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AVAILABILITY AND USE OF DIGITAL INFORMATION RESOURCES BY UNDERGRADUATES OF UNIVERSITIES IN DELTA AND EDO STATES, NIGERIA

**A THESIS SUBMITTED TO THE DEPARTMENT OF LIBRARY AND INFORMATION
SCIENCE, FACULTY OF EDUCATION NNAMDI AZIKIWE UNIVERSITY, AWKA**

BY

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**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS
DEGREE IN LIBRARY AND INFORMATION SCIENCE (M.LIS)**

Under The Guidance of

Dr. A.U Nwabueze



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ABSTRACT

The research work investigated the availability and use of Digital Information Resources by undergraduates of universities in Delta and Edo States. Descriptive survey design was adopted for the study. The population comprised ten thousand eight hundred and eighty-two students (10, 882) in four universities in Delta and Edo States in Nigeria. The sample size comprised one thousand and eighty-eight (1,088) respondents, selected through proportionate stratified random sampling technique. Capture sampling was adopted for the administration of the instrument. Three research questions guided the study and two hypotheses were tested at 0.05 level of significance. Observation checklist and questionnaire were used for data collection. The instrument was titled “Availability and use of Digital Information Resources Questionnaire (AUDIRQ).” Data obtained were analyzed using descriptive statistic and the hypotheses was tested with Z test. The major findings include that some Digital Information Resources (DIRs) were available in the university libraries visited by the researcher are the following: e-conference papers, e-zines, e-newsletters e-reference materials, e-projects, e-journals, e-seminar papers, e-books and e-dissertation. More specifically, Ambrose Alli University Library (AAU) have ten(10) types of DIRs; John Harrison Library in University of Benin (UNIBEN) eight of DIRs are available either through inter- library loan (ILL), or online subscription. Federal University Petroleum Resources Library do not have any of the DIRs because the digital library was just newly established and under structuring; but they are using it as cybercafé for students to search academic information with the Internet facilities. The findings also revealed that students make use of DIRs to a low extent. The constraints encountered by students towards the accessibility of DIRs in the four libraries are epileptic power supply, none availability of online databases, lack of formal training in Internet skills among students, slow bandwidth, network problems and server slowness. Implications of the findings were pointed out and some recommendations were made among which were that the university management of Federal University of Petroleum Resources Library (FUPR) and Delta State University Library (DELSU) should look into the development and growth of the digital library as a matter of urgency through the process of free downloading and subscription of databases online. University management of both federal and state institutions should vote a reasonable amount of fund to enable the library management buy all facilities needed for digital library to work effectively and efficiently.

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CERTIFICATION

This is to certify that I am responsible for the work submitted in this thesis. The original work is mine, except as specified in the acknowledgements and references, and that neither the thesis nor the original work contained therein, has been submitted to this university or any other institution for the award of a degree.

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NAU/PG/ 2010206004 F

NOVEMBER, 2014

DEDICATION

This research work is dedicated to my best friend Ufeli L. Nkem, Sisters and Brothers.

CHAPTER ONE

INTRODUCTION

Background to the Study

In recent times, universities in Africa have embarked on integration of technology in their operations. This serves as a tool for improvement and development, especially in a situation where attention is drawn to the academic contents and ways of digitizing and preserving them. University libraries are fully involved in this development as they are the heart of the university. This is because University libraries house the intellectual contents of the institutions. This effort to digitize the intellectual property of the institution is what is known as digitization (Adeyinka, Adedeji, Ayen, & Omoba, 2008).

The major function of libraries, irrespective of type, is to provide the right materials (resources in all formats) to meet the information needs of users. A university library aims at serving students and researchers at all levels, hence, librarians must be ready to acquire and make available necessary databases for teaching and research for the university communities (Devi & Singh, 2004). Devi and Singh further stated that information explosion and information technology revolution leading to the emergence of digital information era has made several library resources available for clientele.

In a digital library, resources are stored and made available in digital forms, and the services of the library are also made available electronically. Rosenberg (2005) noted that these services are made available frequently over the Internet so that users can access electronic materials remotely. This refers to e-services which most libraries are trying to embrace in the digital environment. Rosenberg further stated that as libraries embrace the digital environment,

their most crucial role is not that of providing e-resources, but of establishing services that facilitate access to available information. According to Fabunmi, Paris and Fabunmi (2006), library digitization has become part of the work of librarians, and most libraries are involved in digitization. Libraries in Nigeria universities are not left out in this trend of digitization.

Digital Information Resources(DIRs) connotes those information resources which before now were in print form, but currently found in non- print form (soft copy) and are accessible through computer machines and other corresponding ICT tools(Obaseki, Umeji & Krubu, 2010). Similarly, Digital Information Resources(DIRs)includes music's, games, stories, articles from magazines, published journals and books, encyclopaedias, pamphlets, cartographic materials and other published resources that are in soft copies. They also often include sound animated graphics, pictures and movies.

The aim of digitizing library materials is for preservation and easy access by students, researchers and other users. In the words of Fabunmi, Paris and Fabunmi (2006:30) stated that:

Digitization improves access to library resources. By digitizing library collections, information will be accessible to all instead of a group of researchers. Digital projects allow users to search for collections rapidly and comprehensively from anywhere at any time. Digitization makes the invisible to be visible. Several users can access the same material the same time without hindrance. It also removes the problem of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such materials.

Okwaro (2010) while discussing issues relating to digital libraries and development, draw attention to the key principle of the World Summit on the Information Society (WSIS) which emphasized the common desire and commitment of the world to build a people - centred, inclusive and development-oriented information society. According to him, it would facilitate a situation where everyone can create, access, utilize and share information which is aimed at enabling individuals and communities to achieve their full potential in promoting sustainable development. Therefore, Digital Information Resources(DIRs) of an institution's library has a lot of positive effects. In addition to this, Imo and Igbo (2011) stated that digitalization promotes access to information for the end user such as researchers, lecturers and more especially undergraduates and also enhances the status of the institution engaged in the initiative at the global level. A digital information resource of African origin involves diverse kinds of materials. In studies conducted by Fatoki (2007), the materials considered for digital resources include, published articles, theses, dissertations, conference papers, reports, technical and working papers, photographs, newspapers, government official publications, data/ statistics, artefacts, maps, charts, artistic paintings, historical documents and African documents and manuscripts.

Omekwu (2002: 100) also pointed out that:

Traditional domains of librarians and libraries have always been in the printed page. The strength of services has also been on delivery of library-held information resources to the clientele system. So it is understandable when librarians talk excitingly about the largeness of their collection and the membership of their clientele system. But these two factors – the printed page and their provision to users are already at a crossroad with the challenges which ICT information systems pose to the traditional orientations.

In effect, there is an obvious shift from the traditional collection development and services approaches to modern trends in library and information and documentation services. Libraries, until the past two decades, were basically discharging their functions via the provision of printed materials and rendering of traditional services which made it compulsory for face to face contact with the users before they could receive any service (Ukachi, 2011). According to Ukachi (2011), presently the service delivery of libraries especially that in higher education sector has taken another dimension. Information needs of learners and knowledge seekers are met through a plethora of sources Digital Information Resources(DIRs), that is, library resources in electronic formats, are now acquired by libraries to compliment the printed materials.

Digital Information Resources (DIRs) play a prominent role in facilitating access to required information by the users in an easy and expeditious manner of undergraduate students. Negahban and Mysore (2009) asserted that digital Information Resources (DIRs) in reality have become the backbones of many academic institutions. They serve as a motivating factor to students as they provide them opportunity to transmit, acquire or download, process and disseminate information on any subject of interest. Further, Ukachi, (2011) however stated that, the use of Digital Information Resources (DIRs) aid the users to keep abreast with current developments in their respective subject fields, in contrast with print media which are not regularly updated like the electronic ones.

The creation and dissemination of Digital Information Resources (DIRs) is driving fundamental changes in what librarians currently do. Hence digital libraries create and contribute to knowledge without much hurdles (stress) compared to conventional system. In the electronic

era, human beings can increase their knowledge bases through digital means independent of discipline, time and geography. It therefore, guarantees open access to global knowledge and digital libraries are transforming education by providing organised access to high quality resources and tools that support innovations in teaching, learning and research at all levels of education worldwide (Otubelu, 2010).

