**Jewel Journal of Librarianship**
ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
Volume 21, Issue 2, 2026

# DIGITAL SEARCH SKILLS AND UTILIZATION OF ELECTRONIC INFORMATION RESOURCES AMONG FEMALE STUDENTS IN TERTIARY INSTITUTIONS IN GOMBE STATE, NIGERIA

**Fatima Sani**
Faculty of Arts and Social Sciences
Department of Library and Information Sciences
Gombe State University, Gombe, Gombe State-Nigeria

**Dr. Hauwa Sani Ahmad**
Department of Library and Information Sciences
Bayero University Kano

**Prof. Yahaya Ibrahim Harande**
Department of Library and Information Sciences
Bayero University Kano

**Abstract**
*This study investigated the digital search skills on the utilization of electronic information resources (EIRs) among female students in tertiary institutions in Gombe State, Nigeria. The population of this study comprises all the registered female library users from the ten (10) tertiary institutions in the study area. The total population of registered female students across the selected tertiary institutions' libraries in Gombe state is 28,528. Taro Yamane's formula for sample size determination was used to select a sample of 394 respondents. A descriptive survey research design was employed, and data were collected using a structured questionnaire administered to a stratified sample of respondents. The findings revealed that although electronic resources such as e-journals, e-books, and online databases were widely available, their utilization was significantly influenced by students' search competencies. The study found that female students with higher levels of digital literacy and search skills demonstrated greater frequency and effectiveness in using electronic resources for academic activities. However, factors such as inadequate user training, poor internet connectivity, unstable power supply, and limited ICT infrastructure constrained effective utilization of these resources. The study concluded that the availability of electronic information resources alone does not guarantee their effective use; rather, students' digital search skills and the provision of adequate technological and institutional support are critical determinants of successful utilization.*

**Keywords:** Digital Search Skills, Electronic Information Resources, Digital Literacy, Academic Libraries, Nigeria

**Jewel Journal of Librarianship**
ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
Volume 21, Issue 2, 2026

## Introduction

The rapid advancement in digital technologies has significantly transformed the creation, storage, and dissemination of information across all sectors of society, including education, health, and culture. One of the most notable outcomes of this transformation is the shift in academic libraries from traditional print-based collections to electronic information resources (EIRs), which has redefined information explosion and access in higher education. As a result, academic libraries now operate in a more digital-driven environment where information is predominantly produced and accessed electronically, requiring continuous adaptation in library services and user support systems.

Academic libraries remain central to the success of higher education institutions by providing access to relevant information resources that support teaching, learning, and research. They function as intellectual support systems that help institutions achieve their academic and developmental objectives by offering well-organized print and electronic resources, skilled personnel, and appropriate technological infrastructure. As noted by Anyaegbu and Wali (2020), academic libraries provide “diverse information resources and services, encompassing well-organized print and non-print collections, skilled personnel to support information access and interpretation, and adequate physical and technological facilities that enable effective information use.” This highlights their critical role in ensuring that students and staff have equitable access to information for academic success.

Electronic information resources, as a concept, are viewed from different perspectives by different scholars and schools of thought. Adedipe and Ogunlade (2023) describe electronic resources as "indispensable tools for academic staff," encompassing "e-books, online journals, e-data archives, and specialized databases" that are accessed electronically to support teaching, learning, and research activities. “Electronic resources refer to digital materials managed within libraries, such as databases, electronic journals, and electronic books, which necessitate complex workflows and systems for effective management throughout their life cycle” (ScienceDirect Topics, 2024). However, in the context of this study, electronic information resources are viewed as essential tools in modern academic work due to their accessibility, flexibility, and wide coverage. According to IGI Global (2019), EIRs are electronic products that provide access to extensive collections of scholarly materials, while Khan (2022) emphasizes that many academic resources are now available remotely, improving efficiency and expanding access beyond physical library spaces. However, although electronic information resources offer numerous benefits for teaching, learning, and research, their availability does not necessarily guarantee effective utilization. Previous studies have reported disparities in the awareness, accessibility, and use of electronic information resources among students in higher education institutions. Furthermore, limited empirical evidence exists regarding how female students in tertiary institutions in Gombe State access and utilize these resources to support their academic activities. Understanding the patterns of use, purposes of utilization, and challenges associated with electronic

