



Accessibility, Use and Challenges of Library Electronic Information Resources by Final Year Students of Faculty of Natural Sciences, University of Jos, Nigeria.

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Abstract

This paper investigates accessibility, use and challenges of library Electronic(e) Information Resources (EIRs). It highlights the types, purpose of use, frequency of use, source of awareness, places of accessibility by final year students, benefits, challenges and proffered solutions on the available library Electronic(e-) Information Resources (EIRs). A total of 66 respondents were surveyed at the University of Jos using a self-designed questionnaire as data collection instrument. The data were analyzed using descriptive statistics such as tables, mean, standard deviation and percentages. Hypotheses were tested and results showed that there is a positive, moderate significant relationship between the purpose of utilization and satisfaction of final year students of Faculty of Natural Sciences of Electronic information resources in University of Jos library ($r = 0.65$, $df = 65$, $p < 0.05$). Hence hypothesis 1 was rejected. Also, there was no significant difference in the use of Electronic Information Resources between male and female final year students of Faculty of Natural Sciences ($t = 0.91$, $df = 64$, $p > 0.05$). Hence hypothesis 2 was not rejected. Furthermore, findings revealed that databases and internet resources were the main type of e-information resources identified by respondents and majority use the e-resources for research. The frequency of use is occasionally inside the university of Jos Library. poor awareness, the need for username and password to access some, amongst others were reported

as challenges to the use of EIRs by final year students. The study offered recommendations as ways of enhancing maximum use of EIRs for prompt academic excellence and information services to final year students of Faculty of Natural Sciences in University of Jos Library.

Keywords: Accessibility, barriers to use, electronic information resources, Final year students, academic libraries, Nigeria.

Introduction

Most times, many final year students and other library patrons walk in and out of the library frustrated without knowing the library has other information resources outside print collections. This may also be attributed to many reasons such as: the notion many have about the Libraries being only store house of books, poor awareness on patrons' part of such services; or they are aware of such services but do not know how to access them, scattered unnecessary information amongst other challenges. Libraries in recent times acquire both Prints and Electronic Information Resources (EIRs) for diverse information users to meet their individual information quests. This has created a competition between prints and electronic information resources of which many final year library patrons seem to drift towards electronic resources due to its fast speed delivery, no geographical barriers, wider scope, up to date information, search many sites, easy to upload and storage amongst too many other advantages over print counterpart for their academic benefits.

Igbo (2008) refers to information resources as any information in electronic, audiovisual or physical form or any information in hardware or software that makes possible the storage and use of information. Bitagi and Garba (2014) opine that these resources constitute a range of materials and equipment gathered by the library in order to meet the information needs of both intended and anticipated users. Thus, the usage of information resources is an important factor in the success of every academic library.

Shim (2001) defined Electronic information resources (EIRS) as those resources that users access electronically via a computing network from inside the library or remote to the library. They include: internet resources, Electronic Books (E-Books), Electronic journals (e-Journals), Databases, Online Public Access Catalogue (OPAC), Electronic magazines/newspaper (E-Magazines/Newspapers), Electronic theses, dissertations (E-Theses, dissertations), CD-ROMs e.t.c. According to Armstrong et al. (2001), information resources are being produced and converted into an electronic form at pace which is greater today than in previous years. The growth and diversity of electronic resources, especially e-journals, in the past few years has led many to predict the extinction of the printed journal (Okello-Obura and Magara, 2008). Shuling (2007) supported the above facts as he quipped that in recent years, electronic information has gradually become a major resource in every university library. This has made many university managements to embrace digitization of print information resources and thus pose a great threat to it in most institution libraries. This is why Sharma (2009) observed that with advances in technology, print medium is increasingly giving way to the electronic form of materials.

Academic Libraries play key roles in serving diverse groups of people (like undergraduate students such as final year students), post-graduate students, lecturers and others within and outside the community it is located. The above crucial roles cannot be carried out effectively without adequate accessibility to the diverse electronic library information resources by these different library patrons within a fast and convenience methods to satisfy their information needs irrespective of their background.

Accessibility of library electronic information resources is of great importance to both library management, final year students and other library patrons as it is a determinant factor in users' satisfaction or dissatisfaction with library services and activities. Accessibility has a direct link with convenience and timeliness of library services and information delivery. Even with the enormous electronic library information resources and library patrons are made aware of such availability, it is not a plus that they would be able to access them easily as challenges such as slow internet access, ease of use of system, organization of the information on the library portal amongst others abound. This would determine whether library patrons would still visit the library next time or not. For example, a difficult access to electronic information resources is always wrongly misinterpreted by different library patrons who often times felt it is a waste of their precious time coming to the Library

who has nothing in her databases for them. Easy accessibility to the available library e-information resources also promote good library image as library patrons would help advertise the library and her services. Accessibility determines the utilization of the library and her acquired library electronic information resources. In a plain word, once there is no accessibility then there is no utilization of library electronic information resources. Thus, this researcher would like to summarize that ‘Accessibility is a determinant factor to the success or failure of library goals set out to enable final year students and other library information seekers harness the full benefits of use of the available electronic library information resources it has acquired (be it in print or electronic formats) for academic success.

The access to electronic information resources in academic libraries and among University students is rapidly increasing as a result of the massive adoption of information communication technology. Electronic Information Resources (EIRs) play vital roles in helping libraries in their quest to support the teaching and learning process at University level and to provide quality assistance to its users. As an emerging field, Information technology has been facilitated by providing electronic and internet resources for fulfilling the day to day academic and research requirements of the university students (Manoj, Gauri, and Bimal, 2011).

The thriving growth of electronic publications is reshaping the nature of collections and the mode of delivering and accessing information in libraries. Nowadays, the world is a global village as Library information resources can be sourced easily, speedy and at convenience from anywhere around without the library patrons being there in person and without restrictions. This gives credence to Ferguson (2006) assertion that in the global information communications technology (ICT)-dominated world, “place” is much less important. These days, the traditional library services that takes longer time are gradually giving ways to electronic operations due to Information Communication Technology (ICT) facilities which offer ample advantages and opportunities to library users. Tenopir (2003) states that Electronic resources have affected the functioning of libraries and the information seeking habit of users.

While Tsakonas and Papatheodorou (2006), stated that the transition from print to electronic medium apart from resulting in a growth of electronic information, has provided users with new tools and applications for information seeking and retrieval. Electronic information resources offer today’s students and scholars different opportunities compared to their predecessors. In today’s information age it would seem that library users would not only be eager to take advantage of the convenience electronic resources have to offer, but would be fully immersed in the new technologies (Elam, 2007).