The importance of digital libraries in area of information and knowledge provisions to human resources in all sphere of life cannot be over -emphasized. It is obvious that academic libraries all over the world and particularly in Nigeria are challenged with issues such as paucity of finance to acquire information resources in print form, and even subscribe to electronic resources; competent library professionals suitable for the digital era are also inadequate.

Another potential problem in digital age in developing countries is hardware and software related problems, human resources to man the technologies effectively as well as power supply instability. This situation is prevalent in most academic libraries and has great implication for education development of this nation (Omekwu, 2002).

Despite the above challenges, making digital resources and services available for use by students and other users becomes very vital as digital libraries provide access to information resources such as databases, electronic journal (e-journal), electronic book (e- book) alerting services, , special collections, CD-ROM, online reference tools and these improve the quality of teaching and research (Lee, 2008). Therefore, it has become expedient to know the availability and uses of these Digital Information Resources (DIRs) for academic purposes. Since information seekers are no longer satisfied with the printed materials alone, the only alternative are digital information resources in the digital age.

Gbaje (2007) and Ya'u (2003) pointed out that digital library provides value-added solutions for all higher education institutions and facilitates on-line access to enormous current volume of academic information. Digital library has the capability to address the scarcity of teaching and research materials in the libraries of institutions of higher education in Nigeria. As such this study is set out to investigate the availability and use of digital information resources by undergraduates of universities in Delta and Edo state of Nigeria.

Statement of the Problem

The widespread use of electronic technologies to produce, store, manipulate and distribute information of all kinds is one of the great achievements of the information age. The availability and use of Digital Information Resources (DIRs) can facilitate increase and ease processing and access of information to library users. However, despite the advantages of Digital Information Resources (DIRs) usage in university libraries; several literatures have noted that there are a number of generally recognised problems that hinder the effective utilisation of the DIRs among students. Cyprian (2009) opined that students lack skills (competency) to search information materials in digital environment of academic libraries. These have greatly affected creativity and innovation in libraries. Some of these libraries have adequate digital resources which are greatly being under- utilized largely due to lack of information technology (IT) skills by students. Furthermore, absence of related infrastructure facilities in some of the university libraries in Nigeria is part of the challenges facing students when they want to access and utilize Digital Information Resources (DIRs).

In the light of this, students must have a wide range of skills to access, use, and manage the changing environment of information resources in the digital age. It is in view of these that the researcher investigated whether digital information resources are sufficiently available and

the extent to which undergraduates in Delta and Edo states universities make effective use of them.

Purpose of the Study

The main purpose of this study was to find out the availability and use of digital information resources by the undergraduate students of universities in Delta and Edo states, Nigeria.

The specific objectives are to find out:

- i. the digital information resources (DIRs) available in university libraries in Delta and Edo States.
- ii. the extent to which students make use of Digital Information Resources (DIRs) available in their institutions?.
- iii. the constraints to effective use of Digital Information Resources (DIRs) by undergraduate students in university libraries.

Significance of the Study

This study on availability and use of digital information resources by undergraduates of universities in Delta and Edo State will be of great benefits to university Librarians, undergraduates, university management, and both federal and state government in Nigeria. The study will help university librarians know the digital information resources that should be provided to undergraduates for their research and learning activities.

Through the findings of the study, undergraduates will be able to know the usefulness of digital information resources which enable them to do their assignment and research works effectively and efficiently.

The findings of this study will guide university administrators (management) in developing the necessary framework towards establishment of standard digital library in the universities to enhance teaching, learning and research for both staff and students. The information provided through the findings of this study will help the federal and state government to see the need to ensure adequate funding of digital libraries in Nigerian universities.

Scope of the Study

The study will be delimited to availability of Digital Information Resources (DIRs) and their usage by the students in the universities in Delta and Edo states. Although there are several universities in Delta and Edo states the work will be limited to only federal and state universities.

Research Questions

The following research questions guided the study:

- i. What are the Digital Information Resources (DIRs) available in university libraries in Delta and Edo states?
- ii. To what extent do students make use of Digital Information Resources (DIRs) available in their institutions?
- iii. What are the constraints to effective use of Digital Information Resources (DIRs) in university libraries by undergraduate students?

Research Hypotheses

- 1 .The mean scores of federal and state university students on the extent of their usage of Digital information resources will not differ significantly.
- 2 . There is no significant difference in the constraint identified by students in the use of Digital Information Resources based on the ownership of the institution

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In this chapter literature related to this present study was reviewed under the following sub-headings:

Conceptual framework

Digital Information Resources (DIRs)

Theoretical frame work

Theory of information science that relates to Digital Information Resources (DIRs)

Theoretical studies

Digital Information Resources (DIRs)

Use of Digital Information Resources (DIRs)

Constraints militating against use of Digital Information Resources (DIRs)

Empirical studies

Summary of Review of Related Literature

Conceptual framework

Digital Information Resources (DIRs)

These are library materials produced in digital formats, such as, e-journals, e-books, reference work published online and CD-ROM, bibliographic databases, and other web based resources(Okoro,2008). That means digital resources could be on PC, CD-ROM, DVD or on the Internet. But materials that appeared on the Internet are generally regarded as online information resources. The provision of DIRs in academic library is necessary for users especially, for the provision of better, faster, easier access to information. DIRS help to expand access, increase usability and effectiveness. They also help to establish new ways for individuals in using information for enhanced productivity in their endeavours. The application of the concept of Digital Information Resources (DIRs) into library functions and services have invariably changed the connotation of what an academic library stands for.

The current trends defined academic library by function rather than place which is the building. Digital Information Resources (DIRs) is the presence of printed information in a format only viewed and accessed through the use of ICT via electrical manipulations (Obaseki & Amune, 2009). This assertion indicated that a digital information resource connotes not only those information resources accessed only with the aid of computer, but also other forms of ICTs such as blackberry phones or Samsung galaxy phones and Ipad,

Shariful (2012), is of the view that Digital Information Resources (DIRs) are those resources that deal with both born electronic and digitized materials which can be either accessible from library's in house database or from the world-wide-web. The born electronic

materials includes: e-books, e-journal, e-newspaper, e-magazine, e-projects, e-thesis, e-dissertations, e-reports, website, www-resources and other related materials which can be considered necessary by the users, researchers, information professionals or even by the library management itself. On the other hand, digitalized materials mean converting the materials from other formats into digital format.

Nkanu and Okon, (2010) referred to Digital Information Resources (DIRs) as the new wave of air blowing many libraries globally, simply because there is increasing amount of information now available in digital form and this is likely to have significant consequences for information retrieval. With digital libraries abstracts and indexes are available online and there is easy access to computer-held information, together with the possibility of including sound and video. Meaning that, for many other reference tools digital format has notable advantage over print.

Singh and Sharma (2002) stated that a majority of the digital scholarly publishers, trade publishers, information aggregators, vendors, and information disseminators, now-a-days, increasingly act globally to provide electronic information (e -information) on Internet. Singh and Sharma went further to say that Digital Information Resources (DIRs) include full text archives or databases of journals, books, patents, standards, or technical reports of a particular publisher or a group of publishers.

Theoretical Framework

One theory in information science is useful for explaining how digital information resources are utilized. The theory is Technology Acceptance Model (TAM) propounded by Davis in 1989. The Technology Acceptance Model (TAM) is an information systems theory that

models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. These factors are behavioural intentions, attitude and perceived usefulness of the system, perceived ease of use of the system, individual intention and facilitating or organisation condition.

Technology Acceptance Model (TAM) is the most influential extensions of Ajzen and Fishbien's Theory of Reasoned Action (TRA) in the literature. He hypothesized that the attitude of a user toward a system was a major determinant of whether the user will actually use or reject the system. The attitude of the user, in turn, was considered to be influenced by two major beliefs: perceived usefulness and perceived ease of use having a direct influence on perceived usefulness.

