for sustainable access to relevant e-resources in research, in view of their perceived positive effect on academic activities, which in this study is measured in terms of publication output (specifically, a measure of total number of published journal articles within a period). With the emergence of the digital age and electronic resources, access to information is relatively enhanced as information is made available and accessible to postgraduate students through

computers, the Internet, digital libraries, and related electronic networks, and is readily used in the research process. Thus, in the emerging electronic information environments in Nigerian universities, electronic resources now provide platforms for accessibility and information utilization in the academic work process, as they are perceived to have a positive effect on academic activities.

Information resources that can be accessed, retrieved, stored and used through electronic means can be seen as e-resources. Information in electronic format can be accessed via the internet, storage devices such as CD-ROMs, pen drives, and other peripheral devices through the use of computer systems (Ukachi, 2013). These resources include information on CD-ROMs, online databases, electronic journals (e-journals), electronic books, (ebooks), internet resources, etc. The Anglo American Catalogue Rule Two (AACR2) defined e-resources as materials consisting of data and/or computer programme(s) encoded for reading and manipulation by a computer through the use of a peripheral device directly or remotely connected to the computer or via a network such as the internet. In addition, Deng (2010) listed examples of e-resources as; e-databases, electronic books (e-books), electronic journals (e-journals), electronic magazines (e-magazine), electronic newspapers and archives, the rest include e-theses, conference papers, government papers, monographs and research reports in electronic form.

E-resources can be used to supplement printed information in university libraries in order to give postgraduate students the choice to have access to more convenient and reliable information sources to meet their research information needs. Therefore, advancement in technology makes it possible for libraries to adopt modern trends of technology to organize their collections and improve service delivery. Certainly, current and up to date information

can be found in e-resources which can be beneficial to information seekers. Aina (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 and increase academic activities.

In addition, academic libraries are storehouses of information and knowledge for both local and remote users. Information resources occupy a prominent place in promoting post graduate research activities. As such, a university library must not only be well equipped with relevant resources but see to its responsibility of ensuring that the use of such information sources are maximized to the benefit of its patrons. This will be attained by providing not just printed resources but having a stake in the provision of the electronic version commonly referred to as Electronic Information Resources (EIRs).

Owolabi *et al.* (2012) observed that EIRs have increasingly become an invaluable asset in education, research, teaching and learning. They noted that EIRs have transformed the conduct of research and teaching in universities by allowing postgraduate students opportunity for accessing a wide range of accurate and timely information on various subjects. They comprise digital learning objects selected and organized to facilitate their discovery, access, and use.

In Africa, there has been a considerable growth of information in electronic format in university libraries through the initiative of organizations. Since in the 1990s, the International Network for the Availability of Scientific Publications (INASP) negotiate with international publishers on behalf of African countries for discount prices on eresources for subscription by academic institutional libraries.

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 of intellectual knowledge in African universities to varied users. Therefore, most universities have made it obligatory that postgraduate engineering students submit their academic work in both print and electronic formats on CD-ROMs. These libraries have also taken advantage of the digitization processes to digitize hard copies of old theses and make other information resources more accessible to users. Every academic library, irrespective of its purpose, is duty bound to integrate electronic resources into their system of information. Effective exploitation of electronic information resources go hand in hand with computer competency skills. Moreover, basic computer skills are important assets to postgraduate students to exploit desired information in their learning and research processes.

Computer literacy involves the ability to use and manipulate computer system to acquire desired information. The ability to use the computer to search for information largely depends on user knowledge of the search system. Also, the ability to locate, identify, and retrieve and manage information effectively can be transferable skill useful for lifelong learning for human endeavour. It is therefore necessary for postgraduate students to acquire computer skills which are aspect of information literacy skills to enable them access and make effective use of electronic information from various sources for educational purposes.

It can be established that in order for Nigerian universities to enhance the accessibility and utilisation of e-resources in this information age, the present state of ICT infrastructure in Nigerian universities must be redressed and overhauled. It can therefore be said that

e-resources contribute immensely to the realization of institutional goals through the provision of adequate and effective information to library users.

Notwithstanding the significance of e-resources to university education, their accessibility and usage are hampered by varying factors. Studies have revealed that these factors include poor funding of universities, high cost of Information Technology gadgets, and high rate of foreign exchange, power outages, poor telecommunication infrastructures, inadequate skills and limited training on the effective use of e-resources.

This also involve the value of e-resources in the provision of effective and efficient information for learning and research purposes which shows that usage of e-resources is not up to the level expected. These problems are more peculiar to developing countries. Studies by Bankole (2012), Frankor *et al.* (2012) revealed low awareness of e-resources by library users; has contributed to limited access to relevant and reliable information by postgraduate engineering students in making decision on their academic activities. Hence, within the past two decades, scholars have been conducting users' studies to determine the relationship between accessibility and use of electronic resources and academic activities in a global perspective at universities.

Observably, most of these studies dealt with the perceived effect of electronic resources on academic activities, and the goal of this study is, therefore, to contribute to this debate at Nigerian universities.

1.2 Statement of the Research Problem

University libraries in the 21st century are spending huge sums of money to subscribe and purchase electronic information resources in order to meet the information needs of the

university community. These sources are assisting and enhancing students' academic activities in various universities in Nigeria. Thus, the quality of academic activities of postgraduate students is greatly dependent on availability of facilities/resources provided to support such activities. From existing literature it has been found that access and use of these electronic information resources by postgraduate engineering students in most Nigerian universities is low as some postgraduate engineering students hardly visit the libraries to use electronic information resources that could boost their academic activities.

Similarly, records of library use in the libraries visited revealed that many postgraduate engineering students seem not to have been patronizing their libraries. Some students' theses and dissertations that were observed showed some inadequacies especially in currency and relevant literature citations from digital information resources. This development could however affect the academic activities of the postgraduate engineering students in the Federal Universities in South West Nigeria.

Based on this, investigation therefore became necessary for the researcher to conduct a research in order to assess electronic information resources use on postgraduate engineering students' academic activities in federal universities South-West, Nigeria.

1.3 Aim and Objectives of the Study

The aim of this study was to carry out the assessment of electronic information resources use on postgraduate engineering students' academic activities in federal universities in South-West, Nigeria. The specific objectives of the study were to determine:

1. the types of electronic information resources available for postgraduate engineering students.

2. the extent of awareness on electronic information resources available for the postgraduate engineering students.
3. the level of accessibility of the available electronic information resources by the postgraduate engineering students.
4. the level of usage of the available electronic information resources by the postgraduate engineering students.
5. the level of information literacy skills of the postgraduate engineering students.
6. the challenges faced in the utilisation of electronic information resources among postgraduate engineering students.

1.4 Research Questions

The following research questions guided the study:

1. What are the types of electronic information resources available for postgraduate engineering students?
2. To what extent are the postgraduate engineering students aware of the available electronic information resources?
3. What is the level of accessibility of the available electronic information resources by postgraduate engineering students?
4. What is the level of usage of the available electronic information resources by postgraduate engineering students?
5. What are the information literacy skills used by postgraduate engineering students?
6. What are the challenges faced in the use of electronic information resources among postgraduate engineering students?

1.5 Research Hypotheses

The following sets of null hypotheses were formulated and tested at 0.05 level of significance in the study:

H_{O1} There is no significant relationship between accessibility and utilization of electronic information resources on academic activities of postgraduate engineering students in federal universities in South-West, Nigeria.

H_{O2} There is no significant relationship between electronic information resources use and postgraduate engineering students' academic activities in federal universities in South-West, Nigeria.

1.6 Significance of the Study

The findings and recommendations from this study would be of benefit to engineering postgraduate students, the management of university libraries, academic staff, academic library staff and researchers.

The findings from this study would enable postgraduate engineering students in federal universities in South-West, Nigeria to understand the importance and benefits of information literacy, create awareness of the various electronic information resources available for their research purposes, how to access them and also serve as a guide in providing solutions to existing problems faced by postgraduate students in accessing and utilization of the various electronic information resource and also to provide solutions that will enhance their academic activities.

To the management of the academic libraries, the study will be of great importance as to tend to highlight the need of adequate information literacy and acquire various electronic

information resources in their libraries. This will also improve the library service delivery, increase its efficiency and effectiveness in their daily routines, help in policy formulation, also to access the weakness and strength of their services and make corrections where needed. To the academic staff, it will help them incorporate the teaching of information literacy into their curriculum, in order to assist their students.

This research will help academic library staff in providing relevant electronic information resources to assist their postgraduate patrons for their academic activities purposes. It will also help them to provide information on the importance and need for postgraduate patrons to have the needed information literacy skills to help them in the process of electronic information resources selection and effective utilization of the selected electronic information resources in different format.

This study will also be of benefit to other researchers embarking on similar study, as it will serve as a reference point for their studies.

1.7 Scope of the Study

The content scope of this study covered the assessment of electronic information resources use on postgraduate engineering students' academic activities in federal universities in South-West, Nigeria. This study was intensive in scope in the sense that only postgraduate engineering students were examined and studied on assessment of electronic information resources on postgraduate engineering students' academic activities. The geographical scope of this study covered six (6) federal universities in South-West, Nigeria namely: University of Lagos, University of Ibadan, Federal University of Agriculture, Abeokuta, Federal University of Technology, Akure, Obafemi Awolowo University, Ile-Ife and Federal University of Oye-Ekiti respectively.

1.8 Operational Definition of Terms

The following terms were defined operationally as used in this study

Assessment: establish the relationship between electronic information resources and how they are used by postgraduate engineering students for their academic activities in federal universities in South-West, Nigeria.

Electronic Information Resources: information stored in electronic format in computer or computer related facilities used by engineering postgraduate students for their academic activities.

Information Literacy: ability of engineering postgraduate students to be able to identify, locate, evaluate and effectively use electronic information resources for their academic activities.

Postgraduate Engineering Students: students who have obtained undergraduate degrees in engineering faculty and currently undertaking further study at a more advanced level in federal universities in South-West, Nigeria.

South-Western, Nigeria: one of the major divisions in modern Nigeria created during the regime of president General Sani Abacha which consist of six states namely: Lagos, Ogun, Oyo, Osun, Ondo and Ekiti.

Students Academic Activities: activities such as thesis, seminar papers, conference papers, assignments, tests and examinations carried out by engineering postgraduate students in federal universities in South-West, Nigeria.

Federal Universities: universities established by the federal government, Nigeria where students study for different degrees in engineering and where academic activities are carried out by them.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptual Frame Work

The conceptual model as shown in Figure 2.1 describe the connection among the independent and dependent variables in this research.

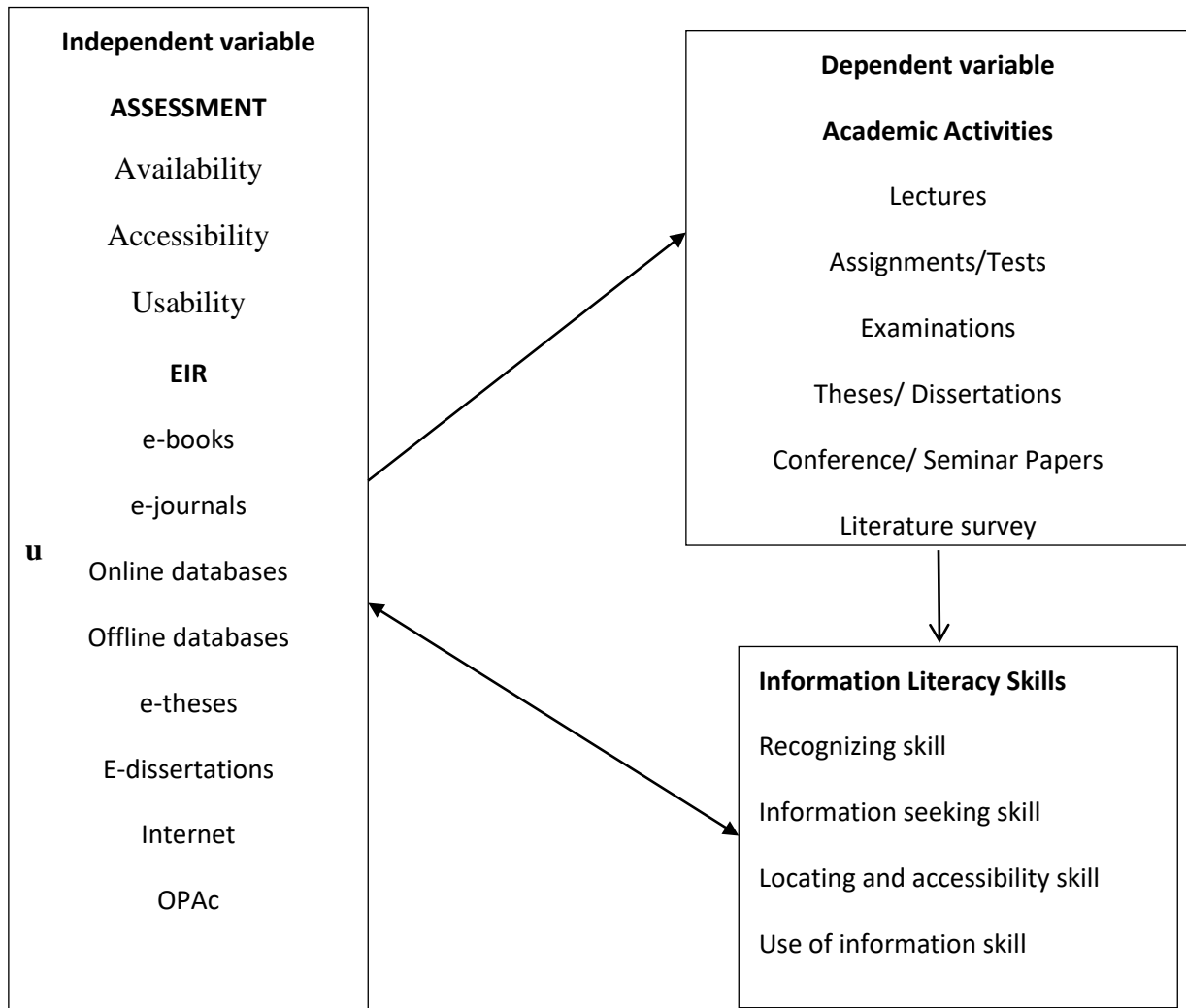


Figure: 2.1 Conceptual Framework showing relationship between EIR and postgraduate engineering students academic activities.

