# Utilization of Electronic Information Resources for Effective Research by Polytechnic Students in Polytechnic Libraries in Gombe State, Nigeria

## ALI, Usman[1], and SALEH, Aminu[2]
Polytechnic Library, Gombe State Polytechnic, Bajoga Gombe State, Nigeria.
Department of General Studies Gombe State Polytechnic, Bajoga

*Abstract*:

*Purpose: this study was conducted to explore the utilization of electronic information resources for effective research by polytechnic students in polytechnic libraries in Gombe state, Nigeria.*

*Design/ Methodology/Approach: the descriptive survey design was adopted for this study. Four research questions guided the study. Purposive sampling technique was used to select 160 polytechnic students out of 1567 using Nwana's (1981) formular. Observation checklist and questionnaire were used as the instruments for data collection and descriptive statistics such as frequency, percentage, mean and standard deviation were used in the data analysis and presentation*

*Findings: The study found high level of availability of electronic information resources to polytechnic students in the polytechnic libraries investigated. The findings revealed that the most important purpose of use of EIRs for effective research by polytechnic students is to provide access 24/7 without distance or barrier. The findings of this study shows that polytechnic students utilized electronic information resources for effective research to a moderate extent, the finding of this study revealed that the respondents agreed that all the items (1-15) contribute to effective research to a high extent.*

*Implication: The finding of this study has a number of implications for the electronic information resources in polytechnic libraries and other higher institution of learning in Nigeria. polytechnic libraries should create more awareness especially on EIRs and training and retraining of service providers and users so as to enhance the quality of learning and research activity. Polytechnic students and other researchers who fail to make use of such resources may be losing valuable information available to them.*

*Originality/ Value: Findings of the study recommended that polytechnic libraries understudy need to purchase more electronic information resources (EIRs) and they also need to subscribe to more open access journals and databases in order to meet up with students' information needs and also lead to utilization of EIRs.*

*Keywords: utilization, electronic information resources, effective research, polytechnic libraries*

*Paper type: Empirical paper*
*Sponsored by tetfund*

**Introduction**

A polytechnic is a type of institution that typically focuses on practical, hands-on learning in science, technology, engineering and math (STEM) fields. Polytechnics usually offer courses and programs that are more career-oriented and often include a combination of classroom learning and practical work experience. They often have close ties to industry and offer opportunities for students to engage in research and development projects with businesses and organizations. Polytechnic libraries provide information resources and services to support the teaching, learning and research needs of the polytechnic community. They typically have a collection of books, journals, and other materials specific to the subjects taught at the polytechnic, such as engineering, technology, and applied sciences. Polytechnic libraries also provide access to online databases, e-books, and other digital resources to support research and study.

Information resources in library comprise all forms of materials that can be used to disseminate information to information seekers that came to the library. That is, they can be in print and non-print forms. The print forms include text books, encyclopedia, journals, magazines, pamphlets, gazetteers, newspapers, dictionaries, etc. while the non-print forms include Audio-visual and archival materials, internet services, data and web-based, virtual libraries and e-libraries. Among these, electronic information resources have gained more prominence in recent years. Electronic information resources can be defined as any electronic resources that provides access to information, such as database, e-books, e-journals, e-newspapers, and more. They are often subscription-based, and are typically provided by academic or research libraries. The term electronic information resources (EIRs) can be described as a material consisting of data or computer program(s) which are encoded for reading and manipulation by a computer or by the use of a peripheral device directly connected to the computer, such as a CD-ROM drive, or remotely via a network, such as the internet (Obaseki, 2014). In other words, electronic information resources can be described as the electronic representation of information which can be accessed via electronic systems and computer networks (Akpojotor, 2016). These resources are available in various forms like e-journals, e-magazines, e-learning tutors, software applications, electronic texts, bibliographic databases, institutional repositories, Web sites, e-books, among others.