The advantages of electronic resources over print as summarized by Brophy (1993) includes: speed, ease of use, ability to search multiple files at the same time, ability to save, print and repeat searches, more frequent updating and the ability to access from outside the library (a particular advantage for the distance learner). In addition, Dadzie (2007) emphasize that in present scenario, Electronic Information Resources are becoming more and more important and these are invaluable research tools that complement the print resources in a traditional library setting. The print resources are being digitized, which has given rise to increases of the availability of E-books and E-journal. These electronic resources are helpful because of their easy portability and its feature of incorporating more than one resource in a single hand held device. Furthermore, the author stated other advantages as: access to information that might be restricted to the users due to the geographical limitations, financial constraints, access to more current information and provision of extensive link to additional resources or related contents. Abubakar (2011) quipped that the global trend is characterized by a fundamental shift from traditional information environment to an e-environment where emphasis is placed more on acquisition of e-resources such as e-books, e-journals as well as on-line databases. Salaam (2008) attributed the popularity of electronic resources to flexibility in searching than their paper-based counterpart, and that they can be accessed remotely at any time. Dilevko and Gottlieb (2002) also found that undergraduate students prefer electronic resources over their print equivalents when they want to cut and paste quotations directly into their essays.

Electronic information resources are important research tools that complement the print-based resources in a traditional library setting, EIRs are easily accessible in the remote areas and solve storage problems and control the flow of information (Ansari and Bushra, 2010). Electronic information resources provide access to information that might be restricted to the user because of distance (Sabouri, et al 2010).

Majid and Abazova (1999) posited that technological advancements opened up new horizons for the creation, storage, access, distribution and presentation of information. While Kinengyere (2007) is of the view that the impact of moving from text-based to resource-based learning has involved heavier use of library materials and a demand for more and varied media sources. This makes the provision and use of Electronic Information Systems (EIS) in academic libraries a critical issue for those working in information and library services (Armstrong et al., 2001; Elam, 2007).

Maidabino and Ladan (2015) asserted that the provision of standard information resources in form of print and non-prints (such as books, journals, and audiovisual collection, e-books, e-journals, and services) will help academic libraries to attain their noble objective.

One of the mandatory requirement by Final year students of Faculty and Natural Sciences for the award of Bachelor of Science(B.Sc) is project writing and internal and external defense since they are the class that is in their last lapse and therefore need to source for information resources. This is supported by Olubiyo, Jato and Ogunniyi (2011) who posited that students need to conduct research, write notes, assignment, term papers, and do presentations as such they need information.

However, several constraints have been reported by various authors as regards accessibility and use of electronic information resources in different libraries of the world. The results of findings of Olubiyo, and Ogunniyi, (2017) on "Awareness and use of information resources for research by final year students in Adeyemi College of Education, Ondo" revealed that the nature of awareness of the availability of information resources for research among final year students is high but indicated lack of current resources, inadequate resources, inadequate loaning period, constant power outage and slow connection speed were the challenges encountered in the use of information resources in the library. The study concluded that the challenges could be the reasons why some other students do not bother to do the necessary information sourcing before embarking on their project work which definitely leads to plagiarizing former project written by past students. Malekani (2007), reported constraints at Sokoine National Agricultural Library (SNAL) to find out student experiences and perceptions towards the Internet in meeting their learning needs, revealed that most students have positive attitude towards the Internet and use for academic purposes. Its effective use is hampered by several factors including low bandwidth, few internet accesses points, and lack of skills.

Radijeng (2007) who in his study on Demand for Electronic Information at the University of Botswana, reported technical problem, lack of infrastructure, inadequate computer literacy, limited printers and printing opportunities, computer phobia, irrelevancy of contents to local needs, economic problems and, problems associated with electronic resources access. Bhardwaj and Madhusudan (2013) identified the following as constraints to use of Electronic Resources: Lack of proper arrangement of legal information resources, poor description on legal information sources, lack of online help, poor website design, too many login requirements, lack of expertise in using the databases, lack of printing provision, and confusing search screens. Echezona and Ugwuanyi (2010), argued that the poor nature of Internet speed infringes on the usefulness of the connections and is a real barrier to using e-resources.

When Kinengyere (2007) examined the effect of information literacy (IL) on the usage of electronic information resources in academic and research institutions in Uganda; the paper reports that availability of information does not necessarily mean actual use. The study furthermore revealed that some of the available resources have not been utilized at all. This means that users are not aware of the availability of such resources, they do not know how to access them, or they do not know what the resources offer. All this calls for continued information literacy programs. In another study by Tariq and Zia (2014) that the frequency of use of Electronic Information Resources (EIR) is crystal clear as 67.83% respondents use EIR daily, 11.74% student's uses occasionally, 8.26% uses EIR once in a week, 6.96% use EIR thrice a week and 5.22% use twice a week.

Ojo and Akande (2005) as cited by Akpojotor (2016) opined that students' level of access, usage and awareness of electronic information resources at the University College Hospital (UCH) Ibadan, Nigeria is not high. In a study carried out by Dilrukshi as cited by Wijetunge (2015) it was reported that 52% of all the fourth-year undergraduate preferred online journal usage while the remaining 48% prefer printed journal. The study

recognized that the absence of training in using online resources, lack of time to engage in searching due to heavy work load, poor knowledge of online journal and lack of computer facilities in the faculty affect the usage of online journal.

In the words of Roberts (2005) 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. Awareness is part of availability and it indicates the extent to which users have information and knowledge of electronic resources being subscribed to. When users of a library have adequate information on the electronic resources being subscribed to, they are encouraged to use them. Available ICT and e-resources must be known to the users. Madukoma, Onuoha and Ikonne (2014) identified lack of awareness as major contributing factor to non-use of e-resources. But another study conducted by Natarajan and Suresh., et. al. (2008) as case study at Annamalai University, India reveals that even with the availability of large collection of electronic resources the rate of their use was found low due to lack of awareness, lack of subject coverage, slow downloading and lack of time. Results shows that users were aware of e-journals only among all the other e-resources, 50% of the users are satisfied from e-resources, e-journals were the only source used extensively by users and also discovered that the e-dictionaries and e-encyclopedias were the e-resources with the least usage. Ibrahim, (2004) had conducted a survey in United Arab Emirates, to study the use and user perception of electronic resources in UAE University. According to the results the frequency of usage of e-resources was unexpectedly low because of language barriers, lack of computer literacy and lack of time. Ajuwon (2003) also carried out a study of uptake of ICTs by health science students at the University College Hospital, Ibadan. This study found that 57% of students sampled could not use a computer, that the use of the database was poor, due to lack of awareness, lack of access to computers, insufficient training and the high cost of provision. Buttressing this fact, Abdullah (2006) noted that most users are unaware of the existence of e-books and e-journals in library collections, also unfriendly interfaces or usability problems tend to hinder their further use of electronic resources.