The framework used in this study was the assessment of electronic information resources use on postgraduate engineering students’ academic activities and the relationship between them has four independent variables and one dependent variable. The dependent variable is the postgraduate engineering students’ academic activities and the independent variables identified are availability of EIRs, access to EIRs, postgraduate student’s EIRs information literacy skills and utilization of the EIRs available.

The presence and use of EIRs by postgraduate engineering students for their academic activities purposes provides an avenue for interaction. Electronic information resources such as Electronic Journals, Electronic Books, Databases, Blogs, Internet, OPAC, Patents, Standards, Dictionaries, Online Theses and Dissertations expose postgraduate engineering students to the diverse ways in which they improve their research work which will in the long run affect their academic activities and give them the desire to utilize the acquired knowledge in other dimension. The following subsections however presents the concepts related to the assessment of electronic information resources on postgraduate engineering students academic activities in some selected universities.

2.1.1 Concept of academic activities

Academic activities outline a pattern of commitment and create avenue for students and lecturers to engage in teaching and learning for knowledge acquisition and these activities vary from one university to the other. In academic activities, every action and interaction is based on teaching or learning for which reward is given. The reward for academic activities is measured in grades and award of certificate. Every academic activity is associated with grade for every level of performance. In order words, every failure or success associated with academic activities is dully rewarded based on academic rules and regulations. Academic activity usually results in the creation of new knowledge and the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings.

Thus academic activities are systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. The most common academic activities among postgraduate students are: assignments, tests,

examinations, seminar paper, conference paper, thesis and dissertation to mention but a few. The beauty of academic activities is that it is a process that enable and support researchers' efforts with findings deposited in published and unpublished documents. It is no wonder university libraries are established to harness and harmonize reputable information resources to reduce information seeking stress that might be faced by lecturers, researchers and students. Visiting and consulting information resources under the custodian of university libraries also reduce expenses associated with purchase of expensive information resources like books and journals.

Academic activities make it possible and easy to utilize rare information resources that might have been difficult to find or locate within the period of researches, for a research to be successful within academic hemisphere. Academic activities plays significant role in developmental process of any nation of the world, hardly could any nation develop without research and that is why nations systematically spend on research to bring the desired quality of lives to their citizens.

Academic activities include assignment, test, examination, writing of thesis and dissertation, writing of conference and seminar papers to develop problem-solving mechanisms, critical thinking, creative reasoning to help add to the body of knowledge which would in turn help the growth of the nation. If well-coordinated, a country could bring revolutionary changes in the society and make lives more pleasant by bringing in desired development. Nations that are weak in academic activities risk the intellectual erosion of their strength, lose their critical ability to assess claims to knowledge and such nation become dependent on outside for supply of knowledge (Wani *et al.*, 2013). Nations that fail to invest wisely on academic

activities will definitely get it at higher cost from countries outside their boundaries as they will pay through their nose to get development.

Academic activities such as thesis and dissertation researches provides ideal platform for postgraduate students to become successful in their field of expertise. This is because it develops academic knowledge and reinforces the skills needed for effective knowledge. Yusuf (2012) observed that both the quantity and quality of academic activities output from institutions in Nigeria are generally too low to make the desired impact on national development. Academic activities in any field of specialization provide current information for growth, progress, development and improved society. When postgraduate students publish their academic works, it is an avenue for their peers to access their research and communicate with other colleagues interested in a similar subject area.

Academic activities play an important role in facilitating the advancement (prosperity) of a nation and the well-being of her people. Through researches, conferences, seminars universities and other higher institutions of learning make important contributions to the growth and development of vital sectors of a nation, thereby promoting national and global development. Most of these activities in Nigeria occur in the universities.

Research is an integral part of the academic activities which is a process of rigorous, systematic, validating, verifiable, empirical, critical, analyzing and interpreting information to answer questions. It is a conscious effort to collect, verifies, and analyzes information. Mason (2011) defined research as the systematic quest for knowledge. Research provides good platform for postgraduate students to become accomplished scholars.

Research outputs come in the form of journal articles, published books, and chapters in books, technical reports, conference papers, seminar papers, edited works, workshop papers, thesis and other types of publications. An important variable that may influence academic activities of postgraduate engineering students in universities in Nigeria is the academic library resources. All through the history of the world, libraries have been important institutions for the conservation and preservation of human knowledge.

Generally, the library is unique in that, it does not only select, organize, store and retrieve information; it also creates access, protects intellectual freedom and provides direct assistance and instruction to its users in the use of its information resources. In recent times, new technologies and communication tools have revolutionized the format and style of libraries services. The channels to access and distribution of information and knowledge have become much more diverse. While libraries will not be replaced, they will need to adapt new methodologies in order to take advantage of the new tools.

Okonedo (2015) opined that there is a direct correlation between utilization of library resources and academic activities of library users. Okonedo recommended that academic libraries in Nigeria should be equipped with both print and electronic resources in order to attract more users' especially postgraduate students. Some benefits of academic activities includes:

1. Helping students to construct solutions to practical problems.
2. Helping students to develop their own problem solving skills.
3. Helping students to collaborate with each other.

4. Help students with services to meet their academic requirements at each level of their programme.

2.1.2 Concept of Electronic Information Resources (EIRs)

In recent times, electronic resources have been identified as the major sources for information dissemination in the universities, especially for postgraduate students and researchers (Lefuma, 2017). The term electronic information resources is seen by Sharma (2019) as library's information materials in electronic forms or formats which include electronic books (e-books); electronic newspapers (e-newspapers); electronic journals (e-journals) as well as Internet resources. E-resources also consist of databases, magazines, archives, theses, conference papers, government papers, scripts and monographs in an electronic form (Deng, 2010). MEDLINE, Science Direct AGORA (Access to Global Online Research in Agriculture), HINARI, OARE (Online Access to Research in the Environment), LexisNexis, Ebscohost are examples of databases (Ani *et al.*, 2012).

Electronic resources, in most universities, are integral part of the electronic library and stand as vital academic resources that support teaching, learning and other academic activities (Zhang ye, *et al.* 2011). In academia, electronic resources are dominating the research activities of researchers; researchers have realized the importance of such resources (Hadagali *et al.*, 2012). Electronic resources provide accurate and timely information, especially for students who depend greatly on the electronic resources for information to advance research and collaboration with other researchers around the world for intellectual growth (Ukpebor, 2012).

The goal of postgraduate study in any university is for further development of graduate students with the spirit of enquiring knowledge through training and research in an

atmosphere of intellectual independence and individual creativity with a strong sense of group cooperation (Lateef *et al.*, 2013). Ndubuisi *et al.* (2013) in an empirical study of motivation, challenges and strategies in the use of electronic information resources by postgraduate library users in South-East Nigerian Federal Universities, revealed that postgraduate students were motivated to use electronic resources in their university libraries because they found them to be more informative, easy to access and use, saves time, more useful and less expensive.

Assessment of electronic services by postgraduate students and research scholars, according to Ramana (2016), shows that a large majority of students use online journals for preparing project reports and for listing references. This shows that postgraduate students, irrespective of their field of work, have information needs in their various levels of studies and research. In spite of perceived availability of electronic resources in universities and their benefits to university education, their effective utilization by postgraduate library users in Nigeria appears to be hampered by different factors (Ndubuisi *et al.*, 2013).

Today, it is very common to find electronic resources in most university libraries. However, their availability does not necessary equates their utilisation. Availability and utilisation of electronic resources is the totality of utilization when needed and being able to meet the information need of who is using them. The emergence of electronic resources, according to Ani *et al.* (2012), has tremendously transformed the handling and management of information in Nigerian academic environments and university libraries in particular. Electronic information resources are digitized information, facilitated by computers, network connectivity, electricity, other peripheral components and most importantly human beings.

They come in different formats including text, videos, audio, maps, graphics, tables, pictures to mention but a few. Amankwah (2014) also indicated that electronic resources include full text documents, CD-ROMs, resources available on the Internet such as Ejournals, Online Public Access Catalogues (OPAC) and other computer based electronic networks.

The electronic information resources are systems in which information is stored electrically and made accessible through electronic and computer network. These resources include online public access catalogue (OPAC), CD-ROMS, (Compact Disc-Read Only Memory), Online-databases, e-journals, e-books, Internet resources to mention but a few. Multiple accesses speed, richer in content, reuse, timeliness, anywhere access is some of the features of e-resources (Prangya & Rabindra, 2013).

Postgraduate students use electronic resources for several purposes especially in carrying out their research works. The effect of electronic information resources in the libraries includes: **Automation-** in this phase, libraries apply a range of Information Technology (IT) to the management of electronic information resources. A higher stage of library automation is characterized by the conversion of print materials to electronic formats.

Networked information- Here electronic content and services become accessible through the network any time, any place and could be tailored to meet the needs and objectives of each user.

Transformation- Technological changes have resulted to a set of new issues: how to archive digital information, how to address the question of authenticity, integrity and provenance.

2.1.3 Concept of university libraries

The university is an institution of higher learning that provides facilities for learning, teaching research, community service/application and is authorized to grant academic degrees; specifically, one made up of an undergraduate division which confers bachelor's degrees and a graduate division which comprises a graduate school and professional schools each of which may confer master's degrees and doctorates (Merriam-Webster, 2010). However, it is important to understand that universities are not set up simply as degree mills to produce students in learning centres, but primarily to do research, and disseminate outcomes and propagate innovation through the society (Ibidapo-Obe, 2012).

Thus, the university is dedicated to providing postgraduate students with an environment and infrastructure that help them develop potentials for scholarship, creative work, professional realization, and services that culminate in its objectives of building a total man, by impacting knowledge, skills and capacity to identify problems in the society and proffer solutions to them (Obayan *et al.*, 2012). In this way, postgraduate students generate knowledge and information classified and packaged into different mediums for onward dissemination in the form of electronic information resources.

Electronic Information resources occupy a prominent place in promoting postgraduate students academic activities. As such, a university library must not only be well equipped with relevant resources but see to its responsibility of ensuring that the use of such information sources are maximized to the benefit of its users. This will be attained by providing not just printed resources but having a stake in the provision of the electronic version commonly referred to as Electronic Information Resources (EIRs). As the name

suggests, they are resources in electronic format that can only be accessed with the use of a computer/network technology while some must be accessed through the Internet.

Owolabi *et al.* (2012) observed that EIRs have increasingly become an invaluable asset in education, research, teaching and learning. They noted that EIRs have transformed the conduct of academic activities in universities by allowing postgraduate students including academic staff the opportunity for accessing a wide range of accurate and timely information on various subjects. EIRs are highly important teaching and research tools, which complement print-based resources and enhance the learning and research processes in any academic institution (Iroaganachi, 2016).

Electronic information resources comprise of digital learning objects selected and organized to facilitate their discovery, access, and use. The research potentials of these sources, when effectively utilized, impact the academic activities of postgraduate engineering students and academic staff in many ways (Jewel, 2010).

2.1.4 The Availability of electronic information resources

The availability of electronic information resources refers to readily access to information in electronic format with little or no stress to postgraduate students and other library users.

The availability of electronic information resources in the library is not just enough, postgraduate students, researchers and other library users must know of the existence of electronic resources to be able to use them effectively.