The importance of electronic resources to polytechnic students and polytechnic libraries cannot be over emphasized. They offer both National Diploma (ND) and Higher National Diploma (HND) students the chance to access and utilize relevant and current information from different subject areas. The emergence of electronic resources, according to Ani and Edem (2015), has tremendously transformed the handling and management of information in Nigerian academic environments and Polytechnic libraries in particular. Consequently, the emergency and development of electronic information resources make it possible for librarians to envision different ways of organizing the information resources and services that libraries traditionally provided to users. In the same vein, these resources offer numerous advantages over print information resources for the users. Among these advantages is that they are convenient to search and access within the shortest possible time. Also, Polytechnic students, researchers and other information users can effectively and efficiently access these information resources to tackle the issues they are investigating, solve problems, make decisions, creative solutions to support learning and develop new understanding in areas of learning (Aramide & Bolarinwa, 2017).

The use of these EIRs resources by students is necessary because they provide better and easier access to information than information accessed through print media (Barfi et al., 2017; Kumah, 2015). Electronic information resources help to expand access, increase usability and establish new ways for postgraduate students to use information to be more productive in their academic activities. One of the most important uses of EIRs that contribute to the effective and efficient utilization is the level of awareness about these resources. Postgraduate students utilize electronic resources for various purposes ranging from study, research, seeking current information, having easy access to relevant and current information, downloading articles, carrying out assignments updating knowledge and even for pleasure. More importantly is that postgraduate students utilize EIR to conduct research, do assignments, prepare for tests and examinations. The efforts made in this direction can lead to high academic performance in tests and examinations leading to score grades of A, B, C, D or E. These are made possible through adequate university library services. More so, utilization of electronic information resources becomes possible when they are made available and access is provided by libraries for effective retrieval and use of library resources. Electronic information resource utilization is the pres entation and distribution of instructional content through a web environment (e-teaching) to support learning and communication (Yusuf & Iwu, 2013). Utilization refers to ways in w hich something, is being used such as electronic information. It can also be for other purpos es, such as decision making, communication, knowledge update and for carrying out assignment. The concept of utilization is important because we understand how information resources are used and the benefits they provide. Utilization of electronic information is a multidimensional construct that can be examined from various perspectives being an elusive concept determined by the task, users, the product and the environment. Omekwu (2012) also opines that utilization is a stage where an individual uses the information, and the main functions of the utilization stage are to use the trial results and continue or discontinue its innovative use at a later date. Users now tend to use only what is easily accessible and available.

Research has been defined as man's systematic and empirical investigation into existing but hidden elements in nature with a view to unearthing, restructuring and explaining such elements for development (Ifidon & Ifidon 2017). Research is aimed at discovering new knowledge or experience. Reitz (2015) also describes research as a systematic painstaking investigation of a topic or in a field of study often employing techniques of hypotheses and experimentation, undertaken by a person intent on revealing new facts, theories or principles or determining skill and identification of research problems. Research can be said to be the search for knowledge through objective and systematic methods of finding solutions to a problem including a systematic approach concerning generalization and the formulation of a theory. It is the pursuit of truth with the help of study, observation, comparison and experiment (Jayanta & Priyanka, 2015). The effectiveness of a research study is important because this allows other researchers (Polytechnic students) to test the study's findings. Effective research has been defined as research that has the sole purpose of creating or furthering knowledge (ARTIFACT, 2020). Effective research also tends to be theoretically focused, and its findings are evaluated through a peer review process and made public through scholarly journals and academic conferences. In many cases, effective research is defined in contrast to professional research. Also called applied research,

professional research is carried out to find solutions to practical problems. This research is also commonly organizationally focused (Belmont University, 2021).

Gombe State Polytechnic, Bajoga (GSPB) is a public tertiary institution located in Bajoga, Gombe State, Nigeria. It was established in 2014 by Gombe State Government to provide technical and vocational education to the people of the State. The polytechnic currently offers National Diploma programs in various fields, including engineering, science and management technology. While Federal Polytechnic Kaltungo (FPK) is a federal government-owned tertiary institution established in 2018 it is located in Kaltungo, a town in Gombe State, Northeastern, Nigeria. The polytechnic is currently offering National Diploma programs in various fields, including engineering, science and technology.

Based on the available literatures and personal observation of the researcher, the Polytechnics under study have many electronic information resources available in their libraries but, are not yet properly utilized by Polytechnic students for their research activities. It could be because of instability of electricity, lack of awareness, lack of searching skills, poor internet connectivity, lack of access to EIRs, high cost of ICT facilities, technophobia, un-accessibility to the resources, lack of trained library staff to guide them etc. It is against this backdrop that this study was conceived to explore the utilization of electronic information resources for effective research by Polytechnic students in Polytechnic libraries in Gombe state, Nigeria where no similar study has been carried out to the best knowledge of the researcher.