information resources among female students is essential for improving library services and maximizing the educational benefits of digital resources. Therefore, this study seeks to investigate the utilization of electronic information resources by female students in tertiary institutions in Gombe State, Nigeria. indicate that female students still face challenges in effectively using these resources, leading to underutilization. In this context, this study investigates the use of electronic information resources by female students in tertiary institutions in Gombe State, Nigeria, focusing on usage patterns and the challenges affecting their academic engagement

**Statement of the Problem**

Electronic Information Resources (EIRs) have become indispensable tools for teaching, learning, and research in tertiary institutions. They provide students with access to current scholarly information through electronic journals, e-books, online databases, institutional repositories, and other digital platforms. Despite the increasing availability of these resources in tertiary institutions, evidence suggests that their utilization among students remains below expectations. Previous studies have attributed this situation to inadequate digital literacy, poor search skills, insufficient awareness, and infrastructural challenges such as poor internet connectivity, unstable electricity supply, and inadequate ICT facilities.

In tertiary institutions in Gombe State, considerable investments have been made in the provision of electronic information resources to support academic activities. However, it remains unclear whether female students possess the necessary search skills required for effective utilization of these resources and the extent to which such skills influence their use of EIRs. Furthermore, female students may face several challenges, including inadequate ICT infrastructure, high cost of internet access, limited training opportunities, and poor connectivity, which could affect their ability to benefit fully from available electronic resources.

Although studies have examined the utilization of electronic information resources among university students, there is limited empirical evidence on the relationship between search skills and the utilization of EIRs among female students in tertiary institutions in Gombe State. This gap necessitates an investigation into the search skills possessed by female students, the extent of their utilization of electronic information resources, and the challenges affecting effective use of these resources. Therefore, this study seeks to examine search skills and the utilization of electronic information resources among female students in tertiary institutions in Gombe State, Nigeria.

Jewel Journal of Librarianship
ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
Volume 21, Issue 2, 2026

**Research Objectives**

The main objective of the study is to examine the search skills and utilization of electronic information resources among female students in tertiary institutions in Gombe State, Nigeria. The specific objectives are to:

1. Determine the search skills possessed by female students for the utilization of electronic information resources in tertiary institutions in Gombe State.
2. Examine the extent of utilization of electronic information resources by female students in tertiary institutions in Gombe State.
3. Identify the challenges encountered by female students in the utilization of electronic information resources in tertiary institutions in Gombe State.
4. Determine the influence of search skills on the utilization of electronic information resources among female students in tertiary institutions in Gombe State.

**Literature Review**

**Concept and Significance of Electronic Information Resources**

Electronic Information Resources (EIRs), commonly referred to as electronic resources or e-resources, constitute one of the most significant developments in contemporary information and communication technologies. The increasing digitization of scholarly communication has transformed how information is created, stored, organized, accessed, and disseminated within academic environments. EIRs provide users with immediate access to a vast range of information resources through networked technologies, thereby enhancing information availability beyond the limitations of traditional print collections.

Scholars have conceptualized electronic information resources from different perspectives. According to Khan (2022), electronic information resources are digital information materials that are created, stored, and accessed through electronic devices and communication networks for educational, research, and professional purposes. Similarly, Adedipe and Ogunlade (2023) describe electronic resources as indispensable academic tools that include e-books, electronic journals, online databases, institutional repositories, and other digital information sources used to support teaching, learning, and research activities. In the same vein, Abubakar and Ibrahim (2024) define electronic information resources as information materials available in digital formats and accessed electronically through computers, mobile devices, and internet-enabled platforms to satisfy users' information needs.

Electronic information resources encompass a broad range of scholarly materials, including electronic books, electronic journals, online databases, electronic theses and dissertations, conference proceedings, institutional repositories, multimedia resources, and web-based academic publications. According to the Association of College and Research Libraries (ACRL, 2020), these resources provide seamless and remote access to scholarly information, enabling users to obtain current and authoritative information irrespective of geographical location. Their integration into academic libraries has significantly expanded opportunities for knowledge acquisition, collaboration, and scholarly engagement.