In other to put use the available electronic resources, postgraduate students and other library users must possess the requisite skills that will enable them to exploit these resources and services. The availability of information resources including those in the electronic formats

at any time of the day; huge information reservoirs; quick information; various search options; easy citations; ease in uploading and updating; ease in storage and dissemination; flexibility; time, space and cost are not major hurdles; ease of archiving are importance of information resources as noted by Tekale *et al.* (2012).

Electronic information resources reduce pressure on academic libraries for physical storage space for books and journals and provide unlimited access to users (Lefuma, 2017). Availability of electronic information sources relates to the provision for and inclusion of the resources in the collection of the libraries at the disposal of users in academic institutions. Egberongbe (2011) opined that the availability of electronic resources provides access to authoritative, reliable, accurate and timely access to information. In addition to this, the resources can enable innovation in teaching and increase timeliness in research of postgraduate students and other researchers.

The National Universities Commission (NUC), a government agency in Nigeria, subscribed to a number of international and local journals and made them accessible to Nigerian Universities through its URL link (www.nigerianvirtuallibrary.com) on the Internet. The Nigerian University Libraries Consortium (NUC) and Electronic Information for Libraries Network (EILN) are partnering to provide electronic resources towards teaching, learning and research in Nigerian Universities (Okiki, 2012).

National Information Technology Development Agency (NITDA), according to Egberongbe (2011), is developing ICT in Nigerian tertiary institutions through the National Virtual Library Project by setting up virtual libraries and donation of computers and Internet facilities. Electronic resources, in most universities, are integral part of the electronic library

and stand as vital academic resources that support teaching, learning and other academic activities (Zhang, et al. 2011). Electronic information resources are invaluable research tools for postgraduate and other categories of students in higher institution of learning. In academia, electronic resources are dominating the academic activities of students. This is in line with the findings of Budu (2015) that researchers have realized the importance of electronic information resources for academic activities. Electronic information resources provide accurate and timely information, especially for students who depend greatly on the electronic resources for information to advance research and collaboration with other researchers around the world for intellectual growth (Ukpebor, 2012).

2.1.5 Accessibility to electronic information resources

Access is a general term used to describe the degree to which resources, services, product and environment is accessible by as many people as possible. It can be viewed as the ability to access information with little or no stress. Accessibility of information resources is an important recurring theme in the literature.

The emergence of digital age in universities and research institutions has brought about a great dependency on Information and Communication Technologies (ICTs) in the conduct of research activities. There are different ICT tools that provide access to different types of Electronic Information Resources (EIR). Postgraduate students and other researchers always seek information that will help them to do away with repetitive research and training and to draw from the findings of research conducted elsewhere.

Musa *et al.* (2017) opined that scientific research findings are communicated in scholarly journal based on subscriptions or licenses that is expensive to disseminate. Accessibility of electronic information resources is the process of making scientific information readily available and reachable which enables postgraduate students to effectively and efficiently access soft copies, online or digital information resources for an increase in the quality and effectiveness of their academic activities.

Sejane (2017) also submitted that EIR enables students to have a better access to the work of the global scientific community to incorporate proven scientific knowledge into academic activities. The use of EIRs became necessary because information needs of postgraduate students have grown beyond management of print resources. Postgraduate students are not devoid of the problem of incomplete information materials while facing difficulty in accessing the relevant available information. Apparently, accessing such information from Internet is very slow due to overload of information or taken long time to download relevant information through Internet. In line with this assertion, it becomes imperative for university libraries to know how to make agricultural information resources readily accessible and conveniently usable to effectively meet the information needs of postgraduate students.

Odunlade (2017) noted that librarians of contemporary time should not be regarded as custodians of library materials but exploiters of information and information conduit. This is in assumption that electronic information resources should be made accessible and use purposefully by postgraduate students and other researchers alike. For users to be able to access and effectively use e-resources, they must also have adequate skills for retrieving information and to evaluate the outputs of the search process. In this regard, for university

libraries to make significant impact in international research and publications in this electronic information age, the present state of ICT infrastructure must be redressed. Gakibayo *et al.* (2013) submitted that accessibility and utilization of EIRs were not only affected by poor ICT infrastructure and lack of computer skills but also lack of resources and processes of accessing the resources.

2.1.6 Types of Electronic Information Resources

The emergence of electronic information resources (EIRs) has greatly transformed information handling and management of electronic information resources in Nigerian university communities. Electronic information resources have gradually become a major resource in every university community. Electronic information resources are provided in electronic form, and these include CD-ROM database, online databases, online journals, OPACs, Internet and other computer-based electronic networks as supported by (Quadri *et al.*, 2014).

The various types of e-resources in academic libraries include: e-databases, e-journals, edata archives, e-manuscript, e-maps, e-books, e-magazines, e-thesis, WWW, e-newspapers, e-research reports, and e-bibliographic databases (Ankrah *et al.*, 2018). The major benefit of electronic resources in the university library besides ease of access to the needed information is that access can be done remotely by postgraduate students and other researchers in their offices/laboratories or at homes without physical visit to the library. Thus, electronic resources promote efficiency in dissemination of information for research purposes among postgraduate students, lecturers and researchers in universities (Das *et al.*, 2013).

Electronic resource is more of a tool to assist in conducting research, that is, a way of scanning a lot of materials quickly. The act of providing access to electronic resources by the university library to postgraduate students and other library patrons is referred to as electronic information services. In view of the potential advantages and benefits of eresources over the print in modern electronic information environment, accessibility and utilization of e-resources is fast becoming a norm in research in universities around the world. Hence, access to electronically stored information in computers has been increasing regularly in universities to aid postgraduate students in their academic activities. Different types of electronic resources that are used by postgraduate students for their academic activities include but not limited to the following: e-journals, e-books, online databases, electronic conference proceedings and CD-ROM databases (Amankwah, 2014).

2.1.7 Utilisation of electronic information resources

The growth in ICT is changing people attitude towards the adoption of more current information resources to meet their information need. University libraries need to have strong collection development of information resources in print and non-print format to meet knowledge requirements of both local and remote users of libraries (Olofinsawe *et al.*, 2010). This suggests that since the university library's aim is to assist the parent university to achieve its objectives; its collection development policy should be able to support the teaching, learning and other academic activities in the university.

The academic library has a duty to ensure that adequate information resources are provided to help postgraduate students in their assignments, tests, examinations, writing of conference and seminar papers and to also facilitate their research activities. Therefore, this would also encourage users to have positive attitude towards the use of libraries resources. Shukla *et al.*

(2011) observed that postgraduates prefer to use e-resources to print resources and that e-resource are used frequently on daily or weekly basis. This finding is affirmed by Okiki *et al.* (2011) who observed that postgraduate students use e-resources monthly and occasionally. Therefore; the adoption rate of e-resources is seemingly improving due to the level of awareness by users. Libraries need to provide more promotional activities to enhance the access and usage of e-resources.

The information era has given postgraduate students and other library users the chance to choose information from many sources to satisfy their information needs. When postgraduates and other users of the library have the ability and enough knowledge on particular information resource, their access to such information resource increases. Therefore, the library needs to create more awareness and provide training of its resources so that the postgraduate students will improve their use of the library resources and services.

The issue of information proliferations is generating difficulties for students, researchers and information users since they need to sift through quantities of information to determine quality information from the World Wide Web. Postgraduate students and other information seekers from higher educational institutions need to have information from credible, reliable and peer reviewed sources to enable them to conduct quality research and improve academic standards.

2.1.8 The problems encountered by students in accessing and utilising information resources

The value of e-resources in university libraries and safeguarding its usage seems not encouraging. Postgraduate engineering students' quest to use e-resources for their academic

activities encounters some difficulties in terms of access and usage. Therefore, in order for academic libraries and information Centre's to improve their e-resource services, it is imperative to better understand the impediments postgraduate students and other users encounter in accessing these resources.

Emwanta *et al.* (2013) reported that the major barrier to the use of electronic journals is the lack of subscriptions in relevant fields of studies and the lack of user orientation or training. This means some postgraduate students and library users are likely to be deprived of the required information for their academic endeavours. University libraries need to invest more in the training and provision of more e-resources to meet the information of all users. Bhatt and Rana (2011) also identified that the most common problems with e-resources are low speed connectivity, lack of awareness about statutory provision for accessing eresources by the institutions, technical problems, unavailability of sufficient e-resources, doubts in permanency, high purchase price and lack of legal provision.

A similar study by Shukla *et al.* (2011) revealed that majority of postgraduate students have problem of low Internet connectivity. Oduwole *et al.* (2010) averred slow access speed of the Internet as the most common problem. Oduwole *et al.* (2010) also added that it takes too long to view or download pages and find it difficult to get relevant information and that too much information is retrieved and the postgraduate students cannot make use of eresources effectively due to the lack of proper IT knowledge. Emwanta *et al.* (2013) revealed that the majority of postgraduate engineering students similarly face a problem of lack of training in relation to the use of e-resources.

It is clear that the major problems in the use e-resources as identified are lack of subscriptions in particular fields of study, lack of user orientation or training, low bandwidth, lack of printing facilities, terminals and training. Undoubtedly, electronic information resources in libraries are unique and so their use may be affected by either the user, institutional or product centred factors. Kumar *et al.* (2011) found that information specialists have long sought to understand the factors that are pertinent in encouraging a person to search for information. Many studies have been cited to show how factors like language proficiency, computer literacy and information literacy can affect the use of electronic information resources of the library.

Other factors that may affect the utilization of e-resources include inadequate competence use of e-resources on the part of users, such as lack of knowledge, negative attitudes, poor practices and inadequate and limited infrastructure. In another study, Ankrah *et al.*, (2018) affirmed that utilization of e-resources is influenced by human and institutional factors including information literacy, low bandwidth and limited number of resources available to users.

The literature review for this study also found that availability of e-resources; discipline and institutional factors affect the use of the resources by students and researchers. One other obstacle to the use of a library's resources and in particular, its electronic resources, is that they are not seen as being easily accessible. This is in contrast to an internet search engine where a single keyword search could result in thousands of hits, no matter the topic. Electronic information resources have contributed immensely to teaching, learning, research

and communication but there are challenges that affect the effective use of these resources especially among postgraduate students for their academic activities such as:

1 Lack of Skills and Knowledge

It is a fact that the major problem in the use of electronic resources is lack of skills and knowledge. Students, research scholars and staff lack skills and knowledge for effective search, retrieval and evaluation of information (Baro *et al.*, 2013). Many postgraduate students and research scholars depend on library staff, friends, cybercafé assistants for their assignments and research output.

2 Lack of subscription to relevant e-journals

Majority of the relevant journals and books on the Internet can only be accessed through subscription. Many universities have Internet connectivity in their libraries but do not subscribe to journals. For instance, majority of articles in emerald journals on the Internet are not accessible unless the library subscribes to them. Dilek-Kayaoglu (2018) observed the lack of subscription of electronic resources of discipline in the universities also cause problems in the use of electronic resources.

3 Lack of maintenance and poor infrastructure

According to Baro *et al.* (2013), universities lack maintenance culture. They lack the skilled manpower to maintain and manage the system after the initial installation. They added that the Delta State University library Internet connectivity that was scheduled to be fully connected in 2001 failed as a result of system crash that affected the workstations and network drivers; after installation and some of the work station could not access the server.

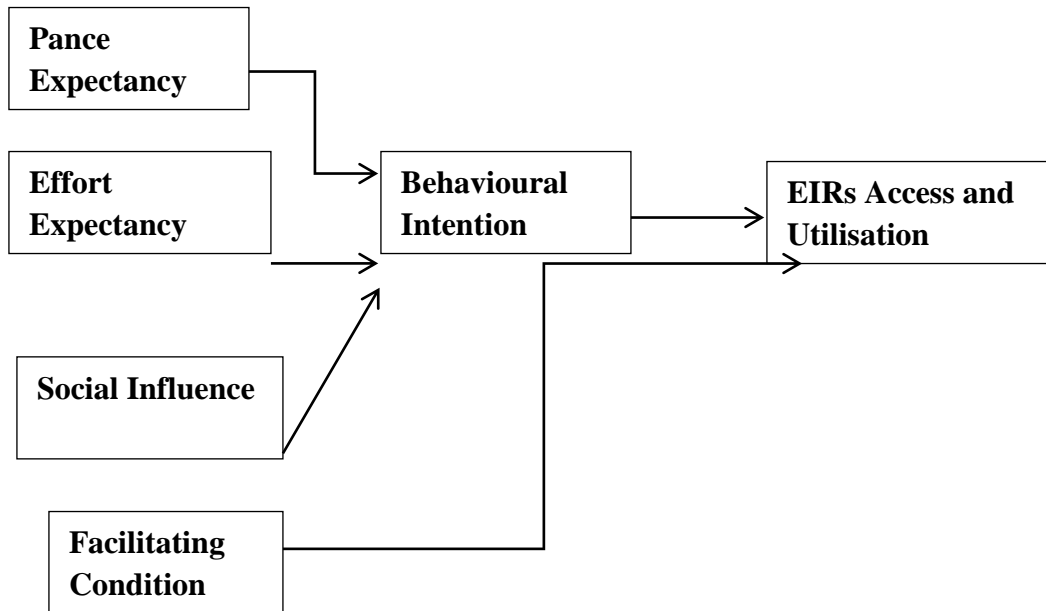
4 Poor power supply and slow Internet connectivity

This is one of the biggest problems in the use of electronic resources. Okiki and Asiru (2011) stated that slow Internet connectivity, incessant power outage and lack of IT skills are the problems that affect the use of electronic resources. The insufficient training of staff, slow Internet connectivity and frequent power failure in Nigeria are problems that affect the use of electronic resources thereby affecting the research productivity of engineering postgraduate students, researchers and other library users.