A number of studies have been made with a view to proffering solutions to problems encountered in the use of electronic information resources. However, little or no efforts have been made to identify the accessibility and challenges of use of Library Electronic Information Resources among Final Year Students of Faculty of Natural Sciences, University of Jos, Nigeria.

This is the gap which the researchers sought to identify. The purpose of study is to investigate the accessibility and challenges of use of Library Electronic Information Resources by Final Year Students of Faculty of Natural Sciences, University of Jos, Nigeria.

Objectives

The main purpose of this research was to survey accessibility, use and the challenges that hinder the maximum utilization of electronic information resources by final year students in university of Jos Library.

The general objectives are to:

1. investigate the types of Electronic Information Resources that are available to final year students' accessibility and use in University of Jos Library.
2. ascertain how final year students get awareness on Electronic Information Resources that are available for accessibility and use in University of Jos Library.
3. investigate final year students' purposes of use of the available Electronic Information Resources in University of Jos Library.
4. determine how often final year students' access and use the available Electronic Information Resources in University of Jos Library.
5. investigate where final year students normally access and use the available Electronic Information Resources.
6. investigate the ways available Electronic Information Resources has helped final year students.
7. determine final year students' level of satisfaction with accessibility and use of the available Electronic Information Resources in University of Jos Library.
8. investigate the challenges that hinder final year students' effective accessibility and use of the available Electronic Information Resources in University of Jos Library

- investigate various ways to proffer solutions to the challenges that hinder final year students' effective accessibility and use of the available Electronic Information Resources in University of Jos Library

Research Questions

The study was guided by the following questions:

- What type of Electronic Information Resources are available to final year students in University of Jos Library?
- How did final year students get to know about the available Electronic Information Resources in University of Jos Library?
- What do final year students use the Electronic Information Resources for in University of Jos Library?
- How often do final year students use the available Electronic Information Resources in University of Jos Library?
- Where do final year students normally access the available Electronic Information Resources of University of Jos Library?
- In what ways has the available Electronic Information Resources helped final year students?
- How satisfied are final year student with the accessibility and use of the available Electronic Information Resources in University of Jos Library?
- What are the challenges that hinder your effective use of Electronic Information Resources as a final Year Student in University of Jos Library?
- What are the proffered solutions to the challenges that hinder final year students' effective accessibility and use of the available Electronic Information Resources in University of Jos Library?

Statement of the Problem

Information in academic libraries all over the world is a basic necessity for optimal service delivery to final year students and other numerous library patrons. With the advent of Information, Communication and Technology (ICT) in the 21st Century, information is conveniently and made easily available to diverse number of users promptly irrespective of their geographical locations, as well as information portability and easy transfer to another client, easy links to other information accounts, multiple search at the same time, saving of time among other advantages. This fast delivery method of information has attracted and drawn the final year students and other millennial information seekers who are mostly youths to electronic library information resources.

However, the availability of electronic information resources does not guarantee its accessibility and use by final year students and different library patrons as accessibility has been found to be a major challenge for the maximum use of available electronic information resources in libraries. Other problems such as perceived ease of use, lack of search skills among students, erratic power supply, slow internet speed or no access at all, too many irrelevant information, the need for usernames and passwords to search some databases among others often pose great challenges to the maximum accessibility and use of electronic information resources to final year students of faculty of Natural Sciences, University of Jos, Nigeria.

It is therefore paramount to conduct a study to investigate final year students' accessibility, use and the challenges their encounter during the use of the available electronic information resources in university of Jos Library, Nigeria.

Significance of the Study

This finding will help to create more awareness on the available electronic information resources for final year students' use in University of Jos Library, Nigeria.

The evidence from this study if used by Library Management would help them know the challenges encountered by final year students and proffer the necessary solutions to improve on the effective use of electronic information resources subsequently in university of Jos library.

The result of the study would be useful to all professional librarians, the university libraries, students, university management, and researchers to understand and appreciate the role of electronic information resources in education most especially in the area of research (project writing), assignment, general information amongst others.

The findings of the study would help in budget planning by Library Management and allocation by University administrators for acquiring of the necessary electronic information resources in university of Jos library, Nigeria for final year students, other students and the community' accessibility and utilization.

Hypotheses

Two hypotheses were drawn:

(Ho1). There is no significant relationship between the purpose of utilization and satisfaction of final year students of faculty of natural sciences of electronic information resources in university of Jos library.

(Ho2). There is no significant difference between male and female final year students of faculty of natural sciences use of electronic information resources in university of Jos library

Methodology

The survey research method was adopted for this study because it was considered more appropriate for this type of study. A simple random sampling technique was used to select the sample for this research. This strategy allowed the researcher to avoid self-selection of the survey respondents and to reach out to a diverse number of students of different departments in the faculty of Natural Sciences. 66 respondents were drawn from a total of 657 population size of final year students of Faculty of Natural Sciences. The expert advice of Curry (1984) which stated that for a Population size of 101-1000, a sample fraction of 10% of the sample should be used was adopted. Thus, 10% was proportionately allocated to each departmental population size and was used to calculate the sample size. Therefore, the final sample frame consisted of 66 respondents with their respective departments and population size is presented in Table 3.1 below.

Data was collected for the study through the use of questionnaire. The questionnaire was in two (2) main sections. Section A elicited background information such as gender, age and marital status of respondents while section B contains research questions drawn from the objectives of the study. These are Eight (8) in number as they sought information on respondents' types of electronic information resources, sources of awareness of electronic information resources, purposes, frequency, places of accessibility, benefits, the challenges and proffered solutions for the maximum use of library electronic information resources. The data was analyzed using simple percentages and frequency counts.

Table 3.1: Population Size of Natural Sciences Faculty, Departments and Calculated Sample Size

S/no.	Departments	Number of Final Year Students (Population size)	Calculated Sample size (%)
1.	Computer Science	102	10
2.	Chemistry Major	94	9
3.	Industrial Chemistry	56	6
4.	Geology	60	6
5.	Physics	34	3
6.	Plant Science and Technology	79	8
7.	Mathematics	28	3
8.	Statistics	55	6
9.	Microbiology	61	6
10.	Science Laboratory Technology	Students where on Industrial Training	-
11.	Zoology	88	9
	TOTAL	657	66

Source: Researchers' field work 2019.