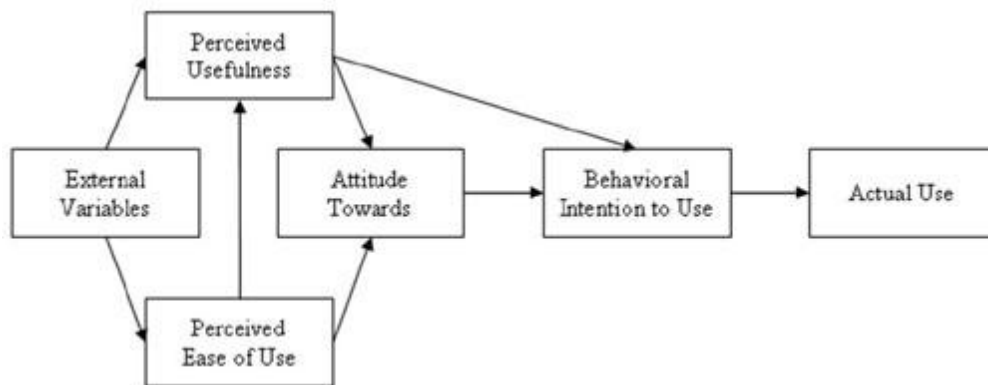


Figure 1. Original technology acceptance model (TAM) (Davis, 1989).

This theory is relevant to this study “availability and use of digital information resources by the undergraduates in Delta and Edo state of Nigeria” in the following ways:

According to Davis, Perceived usefulness (PU) element as defined above is relevant to the study because undergraduates believe that using computer system connected them to local

database or Internet. Phones and other electronic devices to search for information electronically enhance their academic activities than the traditional ways. That is students can read and search for information to do assignment and research faster with the use of technology.

Perceived ease-of-use (PEOU) is another element in the theory that is relevant to the study. The ability of students to accept and use electronic machine devices will ease their usefulness of digital Information Resources (DIRs) and learning becomes easier to them as well as influences their academic activities in their daily life. That is, efforts to search information in traditional ways are reduced automatically with the use of technology. The researcher adopted this theory because of its relationship to the problem under investigation.

Theoretical Studies

Digital Information Resources

Electronic Journals (e-journals) as one of the digital information resources (DIRs) has no standard acceptable definition. The term covers variety of diverse phenomena. Electronic journal is any journal which is available in electronic or computerized form on the internet or on CD-ROM. Electronic journals have been called by various names such as virtual journals, paperless journals, online journals, scholarly electronic journals, networked journals and CD-ROM journals.

Anyira and Nwabueze (2011) defined electronic journals (e-journals) as scholarly journals or intellectual magazines that can be accessed via the World Wide Web. E-journals are fashioned to be like the print journal. E-journal articles usually contain metadata that can be entered into specialized databases as well as the databases and search engines for the academic and discipline concerned. Some e-journals are Internet-only, while others are Internet version of

printed journals. In simple words, electronic journal is one which is available electronically and used with the help of computer and other communication technologies (Singh & Krishan , 2005).

Electronic journal may be defined broadly as any journal, magazine, newsletter or type of electronic serial publication which is available over internet. Electronic journals are mostly available via Web. Out of the electronic journals which are available on Internet, some are delivered over the World Wide Web and by e-mail. Some journals use PDF (portable document format). Singh and Krishan further explained that the editorial process is the same for electronic journal and print journal. The articles submitted by individuals are peer-reviewed by editorial board members for accepting and rejecting; after completing this process, journals are published.

Adomi (2006) stated that, e-journal has been applied to journals that are available by CD-ROM, such as ADONIS; online, as the internet or Bitnet. Electronic journals can be free, paid subscription pay per use; or licensed for access right. Some can only be subscribed to as part of a multi- journal package. While some electronic journals organize articles into issues, others release articles separately. They can be stored on a local library or campus computer or accessed from a remote site (Nisonyer, 1999) cited in (Adomi, 2006).

JISC (1999), identified two categories of electronic journals as e-journal collections and single electronic journals. With regard to c-journal collection, single point of access is provided to multiple electronic journals (these may be parallel published (print and paper) or electronic only); may be all from one publisher (e.g. MCB University Press) or may be similar in nature to a conventional library supplier such as SWETS or EBSCO and the emphasis would be on a single licence offering access to many (possibly not all available from the source) journals. Examples include JSTOR, Ingenta, NELSLI.

On the other hand, single c-journals are electronic journals which are mounted by both formal and informal publishers and they could be in parallel with a print version or solely electronic; they could also offer the chance of reader feedback. It is possible for one site to offer more than one journal (for example Aslib) but these are essentially single publications rather than large collections and should be included. Examples include Programme; Ariadne; Journal of Information, Law and Technology (JILT), Information Research; FreePint.

Electronic journals offer great opportunities for innovations or enhancements in content. However, Langston, (2000) noted that authors in the literature on electronic scholarly publishing are concerned that c-journals, even if refereed, may not be considered as prestigious as traditional journals that have been around for a while, in part because they have been established fairly recently. The e-journal that this study is concerned with are generally journals mounted on the Internet- whether closed or open access. They are different type of serials are now or will soon be available in digital form, including scholarly journals, popular magazines, newspapers and self published.

Another type of digital information resources are Electronic books (e-books). An electronic book (e-book) is a book-length publication in digital form, consisting of text, images, or both, readable on computers or other electronic devices. Hawkins (2000) stated that "an e-book is the contents of a book made available in an electronic form. Anyira and Nwabueze (2011) Electronic books or e-books are digital texts, which are issued as individual works and designed to be accessed by using special software for text navigation and ease of reading. E-books are digital versions of a traditional printed book designed to be read in a personal computer or an e-book reader. The e-book reader is a software application designed for use in a standard-sized computer or a book sized computer used solely as a reading device. There are large array of

electronic books on the Internet and digital library. Some are designed for reference purposes while others are prepared to be read like textbooks (Anyira & Nwabueze , 2011)

Adomi, (2006) e-books are digital texts that are issued as individual works and designed to be accessed by using special software for text navigation and ease of reading. The desire of users to use e-publications has increased tremendously with computer usage. This has led to the publication of materials in electronic form e-publications as both CD-ROM and World Wide Web. The electronic book is one of the several forms of e-publication and its popularity has been growing over the past ten years with users including educators, businessmen, mobile users, libraries and children (Ramaia, 2005)

According to Rao (2005) e-book are more often referred to as consumer products as a single volume, such as trade book that can be purchased over the web and read in a laptop, desktop computer, a personal digital assistant (PDA) or a dedicated e-book device. The researcher also found out that e-book can be read with modern cameral phones such Tecno brand , Nokia brand, Samsung products, IPAD, Ipons and so on.

Rao further said that e-book are the next wave for library and information centres (LICs) after electronic journals and they not only differ from books both in media and distribution, but also have a wide range of impacts on exist operations in LICs. While Marynard (2005) was of the view that, e-books may be accessible on a variety of media; for instance, on CD-ROM, the internet and dedicated, portable reading devices. They may also include a variety of types of content. (e.g fiction or non-fiction) and may vary as to presentation (e.g. book metaphor), and functionalities (e.g. audio, animation).

Furthermore, electronic theses (e-Theses) are another type of Digital Information Resources (DIRs) use by students in the 21st century. Adomi, (2009) defined thesis as a report or treatise prepared as a part of an academic course for a higher diploma or degree. Adomi, further explained that e-Thesis presents the findings and conclusions reached by the candidate. They are very important research materials as they often contain data not available elsewhere. Many tertiary institutions in the world today upload their thesis in local databases and get connected to the Internet, which make it available for information seekers. Other digital information resources are e-reports, full-text PDF, e-reference materials, and e-graphic materials which include- maps, photographs, globes and game etc.

Use of Digital Information Resources (DIRs)

It is a known fact in this digital era that any student at the higher level who intends to better achieve and go further in academics should have the ability to explore the digital environment. Adeyinka, Adedeji, , Ayen, and Omoba, (2008) stated that students' ability to find and retrieve information effectively is a transferable skill useful for their future life as well as enabling the positive and successful use of the digital resources while at school. Students' use of information systems can be in the form of communicating or posting of information or material by way of electronic mail, bulleting boards, world wide web or other such electronic tools (Mischnick, 2000).

Digital information resources serve as a motivating factor to students as it provides them opportunity to transmit, acquire or download, process and disseminate information on a subject of interest. Digital information resources offer today students greater opportunities that are quite different from their predecessors (Ray & Day, 2003). Other uses according to authors include the fact that “digital information resources are often faster than consulting print indexes,

especially when searching retrospectively, and they are straight forward when wishing to use combination of keywords. They open up the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents. It could be said that “improved data transmission facilities will go a long way to reduce the incessant hardship faced by students in the acquisition and generation of data which serves as the basis for research and academic performance improvement (Day& Bartle,2003). This is because the use of digital information by students of today enhance their performance in academic activities. Furthermore, Day and Bartle, (2003) revealed that the academic community has accepted that electronic information resources have an impact on their work. However, services currently available to academic staff and students are not being used to their full potential and some are hardly being used at all.