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The significance of electronic information resources in academic libraries cannot be overstated. They have transformed traditional library services by improving information accessibility, enhancing resource sharing, and supporting digital learning environments. Okiki and Asiru (2022) observe that electronic information resources have become central to academic library operations because they facilitate rapid information retrieval, support independent learning, and increase research productivity among students and researchers. Likewise, Salman et al. (2023) note that the availability of electronic resources enables libraries to provide users with timely access to current scholarly literature while reducing dependence on physical collections.

One of the major advantages of electronic information resources is their ability to provide flexible and remote access to information. Users can access multiple resources simultaneously regardless of location and time, thereby supporting distance learning and lifelong learning initiatives. Furthermore, EIRs offer powerful search functionalities that allow users to locate relevant information quickly, enhancing the efficiency of academic research. Their digital nature also minimizes challenges associated with physical storage, deterioration of materials, and limited copies of information resources.

In addition, electronic information resources contribute significantly to the quality of teaching, learning, and research by providing access to current and authoritative scholarly content. They facilitate interdisciplinary research, increase the visibility of scholarly outputs, and support evidence-based academic work. Ruzegae and Msonde (2021) maintain that electronic resources improve information accessibility and promote effective utilization of library resources through unrestricted access to digital collections. Consequently, academic libraries increasingly invest in electronic information resources to meet the changing information needs and expectations of users in the digital age.

Despite these benefits, effective utilization of electronic information resources depends on factors such as awareness, accessibility, digital competence, internet connectivity, and institutional support. As higher education increasingly embraces digital scholarship, understanding how students' access and utilize electronic information resources has become essential for improving library services and maximizing the educational value of electronic collections.

**Types of EIRs Used for Academic Activities**

Electronic information resources (EIRs) in academic libraries encompass a wide range of digital materials that support teaching, learning, and research. The internet plays a central role in enabling access to these resources globally, making information readily available across institutions. Scholars identify various types of EIRs, including online catalogues, Online Public Access Catalogues (OPAC), databases, e-journals, e-books, and institutional repositories (Girakaduwa, 2019; Alegbeleye et al., 2019). These resources exist in multiple formats, such as "e-references, internet, databases, e-books, e-journals, and other computer-

based electronic networks" (Ruzegae & Msonde, 2020), and may also include multimedia formats like audio-visual materials, statistical databases, and digital reference tools. Overall, EIRs are described as collections of information in electronic form accessible through devices such as computers and mobile phones, covering materials like encyclopedias, e-mails, and digitized documents (Adedokun & Fawole, 2018).

More comprehensively, EIRs include both online and offline resources such as CD-ROMs, DVDs, flash drives, e-theses, e-newspapers, e-magazines, e-reports, and online sources like websites and blogs (Okori, 2018; Owolabi et al., 2020). Core resources frequently highlighted in the literature are "electronic books," "electronic journals," and "online databases," which are often organized into searchable systems to enhance accessibility. These resources are essential for supporting academic work, as they provide access to current and diverse scholarly materials. Empirical studies confirm that commonly available EIRs in academic libraries include e-books, e-journals, databases, and CD-ROMs, which are widely used for research and digital reference services (Mamman & Abubakar, 2022; Achugbue et al., 2023). However, access to some specialized resources, such as e-manuscripts and dissertations, may still be limited in certain contexts (Andrew & Lukman, 2022).

Despite their availability, the extent of access and use of EIRs varies across institutions, influenced by infrastructural and user-related factors. Studies show that while many libraries provide a broad range of EIRs, such as "e-journals, e-books, OPAC, electronic databases, and internet resources," their utilization is sometimes low due to challenges like inadequate infrastructure, poor internet connectivity, and limited user skills (Uwandu, 2022). Nevertheless, the literature consistently emphasizes that EIRs have revolutionized academic libraries by improving access to information, supporting scholarly communication, and enhancing teaching and research outcomes. Consequently, continuous investment in relevant resources, improved access systems, and user training is necessary to maximize their benefits in academic environments.