5 Inadequate Finance

Finance is indispensable in the use of electronic resources in our universities. Finance is needed to train the staff and maintain the infrastructure. Subscription of e-journals and ebooks also depend on finance. Some university management does not see the need to adequately finance the library. The money given to the library is not sufficient to provide these resources. As such, affects the research output of engineering postgraduate students.

2.2 Theoretical Framework



2.2.1 The Unified Theory of Acceptance and Use of Technology (UTAUT)

In view of the observed weaknesses of individual theories/models in the study of information technology acceptance, Priyanka *et al.* (2013) reportedly examined eight prominent models, empirically compared them, and then formulated a new model or unified model. The unified model is referred to as the Unified Theory of Acceptance and Use Technology (UTAUT). Employing this theory, researchers have tried to establish the rationale behind technology diffusion and acceptance in organizations, with special emphasis on e-resources, e-learning, and e-services.

Studies conducted by Ayele *et al.* (2013) and Miller *et al.* (2010) employed the model of UTAUT and found it to be a profound framework frequently used in information system studies to predict and explain access and use of computer-based applications and solutions. According to the UTAUT, the four main determinants of behavioral intention and actual ICT usage are performance expectancy, effort expectancy, social influence, and facilitating condition.

Application of UTAUT to the Study

Unified Theory of Acceptance Use of Technology (UTAUT) as augured by AlQudah (2014) explained the degree of acceptance of the use of information technology. This theory is applicable to this study to assess whether the postgraduate students under study will be able to accept technologies in the conduct of their academic activities.

Performance Expectancy: This can be seen as the degree to which university libraries believe that access to a particular type of electronic information resource will help in enhancing academic activities of library users. This shows that engineering postgraduate students can accept and use electronic information resources to enhance their academic activities.

Effort Expectancy: This is the degree of ease of access and use of electronic information resources among library users including engineering postgraduate students. This means that effort expectancy refers to the effort needed to use the system, whether it is simple or complicated. User-friendly technology could be easily accepted and adopted by postgraduate engineering students and other users. Most users prefer technology that provide them flexibility, usefulness, and ease of use.

Social Influence: This is the degree to which universities perceives that university libraries should provide access and enable ease of use of electronic information resource in the university. According to Priyanka *et al.* (2013), word of mouth is influenced by reference groups and it includes friends and IT experts, which in turn play a major role in the adoption of communication technologies.

Facilitating Condition: In the context of this study, it refers to the availability of electronic information resources in university libraries used by engineering postgraduate students to

support their academic activities such as tests, examinations, thesis, dissertations, conference papers to mention but a few. Facilitating condition is the degree to which engineering postgraduate students, researchers and academics believe that institutional ICT facilities supports accessibility and utilization of electronic information resources which enhances research and academic activities. Therefore, the performance expectancy and facilitating conditions are the two major UTAUT variables used in guiding the present study within the framework of academic activities in federal universities in South-West, Nigeria. The theory will help university libraries in the study areas to assess the success of introduction of technology and motivate postgraduate students to accept the systems.

2.3 Review of Related Empirical Studies

The extent of use of electronic resources and the types of electronic resources used by students in universities in Nigeria was investigated by Biokuromoye *et al.* (2014). Questionnaire was used for data collection. The study population included all undergraduate students in the faculty of engineering in Niger Delta University (NDU), Bayelsa State and Rivers State University of Science and Technology (RSUST) in the Niger Delta Region of Nigeria. The study revealed that students in Niger Delta University and Rivers State University of Science and Technology (RSUST) use electronic resources very regularly.

The study revealed that the undergraduate students use electronic resources such as NUC virtual library, HINARI, E-journals, CD-ROMs, AGORA, and EbscoHost. The result also shows that students are not very satisfied with use of electronic resources as a result of slow Internet connectivity and poor infrastructure. Findings from this type of study may prove useful to librarians, students, ICT units in universities. It will enable librarians to make

electronic resources more accessible to students and intensify efforts to overcome the challenges. The similarity between both studies is that the former study used questionnaire as instrument for data collection, while the current study used questionnaire as instrument for data collection. The difference between both studies is that the former study was based on the extent of use of electronic resources and the types of electronic resources used by undergraduates in universities in Nigeria, while the current study is on the electronic information resources on engineering postgraduate students' academic activities in SouthWest, Nigeria.

Also, a study on availability, use and constraints to use of electronic information resources by postgraduate students at the University of Cape Coast, Ghana was conducted by Ankrah, et al. (2018) The study adopted a descriptive survey design. Samples of 300 of postgraduate students within seven out of 13 Faculties were randomly selected. Data were collected using questionnaire designed to elicit response from respondents and data were analyzed using descriptive statistics methods of percentages, mean, and standard deviation.

Results indicated that internet was ranked most available and used in the university. Low level of usage of electronic resources, in particular, full texts data bases is linked to a number of constraints: Interrupted power supply was ranked highest among other factors as speed and capacity of computers, retrieval of records with high recall and low precision, retrieving records relevant to information need, lack of knowledge of search techniques to retrieve information effectively, non-possession of requisite IT skills and problems accessing the internet.

The study recommended that usage of electronic information resources be made compulsory, intensifying awareness campaigns concerning the availability, training on use of electronic

resources and the problem of power outage be addressed. The reviewed study adopted descriptive survey design as well as questionnaire serving as instrument for data collection which is the same with the current study. In as much as there are similarities in both the reviewed and present studies, some differences also exist in the studies. This can be seen in the geographical location used, the population used, as well as the type of research design adopted for both studies.

Similarly, Lefuma (2017) also conducted a survey regarding access to and use of electronic information resources in academic libraries of the Lesotho Library Consortium (LELICO). Survey research design was adopted. The study adopted the post-positivists paradigm and mixed methods were used; that is, qualitative and quantitative approaches. The self-administered questionnaire and semi structured interview method were used as instruments for data collection. To analyse quantitative data, the SPSS Version 20.0 was used, while qualitative data was analysed by sorting, classifying and arranging data which were examined in relation to combined thematic content analysis. It was established that the type of e-resources accessed and used by academic libraries of LELICO included: e-mail, search engines, websites, Online Public Access Catalogue (OPAC), e-journals, full-text databases, reference databases, institutional repositories (IRs) and Compact Disc-Read Only Memories (CD-ROMs).

The study established that e-resources which were accessed and used mostly were e-mail, search engines and websites, followed by the OPAC, e-journals, full-text databases, IRs, reference databases. The study further found that main uses of e-resources were for communication, to support teaching and learning activities, such as professional research, assignments and lecture requirements. The findings showed that awareness of e-resources

was mainly through formal engagement, such as library orientation and through informal engagement such as colleagues. The following strategies were in place: IRs, Open Access (OA), Information Literacy (IL) programme as well as library orientation sessions to improve on the access to and use of e-resources.

It has been further revealed that challenges such as budget cuts, low internet bandwidth, lack of up-to-date Information Technology (IT) infrastructure, inadequate searching skills, shortage of staff and high cost of subscription fees posed many of the threats to access to and use of e-resources in the institutions libraries. The findings revealed lack of guidelines and e-resources collection development policies. The study concluded that access to and uses of electronic information resources in the academic libraries were influenced by how e-resources were accessed, systems in place, effectiveness of the consortium, challenges facing libraries and strategies in place.

The study recommended the establishment of e-collection development policies, guidelines and procedures for budget allocation, conducting of needs assessment to selection, collections maintenance, evaluation and resource sharing formulated to be implemented to enhance the efficient management of e-resource collection by providing selection procedures, requirements, standards and specifications in terms of Information and Communication Technologies (ICTs) infrastructure, equipment and human resource recruitment.

The findings of the study influenced the formulation of e-resources collection development policies in academic libraries of the LELICO. The reviewed study used survey research design which is the same research design used in the current study. Both studies used

questionnaire as data collection instrument for data collection. Although, there are differences that existed between the reviewed study and the present study.

Availability, accessibility and use of electronic information resources for academic activities by students in Francis Sulemanu Idachaba Library University of Agriculture, Makurdi, Benue State, Nigeria was investigated by Ternenge *et al.* (2019). The study looked at the types of electronic information resources available for writing theses and dissertations by students, extent of availability, accessibility and utilization of the available electronic information resources for academic activities as well as problems encountered by students while accessing and utilizing the available electronic information resources for academic activities. Five (5) objectives with corresponding research questions guided the study.

The study adopted a survey research design, the population of the study was 7952 registered users (students) of the library. The sample for the study was 381 students registered users of the library who were sampled using simple random sampling technique.

Two instruments were used for data collection titled “Checklist on Availability of Electronic Information Resources for Academic Activities by Students (CAEIAAS)” and “Accessibility and Utilization of Electronic Information Resources for Research by Students Questionnaire (QUEIRRSQ)” which was validated by two experts. The reliability of the questionnaire was established using Cronbach Alpha method and a reliability coefficient of 0.765 was obtained. Data was collected and analyzed using frequency counts, simple percentages and means to answer the research questions.

Findings of the study revealed that, e-journals, e-newspapers, Online Public Access Catalogue (OPAC), CD-Rom database, e-magazines, e-books, online database, e-research

reports, virtual library online, science direct online and Ebscohost reference databases were the types of electronic information resources available for research by students in Francis Sulemanu Idachaba Library. Findings also revealed that, electronic information resources mentioned were available for research by students to a great extent.

Also, it is revealed from the findings that, the extent of accessibility and utilization of the availability of electronic information resources for academic activities by students is great. Findings further revealed that, inadequate computers in the library, poor Internet connectivity limited subscribed titles, power outages, difficulty to access and use, lack of relevant e-resources in various disciplines as well as no assistance from the library, were the problems encountered by students while accessing and using electronic information resources for their research activities in Francis Sulemanu Idachaba Library University of Agriculture, Makurdi.

It was recommended that the University administrators and library management should improve on the bandwidth and enhance the internet connectivity so as to enable the students have easy access to online e-resources. Also, trained personnel should be on ground to assist the students in the use of the available e-resources in the University library and appropriate user education should be organized for students for better use of e-resources in

Francis Sulemanu Idachaba Library, university of Agriculture, Makurdi.

The similarities between both studies is that the former study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis, while the current study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis. The difference between both studies is that the former study was based on the availability, accessibility and use of electronic information

resources for research by students in Francis Sulemanu Idachaba Library University of Agriculture, Makurdi, Benue State, Nigeria, while the current study is on assessment of electronic information resources on postgraduate engineering students' academic activities in federal universities in South-West, Nigeria.

Also, Olawale *et al.* (2019) investigated the influence of gender differences on usage patterns of electronic information sources among undergraduates in Nigeria. The study adopted a descriptive survey research design. The population was made up of randomly selected undergraduate students of Ekiti State University (EKSU) and University of Ibadan (UI). Data were generated through the use of questionnaire designed to elicit responses from respondents and analysed using descriptive statistics method of frequency counts and percentages. However, out of five hundred (500) copies of questionnaire administered, four hundred and twenty one (421) were returned which represents 84.2% response rate for the study.

Findings revealed that there is no basis for gender differentiation in the use of electronic information sources as gender gap in electronic resources usage appeared negligible. However, it was recommended that university libraries in Nigeria should continue to give equal opportunities to both sexes in term of training and orientation on the use of eresources among other recommendations. The similarities between both studies is that the former study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis, while the current study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis.

The difference between both studies is that the former study was based on the influence of gender differences on usage patterns of electronic information sources among undergraduates in Nigeria, while the current study is based on the assessment of electronic information resources on postgraduate engineering students' academic activities in SouthWest, Nigeria.

The various information literacy skills possessed by postgraduate students of University of Nigeria, Nsukka and the need to advance such skills was investigated by Helen, *et. al.*

(2017). Descriptive design was used for the study. The entire postgraduate students in University of Nigeria, Nsukka formed the population of the study. A total of 300 questionnaire copies were distributed across all the attendees with a retrieval success of 270 copies, representing 90% return rate. Data were analyzed using Mean, percentages and frequencies.