Waldman (2003), when drawing inference from Bandura's position, asserted that “students with high self-efficacy regarding computers would also be more likely to explore new technologies, software or databases. Additionally, they would be more likely, for example, to explore a library’s website and find that the library has specialized resources, and they might even try some searches on those resources without, or with less, prompting from professors or librarians and without necessary taking library workshops.” General user opinion towards the use of electronic information resources, in particular, CD-ROM, has been positive, with students enjoying using these sources and finding relatively few problems while using them.

Constraints militating against the use of digital information resources

A lot of factors identified as problems militating against digital Information Resources (DIRs) have been documented in librarianship and information science literature. Imo and Igbo (2011) identified the following problems such as lack of skills and knowledge of digital and

electronic resources development and management by librarian, inadequacy of funds for the projects, unstable electricity supply, lack of written policy framework guidelines for the project, lack of maintenance, fear of copy-right violation, and non- availability of training programmes for up-dating of skills of staff. They further pointed out that funding has been identified as the most crucial factor for success in every initiative including digitization project. Owoeye and Oguntuase (2008) identified the problems of DIRs uses by students as technical problems that is, poor telecommunication link, trained technical staff to help students are inadequate, poor attitude to the training of professional staff, and administrative problem. Imo and Igbo (2011) citing Rosenberg (2009) identified lack of funds among students to buy airtime to access the digital information resources, and lack of written policy framework on the part of the academic libraries, non-availability of training programmes for updating staff skills in order to meet needs of students that are ICT illiterate, high and power supply.

Barttle and Walton (1999) reported that students have problems with access to digital Information Resources (DIRs), according to them; there are still insufficient computers in most institutions for the number of students who want to use them, especially at peak times. Inadequately provided personal computers can make it difficult for people to access DIRs.

Bazillion (2009) identified some problems encountered by the digital information consumer. who is confronted with the problem of retrieval; apart from the experienced researchers, novice retrievers are faced with the dilemmas of precision versus recall of noise and of deciding on the validity of source; the multiplicity of access points to information- TV, newspapers, consumer magazines, learned journals, radio, Internet, PDA, online services- confuses the consumer and leads to breakdown in trust and information dissonances; all electronic media (including analogue broadcasts) in comparison with print media are difficult to

navigate and reference as they are two dimensional, whereas print is three- dimensional, because the shape of the whole experience can be successfully deduced from the physical form; for example even the briefest knowledge of a print newspaper which is not usually indexed at primary use level leads the consumer to an understanding of what they will find and where, in relatively standard formula but digital formats, and the web in particular, have a tendency to break down this easy familiarity and leave the consumer floating in a sea of uncertainty- the consumer responds by losing trust and withdrawing loyalty; with new players coming in all the time, authority is plainly up for grab; it is difficult to determine ownership due to the fact that there are so many parties associated with the production of digital information service.

Empirical Studies

Chimah and Nwokocha (2013) carried out an investigation on “motivation, challenges and strategies in the use of electronic information resources by postgraduate library users in South- east Nigerian Federal Universities”. This paper explores several factors that motivate postgraduate researchers to use the e-resources available in their university libraries. The study reveals challenges that constitute inhibiting factors to EIRs use and strategies that will encourage maximum utilization are recommended. The research design adopted in this study was a descriptive survey. The sample size for the study was one hundred and twenty (120) respondents.

The simple random sampling method was used to select ten (10%) of the total population for the study. Two complementary instruments were used for collecting primary data; questionnaire and unstructured interview of Heads of ICT Unit of the university libraries. At varying percentages, the study reveals that PG students are motivated to use the EIRs in their university libraries because they found e-resources to be: more informative; easy access and use; save time; more useful or less expensive. The study also reveal that the challenges to use are

insufficient computers with internet facilities; incessant power outage; slow internet connectivity; lack of ICT skills; difficulty in finding relevant information and inadequate IT infrastructure. Strategies to improve motivation to use of EIRs, among others include: Increase ICT infrastructure/facilities; have stable electrical backup information literacy training for users.

The methodology used for this EIRs study is related to the present study. The method of data analysis is different from the present study, to determine reliability of the instrument the present study is also different from it, but both studies are related in content and they are different significantly in scope. The researcher used population of postgraduate students while the present study used undergraduate students. The researchers focused on one federal universities in south-east but the present study focused on federal and state university libraries in Delta and Edo State. Both studies also used questionnaire as instrument of data collection.

Ekwelem, Okafor and Ukwoma (2009) carried out work on “Students use of electronic Information Resources (EIRS) at the University of Nigeria, Nsukka”. Data was collected through a questionnaire administered to 600 student’s users of the Cybercafe’s on the university campus. A survey approach was used; simple percentage and frequency count were used to analysis the data. Results from the study showed that 52.3% of the respondents agreed that electronic Information Resources (EIRS) provide reliable access to information resources, while 92.5% of them rated the Internet as their most preferred electronic Information Resources (EIRS). Another finding from the study is that 3.7% of the students preferred CD-ROM, and almost all the students spent about 40-60 minutes which is about 31.2% in searching for EIRs. Finally, the study found out that the main barriers to the use of EIRs by students includes- finance, inadequate skill; and inadequate bandwidth and epileptic power supply.

The methodology used for this EIRs study was appropriate to the study. The method of data analysis is suitable for the present study, to the instrument used by the study to determine the reliability is different from the present study, but both studies are related in content and they are different significantly in scope. The researchers focused on one federal university south-east but the present study focused on federal and state university libraries in Delta and Edo State. Both studies also used questionnaire as instrument of data collection.

Nkanu, Ebaye and Ogar (2010) investigated on “electronic information resources availability and the provision of library and information services in Nigeria University”. Survey design was used, with questionnaire as the instrument for data collection. This revealed that 69.49% of CD-ROM databases are available and used by students, while 72.88% of the students as well as of video tapes. Other findings showed that 66.27% of digital information resources available for the provision of Library and information services are audio tapes.

The method of data analysis is suitable for the present study. And research design used was appropriate to the present study. Both studies are related in content but they differ significantly in scope in that the present study focused on federal and state university library users. Instrument for data collection was also suitable for the present study.

Adeyinka , Adedeji, Ayen, and Omoba (2008) undertook a study on “Self-efficacy and use of electronic as predictors of academic performance”. Data on the study was collected through the Morgan-Tinks academic efficacy scale and of electronic information scale.(UEIS) with $r=0.75$. The population of the study was drawn from 700 students both undergraduate and postgraduate in seven departments in the faculty of education, university of Ibadan. The study adopted a descriptive survey research approach. Data obtained from the study was analyzed using Multiple

Regression analysis, Pearson Product Movement correlation matrix, and simple percentage statistical tools to test instrument.

The results indicated that self-efficacy and the use of electronic information jointly predict and contribute to academic performance; that respondents with high self-efficacy make better use of electronic information and have better academic performance, and that a correlation exists among self efficacy, use of electronic information and academic performance influenced respondents' performance in general education subjects more than other subjects. The methodology used for this electronic information resources (EIRs) study is appropriate for the present study. The method of data analysis is different from the present study, to determined reliability of the instrument the present study is different as well; but both studies are related in content but differ significantly in scope. The population of present study is only for undergraduate students. Both studies used questionnaire as instrument of data collection.

Ray and Day (2003) undertook survey meant to determine the use of electronic resources, how students feel about various issues surrounding electronic resources. The research instrument used to collect data was questionnaire and descriptive survey was adopted as a design. Simple percentage and frequency count table were used to analyze the data. Findings revealed that 91% of respondents acknowledged access to a networked computer via university, 54% acknowledged access at home as well as university; that the most popular electronic resources were CD-ROMs. While 37.5% of the sample population used c-journals as an information retrieval tool; only 46% of respondents claimed to use OPACs; that c-information has improved their academic career by providing them access to current up to date information, easier access to information, faster access to information, access to a wider ranger of information (in ascending order). However, the respondents feel that c-resources have hindered their academic career by facilitating retrieval of

too much information; time consuming, limited access to a computer terminal; lack of information technology knowledge to effectively utilize the services and that using e-resources often detracts from doing work.