**Statement of the Problem**

Electronic Information Resources are very important for the academic community in accessing up-to-date information at the right time and in the right form. They enable students (ND and HND) to have access to firsthand information characterized by being timely, current, easy to access and even from remote places and also open up to possibility of searching multiple files at a time, a feat accomplished more easily than when using printed equivalents. Unfortunately, li terature and personal observation had revealed that despite the potentials EIRs hold for eff ective learning and research still are underutilized by Polytechnic students. The impression is that many of the Polytechnic students are not aware of its existence, while those that are aware, lack the basic searching skills to access it. This report and observation may lead one to begin to ask the coverage and quality of the information circulating within the Polytechnics as well as what the future hold for Gombe state academic hence graduates of Polytechnics are trained to be productive citizen of the state. The need to achieve greater utilization of EIRs by Polytechnic students who constitute a significant percentage of the user's community and are even the majority in most Polytechnics make it imperative to identify the major factors affecting the effective utilization of the EIRs in Polytechnics in Gombe state. One of the consequences of not adequately utilizing EIRs for effective research in Polytechnics in Gombe is poor research output, repetition of research, poor literatures, lack of accessibility to other researchers works and lack of connectivity to other scholars across the globe. In the light of the above, the study investigates the awareness and utilization of electronic information resources which is the key factor militating against harnessing of the potentials of EIRs by polytechnic students for effective research in polytechnic libraries in Gombe state, Northeast, Nigeria.

**Research Questions:**
The followings are the research questions based on the purposes:
1. What are the available electronic information resources in Polytechnic Libraries in Gombe State?
2. What are the purposes of utilization of electronic information resources by Polytechnic Students for effective research?
3. What is the extent to which Polytechnic Students Utilize electronic information resources?
4. To what extent utilization of electronic information resources contributes to effective research of Polytechnic Students in polytechnics in Gombe state

**Scope of the Study**

The study is on utilization of electronic information resources for effective research by Polytechnic students in Polytechnic libraries in Gombe state, Northeast, Nigeria. Basically, the study is poised to find out the availability, extent of utilization of electronic information resources by Polytechnic students. The study is also delimited to the contribution of electronic information resources. Geographically, the study is delimited to polytechnic libraries in Gombe state, Northeast, Nigeria. The scope of the study is focused on two Polytechnic libraries in Gombe state, Northeast, Nigeria. Theoretically, the study is delimited to Technology Acceptance Model (TAM).

**Review of Related Empirical Studies**

Some related empirical studies have been carried out in the area of utilization of electronic information resources. Also, researchers from different parts of the world had carried out different studies in the field of EIRs. The empirical review would be discussed here.

In a study by Ali (2014) on availability and utilization of ICT facilities in academic libraries, using Gombe state University Library, a descriptive survey design was adopted for this study, the researcher uses two instruments which is questionnaire and observation checklist, four research questions in line with their purpose were being used, 350 respondents were used as a population of the study, sample size is 200 respondents which represent 57% and random sampling technique was used. Mean, standard deviation and frequency were used to analyze data. Findings of the study shows that 13 ICT facilities are available in the GSU library, students are not aware of some of the facilities, lack of searching skills, erratic power supply, poor internet connectivity, cost effectiveness of the facilities while strategies to improve the utilization of ICT facilities, stable power supply, user education programmes, stable internet connectivity and low-cost ICT facilities. The study is similar with present study in term of research design both studies adopted descriptive survey, ICT, utilization, instruments, geographical location both researches conducted in the same area but differs in population the population of the previous study is 350 while present study has population of 350, sampling technique previous study used random sampling technique while present study used purposive sampling technique, availability. The gap in literature that this study intends to fill is that reviewed work carried out on ICTs facilities.