The findings of this study revealed that most of the postgraduate students are knowledgeable in basic information literacy skills such as use of search engines (98.0%), as opposed to knowledge in emerging research trends such as virtual research environment (31.4%), use of social media for research (3.70%) and online referencing tools – Zotero and Mendeley (9.2%). It was equally found that none (0.0%) of the postgraduate students is knowledgeable about research ethics. For example, avoiding plagiarism, duplicate publication, republishing conference papers, conflict of interest, supervisor authorship, to mention but a few. For the information literacy skills needed, majority (84.4%) of the respondents stated that they need Zotero and Mendeley skills, 92.9% need research writing skills, 92.5% need to be taught the use of Library OPAC, while 81.4% need knowledge about building online community (Virtual Research Environment). Originality/Value: The paper

captures beyond the traditional information literacy skills by designing and recommending an advanced information literacy curriculum for postgraduate students.

The similarities between both studies is that the former study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis, while the current study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis.

Also, Akporhonor *et al.* (2016) investigated the challenges confronting postgraduate library and information science students in the use of electronic resources in Southern-Nigeria. The descriptive survey design was adopted for this study. The census sampling technique was adopted for this study. Thus, the entire population of three hundred and seventy (370) postgraduate students of library and information science in Southern Nigeria was used as the respondents for this study. The questionnaire was the instrument used for data collection. The simple percentage statistical tool was used to answer the research questions.

The findings revealed that poor Internet connectivity epileptic power supply, information overload, high cost of access, download delay and difficulty in accessing some websites are some of the problems militating against the use of electronic information resources by postgraduate students of library and information science in Southern Nigeria. Based on the findings, the study recommended that power supply should be improved upon, internet providers should improve their network services, cost of accessing electronic information resources should be subsidize to a minimum so as to make them affordable.

The similarities between both studies is that the former study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis, while the current study used questionnaire as instrument for data collection and descriptive statistics involving mean, standard deviation and frequency counts as method for data analysis.

The difference between both studies is that the former study was based on the challenges confronting postgraduate library and information science students in the use of electronic resources in Southern-Nigeria, while the current study is on the assessment of electronic information resources on postgraduate engineering students' academic activities in federal universities in South-West, Nigeria.

The extent of availability and utilisation of electronic resources by postgraduate (PG) students in the University of Calabar (UNICAL) Library was examined by Edem *et al.* (2016). Five research questions and a single hypothesis were formulated to guide the study. Descriptive survey was adopted and the population of the study was two thousand, seven hundred and twenty six, while a sample of four hundred postgraduate library users were selected through stratified sampling (two hundred postgraduate student each from Faculty of Education and Faculty of Science). Questionnaire was the main instrument used for data collection. Pearson Correlation Coefficient (r) was the statistical analysis technique adopted to test the hypothesis under study at 0.05 level of significance. Three hundred and eighty two dully filled copies of the questionnaire were received, giving an overall response rate of 95.5 percent.

The result of the analysis revealed that electronic resources were available in University of Calabar Library and P.G. students utilized them. However, online databases were

underutilized. The University Library had e-journals, e-books and access to databases and Internet resources. E-journals were the most often used electronic resources. Lack of computer skills, slow network, inconsistent Internet connectivity, power outage and irrelevant electronic information resources were the problems postgraduate students encountered while accessing and using electronic resources in University of Calabar Library.

Based on the findings, the following recommendations were made: adequate budgetary allocation should be given to the University Library for subscription to online databases and acquisition of electronic books, more relevant open access databases should be made accessible to users, creation of awareness on the available electronic resources in University of Calabar Library, installation of inverter and battery system in the Electronic Library, and organising users education for better use of electronic resources in University of Calabar Library.

The similarity between both studies is that the former study used questionnaire as instrument for data collection, while the current study used questionnaire as instrument for data collection. The difference between both studies is that the former study was based on the extent of availability and utilization of electronic resources by postgraduate (PG) students in the University of Calabar (UNICAL) Library, while the current study is on assessment of electronic information resources use on postgraduate engineering students' academic activities in federal universities in South-West, Nigeria.

Onuoha *et al.* (2013) investigated the impact of library use on research productivity. The study was carried out using the survey research method. The population was made up of 359 postgraduate students at Babcock University, Ogun State. Sampling was enumerative as all

members of the population were used for the study. A self-designed questionnaire was used for data collection. Results showed that library services are of utmost importance to the research productivity of postgraduate students as all the respondents who were able to have at least one publication within the last two years affirmed using the library.

However, printed books were ranked as the most important library service for research. Although personal assistance of library staff was ranked very low in importance, suggestions made by the respondents for the training of library staff in order to improve staff-user relationship show that the respondents value the assistance of library staff but may not be happy with the way library staff relates to users presently.

The similarity between both studies is that the former study used questionnaire as instrument for data collection, while the current study also used questionnaire as instrument for data collection. The difference between both studies is that the former study was based on the impact of library use on research productivity, while the current study is based on electronic information resources impact on postgraduate research productivity in South West Nigeria.

In the same view, Ankrah *et al.* (2018) examined the use of electronic resources by postgraduate students of the University of Cape Coast, and with a view of giving recommendations based on findings. The major objectives of the study were: to determine postgraduate students' awareness of electronic resources in the library, to find out the frequency of usage of e-resources by students, to determine the computer literacy level of postgraduate students and to identify the likely problems in the utilization of electronic resources by postgraduate students.

The findings revealed that most of the postgraduate students were aware of the e-resources in the library. The findings of this study also revealed that most postgraduate students rather preferred to access information from Google scholar, and other web based databases more frequently than the databases in the library. The respondents identified poor Internet connection as the most significant constrain for ineffective access to e-resources.

Omeluzor, *et. al.* (2016) investigated students' perception, use and challenges of electronic information resources in Federal University of Petroleum Resources Effurun, Nigeria.

A descriptive survey research design was adopted. A census sampling technique was used and data was gathered from Two hundred and forty-nine students of 500 level in the Departments in College of Technology. The data gathered were analyzed using descriptive and inferential statistics, while regression analysis was used to analyze result of the hypotheses. The result revealed that electronic information resources are used at different level by the respondents with e-journal, e-database, web OPAC and repositories recording high usage. It shows that users' perception influences use of electronic information resources in academic libraries with $\beta=.214$, $p<.05$. From the findings, it is deduced that users' perception influences use of e-resources in academic libraries, while lack of awareness, lack of training, unreliable Internet connectivity, insufficient e-resources in various study areas, unavailability of e-resources on 24/7 and difficulty of identifying relevant information to meet users' needs are challenges hindering use of e-resources. The study concludes that librarians should acquire more e-resources to cover various study areas, create more awareness of e-resources at the library to change users' perception and introduce a 24/7 Internet services.

2.4 Summary of the Literature Review

In order to cover the related and available literature of this study, the review was divided into four main headings thus: conceptual framework, theoretical framework, review of empirical studies and summary of review. The review of the literature was mostly based on documentary sources, which consisted of journal articles, textbooks, conference papers, theses and electronic sources such as the Internet and also other important publications.

The review was presented from previous studies to give a proper view to this study. The review captured the variables of the study. It stressed on concept of electronic information resources, how frequent postgraduate students access electronic information resources for their academic activities, the level of use of electronic information resources by postgraduate engineering students for their academic activities, the most utilised electronic information resources by postgraduate engineering students for their academic activities and the challenges faced in using electronic information resources by postgraduate students for the research.

Literature reviewed showed that several studies have been conducted with regards to electronic information resources and academic activities. However, no literature has been conducted on the assessment of electronic information resources on engineering postgraduates' academic activities in federal universities in South-West, Nigeria. This is the gap this study sought to fill and so as to improve the existing literature in this field.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This study adopted descriptive survey design of correlation type. A correlation study is a scientific investigation of the associations between variables. Against this backdrop, the study establishes the relationship between electronic information resources, assessment of electronic information resources and academic activities of postgraduate students in federal universities in southwest, Nigeria. This research design was selected because it allowed inference to be made from the results obtained from the field survey. The independent variables in this study are electronic information resources and assessment of electronic

information resources while the dependent variable is academic activities of postgraduate engineering student.

3.2 Population of the study

The population for this study consisted of sixteen thousand, eight hundred and fifty five (16,855) postgraduate engineering students in the Faculty/School of Engineering in the six (6) federal universities in South-West, Nigeria. These are universities running engineering courses and are located in Lagos, Ibadan, Abeokuta, Ekiti, Akure and Ile-Ife. These universities include: University of Lagos (3,215), University of Ibadan (3,983), Federal University of Agriculture Abeokuta (2,954), Obafemi Awolowo University Ile-Ife (2,856), Federal University of Oye-Ekiti (1,158), and Federal University of Technology Akure (2,689). The population of the study is presented in Table 3.1.

Table 3.1: Population of the Study

S/N	Name of Federal University	Number of Engineering Postgraduate Students
1	University of Lagos	3,215
2	University of Ibadan	3,983
3	Federal University of Agriculture, Abeokuta	2,954
4	Obafemi Awolowo University, Ile-Ife	2,856
5	Federal University of Oye-Ekiti	1,158
6	Federal University of Technology, Akure	2,689
	Total	16,855

Source: Field Survey as at November 2019

3.3 Sample and Sampling Technique

The sample size of the population was three hundred and seventy-five (375) postgraduate engineering students, drawn from sixteen thousand, eight hundred and fifty-five (16,855) postgraduate engineering students in six (6) Federal Universities that constituted the study area using Krejcie and Morgan (1970) table for determining sample size from a given population.

The researcher used proportionate sampling technique to allocate the appropriate number of respondents for each selected university. Practically, the calculation was done by multiplying the Sample Size (375) by the number of postgraduate engineering students in each of the selected Federal Universities and then dividing the result by the target population (16,855).

For example, using the University of Lagos, where:

Number of admitted students =3,215

Sample size =375

Target population = 16,855

Proportionate sample = $\frac{\text{Number of admitted students} * \text{Sample size}}{\text{Target population}} = \frac{3215 * 375}{16,855} = 71.52$

Thus, the proportionate sample for University of Lagos =72

This process was followed for all the six (6) selected universities. The idea of sampling is to obtain a part of the population from which some information of the entire population can be

inferred or generalized. A sample is a subset drawn to represent the relevant attributes of the whole set, such as individuals, objects or events. Table 3.2 shows the sample size of the study.

Table 3.2: Sample Size Table for the Study

S/N	Name of Federal University	Sample of Postgraduate Engineering Students
1	University of Lagos	72
2	University of Ibadan	87
3	Federal University of Agriculture, Abeokuta	66
4	Obafemi Awolowo University, Ile-Ife	64
5	Federal University of Oye-Ekiti	26
6	Federal University of Technology, Akure	60
	Total	375

3.4 Data Collection Instrument

The instrument used to collect data for this study is a questionnaire tagged “Assessment of Electronic Information Resources on Postgraduate Engineering Students’ Academic Activities in Federal Universities in South Western Nigeria (AEIRPESAAFUSOWEN)”. The questionnaire consisted of set of questions presented to respondents for their answers separated into seven (7) sections. Section “A” contained information on demographic data of the respondents, Section “B” contained research questions on the types of electronic information resources that are available for postgraduate engineering students academic activities, Section “C” contained research questions on the postgraduate engineering students level of awareness of available electronic information resources for their academic

activities, Section “D” contained research questions on the level of accessing electronic information resources by postgraduate engineering students for their academic activities, Section “E” contained research questions on the level of utilisation of the electronic information resources by the postgraduate engineering students for their academic activities, Section “F” contained research questions on the computer literacy level of the postgraduate engineering students, Section “G” contained research questions on the challenges faced in the utilization of electronic information resources by postgraduate engineering students for their academic activities.

3.5 Validation of the Research Instrument

The face and content validity of the research instrument was done with the help of the researcher’s supervisor, two lecturers in the Department of Library and Information Science, Minna and an expert in Statistics and Measurement Department. The experts were given a copy of the questionnaire to validate in terms of its appropriateness for the research.

Suggestions made by the experts were used in the course of modification and refinement of the instrument.

3.6 Reliability of the Research Instrument

The questionnaire was subjected to the Cronbach Alpha method of reliability measure to determine its reliability coefficient. A pilot study was conducted in Federal University of Technology, Minna where thirty (30) copies of the questionnaire were administered to engineering postgraduate students to determine the level of reliability coefficient. The overall reliability of the questionnaire was 0.82 indicating that the instrument is reliable.

3.7 Procedure for Data Collection

Letter of introduction from the Head of Department, Library and Information Technology (LIT) Federal University of Technology, Minna was collected, attached to the copies of questionnaire and presented in the study areas for permission to administer the questionnaire to the respondents. The instrument was made simple, self-explanatory and comprehensive. The researcher distributed the copies of questionnaire with the help of six trained research assistants in each of the federal universities under study. Distribution and collection of the copies of questionnaire lasted for four (4) weeks. The researcher collected the returned copies of the questionnaire from the respondents for analysis.