The methodology used for this EIRs study was appropriate to the present study. The method of data analysis is suitable to the present study as both studies are related in content but differ significantly in scope. Both studies used questionnaire as instrument of data collection.

Finally, Oduwole and Akpati (2003) surveyed the “accessibility and retrieval of electronic information in University of Agriculture Library, Abeokuta”. A three-part questionnaire was given to 1,000 out of an estimated 5,030 users of electronic information in the university library using a simple random sampling technique from which 789 responses were returned and found usable. This constituted a 78.9% response. He used simple percentage and frequency count table to analyze the instrument. Findings revealed that non-final year undergraduates use mainly the automated library catalogue (OPAC) while final year and postgraduate students as well as academic staff regularly use bibliographic databases tools such as TEEAL, e-Granary and CAB abstracts. A majority of users were satisfied with the information obtained and requested that they find these automated services to a greater or lesser extent easy to use. Another findings observed that the major constraints to information accessibility and retrieval of automated library services at the university of Agriculture library: were infrastructural; the limited number of terminals available for use and power supply outages, lack of skills among students to use the automated library.

The methodology used for this electronic information resources study was appropriate to the present study. The method of data analysis is appropriate to the present study, both studies

are also related in content but they differ significantly in scope. In population both study are significantly different. Both studies used the same instrument for data collection.

Summary of Review of Related Literature

The literature reviewed has extensively dwelt on different aspects of digital information resources. The Conceptual framework is on digital Information Resources (DIRs) and one theoretical model of technology acceptance model (TAM) was reviewed. Theoretical studies which focused on digital information resources, use of digital information resources and constraints militating against use of digital information resources have been presented.

There has also been attempt to x-ray empirical studies on the topic. Some research studies have been conducted on the area. However, most of researchers have tended to dwell on aspect of electronic information resources such as CD-ROM and most of the studies were conducted in south-east and south-west parts of Nigeria and outside the country.

The literature reviewed showed that most of researchers focused on electronic information resources use by undergraduate, postgraduate and faculty members in university community like federal and state in the south-east and south-west of Nigeria. This opposed the current study which dwells on availability and use of Digital Information Resources (DIRs) by undergraduate students in the south-south geopolitical zone of Nigeria. The scope of the six related studies reviewed covered the period of 2003 up-till-date and none of them has addressed the availability and use of Digital Information Resources (DIRs) by undergraduate students in federal and state university libraries in Delta and Edo States, Nigeria. Therefore, there is a knowledge gap in this area which this present study will fill up.

CHAPTER THREE

METHOD

This chapter was concerned with the research method used in carrying out the research. The chapter focused on the research design, area of the study, population of the study, sample and sampling technique, instrument for data collection, validity of the instrument, reliability of the instrument, method of data collection and method of data analysis.

Research Design

This study adopted descriptive survey research design. According to Nworgu (2006) descriptive survey design is aimed at collecting data on, and describing in a systematic manner, the characteristics, features or facts about a given population. This is appropriate since the study seeks to explore the availability and use of Digital Information Resources (DIRS) by undergraduates in Delta and Edo states, Nigeria. And it intends to generate primary data on the topic.

Area of the Study

The study was conducted in Federal and State University Libraries in Delta and Edo states in the south-south geopolitical zone of Nigeria. The Federal and State Universities in the zone are located in Abraka, Benin City, Ekpoma, and Ugbomro. The researcher chose to study these University libraries because these regions are fast embracing developments in the digital information age.

Population of the Study

The population comprised 10, 882 undergraduate students who are registered library user of four Universities in Delta and Edo States of Nigeria.

(Source: Registered User Notebooks of the University Libraries from 2011-2013)

Sample and sampling Technique

The sample for the study comprised one thousand and eighty-eight hundred(1,088) users drawn from four universities. The selection of the four universities was based on the fact that they are government owned institutions and are in the position to follow the trend of digital information age because they are better equipped than private universities. Purposive sampling technique was used to select two universities from Delta and Edo states respectively. Proportionate stratified sampling technique was used to select respondents from each of the federal and state university libraries used for the study. To determine the sample size, the researcher used 10% of registered users in each of the university library under study. This selection is in line with Ifidon and ifidon(2007) which stated that for descriptive survey research design a sample of 10% of the population is considered minimum if the overall population is up to ten thousand (10, 000).

Thereafter, capture sampling was adopted in its administration. This would be so, because users are brought together in the library to read, do assignments, and consult digital or traditional library materials and among other reasons. Therefore, it is the undergraduate student library users that are present in the library at the time of questionnaire administration that was used for this study (See appendix D for proportionate stratified sampling calculation of sample size).

Instrument for Data Collection

The instruments used for the collection of data were observation checklist and structured questionnaire. The use of observation checklist helped the researcher to determine the availability of digital information resources in various university libraries. The structured questionnaire titled: Availability and Use of Digital Information Resources Questionnaire (AUDIRQ) was made up of two parts. The first part sought information on the demographic data of the respondents. The second part was made up of three sections and sought information on the availability, use and constraints to Digital Information Resources (DIRs) in selected university libraries in Delta and Edo states. The construction of the questionnaire was guided by opinions and findings contained in the review of related literature.

The instrument contained a total number of 35 items, divided into sections A, B and C. The items in section A are observation checklist of Digital Information Resources (DIRs) available in the four university libraries. Section B was on the extent of use of the available digital information resources. The items in section B were structured on a four point rating scale of strongly agree, agree, disagree, and strongly disagree. While section C focused on constraints to the used of the available digital information resources. The items were structured on a four point liket scale of very high extent, high extent, Low extent and very low extent.

Validation of the Instrument

The draft questionnaire and observation checklist were given to two experts in library and information science and an expert in the department of measurement and evaluation in Nnamdi Azikiwe University, Awka to do face and content validity. The copies of the instrument were given to them alongside the title of the work, purpose of the study, research questions, and

research hypothesis. These experts viewed the relevance of the instrument to the content, objectives, language use (whether they are adequate or ambiguous), to ensure that it would elicit the information that it is meant to measure (See appendix G for validation of all the experts).

Reliability of the Instrument

In order to determine the reliability of the instrument, the researcher distributed thirty (30) copies of the instrument to thirty undergraduates user of Festus Aghagbo Nwako Library at Nnamdi Azikiwe University, Awka and thirty (30) undergraduates user of Anambra State University Library, Uli. The reliability of the instrument was calculated using Cronbach alpha reliability formula because it is ideal for four point scale questionnaire. Internal consistency reliability co-efficient obtained for each of sections B and C of the questionnaire are 0.97 and 0.82 respectively after computation, as shown in (Appendix G). The observation checklist, (Appendix C) which was the instrument designed for section A, could not lend itself to any reliability test.

Method of Data Collection

The researcher personally used the observation checklist to check for the digital information resources that are available in the four libraries. Observation of digital information resources in the libraries was recorded on the checklist. Thereafter the copies of the final version of the questionnaire were administered with the help of research assistant in each school to undergraduates of the library as at the time of administration. (See appendix F which contains the number of the returned questionnaires).

Method of Data Analysis.

The data obtained from retrieved copies of the questionnaire was analyzed using descriptive and inferential statistics. Descriptive statistics was used to answer all the research questions and inferential statistics was used in testing the hypotheses. The research hypotheses were tested using Z- test method. The hypotheses were tested at 0.05level of significance:

Very high extent/Strongly Agree = 3.50-4.00

High extent/Agree = 2.50-3.499

Low extent/Disagree = 1.50-2.499

Very low extent/ Strongly disagree = 1.00-1.99

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

The data obtained for this study were analyzed and presented based on the research question and hypotheses that guided the study. Out of 1,088 questionnaires distributed, 972 was duly completed and returned. This shows 89.5% return rate. Analysis was based on this number.

Research Question 1: What are the Digital Information Resources (DIRs) available in the university libraries in Delta and Edo State.

Table 1 : Availability of Digital information Resources in the four University libraries.