In another study by Abubakar, (2020) on awareness and utilization of blended librarianship (BL) practices for effective service delivery in universities in North-East Nigeria. The convergent parallel research design was adopted for the study. the population

of the study was all 215 professional librarians in the 11 functional universities (federal and state established before 2016) in the North-East, of Nigeria. Six reference librarians from universities were adopted for the interview. Three sets of instruments which include a structured questionnaire titled "Awareness and Utilization of Blended Librarianship Practices by Librarians for Effective Service Delivery in Universities in North-East, Nigeria (BLLIPQ), a checklist and an interview schedule were to collect the data. The BLLIPQ instruments were validated by experts in the field of library and information science at the department of library and information science and measurement and evaluation unit all in the Faculty of Education of the University of Nigeria Nsukka. The research instruments were trial-tested for reliability in one university library in Northwest Nigeria. The reliability coefficient of 0.95 was established using Cronbach's Alpha procedure. A total of 215 questionnaires and eleven copies of the checklist were administered to the respondents; out of which, 190 copies and eleven copies of the checklist were returned and found to be valid. This gave a response rate of 95% for the questionnaire and 100% for the checklist.

The data from the questionnaire and the checklist were collected with the help of research assistants and were analyzed using percentages, mean and Standard Deviation to answer the research questions while the null hypothesis was tested at a 0.05 level of significance using t-test statistics. Thus, the findings from the quantitative data were that librarians in the universities in Northeast Nigeria are aware of the blended librarianship practices while findings from the qualitative data indicated a variation in their level of awareness of the practical approaches for blended librarianship practices likewise their competencies/skills and their level of collaboration with the faculty is very low. The findings also revealed that facilities and infrastructures for the blended practices which include; the library's website, email list, blogs, podcasts, and YouTube, are not available. The utilization of facilities is also to a low extent. The study is similar to the present study in questionnaire, geographical area, electronic information resources, and universities and differs in respondents, population, types of research design and instruments. The gap in literature that this study intends to fill is that reviewed study used only librarians without users.

In another study by Ibrahim (2023) on utilization of electronic information resources by students for enhanced research in state polytechnic libraries in North-West zone, Nigeria, a descriptive survey design was adopted for this study, the researcher uses 10 research question in line with the purposes of the study and 10 hypotheses. two instruments were used observation checklist and questionnaire, area of the study is North-west, Nigeria, population of the study is 7,107, multi stage sampling technique was used. To establish the reliability of the instrument the Cronbach coefficient was deployed to test the internal consistency of the items and yielded an over roll reliability of 0.96. the t-test statistic was used in testing the hypothesis at 0.05 level of significance. The study is similar with the present study in the design of the study, electronic
information resources, utilization, instruments, sampling technique and differs in population, hypothesis, reliability and geographical zone because previous study conducted in North-west while present study conducted in North-east.

**Research Methods**

The research design adopted for this study is a descriptive survey. According to Mole (2019), the descriptive survey is one of which is aimed at collecting data from members of a given population on their views, opinions, attitudes, beliefs, perceptions etc. on a

phenomenon, event or practice to determine the characteristics, features or facts about the population. Area of the study is Gombe state, population of the study is 1567 polytechnic students and the sample size is 160 while sampling technique for this study is purposive sampling technique. Method of data collection is through observation checklist and questionnaire with the help of one research assistant. Data were analyses using frequency, percentage, mean and standard deviation.

**Data Presentation**
**Table 1: Observation Checklist on the EIRs available for effective research in university libraries in Gombe State, Nigeria**

| | Institutions | FPK | | GSPB | | Overall | | D |
|---|---|---|---|---|---|---|---|---|
| S/N | EIRs | A | NA | A | NA | A | NA | |
| 1 | E-books | √ | | √ | | 2(100%) | | A |
| 2 | E-journals | √ | | √ | | 2(100%) | | A |
| 3 | Databases | √ | | √ | | 2(100%) | | A |
| 4 | OPAC | √ | | | X | 1(50%) | 1(50%) | A |
| 5 | CD-ROM | √ | | √ | | 2(100%) | | A |
| 6 | Google scholar | √ | | √ | | 2(100%) | | A |
| 7 | ResearchGate | √ | | √ | | 2(100%) | | A |
| 8 | LMS | √ | | | X | 1(50%) | 1(50%) | A |
| 9 | E-Encyclopedias | | x | | X | | 2(100%) | NA |
| 10 | Institutional Repository | | x | | X | | 2(100%) | NA |
| 11 | DOAJ | √ | | | X | 1(50%) | 1(50%) | A |
| 12 | E-project | | x | √ | | 1(50%) | 1(50%) | A |
| 13 | E-dissertation | | x | | X | | 2(100%) | NA |
| 14 | E-theses | | x | | X | | 2(100%) | NA |
| 15 | E-abstract | | x | | X | | 2(100%) | NA |
| 16 | E-newspapers | √ | | √ | | 2(100%) | | A |
| 17 | Social network | √ | | √ | | 2(100%) | | A |
| 18 | Web 2.0 | √ | | √ | | 2(100%) | | A |
| 19 | Online classification schemes | | x | | X | | 2(100%) | NA |
| 20 | Google drive | √ | | √ | | 2(100%) | | A |
| | **Total** | **13(65%)** | **7(35%)** | **11(55%)** | **9(45%)** | **14(70%)** | **6(30%)** | A |