3.8 Method of Data Analysis

The data from this study were organised and analysed using descriptive statistical tools such as frequency tables, percentages, mean and standard deviation to analyse the data for the study. Descriptive statistics would enable a researcher to organise and summarise data in an effective and meaningful way. Pearson Product Moment Correlation (PPMC) analysis was used to test the null hypotheses at 0.05 level of significance.

CHAPTER FOUR 4.0

RESULTS AND DISCUSSIONS

4.1 Response Rate

A total number of three hundred and seventy-five (375) copies of the questionnaire were administered to respondents in the six federal universities under study. Three hundred and seven (307) copies representing 82% response rate were properly filled and returned for analysis. Table 4.1 shows the response rate based on the number of the questionnaire administered returned and percentage(s) in each of the federal university studied. **Table 4.1: Response Rate**

S/N	Name of Federal University	No. Administered	No. Returned	Percentage(s) (%)
1	Federal University of Agriculture, Abeokuta	66	53	80

2	Federal University of Technology, Akure	60	47	78
3	Federal University of OyeEkiti	26	22	85
4	Obafemi Awolowo University, Ile-Ife	64	48	75
5	University of Ibadan	87	73	84
6	University of Lagos	72	64	89
	Total		307	82
		375		

Table 4.1 shows that 66 copies of the questionnaire were administered to postgraduate engineering students in Federal University of Agriculture, Abeokuta, 53 copies representing 80% were returned, 60 copies of questionnaire were administered to postgraduate engineering students in Federal University of Technology, Akure, 47 copies representing 78% were returned, 26 copies were administered to postgraduate engineering students in Federal University of Oye-Ekiti, 22 copies representing 75% were returned, 64 copies of questionnaire were administered to postgraduate engineering students in Obafemi Awolowo University, Ile-Ife, 48 copies representing 75% were returned, 87 copies of questionnaire were administered to postgraduate engineering students in University of Ibadan, 73 copies representing 84% were returned and 72 copies were administered to postgraduate engineering students in University of Lagos, 64 copies representing 89% were returned.

4.2 Descriptive Analysis of Demographic Data

The respondents were asked to indicate their demographic variables. Table 4.2 shows the responses based on gender and degree in view.

Table 4.2: Demographic Distribution of the Respondents

S/N	Gender	Frequency	Percentage(s)
1	Male	194	63
2	Female	113	37
Total		307	100

Degree in View	Frequency	Percentage(s)
Doctor of Philosophy (Ph.D)	59	19
M.Tech/M.Sc./M.Ed.	163	53
Postgraduate Diploma	85	28
Total	307	100

The result from Table 4.2 indicates that 194 (63%) of the respondents were males, while 113 (37%) of the respondents were females. This shows that most of the respondents are males. Similarly, 59 (19%) of postgraduate engineering students are undergoing their Doctor of Philosophy degree programme (Ph.D), 163 (53%) of postgraduate engineering students are undergoing their M.Tech/M.Sc./M.Ed. degree programme and 85 (28%) of postgraduate engineering students are undergoing their Postgraduate Diploma programme.

4.3 Answers to Research Questions

Research Question One: What are the types of electronic information resources available for postgraduate engineering students' academic activities in the federal universities in South-West, Nigeria?

Table 4.3 shows the types of electronic information resources available for postgraduate engineering students' academic activities.

Key: Available [√], Not Available [-]

The result in Table 4.3 showed the electronic information resources available and those not available for engineering postgraduate students' academic activities in the six federal universities studied. Electronic information resources such as e-books, e-journals, e-newspapers, e-conference papers, e-magazines, e-theses/dissertations, e-monographs, Web Public Access Catalogue and online databases are available in the six federal university universities. On the other hand, CD-ROMs and e-government papers are not available in Federal University, Abeokuta and Federal University of Oye-Ekiti respectively.

Research Question Two: To what extent are the postgraduate engineering students aware of the available electronic information resources for their academic activities in the federal universities in South-West, Nigeria?

Table 4.4 showed the responses of postgraduate engineering students on the awareness of electronic information resources available for their academic activities.

S/N	Extent Of Awareness of Electronic Information Resources By Postgraduate Engineering Students	VHE	HE	LE	VLE	n	FX	\bar{x}	STD	Decision
		4	3	2	1	307				
1	E-books	106(34.5%)	111(36.2%)	48(15.6%)	42(13.7%)	307	895	2.91	0.49	High
2	E-journals	97(31.6%)	106(34.5%)	33(10.7%)	71(23.1%)	307	843	2.75	0.25	High
3	E-newspapers	102(33.2%)	72(23.5%)	89(28.9%)	44(14.3%)	307	846	2.76	0.26	High
4	E-conference papers	97(32%)	104(33.9%)	57(18.6%)	49(15.9%)	307	863	2.81	0.31	High
5	E-magazines	67(21.85)	100(32.6%)	81(26.4%)	59(19.2%)	307	789	2.57	0.07	High
6	E-theses/dissertations	92(29.9%)	101(32.9%)	74(24.1%)	40(13.0%)	307	859	2.79	0.29	High
7	E-government papers	48(15.6%)	66(21.5%)	102(33.3%)	91(29.6%)	307	685	2.23	0.27	Low
8	E-monographs	75(24.4%)	87(28.3%)	81(26.4%)	64(20.8%)	307	787	2.56	0.06	High
9	E-scripts	47(15.3%)	93(30.3%)	101(32.9%)	66(21.5%)	307	735	2.39	0.11	Low
10	Web Public Access Catalogue	34(11.1%)	78(25.4%)	112(36.5%)	83(27.0%)	307	677	2.20	0.30	Low
11	CD-ROMs	43(14.0%)	69(22.5%)	95(30.9%)	100(32.6%)	307	669	2.18	0.32	Low
12	Online databases	85(27.7%)	91(29.6%)	78(25.4%)	53(17.3%)	307	822	2.68	0.18	High

Table 4.4: Extent of Awareness of Electronic Information Resources By Postgraduate Engineering Students

KEY: Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE)

1. The result from Table 4.4 showed that out of the twelve items listed for engineering postgraduate students to respond on the awareness of electronic information resources available for their academic activities, eight items produced high mean scores, which were above the bench mark of 2.50. These items include item 1: I am aware of the availability of e-books for my academic activities ($\bar{x}=2.91$; $SD=0.41$), item 4: I am aware of the availability of e-conference papers for my academic activities ($\bar{x}=2.81$; $SD=0.31$), item 6: I am aware of the availability of etheses/dissertations for my academic activities ($\bar{x}=2.79$; $SD=0.29$), item 3: I am aware of the availability of e-newspapers for my academic activities ($\bar{x}=2.76$; $SD=0.26$), item 2: I am aware of the availability of e-journals for my academic activities ($\bar{x}=2.76$; $SD=0.25$), item 12: I am aware of the availability of Online databases for my academic activities ($\bar{x}=2.68$; $SD=0.18$), item 5: I am aware of the availability of e-magazines for my academic activities ($\bar{x}=2.57$; $SD=0.07$) and item 8: I am aware of the availability of e-monographs for my academic activities ($\bar{x}=2.56$; $SD=0.06$). On the other hand, four items produced low mean score below the bench mark of 2.50. These items include item 9: I am aware of the availability of e-scripts for my academic activities ($\bar{x}=2.39$; $SD=0.11$) item 7: I am aware of the availability of e-government papers for my academic activities ($\bar{x}=2.23$; $SD=0.27$), item 10: I am aware of the availability of Web Public Access Catalogue for my academic activities ($\bar{x}=2.20$; $SD=0.30$) and item 11: I am aware of the availability of CD-ROMs for my academic activities ($\bar{x}=2.18$; $SD=0.32$). This implies that the respondents indicated

were aware of the availability of most electronic information resources available for their academic activities.

Research Question Three: What is the level of accessibility of the available electronic information resources for postgraduate engineering students' academic activities in the federal universities in South-West, Nigeria?

Table 4.5 shows the responses of engineering postgraduate students on the level of accessibility to electronic information resources for their academic activities.

Table 4.5: Level of Accessibility to Electronic Information Resources

S/N	Level of Accessibility to Electronic Information Resources	VH	H	L	VL	n	FX	\bar{x}	STD	Decision
		4	3	2	1					
1	Computer	101(32.9%)	93(30.3%)	89(28.9%)	24(7.8%)	307	885	2.88	0.38	High
2	Internet	97(31.6%)	103(33.6%)	64(20.9%)	43(14.0%)	307	868	2.83	0.33	High
3	Phone	85(27.7%)	91(29.6%)	78(25.4%)	53(17.3%)	307	822	2.68	0.18	High
4	Library website	93(30.3%)	109(35.5%)	47(15.3%)	58(18.9%)	307	851	2.77	0.27	High
5	Social media	91(29.6%)	98(31.9%)	63(20.5%)	55(17.9%)	307	839	2.73	0.23	High

KEY: Very High (VH), High (H), Low (L), Very Low (VL)

Table 4.5 showed that five items were listed for engineering postgraduate students on response to their level of accessibility to electronic information resources for their academic activities. All the five items produced high mean scores which were above the benchmark mean of 2.50. These items include item 1: I access electronic information resources through the use of computer for my academic activities (\bar{x} =2.88; SD=0.38), item 2: I access electronic information resources through the Internet for my academic activities (\bar{x} =2.83; SD=0.33), item 4: I access electronic information resources through the library website for my academic activities (\bar{x} =2.77; SD=0.27), item 5: I access electronic information resources through social media for my academic activities (\bar{x} =2.73; SD=0.23) and item 3: I access electronic information resources through phone for my academic activities (\bar{x} =2.68; SD=0.18).

Research Question Four: What is the level of use of the available electronic information resources for postgraduate engineering students' academic activities in the federal universities in South-West, Nigeria?

Table 4.6 showed the level of use of the available electronic information resources by engineering postgraduate students for their academic activities.

Table 4.6: Level of Use of the Available Electronic Information Resources

S/N	Level of Use of the Available Electronic Information Resources	VH	H	L	VL	n	FX	\bar{x}	STD	Decision
		4	3	2	1					
1	E-books	98(31.9%)	103(33.6%)	72(23.5%)	34(11.1%)	307	879	2.86	0.36	High
2	E-journals	93(30.3%)	98(31.9%)	53(17.3%)	63(20.5%)	307	835	2.72	0.22	High
3	E-newspapers	76(24.8%)	104(33.9%)	52(16.9%)	75(24.4%)	307	795	2.59	0.09	High
4	E-conference papers	83(27.0%)	97(31.6%)	69(22.5%)	58(18.9%)	307	819	2.67	0.17	High
5	E-magazines	74(24.1%)	87(28.3%)	89(28.9%)	57(18.6%)	307	792	2.58	0.08	High
6	E-theses/dissertations	94(30.6%)	99(32.2%)	90(29.3%)	24(7.82%)	307	877	2.86	0.36	High
7	Web public access catalogue	92(29.9%)	101(32.9%)	59(19.2%)	55(17.9%)	307	844	2.75	0.25	High
8	Electronic reference sources	68(22.1%)	63(20.5%)	102(33.2%)	74(24.1%)	307	739	2.41	0.09	Low
9	Online databases	92(29.9%)	101(32.9%)	76(24.8%)	38(12.4%)	307	861	2.80	0.30	High

KEY: Very High (VH), High (H), Low (L), Very Low (VL)

The result from Table 4.6 showed that nine items were listed for engineering postgraduate students to respond on the level of use of the available electronic information resources for their academic activities. Eight items produced high mean scores which were above the average benchmark of 2.50. These items include item 1: I consult e-books to get relevant information for writing the background to the study of my research ($\bar{x}=2.86$; $SD=0.36$), item 6: I use e-theses/dissertations to identify gap, new research areas and determine the methodology for my ongoing research ($\bar{x}=2.86$; $SD=0.36$), item 9: I use Online databases for getting information needed and desired that match my writing of theses and dissertations ($\bar{x}=2.80$; $SD=0.30$), item 7: I used online public access catalogue to search and retrieve bibliographic records to be used for my research ($\bar{x}=2.75$; $SD=0.25$), item 2: I use e-journals to find current articles that will assist me in my project, thesis and dissertation writing ($\bar{x}=2.72$; $SD=0.22$), item 4: I use e-conference papers to get current information about my area of research ($\bar{x}=2.67$; $SD=0.17$), item 3: I consult e-newspapers to obtain very current information needed for my res ($\bar{x}=2.59$; $SD=0.09$) and item 5: I use e-magazines for getting information that is very current and up-to-date for my research ($\bar{x}=2.58$; $SD=0.08$). On the other hand, one item produced low mean score below the benchmark mean of 2.50 which is item 8: I use electronic reference sources to find information about my research topic and locate fact information to be used for my research ($\bar{x}=2.41$; $SD=0.09$).

Research Question Five: What are the information literacy skills used by the postgraduate engineering students for their academic activities in the federal universities in South-West, Nigeria?

Table 4.7 showed the information literacy skills used by engineering postgraduate engineering students for their academic activities.