S/N	DIRs	AAU	DELSU	FUPR	UNIBEN	TOTAL	
1.	e- Project	-	-	-	4500	4,500	
2.	e- Conference papers	-	-	-	-	-	
3.	e- Journals	2,500	2380	-	14,000,000	16,502,380	
4.	e-Technical report	6,651	-	-	10,400	17,057	
5.	e-Reference materials	1,000,000	-	-	2,000,000	3,000,000	
6.	e-seminar Papers	-	-	-	2,651	2651	
7.	e- Conference proceedings		951	35	-	-	986
8.	e- Zines	196	-	-	-	196	
9.	e-Books	2,000,000	14,000,000	-	11,000	17,011,000	
10.	e-Newsletters	38	30	-	-	68	
11.	e-Grey document	1,000,000	-	-	-	1,000,000	
12.	e-Thesis	3,621	-	-	1,000,000	100,3621	
13.	e- Dissertation	2,621	-	-	2,000,000	200, 2621	

The observation checklist shows that none of the University libraries has e-Conference papers. At the Ambrose Ali University Library, ten types of digital information resources out of the thirteen types of digital information resources checked were available. The available digital information resources in the library are e-Journals; e-Technical report; e-Reference materials; e-Proceedings; e-Zines; e-Books; e-Newsletters; e-Grey document; e-Thesis; and e-Dissertation and all of them are six million, five hundred and fourteen thousand and seventy-eight (6,5514078) in number.

At the Delta State University Library, four types of digital information resources are available. They are e-journals; e-proceedings; e-Books; and e-newsletters and the entire are fourteen million and two thousand four hundred and forty-five(14,002445) in number. At the University of Benin Library eight types of digital information resources are available. They are e-projects; e-Journals; e-technical report; e-reference materials; e-Seminar; e-Books; e-Thesis; and e-Dissertation, and all of them are nineteen thousand and twenty –eight thousand, five hundred and fifty-one(19,028551) in number. At the federal University of Petroleum Resources Library, none of the digital information resources was available.

The findings show that digital information resources available in university libraries in Delta and Edo States are e-Projects e-Journals; e-Technical report; e-

Reference materials; e- Conference proceedings; e-Zines; e-Books; e-Newsletters; e-Grey document; e-Thesis; and e-Dissertation; e-Seminar and their total in the whole University Libraries is forty million, five hundred and forty-five thousand, seventy –four(39, 545074). With the exception of e-Conference papers that were not available in the whole University Libraries, e- Books were found to be highest in number, while e- Newsletter was lowest in number when the digital information resources in the whole libraries are paved together according to types.

Research Question 2: To what extent do students make use of Digital Information Resources (DIRs) available in their institutions?

Table 2: Mean scores(x) of extent of students use of digital information resources (DIRs) in the institutions.

S/N Digital Information Resources	Mean	Remarks
1. e- Projects	2.68	High Extent
2.e- Journals	2.60	High Extent
3.e- Reference materials	2.70	High Extent
4. e- Seminar Paper	2.67	High Extent
5. e- Books	2.62	High Extent
6. e- Newsletters	2.51	High Extent
7. e- Thesis	2.54	High Extent
8. e-Zines	2.06	Low extent
9. e- Conference papers	2.40	Low extent
10. e-Technical reports	2.49	Low extent

11.e- Grey_Document	2.17	Low extent
12.e- Conference proceedings	2.17	Low extent
13.e- Dissertation	2.36	Low extent

The result presented in table 2 shows that students use e- Projects; e- Journals; e- Reference materials; e- Seminar papers; e-Books; e- Newsletters; and e- Thesis to a high extent in the institutions, thus the mean scores of 2.68; 2.60; 2.70; 2.67; 2.62; 2.57; and 2.54 respectively. Undergraduates also use e-zines; e- Conference proceedings; e-Grey document; e-Dissertation; e-Conference papers; e-Technical to a low extent, in the institutions, thus the mean scores of 2.40, 2.49; 2.17; 2.06; 2.17 and 2.36 respectively. A grand mean of 2.46 shows that students use Digital Information Resources in the University libraries to a low extent.

Research question 3:What are the constraints militating against students effective use of digital information resources in university libraries?

Table 3: Mean scores(\bar{X}) of students on the constraint face by students in use DIRs

S/N	Digital Information Resources	Mean	Remarks
1.	Epileptic power supply	2.96	Agree
2.	None availability of online databases	2.69	Agree
3.	Inadequate or slow band width	2.68	Agree.
4.	Inadequate number of computers to access digital information resources in my library	2.57	Agree
5.	Network problems	2.63	Agree
6.	Lack of skills to access digital information resources in the both local /foreign databases of my library	2.64	Agree
7.	Lack of formal training in Internet use	2.68	Agree

8. Server slowness	2.62	Agree
9. Frequent breakdown	2.52	Agree

The result presented in table 3 shows that the respondents agreed that epileptic power supply; non-availability of online databases; inadequate number of computers to access digital information resources; inadequate bandwidth; Network problems; lack of skill to access digital information resources in local and foreign databases; Lack of formal training on internet use; Server slowness and frequent breakdown of digital resources are constraints to students effective use of digital information resources in University libraries, thus the mean scores of 2.96; 2.69; 2.68; 2.57; 2.63; 2.64; 2.68; 2.62; and 2.52 respectively.

This shows that the students agree that all the listed nine constraints for accessing digital information resources were encountered by them as they tried to access the digital information resources.

HO1: The mean scores of federal and state university students on the extent of their usage of Digital information resources will not differ significantly.

Table 4: Z-test Analysis of extent of students' use of Digital Information Resources

by University Ownership

DIRS in	University	N	Mea	Std.	Df	Z- cal	Z-	Decision
e. Project	Federal	506	2.87	1.01	970	5.997	1.96	Accepted
e-Conference paper	Federal	506	2.47	.99	970	2.416	1.96	Accepted
e. Journals	State Federal	506	2.76	1.00	970	4.645	1.96	Accepted
e.Technical Report	State Federal	506	2.56	1.03	970	2.055	1.96	Accepted
e. Reference Materials	State Federal	506	2.73	1.08	970	.389	1.96	Rejected
e_Seminar paper	State Federal	506	2.57	1.05	970	-2.988 .171	1.96	Rejected
e_Conference	State Federal	506	2.18	.95	970		1.96	Rejected
e_Zines	State Federal	506	2.12	.99	970	1.925	1.96	Rejected
e_Books	State Federal	506	2.60	1.04	970	-.612	1.96	Rejected
e_Newsletters	State Federal	506	2.54	1.08	970	.894	1.96	Rejected
e_Grey_Document	State Federal	506	2.29	1.01	970	3.723	1.96	Accepted
e_Thesis	State Federal	506	2.63	1.00	970	2.895	1.96	Accepted
e_Dissertation	State Federal	506	2.44	1.02	970	2.731	1.96	Accepted
	State							

Table 4 shows that there is a significant difference between federal and state Universities in their extent of utilization of Digital Information Resources (DIRs), as the calculated z-values at 0.05 level of significance, for eight out of the thirteen forms of digital information resources (DIRs) ranged from 2.055 to 5.997) are greater than the critical z- with value 1.96. Calculated z- value five forms of DIRs were not greater, and thus rejected. It is thus concluded that federal and state University differ significantly in terms of utilization of Digital Information Resources(DIRs) by their students.

HO2: There is no significant difference in the students' mean rating of constraints in the use of Digital Information Resources based on the ownership of the institution

Table 6: *Z-test Analysis of Students' mean rating of constraints to the use of Digital Information Resources by University Ownership*

DIRS in University	University Ownership	N	Mean	Std. Dev.	Df	Z- cal	Z- crit	Decision
Epileptic power Supply	Federal	506	3.05	1.08	970	2.522	1.96	Accepted
Non availability of online database	Federal	506	2.75	1.11		1.887	1.96	Rejected
Inadequate or slow bandwidth	Federal	506	2.74	1.07		1.898	1.96	Rejected
Inadequate number of computer to access digital information resources in my library	Federal	506	2.69	1.21		3.215	1.96	Accepted
Network problems	Federal	506	2.71	1.00		2.510	1.96	Accepted
Lack of skills to access digital information resources in the both local/foreign database of my library	Federal	506	2.66	.87		.679	1.96	Rejected
Lack of formal training in internet use	Federal	506	2.68	.78		-.135	1.96	Rejected
Server Slowness	Federal	506	2.57	.89		-1.647	1.96	Rejected
Frequent breakdown	Federal	506	2.48	.87		-1.317	1.96	Rejected

Table 5 shows that there is no significant difference in students' mean rating of the constraints of usage of Digital Information Resources (DIRs) by University ownership as the calculated z-values for six out of the nine rating of constraints at 0.05 level of significance, which ranged from 1.647-1.898 are less than z-critical value of 1.96. The null hypothesis was therefore accepted. It is thus concluded that students in federal and state universities do not differ significantly in their mean rating of the constraints to usage of Digital Information Resources (DIRs).