**Keys: A= Available, NA= Not available**

The result from table 1 shows that most of the electronic information resources (EIRs) are available in both polytechnics which further reveal that FPK has 13 out 20 EIRs available in their library representing 65% while GSPB has 11 out 20 EIRs which represent 60%. From the overall result shows that all polytechnics under study have availability of 14 out 20 EIRs in their libraries which represent total percentage of 70% and it considered as positive that is EIRs in polytechnic libraries under study are available.

**Research Question 2:** what are the purposes of utilization of electronic information resources by polytechnic students for effective research?

**Table 2: Mean and standard deviation ratings of the Polytechnic student's purpose of utilization of electronic information resources for effective research.**

N=153

| S/N | Item statement | SA | A | D | SD | X | SD | D |
|-----|----------------|----|----|----|----|----|----|----|
| 1 | To complete my assignment | 12 | 126 | 9 | 6 | 2.94 | .541 | A |
| 2 | To update my self | 24 | 123 | 3 | 3 | 3.10 | .497 | A |
| 3 | It is less expensive | 30 | 110 | 6 | 7 | 3.07 | .646 | A |
| 4 | To search for resources for research | 34 | 119 | 0 | 0 | 3.22 | .417 | A |
| 5 | To save my time and energy | 31 | 116 | 6 | 0 | 3.12 | .588 | A |
| 6 | Accomplish my task easier and faster | 40 | 113 | 0 | 0 | 3.26 | .441 | A |
| 7 | To search for relevant information resources | 33 | 114 | 6 | 0 | 3.18 | .475 | A |
| 8 | To get more access to current and timely information | 35 | 112 | 6 | 0 | 3.15 | .604 | A |
| 9 | To update lecture notes | 9 | 99 | 15 | 30 | 2.57 | .872 | A |
| 10 | For subject knowledge acquisition | 24 | 123 | 6 | 0 | 3.08 | .556 | A |
| 11 | Complement of the class room teaching | 15 | 135 | 3 | 0 | 3.06 | .417 | A |
| 12 | To examine related empirical studies | 4 | 33 | 116 | 0 | 4.00 | 4.785 | SA |
| 13 | Formulation of research objectives and questions | 15 | 63 | 15 | 60 | 2.22 | 1.07 | D |
| 14 | To checked the correctness of references and citations | 33 | 117 | 3 | 0 | 3.20 | .445 | A |
| 15 | To carry out effective research | 30 | 123 | 0 | 0 | 3.20 | .398 | A |
| | **Cluster mean** | | | | | **3.09** | **0.79** | **A** |

**Key: SA= strongly agree, A= agree, D= disagree, SD= strongly disagree**

Table 2 shows the mean and standard deviation response of the purpose of use of EIRs for effective research. The respondents agree that 15 items on EIRs were used for effective research and have their mean value ranged from 2.57-4.00. This showed that the mean value of each item was above the cut-off point 2.50, indicating that 14 out 15 items on the purpose of used of EIRs by Polytechnic students for effective research in polytechnic libraries in Gombe state Nigeria. The table also showed that the standard deviations (SD) of the items are within the range of 0.41-0.87. With this cluster mean of 3.09 and standard deviation 0.79, these results suggest that the extent of agreement of Polytechnic students on the purpose of use of EIRs is moderate.

**Research Question 3:** What is the extent to which postgraduate students utilize electronic information resources for effective research?