Table 4.7: Information Literacy Skills Used by Engineering Postgraduate Engineering Students for Their Academic Activities

S/N : Information Literacy Skills Used by SA		A	D	SD	n	FX \bar{x}	STD	Decision	Engineering	Postgraduate
		4	3	2	1	307				
1	have the knowledge to use E-books for my academic activities	98(31.9%)	103(33.6%)	72(23.5%)	34(11.1%)	307	879	2.86	0.36	Agreed
2	have the knowledge to use E-journals for my academic activities	92(29.9%)	101(32.9%)	76(24.8%)	38(12.4%)	307	861	2.80	0.30	Agreed
3	have the knowledge to use E-conference papers for my academic activities	91(29.6%)	98(31.9%)	63(20.5%)	55(17.9%)	307	839	2.73	0.23	Agreed
4	have the knowledge to use E-magazines for my academic activities	50(16.3%)	63(20.5%)	103(33.6%)	91(29.6%)	307	686	2.23	0.27	Disagree
5	have the knowledge to use E-newspapers for my academic activities	58(18.9%)	81(26.4%)	93(30.3%)	75(24.4%)	307	736	2.39	0.11	Disagree
6	have the knowledge to use Etheses/dissertations for my academic activities	94(30.6%)	99(32.2%)	90(29.3%)	24(7.82%)	307	877	2.86	0.36	Agreed
7	have the knowledge to search Online databases for my academic activities	74(24.1%)	87(28.3%)	89(28.9%)	57(18.6%)	307	792	2.58	0.08	Agreed
8	have the knowledge to search Web Public Access Catalogue for my academic activities	33(10.7%)	92(29.9%)	99(32.2%)	83(27.0%)	307	689	2.24	0.26	Disagree

KEY: Strongly Agreed (SA), Agreed (A), Disagreed (D), Strongly Disagreed (SD)

Table 4.7 showed that eight items were listed for engineering postgraduate students to respond on information literacy skills used by them for their academic activities. Five items produced high mean scores which were above the benchmark mean of 2.50. These items include item 1: I have knowledge on how to use the e-books for my research ($\bar{x}=2.86$; $SD=0.36$), item 6: I have knowledge on how to use the e-theses/dissertation for my research ($\bar{x}=2.86$; $SD=0.36$), item 2: I have knowledge on how to use the e-journals for my research ($\bar{x}=2.80$; $SD=0.30$), item 3: I have knowledge on how to use the e-conference papers for my research ($\bar{x}=2.73$; $SD=0.23$) and item 7: I have knowledge on how to use online databases for my research ($\bar{x}=2.58$; $SD=0.08$). On the other hand, three items produced low mean score which were below the benchmark of 2.50. These items include item 5: I have knowledge on how to use the e-newspapers for my research ($\bar{x}=2.39$; $SD=0.11$), item 8: I have knowledge on how to use Web Public Access Catalogue for my research ($\bar{x}=2.24$; $SD=0.26$) and item 4: I have knowledge on how to use the e-magazines for my research ($\bar{x}=2.23$; $SD=0.27$).

Research Question Six: What are the challenges faced in the use of electronic information resources among postgraduate engineering students for their academic activities in the federal universities in South-West, Nigeria?

Table 4.8 showed the challenges faced in the use of electronic information resources among postgraduate engineering students for their academic activities in the federal universities studied.

Table 4.8: Challenges Faced in the Use of Electronic Information Resources among Postgraduate Engineering Students for Their Academic Activities

S/N	Challenges Faced in the use of Electronic Information Resources among Postgraduate Engineering Students for Their Academic Activities	SA	A	D	SD	n	FX	\bar{x}	STD	Decision
		4	3	2	1	307				
1	Poor ICT infrastructure	101(32.9%)	91(29.6%)	74(24.1%)	41(13.4%)	307	866	2.82	0.32	Agreed
2	Out-dated electronic information resources	83(27.0%)	97(31.6%)	69(22.5%)	58(18.9%)	307	819	2.67	0.17	Agreed
3	Erratic power supply	94(30.6%)	99(32.2%)	90(29.3%)	24(7.82%)	307	877	2.86	0.36	Agreed
4	Lack of subscription	92(29.9%)	101(32.9%)	76(24.8%)	38(12.4%)	307	861	2.80	0.30	Agreed
5	Poor funding	98(31.9%)	103(33.6%)	72(23.5%)	34(11.1%)	307	879	2.86	0.36	Agreed
6	Lack of proper ICT knowledge	93(30.3%)	98(31.9%)	53(17.3%)	63(20.5%)	307	835	2.72	0.22	Agreed
7	Low bandwidth	76(24.8%)	104(33.9%)	52(16.9%)	75(24.4%)	307	795	2.59	0.09	Agreed
8	Lack of user orientation	85(27.7%)	91(29.6%)	78(25.4%)	53(17.3%)	307	822	2.68	0.18	Agreed

KEY: Strongly Agreed (SA), Agreed (A), Disagreed (D), Strongly Disagreed (SD)

Table 4.8 further revealed the challenges faced in the use of electronic information resources among postgraduate engineering students for their academic activities in the federal universities studied. All the eight items have high mean scores which are above the mean score of 2.50. These items include item 3: Erratic power supply ($\bar{x}=2.86$; $SD=0.36$), item 5: Lack of fund ($\bar{x}=2.86$; $SD=0.36$), item 1: Poor ICT infrastructure ($\bar{x}=2.82$; $SD=0.32$), item 4: Lack of subscription ($\bar{x}=2.80$; $SD=0.30$), item 6: Lack of proper ICT knowledge ($\bar{x}=2.72$; $SD=0.22$), item 8: Lack of user orientation ($\bar{x}=2.68$; $SD=0.18$), item 2: Out-dated electronic information resources ($\bar{x}=2.67$; $SD=0.17$) and item 7: Low bandwidth ($\bar{x}=2.59$; $SD=0.09$). This implies that poor ICT infrastructure, outdated electronic information resources, erratic power supply, lack of subscription, lack of fund, lack of proper ICT knowledge, low bandwidth and lack of user orientation are seen as challenges faced in the use of electronic information resources by postgraduate engineering students for their academic activities.

4.4 Testing of Hypotheses

H₀₁ There is no significant relationship between accessibility and utilisation of electronic information resources on academic activities of postgraduate engineering students in federal universities in South-West, Nigeria.

Table 4.9 showed the relationship between accessibility and utilisation of electronic information resources on academic activities of engineering postgraduate students in federal universities in South-West, Nigeria.

Table 4.9: Relationship between Accessibility and Utilisation of Electronic Information Resources

		Accessibility to Electronic Resources	Utilisation of Electronic Information Resources
Accessibility to Electronic Resources	Pearson Correlation	1	.718**
	Sig. (2-tailed)		.000
	N	307	307
Utilisation of Electronic Information Resources	Pearson Correlation	.718**	1
	Sig. (2-tailed)	.000	
	N	307	307

** . Correlation is significant at the 0.05 level (2-tailed).

Table 4.9 shows the relationship between accessibility and use of electronic information resources among engineering postgraduate students in federal universities in South-West, Nigeria. Since sig-value (0.000) < 0.05, we reject the null hypothesis and conclude that there is significant relationship between accessibility and use of electronic information resources among engineering postgraduate students in the studied federal universities in South-West, Nigeria. This shows that access to electronic information resources will enhance engineering postgraduate students' use of electronic information resources.

H₀₂ There is no significant relationship between electronic information resources use and postgraduate engineering students' academic activities in federal universities in South-West, Nigeria.

Table 4.10 showed the relationship between electronic information resources use and engineering postgraduate students' academic activities in federal universities in SouthWest, Nigeria.

Table 4.10: Relationship between electronic information resources use and engineering postgraduate students' academic activities

		Electronic information resources use	Engineering postgraduate students' academic activities
Electronic information resources use	Pearson Correlation	1	.961**
	Sig. (2-tailed)		.000
	N	307	307
Engineering postgraduate students' academic activities	Pearson Correlation	.961**	1
	Sig. (2-tailed)	.000	
	N	307	307

** . Correlation is significant at the 0.05 level (2-tailed).

Table 4.10 shows the relationship between electronic information resources use and engineering postgraduate students' academic activities in federal universities in SouthWest, Nigeria. Since sig-value (0.000)<0.05, the null hypothesis is rejected and conclude that there is significant relationship between electronic information resources use and engineering postgraduate students' academic activities in federal universities in SouthWest, Nigeria. This means that electronic information resources influence engineering postgraduate students' academic activities.

4.5 Summary of Findings

The findings of the study are as follows:

1. The types of electronic information resources available for academic activities of engineering postgraduate students are: e-books, e-journals, e-newspapers, e-conference papers, e-magazines, e-theses/dissertations, e-monographs, Web Public Access Catalogue and online databases.
1. The extent of awareness on electronic information resources available for postgraduate engineering students is high
2. The level of accessibility of the available electronic information resources for postgraduate engineering students' academic activities is high.
3. The level of postgraduate engineering students use of electronic information resources for their academic activities is high.
4. The information literacy skills of postgraduate engineering students are; ability to use e-books, e-journals, e-thesis/dissertations, e-conference papers, ability to search online databases.
5. The challenges faced in the use of electronic information resources by postgraduate engineering students are; poor ICT infrastructure, outdated electronic information resources, erratic power supply, lack of subscription, lack of fund, lack of proper ICT knowledge, low bandwidth and lack of user orientation are seen as challenges faced in the use of electronic information resources for their academic activities
6. There is significant relationship between accessibility and utilisation of electronic information resources on academic activities of engineering postgraduate students in federal universities in South-West, Nigeria

7. There is significant relationship between electronic information resources use and engineering postgraduate students' academic activities in federal universities in South-West, Nigeria

4.6 Discussion of the Findings

Research Questions

4.6.1 Research question 1: What are the types of electronic information resources available for postgraduate engineering students' academic activities in the federal universities in South-West, Nigeria?

The findings of the study revealed that there is availability of electronic information resources such as e-books, e-journals, e-newspapers, e-conference papers, e-magazines, theses/dissertations, e-monographs, Web Public Access Catalogue and online databases. This is in line with the findings of Sharma (2019) that the term electronic information resources are seen as library's information materials in electronic forms or formats which include electronic books (e-books); electronic newspapers (e-newspapers); electronic journals (e-journals) as well as Internet resources. In addition, Deng (2010) added that electronic resources also consist of databases, magazines, archives, theses, conference papers, government papers, scripts and monographs in an electronic form. This further corroborates the findings of Uzuegbu *et al.* (2012) who argued that electronic information resources predominantly used by postgraduate students in their academic activities are e-books, e-journals, online databases, CD-ROM databases, e-conference papers, e-theses/dissertations, and e-newspapers/e-magazines. Electronic resources provide efficient access to research information beyond institutional boundaries.

On the other hand, CD-ROMs, e-government papers and e-scripts were not available in some of the federal universities studied. The few electronic information resources rendered to engineering postgraduate students could be as a result of inadequate funding of the libraries.

4.6.2 Research question 2: To what extent do the postgraduate engineering students aware of the available electronic information resources for their academic activities in the federal universities in South-West, Nigeria?

The study revealed that engineering postgraduate students were highly aware of the availability of e-books, e-journals, e-newspapers, e-conference papers, e-magazines, theses/dissertations, e-monographs, Web Public Access Catalogue and online databases for their academic activities. This is because electronic information resources provide accurate and timely information that can be used by engineering postgraduate students to advance their research and intellectual growth. This is in line with the findings of Ukpebor (2012) that electronic resources provide accurate and timely information, especially for students who depend greatly on the electronic resources for information to advance research and collaboration with other researchers around the world for intellectual growth.

However, awareness of electronic information resources such as e-government papers, e-scripts, Web Public Access Catalogue and CD-ROMs for academic activities of engineering postgraduate students were low. This could be because engineering postgraduate students lack skills in the use of the aforementioned electronic resources for their academic activities. This is partly in line with Gakibayo *et al.* (2013) who submitted that accessibility and utilisation of EIRs were not only affected by poor ICT infrastructure and lack of computer skills but also lack of resources and processes of accessing the resources.

4.6.3 Research question 3: What is the level of accessibility of the available electronic information resources for postgraduate engineering students' academic activities in the federal universities in South-West, Nigeria?

The findings of the study revealed that the level of accessibility of the available electronic information resources for postgraduate engineering students' academic activities is high. Postgraduate engineering students indicated that they access electronic information resources through the use of their computers, through the Internet, through their phones, through the library website and through social media for their academic activities. This is in line with the findings of Ani *et al.* (2014) that electronic resource as information resource are accessible through ICT facilities, computers, CD-ROMs, the Internet, and other digital networks (such as digital libraries). Basically, electronic resources are widely accessible through the Internet, a global information infrastructure, which allows electronic publishing. Amankwah (2014) also indicated that electronic resources include full text documents, CD-ROMs, resources available on the Internet such as E-journals, Online

Public Access Catalogues (OPAC) and other computer based electronic networks.