RESULTS

Survey Analysis and Discussion

Demographic Information of Respondents

Table 1: Demographic distribution of Respondents

Item	Frequency	Percentage (%)
Gender		
Male	42	63.6
Female	24	36.4
Total	66	100.0
Age (years)		
20-24	38	57.6
25-29	14	21.2
30-34	8	12.1
35-39	4	6.1
40 and above	2	3.0
Total	66	100
Marital status		
Single	60	90.9
Married	4	6.1
Others	2	3.0
Total	66	100

Source: Researchers' field work, 2019



Figure 1: Bar chart showing the distribution of the respondents by Gender

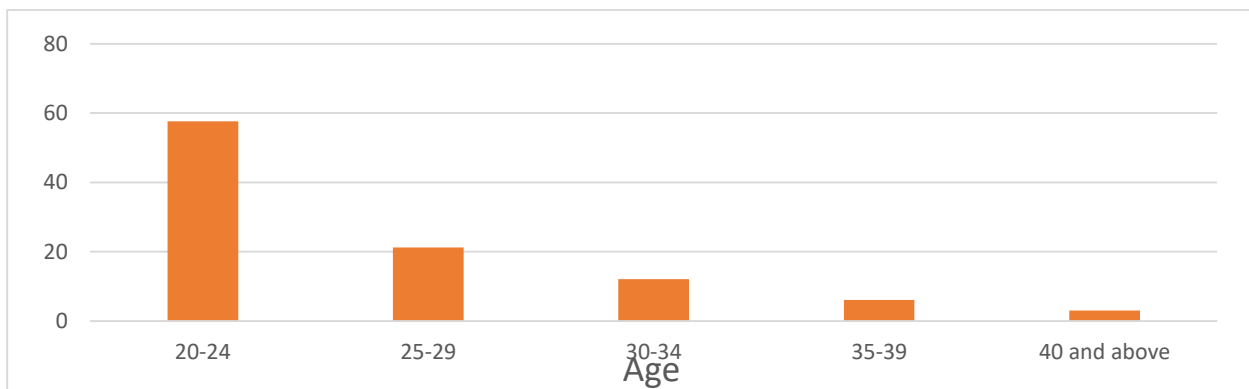


Figure 2: Bar chart showing the distribution of the respondents by Age

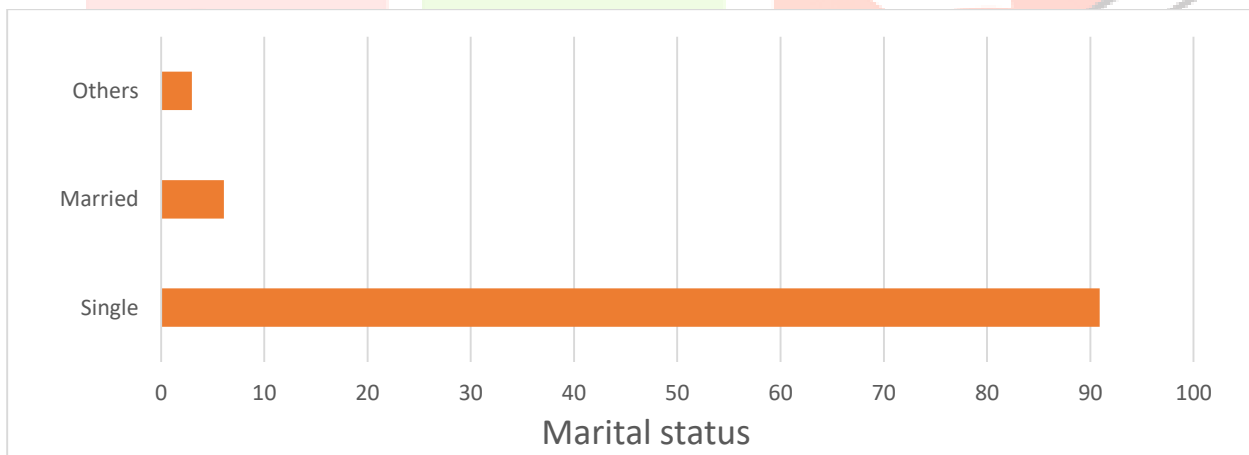


Figure 3: Bar chart showing the distribution of the respondents by Marital status

Table 1 revealed the summary of the demographic information of respondents. It revealed that: majority 42 (63.6%) of the respondents are male while the remaining 24 (36.36%) are female. 38 (57.6%) of the respondents indicated that they are within the age range of 20-24 years, 14 (21.2%) indicated 25-29 years, 8 (12.1%) stated 30-34 years, 4 (6.1%) are within the age range of 35-39 years, while 2(3.0%) indicated 40 years and above age. On marital status, more than half of the respondents 60 (90.9%) are single, 4(6.1%) are married while 2(3.0%) indicated others.

Answering of Research Questions

Research question 1: Which type of Electronic Information Resources are available to final year students in the University of Jos Library?

Table 2: Types of Electronic(E) Information Resources available to final year students

S/N	Types of Electronic Information re-sources	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	E-Books	25(37.88%)	19(28.79%)	8(12.12%)	8(12.12%)	6(9.09%)
2.	Online Public Access Catalogue (OPAC)	11(16.67%)	26(39.39%)	17(25.76%)	9(13.64%)	3(4.55%)
3.	E-Theses and Dissertations	10(15.15%)	26(39.39%)	16(24.24%)	11(16.67%)	3(4.55%)
4.	Internet resources	38(57.57%)	15(22.73%)	17(25.76%)	8(12.12%)	2(3.03%)
5.	Databases (Examples: AGORA, HINARI, TEEAL, JSTOR, OARE, EBSCO HOST, Elsevier Science Direct, , Oxford Journals, BioOne e.t.c)	45(68.18%)	8(12.12%)	7(10.60%)	4(6.06%)	2(3.03%)

Table 2 showed that 45 (68.18%) of the respondents strongly agree that Databases are available in university of Jos library, 38(57.57%) indicated internet resources, 25 (37.9%) indicated E-Books are available, 11(16.7%) indicated that Online Public Access Catalogue (OPAC) is available and only 10 (15.2%) indicated E-theses and dissertations are available. Overall, it is observed that majority 45(86.18%) of the respondents stated that the most predominant electronic information resources available to final year students of Faculty of Natural Sciences, University of Jos Library is Databases and internet resources.

Research question 2: How did you get to know about University of Jos Library Electronic Information Resources?