**Table 3: Mean and standard deviation ratings of the extent of utilization of EIRs for effective research**

N=153

| S/N | Item statement | HU | MU | LU | | X | SD | D |
|---|---|---|---|---|---|---|---|---|
| 1 | E-books | 12 | 114 | 9 | 18 | 2.78 | .752 | MU |
| 2 | E-journals | 12 | 107 | 21 | 13 | 2.77 | .712 | MU |
| 3 | Online public access catalogue (OPAC) | 19 | 116 | 9 | 9 | 2.95 | .647 | MU |
| 4 | CD-ROM database | 24 | 111 | 12 | 6 | 3.00 | .628 | MU |
| 5 | E- biography database | 24 | 104 | 6 | 19 | 2.87 | .825 | MU |
| 6 | E-manuscript | 21 | 114 | 12 | 6 | 2.98 | .612 | MU |
| 7 | Libdex | 24 | 114 | 6 | 9 | 3.00 | .659 | MU |
| 8 | Electronic document delivery | 24 | 114 | 9 | 6 | 3.02 | .612 | MU |
| 9 | Institutional repositories | 27 | 120 | 6 | 0 | 3.10 | .571 | MU |
| 10 | E-thesis | 9 | 123 | 9 | 12 | 2.84 | .640 | MU |
| 11 | E-audio | 27 | 102 | 12 | 12 | 2.94 | .754 | MU |
| 12 | E-conference papers | 24 | 108 | 15 | 6 | 2.98 | .643 | MU |
| 13 | Internet services/website | 15 | 123 | 12 | 3 | 2.98 | .506 | MU |
| 14 | Online database | 24 | 114 | 9 | 6 | 3.02 | .612 | MU |
| 15 | DOAJ | 18 | 125 | 10 | 0 | 2.99 | .618 | MU |
| | **Cluster mean** | | | | | **2.95** | **0.65** | **MU** |

**Keys: Highly Utilize = HU, Moderate Utilize = MU, Less Utilize =LU, Not Utilize = NU**

Table 3 shows the summary of the mean and standard deviation responses of the respondents in federal and state polytechnic libraries in Gombe state on the extent of utilization of EIRs by Polytechnic students for effective research. The results show that the items were utilized to moderate extent and their order of significance is shown in table 3. The respondents utilize all 15 items on EIRs. That means EIRs were moderately utilized for effective research and have their mean value ranged from 2.77-3.10. This showed that the mean value of 15 items was moderate on the extent of utilization of EIRs by Polytechnic students for effective research in polytechnic libraries in Gombe state Nigeria. The table also showed that the standard deviations (SD) of the items are within the range of 0.38-0.75. With this cluster mean of 2.95 and standard deviation 0.65, these results suggest that the extent of utilization of EIRs by Polytechnic students is moderate.

**Research Question 4:** To What extent utilization of electronic information resources contributes to effective research of polytechnic students in polytechnic libraries in Gombe state

**Table 4: Mean and standard deviation ratings of the extent of utilization of EIRs contributes to effective research**

N=153

| S/N | Item statement | VHE | HE | LE | VLE | X | SD | D |
|-----|----------------|-----|-----|-----|-----|------|------|-----|
| 1 | E-books | 39 | 105 | 3 | 6 | 3.16 | .640 | HE |
| 2 | E-journals | 27 | 123 | 3 | 0 | 3.16 | .415 | HE |
| 3 | Online public access catalogue (OPAC) | 18 | 117 | 12 | 6 | 2.96 | .595 | HE |
| 4 | CD-ROM database | 40 | 110 | 3 | 0 | 3.24 | .473 | HE |
| 5 | E- biography database | 41 | 106 | 3 | 3 | 3.21 | .570 | HE |
| 6 | E-manuscript | 43 | 100 | 3 | 7 | 3.17 | .677 | HE |
| 7 | Libdex | 38 | 106 | 3 | 6 | 3.15 | .636 | HE |
| 8 | Electronic document delivery | 35 | 114 | 4 | 0 | 3.20 | .464 | HE |
| 9 | Institutional repositories | 37 | 107 | 6 | 3 | 3.16 | .579 | HE |
| 10 | E-thesis | 6 | 75 | 9 | 63 | 2.16 | 1.02 | LE |
| 11 | E-audio | 21 | 121 | 7 | 4 | 3.04 | .537 | HE |
| 12 | E-conference papers | 39 | 111 | 3 | 0 | 3.24 | .470 | HE |
| 13 | Internet services/website | 37 | 113 | 3 | 0 | 3.20 | .530 | HE |
| 14 | Online database | 39 | 105 | 6 | 3 | 3.18 | .586 | HE |
| 15 | DOAJ | 36 | 111 | 6 | 0 | 3.16 | .608 | HE |
| | **Cluster mean** | | | | | **3.09** | **0.59** | **HE** |