4.6.4 Research question 4: What is the level of use of the available electronic information resources for postgraduate engineering students' academic activities in the federal universities in South-West, Nigeria?

The findings of the study revealed that the level of use of available electronic information resources among engineering postgraduate students is high. The frequency of usage of ebooks, e-journals, e-newspapers, e-conference papers, e-magazines, e-theses/dissertations, Online Public Access Catalogue and use online databases by postgraduate engineering students to search and retrieve

relevant, current and up-to-date information and to also identify gaps and new research areas to support their academic activities is high. This further corroborates the findings of Jewel (2010) that the potentials of electronic information resources, when effectively utilized, impact the academic activities of postgraduate engineering students and academic staff in no small way.

4.6.5 Research question 5: What are the information literacy skills used by the postgraduate engineering students for their academic activities in the federal universities in South-West, Nigeria?

The findings of the study revealed that postgraduate engineering students have the ability to use e-books, e-journals, e- conference papers, e-theses/dissertations, online databases, for their academic activities. The respondents indicated that they have knowledge on how to consult and use e-books, e-journals, e-theses/dissertations and online databases for their academic activities. This is because electronic information resources provide postgraduate engineering students with research works of global scientific scholars which helps improve their academic activities. This is in line with the findings of Sejane (2017) who submitted that EIR enables students to have a better access to the work of the global scientific community to incorporate proven scientific knowledge into academic activities. However, the use of e-magazines, e-newspapers and Web Public Access Catalogue for academic activities of engineering postgraduate students were low. This could be because the some of the federal universities studied do not subscribe to these electronic resources because of their high subscriptions. This partly agrees with the findings of Musa *et al.* (2017) that scientific research findings are communicated in scholarly journal based on subscriptions or licenses that is expensive to disseminate.

4.6.6 Research question 6: What are the challenges faced in the use of electronic information resources among postgraduate engineering students for their academic activities in the federal universities in South-West, Nigeria?

The challenges faced in the use of electronic information resources among postgraduate engineering students for their academic activities are; poor ICT infrastructures, outdated electronic information resources, erratic power supply, lack of subscription, poor funding, lack of proper ICT knowledge, low bandwidth, lack of user orientation. The study equally revealed that the respondents agreed with all the challenges facing the use of electronic information resources among engineering postgraduate students for their academic activities. This indicates that the academic activities of engineering postgraduate students are negatively affected. As such, urgent attention needs to be given on the acquisition of more ICT facilities, provision of alternative source(s) of power supply, provision of fund and user education programme to educate and enlighten engineering postgraduate students on the use of electronic information resources for their academic activities. This is in line with the findings of Mulla (2011) who reported that the major barrier to the use of electronic journals is the lack of subscriptions in relevant fields of studies and the lack of user orientation or training. Similarly, Bhatt *et al.* (2011) identified that the most common problems with e-resources are low speed connectivity, lack of awareness about statutory provision for accessing e-resources by the institutions, technical problems, unavailability of sufficient e-resources, doubts in permanency, high purchase price and lack of legal provision.

4.6.7 Findings on the tested hypotheses

H₀₁: Relationship between accessibility and utilisation of electronic information resources on academic activities of postgraduate engineering students in federal universities in South-West, Nigeria.

The test of the null hypothesis between accessibility and utilisation of electronic information resources on academic activities of engineering postgraduate students has shown that there is significant relationship between them. This means that accessibility will significantly increase or enhance the use of electronic information resources among engineering postgraduate students for their academic activities. This is in line with the findings of Sejane (2017) who submitted that EIR enables students to have a better access to the work of the global scientific community to incorporate proven scientific knowledge into academic activities.

H₀₂: Relationship between electronic information resources use and postgraduate engineering students' academic activities in federal universities in South-West, Nigeria.

The test of the null hypothesis between electronic information resources use and postgraduate engineering students' academic activities shows that there is significant relationship between them. This means that electronic information resources have influence on academic activities of engineering postgraduate students'. Okonedo (2015) opined that there is a direct correlation between utilization of library resources and academic activities of library users.

5.1 Conclusion

The study presented a survey on the assessment of electronic information resources on postgraduate engineering students' academic activities research in federal universities in South West, Nigeria. From the findings of the study it could be deduced that 21st century has created a need where postgraduate students can access information resources beyond printed format because of the nature of information generated or provided in electronic formats which they can access through their phones and laptops. The engineering postgraduate students indicated they consult e-books, e-journals, e-newspapers, e-conference papers, e-magazines, e-theses/dissertations, Online Public Access Catalogue and use online databases to search and retrieve relevant, current and up-to-date information and to also identify gaps and new research areas to support their academic activities. However, factors such as poor ICT infrastructure, outdated electronic information resources, erratic power supply, lack of subscription, lack of fund, lack of proper ICT knowledge, low bandwidth and lack of user orientation were seen as challenges faced in the use of electronic information resources among engineering postgraduate students for their academic activities. With all these, there would not be effective use of electronic information resources by engineering postgraduate students and therefore, affects their academic activities negatively.

5.2 Recommendations

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

1. The management of the federal universities in South-West, Nigeria should strive to provide adequate information resources that can support the academic activities of engineering postgraduate students

2. The management of the federal universities in South-West, Nigeria should create avenue through seminars, workshops and library user education programmes for engineering postgraduate students so as to improve and keep them abreast on the use of electronic information resources for their academic activities.
3. The management of federal universities in South-West, Nigeria should try to install Internet services as well as provide alternative means of power supply for effective and efficient use of electronic information resources among engineering postgraduate students to support their research activities.
4. The management of federal universities in South-West, Nigeria should provide fund for subscription to obtain current and up-to-date electronic information resources that will support the academic and research needs of engineering postgraduate students

5.3 Contribution to Knowledge

The study contributes to knowledge in the following areas:

1. The study revealed that there are adequate electronic information resources in the federal universities studied, the provision of which is hampered by power outage, slow Internet connectivity and lack of user orientation or training which becomes instrumental to not meeting the academic needs of engineering postgraduate students.
2. The study provided empirical evidence that even though engineering postgraduate students are expected to use electronic information resources for their academic activities, they still need to put in more effort especially through use of ICT facilities and its associated gadget to search and locate information resources relevant for their academic activities.

3. The study has equally added to the already existing body of literatures available on electronic information resources and how they are accessed and used by engineering postgraduate students for their academic activities.

5.4 Suggestion for Further Research

1. This study was on the assessment of electronic information resources on postgraduate engineering students' academic activities research in federal universities in South West, Nigeria. As such, it is therefore, necessary for one to suggest a similar research on information need and information literacy skills on the use of electronic information resources by students in university libraries in Nigeria.
2. Information needs assessment and utilisation of digital information resources among library users in private university libraries in North-Central, Nigeria.
3. Influence of electronic information resources on undergraduate students' academic activities in federal university libraries in Western Nigeria
4. There is also the need for research on state owned universities to get more findings on the information literacy skills and use of electronic information resources among postgraduate students' in carrying out their research activities in North-Central, Nigeria.

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APPENDIX A

Questionnaire for Postgraduate Students

Department of Library and Information Technology,
Federal University of Technology, Minna, Niger State.
30th August, 2021

Dear Respondent,

I am a postgraduate student of the Department of Library and Information Technology, Federal University of Technology, Minna. I am currently conducting a research titled **“Assessment of Electronic Information Resources on Postgraduate Engineering Students Academic Activities in Federal Universities in South Western Nigeria”**. Kindly respond to the questions to enable me successfully complete the study. All the information provided will be used for educational purpose only and it will be treated with upmost confidentiality.

Yours sincerely,

FASUGBA, Motunrayo Fatima
M.Tech Researcher

APPENDIX B

Questionnaire for Postgraduate Students

SECTION A: Demography of Postgraduate Students

Indicate your Gender:

- a. Male
- b. Female

Indicate your degree in view

- a. Doctor of Philosophy (PhD)
- b. Master of Philosophy (M.Phil)
- c. Master of Technology/Science (MTech/MSc)
- d. Postgraduate Diploma

SECTION B: What are the types of electronic information resources available for postgraduate engineering students' academic activities in selected federal university libraries South West Nigeria?

Types of Electronic Information Resources Available on Postgraduate Engineering Students' Academic Activities

S/N	Electronic Information Resources	Available	Not Available
1	e-books		
2	e-journals		
3	e-newspapers		
4	e-conference papers		
5	e-magazines		
6	e-theses/dissertation		
7	e-government papers		
8	e-monographs		
9	e-scripts		
10	Web Public Access Catalogue		
11	CD-ROMs		

12	Online databases		
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SECTION C: To what extent are you aware of the availability of electronic information resources for postgraduate engineering students' academic activities in federal university South-West, Nigeria?

Awareness of Electronic Information Resource for Postgraduate Engineering Students Academic Activities

S/N	To what extent are you aware of the availability of electronic information resources for your academic activities	VHE	HE	LE	VLE
1	E-books				
2	E-journals				
3	E-newspapers				
4	E-conference papers				
5	E-magazines				
6	E-theses/dissertations				
7	E-government papers				
8	E-monographs				
9	E-scripts				
10	Web Public Access Catalogue				
11	CD-ROMs				
12	Online databases				

KEY: Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE)

SECTION D: What is the level of accessibility to available electronic information resources for postgraduate engineering students' academic activities in federal universities in South West Nigeria?

Accessibility of Available Electronic Information Resources for Postgraduate Engineering Students' Academic Activities

S/N	Statements	VH	H	L	VL
1	Computer				
2	Internet				
3	Phone				
4	Library website				
5	Social media				
6	Others (please specify)				

KEY: Very High (VH), High (H), Low (L), Very Low (VL)

SECTION E: What is the level of usage of available electronic information resources for postgraduate engineering students' academic activities in federal universities in South West Nigeria?

Level of Use of Available Electronic Information Resources for Postgraduate Engineering Students' Academic Activities

S/N	Statements	VH	H	L	VL
1	E-books				
2	E-journals				
3	E-newspapers				
4	E-conference papers				
5	E-magazines				
6	E-theses/dissertations				
7	Online public access catalogue				
8	Electronic reference sources				
9	Online databases				

Key: Very High (VH), High (H), Low (L), Very Low (VL)

SECTION F: What are the information literacy skills of postgraduate engineering students in the use of electronic information resources for academic activities in federal universities in South West Nigeria?

Information Literacy Skills of Postgraduate Engineering Students in the Use of Electronic Information Resources for Academic Activities

S/N	Literacy Skills	SA	A	D	SD
1	I have the knowledge to use Ebooks for my academic activities				
2	I have the knowledge to use Ejournals for my academic activities				
3	I have the knowledge to use Econference papers for my academic activities				
4	I have the knowledge to use Emagazines for my academic activities				
5	I have the knowledge to use Enewspapers for my academic activities				
6	I have the knowledge to use Etheses/dissertation for my academic activities				
7	I have the knowledge to use Online databases for my academic activities				
8	I have the knowledge to use Web Public Access Catalogue for my academic activities				

KEY: Strongly Agreed (SA), Agreed (A), Disagreed (D), Strongly Disagreed (SD)

SECTION G: What are the challenges faced in the utilisation of electronic information resources by postgraduate students for their academic activities in federal universities in South West Nigeria?

Challenges Faced in the Utilisation of Electronic Information Resources by Postgraduate Students for Their Academic Activities

S/N	Statements	SA	A	D	SD
1	Poor ICT infrastructure				

2	Out-dated electronic information resources				
3	Erratic power supply				
4	Lack of subscription				
5	Poor funding				
6	Lack of proper ICT knowledge				
7	Low bandwidth				
8	Lack of user orientation				

KEY: Strongly Agreed (SA), Agreed (A), Disagreed (D), Strongly Disagreed (SD)
APPENDIX C

Cronbach Alpha Reliability Analysis Result

Notes

Output Created		25-NOVEMBER-2021 13:30:45
Comments		
Input	Data	C:\Users\dell\Desktop\DEFAULT BACKUP\ANALYSIS\Fasugba.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	
	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.
	Processor Time	00:00:00.00
Resources	Elapsed Time	00:00:00.02

CRONBACH ALPHA RELIABILITY COEFFICIENT DATA

SECTION A

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.818	.829	12

SECTION B

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
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.818	.829	12
------	------	----

SECTION C

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.692	.653	5

SECTION D

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.783	.649	9

SECTION E

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
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.892	.835	8
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SECTION F

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.892	.835	8

The total Cronbach's Alpha = $\frac{0.818+0.818+0.692+0.783+0.892+0.892}{6}$

$$= \frac{4.895}{6} = 0.82$$

Cronbach's Alpha = 0.82 (This indicates that the instrument is reliable and can therefore be used for the study)

APPENDIX D

Table 1: Krejcie and Morgan Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970