Table 3: Sources of awareness of Electronic Information Resources available to final year students

S/N	Sources of Awareness	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Library Website	14(21.21%)	28(42.42%)	9(13.64%)	12(18.18%)	3(4.55%)
2.	friends/Class-mates	12(18.18%)	32(48.48%)	12(18.18%)	8(12.12%)	2(3.03%)
3.	Lecturers/Library Staff	20(30.30%)	11(16.67%)	16(24.24%)	11(16.67%)	8(12.12%)
4.	Library Tour (Orientation/ Sensitization) Exercise	21(31.82%)	9(13.64%)	17(25.76%)	10(15.15%)	8(12.12%)
5.	Notices/ Memos/ Letters sent to the Departments	8(12.12%)	5(7.58%)	20(30.30%)	21(31.82%)	12(18.18%)

Table 3 revealed respondents' sources of awareness on University of Jos Library Electronic information resources and rated as follows: 21 (31.8%) of the respondents indicated through library tour (Orientation/sensitization), 20 (30.3%) lecturers /library staff, 14 (21.2%) library website, 12 (18.2%) through friends/classmates, while 8 (12.1%) notices/memos/letters sent to the departments. This implies that final year students agreed they got awareness of the Library Electronic Information Resources mostly through library tour (Orientation/sensitization) and lecturers /library staff.

Research question 3: What do you use the available Library Electronic Information Resources for?

Table 3: Purposes of use of the available Library Electronic Information Resources

S/N	Purpose of use of E-Information Resources	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Research	40(60.61%)	19(28.79%)	3(4.55%)	4(6.06%)	0(0.00%)
2.	Examination	15(22.73%)	28(42.42%)	16(24.24%)	7(10.61%)	0(0.00%)
3.	Assignment	31(46.97%)	20(30.30%)	12(18.18%)	2(3.03%)	1(1.52%)
4.	Leisure	19(28.79%)	10(15.15%)	22(33.33%)	12(18.18%)	3(4.55%)
5.	News/General Information	20(30.30%)	19(28.79%)	15(22.73%)	7(10.61%)	5(7.58%)
6.	e-mailing	14(21.21%)	21(31.82%)	15(22.73%)	9(13.64%)	7(10.61%)
7.	Access full text articles from peer-reviewed publications	11(16.67%)	22(33.33%)	18(27.27%)	11(16.67%)	4(6.06%)

Table 4 showed that more than half of the respondents 40(60.61%) strongly agree that they use the available E-Information Resources for research. 31 (47.0%) indicated Assignment, 20 (30.3%) News/General Information, 19 (28.8%) for leisure, 15 (22.7%) for examination, 14 (21.2%) E-Mailing, and 11(16.67%) indicated to access full text articles from peer-reviewed publications. This means that majority of the final year students of Faculty of Natural Sciences, University of Jos indicated they use the available Library Electronic information resources for research.

Research question 4: How often do you use the E-Information Resources in University of Jos Library?

Table 5: Frequency of Utilization of E-Information Resources

Use the available Electronic Information Resources	Frequency	Percentages
Daily	12	18.2
Weekly	10	15.2
Monthly	6	9.1
Occasionally (Whenever I feel)	30	45.5
Rarely	8	12.1
Total	66	100.0

Table 5 revealed that 30 (45.5%) of the respondents indicated they use the available Electronic information resources occasionally (whenever they feel like). 12 (18.2%) indicated daily, 10 (15.2%) used them weekly, 8 (12.1%) rarely used E-Information Resources, while 6 (9.1%) used them monthly. This implies that final year students of Faculty of Natural Sciences at University of Jos use the available electronic information resources occasionally.

Research question 5: Where do you normally access E-Information Resources of University of Jos Library?

Table 6: Places of Accessibility of E-Information Resources

S/N	Places where I normally access Electronic information Resources	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Hostel	2(3.03%)	18(27.27%)	20(30.30%)	12(18.18%)	14(21.21%)
2.	Lecture Halls	5(7.57%)	13(19.70%)	20(30.30%)	19(28.79%)	9(13.63%)
3.	Inside University of Jos Library	25(37.88%)	33(50.00%)	4(6.06%)	2(3.03%)	2(3.03%)
4.	At Home	3(4.55%)	18(27.27%)	22(33.33%)	10(15.15%)	13(19.70%)
5.	Cybercafés/Information Centres outside the Campus	19(28.79%)	10(15.15%)	17(25.76%)	10(15.15%)	10(15.15%)
6.	Anywhere	6(9.09%)	19(28.79%)	18(27.27%)	12(18.18%)	11(16.67%)

Table 6 gives the summary of respondents' views on places where they normally access the available library electronic information resources as follows: 25 (37.9%) strongly agree that they normally access them inside university of Jos library, 19 (28.8%) stated through cyber cafes/information centres outside the campus, 6(9.1%) indicated anywhere, 5(7.57%) Lecture Halls, 3(4.55%) indicated at home and 2(3.03%) stated Hostel. This implies that few of the respondents normally access the available library electronic information resources inside University of Jos Library.

Research question 6: In what ways has Library Electronic Information Resources helped you as a final year student?

Table 7: Ways in which of E-Information Resources are of help to final year students

S/N	Ways in which E-Resources helps me	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Provide me with most of the Information I need	36(54.54%)	18(27.27%)	6(9.09%)	4(6.06%)	2(3.03%)
2.	A discovery tool that helps on current researches in my field of study and other relevant information from experts around the Globe	28(42.42%)	19(28.79%)	16(24.24%)	3(4.55%)	0(0.00%)
3.	free access to information resources that ordinarily I cannot pay for and are out of my geographical locations.	33(50.00%)	19(28.78%)	10(15.15%)	3(4.55%)	1(1.52%)
4.	Provide me with reliable and up-to-date Information	34(51.51%)	30(45.45%)	2(3.03%)	0(0.00%)	0(0.00%)
5.	Easy, fast retrieval of wide range of information, print, download large	13(19.70%)	27(40.91%)	18(27.27%)	5(7.58%)	3(4.55%)

quantity and distribute Information quickly					
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Table 7 gives respondents' opinions on ways in which E- Resources are helpful. The items are ranked in the following order: Provide me with most of the Information I need with 36(54.54%), Provide me with reliable and up-to-date Information with 34(51.51%), free access to information resources that ordinarily I cannot pay for and are out of my geographical location scored 33(50.0%), A discovery tool that helps me to learn a lot on current researches in my field of study and other relevant information from experts around the Globe scored 28(42.42%) and lastly; easy, fast retrieval of wide range of information and print, download large quantity and distribute Information quickly with 13(19.70%). This shows that the available electronic information is very helpful to final year students.