**Key: VHE= very highly extent, HE= highly extent, LE= less extent, VLE= very low extent**

Table 4 shows the summary of the mean responses and standard deviation of the Polytechnic students in federal and state polytechnic libraries in Gombe state on the extent to which utilization of EIRs contribute to effective research. The table shows that the entire 15 items do contributes to effective research and have their mean value ranged from 2.96-3.21. This showed that the mean value of 14 items was above the cut-off point 2.50; on the extent of utilization of EIRs by Polytechnic students contributes to effective research in polytechnic libraries in Gombe State Nigeria. The table also showed that the cluster mean and standard deviations (SD) of the items are within the range of 3.09 and 0.59. With the above results shows that utilization of EIRs contributes to high extent.

**Recommendations**

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

1. Findings of the study recommended that polytechnic libraries understudy need to purchase more electronic information resources (EIRs) and they also need to subscribe to more open access journals and databases in order to up with students' information needs.
2. The study further recommended that polytechnic students should make sure that they should use polytechnic libraries for effective research first before any other purpose.
3. The study also recommended that polytechnic students should improve their utilization of electronic information resources to a very high extent in order to carry out a very effective and efficient research.

4. It is also recommended that polytechnic students should make adequate utilization of electronic information resources (EIRs) in order to make a significance contribution to effective research.

## Conclusion

A lot of electronic information resources are available to polytechnic students in polytechnic libraries in Gombe state, Nigeria which they can tap to carry out their academic activities and research endeavor. Among these electronic information resources are E-books, E-journals, E-newspapers, E-magazines, Online Database, internet services and CD ROMS, institutional repository, E- theses, E-lecture notes, institutional repositories, E-research, E-encyclopedias, E-Dictionaries etc. Institution wise, Federal Polytechnic Kaltungo Gombe State were reported the highest level of availability of EIRs compared to Gombe State Polytechnic, Bajoga.

## REFERENCES

Abubakar, (2020) awareness and utilization of blended librarianship (BL) practices for effective service delivery in universities in North-East Nigeria. *[Unpublished thesis],* University of Nigeria. Nsukka.

Abdullahi, M. A. (2022). Awareness and use of search engines for effective information retrieval among postgraduate students in universities in Kano state, Nigeria. *[Unpublished master's thesis],* University of Nigeria. Nsukka.

Akpojotor, L. O. (2016). Awareness and usage of electronic information resources among postgraduate students of library and information science in Southern Nigeria. *Library Philosophy and Practice (e-journal),* 5(2), Paper 1408.

Aramide, K. A & Bolarinwa, O. M. (2010). Availability and use of audio-visual electronic resources by distance learning students in Nigerian universities: a case study of National University of Nigeria (NOUN), Ibadan study center. Paper 393. Association (NLA) held from 15-20 July 2012 at the International Conference, Abuja, Nigeria.

Ali, U. (2014). Availability and utilization of ICT facilities in university libraries in Gombe state University library, *[Unpublished thesis]* Gombe state. Nigeria.

Belmont University. (2021, April 30). *Research guides: public relations: Academic and Applied research*. Research Guides at Belmont University.

Ibrahim, K. (2023). Utilization of electronic information resources by polytechnic students for enhanced research in state polytechnic libraries in North-west, Nigeria. *[Unpublished thesis].* University of Nigeria, Nsukka.

Mole, A. J. C. (2019). *Practical Guide to Research in Library and Information Science.* University of Nigeria Press Limited.

Obaseki, T. I. (2014). Availability and use of electronic information resources and service Delivery in universities in South-South Nigeria. *[Unpublished thesis],* University of Nigeria, Nsukka.

Yusuf, M. & Farouk, B. L. (2017). Awareness, Access and Use of Academic Databases by Faculty Members: A Case Study of Bayero University Library. *International Journal of Library and Information Science (IJLIS),* 6 (3), 13-26