Summary of Findings

The major findings of this study are:-

Digital Information Resources available in University Libraries in Delta and Edo states are e-Project; e-Journals; e-Technical report; e-Reference materials; e-Conference proceedings; e-Zines; e-Books; e-Newsletters; e-Grey document; e-Thesis; and e-Dissertation. They are thirty-nine –million, , five hundred and forty-five thousand, seventy –four(39, 545074). With the exception of e-Conference papers that was not available in the whole University Libraries, e- Books was found to be highest in number, while e- Newsletter was lowest in number when the digital information resources in the whole libraries are paved together according to type. The number of available digital information resources in the University

libraries studied shows that the three University authorities of Delta State University, Abraka,(DELSU) University of Benin, Benin(UNIBEN) and Ambrose Ali University, Ekpoma(AUU) are well on -course in terms of provision of the digital information resources in the libraries, although there is need for attention concerning provision of e- Conference papers and provision of the digital information resources that are in small number in the libraries. Finding shows that DIRs are use to low extent in all the university libraries. The finding also shows negligence on the part of university management of Federal University of Petroleum Resources Library that have no digital information resources at all.

Constraints to students effective use of Digital Information Resources in the University Libraries are epileptic power supply; non-availability of online databases; inadequate number of computers to access digital information resources; inadequate bandwidth; Network problems; lack of skill to access digital information resources in local and foreign databases; Lack of formal training on internet use; Server slowness and frequent breakdown of digital resources.

Finally, test of hypothesis one indicated that utilization of digital information resources by undergraduates on federal and State University libraries differ significantly. Students in federal universities use DIRs more than state universities undergraduates in Delta and Edo states. However, test for hypothesis two indicated

that there is no significant difference in the mean rating of constraints to usage of digital information resources by students of both federal and state universities.

CHAPTER FIVE

DISCUSSION OF RESULTS, CONCLUSION AND RECOMMENDATIONS

The discussion of results, conclusions, implications of the study, recommendations, limitations and suggestions for further research are all presented in this chapter.

Discussion of results

The discussions of results are based on the following subheadings:

Digital Information Resources (DIRs) available in the four university libraries

Use of Digital Information Resources (DIRs) by undergraduates

Constraints militating against the use of Digital Information Resources(DIRs).

Digital Information Resources (DIRs) available in the four university libraries

The number of available digital information resources in the University libraries studied shows that the three University authorities of Delta State University, Abraka, University of Benin, Benin and Ambrose Ali University, Ekpoma are well on -course in terms of provision of the digital information resources in the libraries, although there is need for attention concerning provision of e- Conference papers and provision of the digital information resources that are

in small number in the libraries. The finding also shows that negligence on the part of university management of Federal University of Petroleum Resources Library that have no digital information resources at all. This study is line with Isiakpona and Ifijej(2012) which found out that DIRs are available in Federal University of Agriculture, Babcock and Covenant University Libraries of Ogun State . Federal University Petroleum Resources (FUPR) shows that the university library does not have any of the DIRs in the library. They allow undergraduates to use the cybercafé to search academic information generally. The findings also show that digital information resources available in university libraries in Delta and Edo States are e- Projects e -Journals; e-Technical report; e-Reference materials; e-Conference proceedings; e-Zines; e-Books; e-Newsletters; e-Grey document; e-Thesis; and e-Dissertation; e-Seminar papers and their total in the whole University Libraries is thirty-nine million, five hundred and forty-five thousand, seventy – four(39, 545074). With the exception of e-Conference papers that was not available in the whole University Libraries, e- Books was found to be highest in number, while e- Newsletter was lowest in number when the digital information resources in the whole libraries are paved together according to types. Therefore, the findings of this study is relevant, as it has provided further evidence that DIRs are available for undergraduates, but students lack the skills to utilised them to full potential in their academic work.

Use of Digital Information Resources (DIRs) by undergraduates

The result obtained reveals that students use of the following DIRs to low extent: e-Zines; e-Conference papers; e-technical reports; e-Grey documents; e-Proceedings and e- Dissertation. The reason is because of inadequate infrastructures and lack of skills among students to access DIRs in the library. This study is in line with Achonna(2008) which found out that access and usage of e-resources among undergraduates was low because of lack of skills; inadequate provision of computers and power outage and so on were the problems faced in use of e-resources at Yaba College of Technology, Library Yaba Lagos Nigeria. The result for hypothesis reveals that there is significant difference in the use of DIRs among students in Federal and State University Libraries. Federal university students use DIRs more than state university undergraduates. This is because DIRs are available in federal universities more than state universities.

Constraints militating against the use of Digital Information Resources (DIRs).

The result obtained show that there are various factors which hinder students from accessing DIRs in Delta and Edo state University libraries. These factors include epileptic power supply, network problems, and inadequate computer for students, slow bandwidth, lack of skills, and lack of formal training in Internet use, server slowness as well as frequent breakdown of facilities of Internet connectivity.

This study agrees with Imo and Igbo (2011) which identified similar problems in the utilization of DIRS among undergraduates in Nigerian Universities. Among the identified problems are lack of skills and knowledge of digital and electronic resources development and management by librarian, inadequacy of funds for the projects, unstable electricity supply, lack of written policy framework guidelines for the project, lack of maintenance, fear of copy-right violation, and non-availability of training programmes for up-dating of skills of staff. This study also is line with Owoeye and Oguntuase(2008) which identified the problems of DIRs usage by students as technical problems, poor telecommunication link, trained technical staff to help students are inadequate, poor attitude to the training of professional staff, and administrative problem. However, the testing of hypothesis reveals that there is no significant difference on constraints encountered by undergraduates in Federal and State University Libraries. Therefore, the findings show that DIRs accessibility is very difficult for undergraduates because of the numerous hindrances.

Conclusion

Based on the analysis and discussion of the results of this study, the below conclusion are drawn with reference to the research questions.

Digital Information Resources (DIRs) are available in Ambrose Alli University Library (AAU) and John Harrison Library in University of Benin (UNIBEN) in Benin City. Delta State University Library (DELSU) has only four types of DIRs which include e-journals, e-proceedings, e-books and e-newsletters. Furthermore, DIRs are used to a moderate extent in AAU and UNIBEN libraries. In Delta State University Library the students make use of DIRs to low extents. Federal University Petroleum Resources Library (FUPR) do not have any of the DIRs available for their students and that is why their students use cybercafé for academic information

. The numerous factors that hinder the students from accessing DIRs include epileptic power supply, none availability of online databases, inadequate or slow bandwidth; lack of formal training in the Internet use, network problems, and lack of skills to access DIRs in both local and foreign databases in their library as well as server slowness.

Implications of the study

Some educational implications are derived from the results of this study and they include the following:

It has been empirically proved that three university libraries in Delta and Edo state used for the study made DIRs available for their undergraduates. This

implies that the institutions moved with current trends of digital age in higher institution. These DIRs are available through free online databases and subscription. Hence, they should be consistency in their effort of development in the libraries. It has been proved that federal university Petroleum Resources do not have any of DIRs in the library for undergraduates. This implies that the governing council and library management of the institution have not done well to improve the digital library.

The study has revealed that the Digital Information Resources are used to low extent by undergraduates in UNIBEN; AAU; DELSU and FUPR. The implication is that undergraduates that utilized digital information resources to low extent will lag behind in their research, learning and assignment process in this digital age. The students could not compare themselves with other institutions of higher learning that use DIRs to a very great extent. The University libraries where the students use DIRs to low extent also could be regarded as traditional library because they have not incorporated full digital infrastructures and equipments for digital information resources which will be utilized by undergraduates in their studies.

The study also revealed that undergraduates from federal universities use DIRs more than undergraduate students of state universities in Delta and Edo states. This implies that the federal universities made DIRs available to their students than the state institutions. The study also reveals that there are numerous factors that hinder undergraduates to have access to DIRs. This implies that there is negligence on part of the four University authority study to look into the challenges faced by undergraduate students to use digital information resources for research, assignment and learning.