Research question 7: What are the challenges that hinder your effective use of E-Information Resources in University of Jos Library as a final Year Student?

Table 8: Challenges that hinder effective use of available E-Information Resources

S/N	Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Poor awareness on E-Resources	42(63.63%)	10(15.15%)	7(10.61%)	6(9.09%)	1(1.52%)
2.	Lack of adequate networked computers	15(22.73%)	14(21.21%)	23(34.85%)	10(15.15%)	4(6.06%)
3.	Slow/poor Internet connection	35(53.03%)	13(19.69%)	12(18.18%)	5(7.58%)	1(1.52%)
4.	Lack of search skills	9(13.64%)	19(28.79%)	16(24.24%)	14(21.21%)	8(12.12%)
5.	Complex to use unlike Print Materials due to lack of technical guidelines	12(18.18%)	26(39.39%)	21(31.82%)	5(7.58%)	2(3.03%)
6.	Too many unnecessary information	9(13.64%)	18(27.27%)	30(45.45%)	6(9.09%)	3(4.55%)
7.	Some of the E-information resources need username and password to access them	38(57.57%)	20(30.30%)	2(3.03%)	5(7.58%)	1(1.52%)
8.	Erratic power supply	12(18.18%)	8(12.12%)	12(33.33%)	15(22.73%)	9(13.64%)
9.	Inadequate Library Space	33(50.00%)	15(22.73%)	15(22.73%)	1(1.52%)	2(3.03%)

Table 8 showed respondents' opinions on nine (9) items listed as challenges encounter that hinder their effective use of E-Information Resources in University of Jos Library. 42(63.63%) of the respondents indicated poor awareness, 38(57.57%) stated some of E-information resources need username and password to access, 35(53.03%) indicated slow/poor internet connection, while 33(50.0%) indicated inadequate Library Space, 15(22.7%) indicate lack of adequate networked computers, 12(18.2%) stated they were complex to use unlike Print Materials due to lack of technical guidelines and Erratic power supply respectively, and lastly, 9(13.6%) ranked lack of search skills and too many unnecessary information as least challenges respectively.

Research question 8: What are the various ways to proffer solutions to the barriers stated above?

Table 9: proffer solutions to the challenges to use of electronic information resources

S/N	Suggestions	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1.	Create more Awareness	40(60.61%)	20(30.30%)	6(9.09%)	0(0.00%)	0(0.00%)
2	Provide networked computers	37(56.06%)	11(16.67%)	12(18.18%)	6(9.09%)	0(0.00%)
3,	Increase Internet Bandwidth	37(56.06%)	16(24.24%)	12(18.18%)	1(1.52%)	0(0.00%)
4	Provide more training with practical carried out by students while Librarians observe them	39(59.09%)	11(16.67%)	16(24.24%)	0(0.00%)	0(0.00%)
5.	Provision of technical guidelines to aid easy access and use	33(50.00%)	20(30.30%)	11(16.67%)	2(3.03%)	0(0.00%)
6.	Only necessary Information should be filtered and well organized for easy access and use by final year students	34(51.52%)	18(27.27%)	12(18.18%)	1(1.52%)	1(1.52%)
7.	Need to provide final year students with username and passwords easily	41(62.12%)	13(19.69%)	12(18.18%)	0(0.00%)	0(0.00%)
8	Need for alternative power supply	35(53.03%)	12(18.18%)	14(21.21%)	4(6.06%)	1(1.52%)
9.	Adequate library space	36(54.55%)	16(24.24%)	10(15.15%)	4(6.06%)	0(0.00%)

Table 9 showed 41(62.12%) Need to provide final year students with username and passwords easily, 40(60.2%) strongly indicate the creation of more Awareness, 39(59.09%) Provide more training with practical carried out by students while Librarians observe them, 37(56.06%) Increase Internet Bandwidth and provide networked computers, 36(54.55%) adequate library space, 35(53.03%) Need for alternative power supply, 34(51.52%) Only necessary Information should be filtered and well organized for easy access and use by final year students, and 33(50.00%) indicated Provision of technical guidelines to aid easy access and use. This shows all the items were rated by final year students as proffered solutions to the challenges for effective use of available information resources in university of Jos library.

Research question 9: As a final year student, how satisfied are you with the use of E-information resources in University of Jos Library?

Table 10: Level of satisfaction with the use of E-information resources

Very satisfied	15	22.7
Satisfied	13	19.7
Slightly satisfied	32	48.5
Not satisfied	6	9.1

Table 10 indicates the respondents' opinions on their level of satisfaction with the use of E-information resources in University of Jos Library. It revealed that majority (48.5%) of the respondents stated that they were slightly satisfied, 22.7% indicated that they were Very satisfied, 19.7% opined that they were satisfied while 9.1% indicated that they were not satisfied.

Testing of Hypotheses

Ho1: There is no significant relationship between the purpose of utilization and satisfaction of final year students of faculty of natural sciences of electronic information resources in university of Jos library.

Table 11: Relationship between purpose of utilization and satisfaction of final year students

Variables	N	Mean	Std.D	df	r	P-value	Remark
Purpose	66	29.82	3.31	65	0.651	0.000	Sig
Satisfaction	66	16.17	5.01				

* denotes significant at $p < 0.05$

Table 11 revealed that there is a positive, moderate significant relationship between the purpose of utilization and satisfaction of final year students of faculty of natural sciences of electronic information resources in university of Jos library ($r = 0.65$, $df = 65$, $p < 0.05$). Hence hypothesis 1 was rejected. This means the purpose of utilization is positively related satisfaction of final year students of faculty of natural sciences of electronic information resources in university of Jos library.

Ho2: There is no significant difference between male and female final year students of faculty of natural sciences use of electronic information resources in university of Jos library

Table 12: Difference in the use of electronic information resources of male and female students

Gender	N	Mean	Std.D	df	t	P-value	Remark
Male	42	27.11	6.29	64	0.910	0.412	N.S.
Female	24	24.21	4.71				

N.S denotes not significant at $p < 0.05$

Table 12 showed that there is no significant difference in the use of electronic information resources of male and female final year students of faculty of natural sciences ($t = 0.91$, $df = 64$, $p > 0.05$).

Hence hypothesis 2 was not rejected. This means that gender (male and female) of the final year students of faculty of natural sciences has no effect on their use of electronic information resources in university of Jos library.

Discussion of findings (Results)

Demographic information of Final year students

A total of Sixty-six (66) valid responses were analyzed. The survey participants represented final year students of all departments of faculty of Natural Sciences of different population sizes. The findings on Table 1 reveal that they were more male than female respondents as 63.6% final year students were male and 36.4% were female. This negates the findings of Olubiyo, and Ogunniyi, (2017) that out of 100 students that were selected as sample for their study, 47% were male while the remaining 53% were female and implied that there were more female among the students used for this study.