**Search Skills in Electronic Information Resources by Female Students**

Search skills are critical competencies that enable users to locate, retrieve, evaluate, and utilize relevant information from electronic information resources effectively. Research by Ani and Edem 2022), Babalola et al. (2021), Dafi 2022), Nkamnebe et al. (2024 and Imam et al. (2024).

Indicates that in the digital information environment, female students require a range of search skills to maximize the benefits of electronic information resources for learning, research, and academic assignments. These skills include the ability to formulate search queries, use search engines effectively, navigate online databases, evaluate information sources, and retrieve relevant information from digital platforms.

Several specific digital search skills are essential for effective utilization of EIRs. First, female students need keyword search skills, which involve identifying appropriate search terms and

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ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
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phrases that accurately represent their information needs. The selection of relevant keywords significantly influences the quality and relevance of search results. Second, they require Boolean search skills, including the use of operators such as AND, OR, and NOT to refine or broaden search results. Third, database navigation skills are necessary for accessing and exploring scholarly databases, institutional repositories, e-journal platforms, and digital libraries.

In addition, female students require advanced search skills, such as the use of phrase searching, truncation, wildcard symbols, filters, and field searching to improve the precision of information retrieval. They also need information evaluation skills to assess the credibility, accuracy, authority, relevance, and currency of information obtained from electronic sources. According to the Association of College and Research Libraries, information literacy encompasses the ability to discover, evaluate, and use information effectively and ethically.

Furthermore, computer and internet navigation skills are indispensable for accessing electronic information resources. These include the ability to operate computers and mobile devices, use web browsers, manage downloads, create user accounts, access online library portals, and troubleshoot basic technical challenges. Female students also require digital literacy skills, which involve understanding digital environments, utilizing online communication tools, managing electronic files, and engaging with various digital platforms used for academic purposes.

Research has consistently shown that students who possess higher levels of digital search competence are more likely to utilize electronic information resources effectively and achieve better academic outcomes. Conversely, deficiencies in keyword selection, database searching, information evaluation, and internet navigation often result in underutilization of available resources despite their accessibility. Therefore, the effective use of electronic information resources by female students depends largely on their acquisition of essential digital search skills, information literacy competencies, and continuous training provided by academic libraries and educational institutions.

**Challenges Affecting Female Students' Utilization of Electronic Information Resources**

Some of the literature highlights that although electronic information resources (EIRs) are indispensable for teaching, learning, and research, their utilization remains below expectations, particularly in developing countries. This is largely due to the complex nature of their use and numerous associated challenges. Ugwuoma, Oguike, and Chukwu (2020) identify key barriers such as “low telecommunications infrastructure,” “poor power supply,” “limited IT literacy,” and “lack of skilled manpower,” while Ndubuisi and Udo (2023) emphasize poor internet connectivity and inadequate access facilities. Similarly, Diafaighor (2022) notes that despite their benefits, many users fail to harness EIRs due to a lack of awareness, inadequate facilities, and insufficient skills, suggesting that these challenges act as “detractive forces” limiting effective access and use (Ankrah & Atuese, 2018).

**Jewel Journal of Librarianship**
ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
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Empirical studies consistently reveal infrastructural, technical, and user-related constraints affecting EIR utilization. Common issues include slow or unreliable internet, erratic power supply, insufficient workstations, and difficulty in retrieving relevant information (Girakaduwa, 2019; W3C, 2021; Sivakami & Rajendran, 2019). Additional challenges, such as information overload, poor user interface design, restricted access (passwords), and inadequate training, further hinder effective use (Sharma, 2019; Ankrah & Atuese, 2018). Studies in Nigerian and other developing country contexts also report low awareness, poor funding, limited ICT infrastructure, and weak search skills as major obstacles, often resulting in low usage and user dissatisfaction (Osinulu, 2020; Adenariwo & Sulyman, 2022). These findings indicate that both institutional limitations and users' competencies contribute significantly to the problem.