Recommendations

The recommendations that are proffered with regards to the findings and conclusion drawn from this study are as follows:

The university management of Federal University of Petroleum Resources Library (FUPR) and Delta State University Library (DELSU) should look into the development and growth of the digital library as a matter of urgency through the process of free downloading and subscription of online databases. Some of the free databases include UNESCO libraries portal, HIGHWIRE (<http://highwire.stanford.edu/lists/devecom.dtl>, ALUKA, JSTOR, HINARI, Database of African Thesis and Dissertations (DATAD), World Digital e-Library

(<http://elibrary.worldbank.org>), British library of development studies(BLDS) , and EBSCOHOST.

It was argued that lack of skills to access DIRs hinder undergraduate students to make use of e-resources therefore, the researcher suggests that management of the four university libraries in the study should try to train their students in up- to-date 21st century skills of Information Communication technologies (ICTs). This will help to solve the problems of ICTs skills among undergraduates.

It was also argued that lack of fund hinder the DIRs availability therefore, the researcher suggests that university management of institutions either Federal or State should provide enough funds, that is government should vote a reasonable amount of fund to education, especially the library system, this will enable the library management buy all infrastructure and well equipment needed for digital library to work effectively and efficiently.

Finally, effort should be made by the University and library management of both federal and state universities to minimize the challenges faced by undergraduates to access digital information resources.

Limitations of the study

The limitations encountered in the course of this study were:

Firstly, population of the study was too large that to get registered users inside the library by the time of administration of the instrument was not easy for the researcher. It was only at examination period that reasonable numbers of students were seen in the library. Therefore, this affected the research work.

Finally, Federal University Petroleum Resources, Ugbomro and Delta State University Abraka undergraduate students refused to tick some of the questions because they strongly believe that they do not have some of the listed DIRs in their library. This also affected the research work or finding greatly.

Suggestions for further study

Extending this investigation to other universities in Niger-Delta and South-South geo-political zone of Nigeria in order to draw a better generalization of the result of the study

Other researchers can carry out work on assessment of DIRs in university libraries of south -eastern and south- west geopolitical zones of Nigeria.

Extending this investigation to either post-graduate and undergraduate student's skills or literacy in the use of DIRs in higher institutions of Nigeria.

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APPENDIX A

Department of Library and Information Science

Nnamdi Azikiwe University,

P M B 5025, Awka

Sir/Madam

REQUEST FOR VALIDATION OF QUESTIONNAIRE

I am a postgraduate student of the above named institution and I am carrying out research on **Availability and use of digital information resources by undergraduates of universities in Delta and Edo States, Nigeria.**

Please, you are requested to validate the instrument based on the items, clarity, relevance to the purpose of the study, appropriateness of language including the correctness of the instruments to the respondents. I will readily accept any correction you may come up with after going through the questionnaire.

The purpose of the study, research questions and hypothesis are provided below for your referral.

Yours faithfully

URHIEWHU, LUCKY OGHENETEGA.

Researcher

Purpose of the Study

The main purpose of this study was to find out availability and use of digital information resources by the undergraduate students in Edo and Delta state of Nigeria.

The specific objectives are to find out

- i. the Digital Information Resources (DIRs) available in university libraries in Delta and Edo State.
- ii. the extent to which students make use of Digital Information Resources (DIRs) available in their institutions.
- iii. the constraints to effective use of Digital Information Resources (DIRs) by undergraduate students in university libraries.

Research Questions

The following research questions will guide the study:

- i. What are the Digital Information Resources (DIRs) available in university libraries in Delta and Edo state?

- ii. To what extent do students make use of Digital Information Resources (DIRs) available in their institutions?
- iii. What are the constraints to effective use of Digital Information Resources (DIRs) in university libraries by undergraduate students?

Research Hypotheses

1. The mean scores of federal and state university students on the extent of their usage of Digital information resources will not differ significantly.
2. There is no significant difference in the constraint identified by students in the use of Digital Information Resources based on the ownership of the institution

APPENDIX B

Department of Library and Information Science

Nnamdi Azikiwe University,

P M B 5025, Awka

**AVAILABILITY AND USE OF DIGITAL INFORMATION RESOURCES
BY UNDERGRADUATES OF UNIVERSITIES IN DELTA AND EDO
STATS, NIGERIA**

Dear Respondents

I am a postgraduate student of the above named department. I am carrying out a research on **Availability and use of digital information resources by undergraduate of universities in Delta and Edo States, Nigeria.**

Please give me your honest opinion based on the questions contained on this questionnaire. The answers you give here will only be used for the purpose of this study.

Thanks for your cooperation

Yours truly

URHIEWHU, LUCKY OGHENETEGA

Researcher

APPENDIX C

AVAILABILITY AND USE OF DIGITAL INFORMATION RESOURCES BY UNDERGRADUATES OF UNIVERSITIES IN DELTA AND EDO STATES, NIGERIA

Instruction: Please, fill the space provided

QUESTIONNAIRE

PART A

Name of institution: _____

PART B

Please read carefully and place a tick (\checkmark) against each opinion based on your level of agreement and disagreement: Strongly Agreed(SA), Agree(A), Disagreed(D) and Strongly Disagreed(SD). While Items in section B against each opinion based on your level of Great Extent(GE), Moderate Extent(ME), Low Extent(LE) and Very Low Extent(VLE).

SECTION A : Observation checklist on Digital Information Resources(DIRs) available in the four university libraries in Delta and Edo States.

S/N	Digital information resources available are:	Available		Not Available	
1	e- Projects				
2	e-Conference papers				
3	e- Journals				
4	e-Technical reports				
5	e- reference materials				
6	e-Seminar papers				
7	e- Conference Proceedings				

8	e-Zines				
9	e-Books				
10	e- Newsletters				
11	e-Grey document				
12	e-Thesis				
13	e-Dissertation				
	Grand total				

SECTION B: To what extent do you make use of the following digital information resources (DIRs) available in your institutions?

S/N	Extent of use of digital information resources	Very high extent	high extent	Low extent	Very low extent
14	e- Projects				
15	e-Conference papers				

16	e- Journals				
17	e-Technical reports				
18	e- Reference materials				
19	e-Seminar paper				
20	e- Conference proceedings				
21	e-Zines				
22	e-Books				
23	e- Newsletters				
24	e-Grey document				
25	e-Thesis				
26	e-Dissertation				

SECTION C: Constraints you encounter when accessing digital information resources.

S/N	Constraints to effective use of	SA	A	D	SD
-----	---------------------------------	----	---	---	----

	digital information resources are:				
27	Epileptic power supply				
28	None availability of online databases				
29	Inadequate or slow bandwidth				
30	Inadequate number of computers to digital access information resources in my library				
31	Network problems				
32	Lack of Skills to access digital information resources in the both local/ foreign databases of my library				
33	Lack of formal training in Internet use				
34	Server slowness				
35	Frequent breakdown of systems				

Appendix D

Proportionate Stratified Random sampling calculation to get sample size

$$\mathbf{AAU} = 2756/10882 * 1088/1 = 275$$

$$\mathbf{DELSU} = 2557/10882 * 1088/1 = 255$$

$$\mathbf{FUPR} = 1674/10882 * 1088/1 = 169$$

$$\mathbf{UNIBEN} = 3895/10882 * 1088/1 = 389$$

University Libraries	Ambrose Alli University Library (AAU)	Delta State University Library (DELSU)	Federal University Petroleum of Resources (FUPR) Library	John Harrison University Library (UNIBEN)	Total
Population	2,756	2,557	1,674	3,895	10,882
Sample size	275	255	169	389	1,088

APPENDIX E

Cronbach's formula or coefficient alpha for reliability of the instrument.

$$r_1 = k \frac{S^2}{S^2 + (k-1)E^2}$$

$$k-1 \quad S^2$$

Where

k= Number of items

s^2_t = variance of a single item

S= variance of the whole instrument

Formula for Hypothesis Testing for Z- Test- $Z = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$

APPENDIX F

List of University Libraries in Delta and Edo states used for the study and population of the returned questionnaires(respondents)

University Libraries	Frequency	%	Valid %	Cumulative %
Ambrose Ali University Library(AAU)	239	24.4	24.4	24.4
Delta state University Library(DELSU)	227	23.4	23.4	60.4
Federal University Petroleum of Resources Library(FUPR)	156	16.0	16.0	76.4
John Harrison University Library(UNIBEN).	350	36.0	36.0	100.0
Total	972	100.0	100.0	