On age distribution, 38 (57.6%) are within the age range of 20-24 years, 14 (21.2%) indicated 25-29 years, 8 (12.1%) stated 30-34 years, 4 (6.1%) are within the age range of 35-39 years, while only 2(3.0%) indicated 40 years and above age. This means that more than half of the final year students are in 20-24 years. This conforms with the findings of Owolabi, Okocha, Idowu and Ogundare (2016) that majority 107(56.9%) of the respondents were within the age range of 18 and 25 years old. Also, 78(41.5%) of them were within 26 and 35 years of age while only 3(1.6%) of the respondents were between 36 and 45 years old

On marital status, more than half of the respondents 60 (90.9%) are single, 4(6.1%) are married while 2(3.0%) indicated others.

Types of electronic information Resources available in University of Jos Library

The first research question of the study is related to the types of E-Information Resources that are available to final year students in university of Jos Library. The survey analysis in Table 2 revealed that 68.18% indicated Databases and internet resources with 57.57%. E-Books 37.88%, Online Public Access Catalogue (OPAC) with 16.67%, E-theses and dissertations 15.15%. This shows that Databases and Internet resources are the two (2) main types of electronic information resources highly ranked by final year students. The rest were also identified but poorly ranked. This disagrees with the findings of Manhas (2008) survey of dental students in the Punjab State of India, that the use of electronic resources in order of preference was as follows; e-books (43.6%), electronic databases (34.5%), DVD/CD-ROMs (16.3%) and other electronic resources (7%).

Sources of final year students' awareness on available electronic information resources

Table 3 summarizes the result of final year students of Faculty of Natural Sciences sources of awareness of the available Library Electronic Information Resources. The highest ranked method of awareness is through library tour(orientation/sensitization) with 31.8% and lecturers /library staff scored 30.3%. Library websites scored low with 21.2%, through friends/classmates 18.2%, while notices/memos/letters sent to the departments was least scored with 12.1%. This shows that final year students have poor awareness on the available electronic information resources in University of Jos Library. This is worrisome as awareness is a key factor to information utilization and there is no library as Information repository that can meet up with her user satisfaction goals without creating awareness of her services and activities through the use of different platforms like library tour (orientation/sensitization exercise), memos dispatched to the various Heads/Deans of Faculties to notify them on new book arrival or e-information resources package and other activities. These memos are usually pasted on the Faculty/Departmental boards for all to see and respond accordingly. They also use lecturers /library staff among others to create awareness to her esteemed patrons, exhibition e.t.c. These methods also serve as adverts to the institution community and environs on library services and activities. Final year students also help the library create awareness of her services and activities as they interact with their friends/classmates directly and come to access such medium to get information of their choice to satisfy their information needs. It is also a way of helping final year students and other library information seekers get the maximum benefits of services rendered by the library for impactful educational success. This view is corroborated by Wejetunge (2015) assertion that the awareness of information resources available in the library and the ability to search and obtain information from the library add substantial value to the learning process of students.

Purposes of use of the available electronic information resources

Table 4 gives the summary of the purpose of uses of the available Library Electronic Information by final year students as respondents' access and utilize the available resources in University of Jos library majorly for research purpose as indicated by 60.61%. Other purposes such as Assignment scored 46.97%, News/general information with 30.30%, leisure with 28.79%, Examination 22.73%, E-mailing scored 21.21%, and access full text articles form peer reviewed publications with 16.67%. Reasons may not be farfetched as these target audience are in their last lapse and research is one of the requirement for the award of Bachelor of Science (B.Sc) in Faculty of Natural Sciences, University of Jos. This also supports the findings of (Valentine, 1993) that students of tertiary institution showed that they looked for the fastest way that would lead to satisfactory results when doing research, going for electronic information sources first. This conforms with the study by Dhanavandan (2012) regarding access to and awareness of ICT resources and services in the Medical College Libraries in Puducherry (county) that (87.33%) of the respondents used electronic databases for the purpose of their research, while (61.33%) of the respondents use it for communication purpose, (54.66%) respondents use electronic databases for finding relevant information, (34.66%) respondents use electronic resources for career development and (20.66%) of the respondents use electronic resources for other activities.

Frequency of use of the available electronic information resources

The summary of final year students on how often they access and use the available electronic information resources in University of Jos library as presented in Table 5 revealed that majority 45.45% indicated they used it occasionally, 18.2% indicated daily, 15.2% used them weekly, 12.1% rarely used E-Information Resources, while 9.1% used them monthly. This implies that final year students of Faculty of Natural Sciences at University of Jos use the available electronic information resources occasionally. Reasons may be due to the poor sources of awareness and constraints they face when using the available E-Information Resources at University of Jos Library. Again, this not impressive as the Federal Government of Nigeria and University of Jos Management have spent huge amount of money in acquiring modern ICT facilities to help final year and other students' access and use information resources of their choice speedily without restrictions on geographical location and at their convenience for successful academic outputs. Thus, the poor usage of the available e-information resources by final year students of the Faculty under study calls for urgent attention by Library Management to create awareness so as to attract final year students to the available services for optimal results. This contradicts Madhusudhan (2010) finding in his efforts to know the frequency of use of electronic resources, which revealed that 62 percent of the respondents made use of electronic resources daily, 18 percent occasionally, and 16 percent two or three times a week, only 4 percent used the e-resources once a week, and none of the respondents reported using e resources once a month.

Places where they normally access the available library electronic information resources

Table 6 gives the summary of final year students' views on places where they normally access the available library electronic information resources as follows: 37.9% normally access it inside university of Jos library, 28.8% through cyber cafes/information centres outside the campus, 9.1% indicated anywhere, 7.57% went for Lecture Halls, 4.55% indicated Home and only 3.03% indicated Hostel. The introduction of ICT in library profession has made information to be easily accessed from anywhere around the world and even on the palm of our hands using smartphones, laptops etc. Since the world is now a global village, then final year students need not come to the university of Jos library in physical to access and use the available electronic information resources. This should be done from home, hostel, anywhere e.t.c. The assertion is not true as our present research found that respondents gave very low scores at places where final year students normally access the available information resources even within the parent institution library. This means final year students would be cut off from getting prompt information from the university of Jos library as well as around the world and this is not encouraging. This corroborates with Nwalo (2000) assertion that any library that is not linked to the Internet would, as it were, be automatically isolating its users from the best of the world's current literature for higher education and research This calls for increase in bandwidth to cover places of accessibility like homes and hostels. This however negates the findings of Lavanya and Santharoban (2018) that many respondents accessed online information using mobile phones with scores given as follows: with Home/Hostel 72.1%, Faculty 56.5%, Library 39.0%, Computer lab 69.3%, Mobile devices (e.g. Smart phones) 79.2% and Elsewhere (e.g. Internet cafe, friend) 9.8%. The summary on Table 6 above is a wakeup call for Library Management to make sure the main goal of the library which is user satisfaction is met through provision of the information needed by final year students promptly. The result also exposes the fact that the Library is not the only place where electronic information resources can be accessed and used by final year students. This is in line with Connaway (2013) assertion that since the library is not the only game in town to get information and "the majority of the population does not use libraries to get information" it is important for the library to become embedded in the lifestyles of their users and potential users (those who may not or who seldom use library services).