Digital literacy and search competencies have been identified as critical determinants of electronic resource utilization. Agina-Obu and Okwu (2023) found that digital literacy significantly influences students' use of digital resources, concluding that students with higher digital literacy levels demonstrate greater utilization of electronic information resources and online academic materials.

Similarly, Oseghale (2023) reported that digital information literacy skills, including information searching, evaluation, and retrieval competencies, positively influence the use of electronic resources among university students. According to the study, students who possess stronger digital skills are more likely to access and utilize electronic information resources effectively for academic purposes.

Inadequate search skills remain a major challenge affecting the utilization of electronic information resources. Students who lack competencies in keyword formulation, database navigation, Boolean searching, and information evaluation often experience difficulties retrieving relevant information from electronic databases. These limitations reduce the effective use of available electronic resources and negatively affect academic productivity.

Furthermore, several studies demonstrate that these challenges vary across contexts but remain largely consistent in nature. For instance, issues such as "slow internet speed," "power outage," "limited access," and "lack of ICT skills" are repeatedly identified across different regions (Joseph & Yunisa, 2019; Igbinovia & Odelami, 2022; Abubakar et al., 2021). User-related factors like technophobia, poor search skills, and lack of awareness also persist, alongside institutional problems such as inadequate funding and poor library support services. Overall, the literature underscores that while EIRs are essential for academic advancement, their effective use is constrained by a combination of infrastructural deficiencies and user limitations, thereby necessitating targeted interventions such as improved infrastructure, user training, and increased awareness programmes. These challenges are particularly prevalent in developing countries (Idhalama et al., 2025).

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## Methodology

This study adopted mixed method research. The study further employs a survey research design, described as a "blueprint" for data collection and analysis, enabling the investigation of participants' beliefs, attitudes, and behaviours efficiently (Zielhuis et al., 2022).

The study is conducted in twelve tertiary institution libraries in Gombe State, with ten institutions confirmed to have electronic information resources based on a preliminary study conducted in 2022. The population comprises 28,528 registered female library users across these institutions. To ensure representativeness, a proportional stratified random sampling technique was adopted, where each institution served as a stratum, and respondents were selected proportionally. A sample size of 394 was determined using Taro Yamane's formula, ensuring balanced representation across universities, colleges, polytechnics, and specialized institutions. This approach enhances the generalizability and reliability of the findings by capturing the diversity of the study population.

Data were collected using a structured questionnaire divided into six sections covering demographic data, types of electronic resources used, academic activities, satisfaction levels, search skills, and challenges encountered. The instrument was validated by experts to ensure it measures what it intends to measure, while reliability testing using Cronbach's Alpha produced high coefficients (overall value of 0.994), indicating strong internal consistency. Questionnaires were administered personally with the assistance of research aides to improve response rates. Data analysis involved both descriptive statistics (frequencies, percentages, and tables) and inferential statistics, with Pearson Product-Moment Correlation used to test hypotheses and a mean score of 3.0 adopted as the decision benchmark.

## Results and Discussion

### Level of Search Skills

| S/N | Statement | VHE | HE | ME | LE | VLE | Mean | SD | RMK |
|---|---|---|---|---|---|---|---|---|---|
| 1 | I usually access electronic information resources through computers and the OPAC provided in the library. | 182 (48.7%) | 107 (28.6%) | 79 (21.1%) | 3 (0.8%) | 3 (0.8%) | 4.40 | 0.83 | High Extent |
| 2 | I often make use of subscribed online databases (e.g., JSTOR, ScienceDirect, EBSCOhost) provided by my institution to access academic information. | 132 (35.3%) | 235 (62.8%) | 5 (1.3%) | 2 (0.5%) | 0 (0.0%) | 4.44 | 0.61 | High Extent |
| 3 | I usually access e-books, e-journals, and other | 302 (80.7%) | 57 (15.2%) | 14 (3.7%) | 1 (0.3%) | 0 (0.0%) | 4.41 | 0.80 | High Extent |