Ways in which the accessibility and use of available electronic information resources has helped final year students.

Table 7 summarizes ways in which the accessibility and use of available electronic information resources has helped final year students. Three (3) items: Provide me with most of the Information I need with 54.54%, Provide me with reliable and up-to-date Information with 51.51%, free access to information resources that ordinarily I cannot pay for and are out of my geographical location scored 50.0% were highlighted out of five(5) items viewed as most important ways in which E-resources help final year students. The other two: A

discovery tool that helps me to learn a lot on current researches in my field of study and other relevant information from experts around the Globe scored 42.42% and Easy, fast retrieval of wide range of information and print, download large quantity and distribute Information quickly with 19.70%. contributed very low. This gives credence to the findings of Ansari and Zuber (2010) affirmation that electronic resources are the best means of getting current and up-to-date information. This is also supported by Bhat and Mudhol (2014) who also found that students' attitudes seem to be very positive towards electronic databases for their study and research. Their study revealed that students heavily depend on electronic databases for their required information and to keep themselves up-to-date in their subject area. Also, Okello-Obura and Magara (2008) investigated electronic information access and utilization at the East African School of Library and Information Science, Makerere University, Uganda. Out of the 250 targeted students, 190 responded, giving a response rate of 76%. The study discovered that users derived a lot of benefit from electronic resources, gaining access to a wider range of information and improved academic performance as a result of access to quality information.

Challenges that hinder the effective use of library electronic information by final year students

Table 8 reveals that only four (4) items outlined in order of magnitude: poor awareness with 63.63%, some of the E-information resources need username and password to access them with 57.57%, slow/poor internet connection with 53.03%, and inadequate Library Space with 50.0% were reported to be the main challenges that hinder the effective use of library electronic information by final year students of the faculty of Natural Sciences at University of Jos. This negates the findings of Mostafa (2013) that slow network connection is a major problem faced by the respondents and a similar study by Ray and Day (1998,) on students' attitude towards electronic resources revealed that majority 16% of the students noted that using electronic resources was time consuming, and 11% said that there was too much information retrieved coupled with limited access to computer terminals.

Proffered solutions to the challenges that hinder effective accessibility and use of electronic information resources.

Table 9 reveals final year students' opinions on various ways to offer solutions to the challenges that hinder effective accessibility and use of electronic information resources. 62.12% indicated the need to provide final year students with username and passwords easily. 60.2% indicated the creation of more Awareness. 59.09% Provide more training with practical carried out by students while Librarians observe them. This assertion on more training with practical is supported by Okello-Obura and Magara (2008) that students are increasingly expected to use electronic information resources whilst at the university. To make use of the growing range of electronic resources, students must acquire and practice the skills necessary to exploit them. 56.06% indicated Increase Internet Bandwidth and provide networked computers, 54.55% stated adequate library space, 53.03% indicated the need for alternative power supply, 51.52% Only necessary Information should be filtered and well organized for easy access and use by final year students, and 50.00% indicated Provision of technical guidelines to aid easy access and use. This shows all the items were rated by final year students as proffered solutions to the challenges for effective use of available information resources in university of Jos library.

level of satisfaction with accessibility and use of available electronic information resources by final year students

Table 10 summarizes the result of respondents on the level of satisfaction with accessibility and use of available electronic information resources by final year students in university of Jos library. The survey data confirmed that only 48.48% respondents were slightly satisfied, 22.73% indicated they were very satisfied, 19.69% were satisfied and only 9.09% indicated not satisfied. The result shows fairly weak satisfaction. This disagrees with the result of survey by Egberongbe (2011) at University of Lagos, Nigeria on the use and impact of electronic resources that majority of respondents are well aware with the e-resources and services and they frequently use those e-resources available at the University and from which they are highly satisfied. Our research result reveals that final year students were slightly satisfied and this calls for the Library Management to create more awareness to sensitize final year students on the available information resources for maximum utilization and benefits. It also negates the findings of Amad and Panda (2013) study on availability of online journals in Indian institutes in Dubai international academic city(diac) with result showed highly satisfaction and awareness among the users about the availability of online journals by respondents.

Conclusion

The findings of this survey reveal that many final year students are aware of the available Library electronic information resources and have adequate computer search skills. This electronic information resources are now accessed, retrieved fast and easily by electronic means by this category of information seekers irrespective of their geographical location, time and convenience. Final year students' access and utilize the available Electronic information resources in University of Jos library majorly for research purpose. Research is a pre-requisites for the award of Bachelor of Science (B.Sc) at the completion of their undergraduate Degree Programme. It is also of great benefits to final year students as it provides them with reliable and up-to-date Information they need and free access to information resources that ordinarily they cannot afford to pay for and are out of their geographical locations.

Furthermore, the study reveals final year students face barriers of poor awareness, lack of username and password to access some electronic information resources, slow/poor internet connection and inadequate Library Space. The reason for these problems also has to do with the places where the students normally access the electronic information resources. Many students reside in school hostels or their homes where there is majorly slow server and erratic power supply. This is evident in their occasional use of the available information resources and slightly satisfaction level.

Our study thus concludes that final year students of Faculty of Natural Sciences, University of Jos poorly utilize the available electronic information resources at University of Jos Library.

We therefore offer the following recommendations:

1. The problem of accessibility as a major issue in the digital environment must be addressed promptly through literacy skills by library staff. This will help final year students acquire new skills to be able to access the available library electronic information resources, become competent and confident to harness the full benefits.
2. The need for more awareness to be created on available library electronic information resources is crucial.
3. username and password needed to access some Electronic information resources must be adequately provided.
4. Final year students must be encouraged to access and use the available library electronic information resources optimally.

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