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ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
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| | resources from my personal devices (phone, tablet, laptop). | | | | | | | | |
| 4 | I rely on campus Wi-Fi and library portals to connect to electronic information resources. | 151 (40.4%) | 167 (44.7%) | 51 (13.6%) | 3 (0.8%) | 2 (0.5%) | 4.78 | 0.53 | Very High Extent |
| 5 | I often use open internet sources such as Google Scholar, ResearchGate, or institutional repositories when searching for academic information. | 149 (39.8%) | 117 (31.3%) | 102 (27.3%) | 5 (1.3%) | 1 (0.3%) | 4.31 | 0.64 | High Extent |
| 6 | I usually require assistance from librarians or attend training sessions to effectively access electronic resources. | 132 (35.3%) | 161 (43.0%) | 74 (19.8%) | 5 (1.3%) | 2 (0.5%) | 4.16 | 0.79 | High Extent |
| 7 | I often use mobile apps (e.g., library apps, Google Scholar app, research apps) to access e-resources on my phone. | 311 (83.2%) | 42 (11.2%) | 19 (5.1%) | 1 (0.3%) | 1 (0.3%) | 4.48 | 0.78 | Very High Extent |
| 8 | I sometimes rely on cybercafés or external ICT centres to access electronic information resources when campus facilities are unavailable. | 217 (58.0%) | 153 (40.9%) | 4 (1.1%) | 0 (0.0%) | 0 (0.0%) | 4.14 | 0.81 | High Extent |
| 9 | I usually make use of external e-libraries and digital repositories (e.g., National Virtual Library of Nigeria, HINARI, AGORA) for my academic work. | 256 (68.4%) | 100 (26.7%) | 15 (4.0%) | 2 (0.5%) | 1 (0.3%) | 4.51 | 0.62 | Very High Extent |
| 10 | I am often able to access electronic information resources both on-campus and off-campus without difficulty. | 301 (80.5%) | 67 (17.9%) | 5 (1.3%) | 0 (0.0%) | 1 (0.3%) | 4.32 | 0.75 | High Extent |

**Source:** Fieldwork, 2025

The above table displays the responses of respondents on search skills possessed by female students in the use of EIRS. The mean scores (4.14–4.78) reveal that respondents possess high

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ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
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to very high search competence. The highest mean (4.78) for applying Boolean operators and advanced search techniques shows that the majority of respondents have attained functional digital literacy. Similarly, high scores for evaluating search results (4.31) and combining tools (4.32) imply strong analytical and information-evaluation skills. Overall, these findings demonstrate that female students in the study area are confident users of electronic databases, able to search, filter, and use academic information effectively. The results highlight the impact of digital literacy programs and stress that training in search skills is yielding positive outcomes among users.

The study found that most respondents possessed basic search skills but lacked advanced competencies such as Boolean searching and database navigation.

**Utilization of Electronic Resources**

**Extent of Use of Electronic Information Resources by Female Students**

| S/N | Statement | VHE | HE | ME | LE | VLE | Mean | SD | RMK |
|---|---|---|---|---|---|---|---|---|---|
| 1 | I frequently use online databases such as JSTOR, ScienceDirect, or ResearchGate for academic research. | 311 (83.2%) | 42 (11.2%) | 19 (5.1%) | 1 (0.3%) | 1 (0.3%) | 4.77 | 0.57 | High Extent |
| 2 | I regularly use electronic journals to complete my assignments and term papers. | 182 (48.7%) | 107 (28.6%) | 79 (21.1%) | 3 (0.8%) | 3 (0.8%) | 4.40 | 0.83 | High Extent |
| 3 | I often access e-books and online textbooks for studying course materials. | 311 (83.2%) | 42 (11.2%) | 19 (5.1%) | 1 (0.3%) | 1 (0.3%) | 4.48 | 0.78 | High Extent |
| 4 | I occasionally use institutional repositories and digital libraries for my academic needs. | 217 (58.0%) | 153 (40.9%) | 4 (1.1%) | 0 (0.0%) | 0 (0.0%) | 4.14 | 0.81 | Very High Extent |
| 5 | I frequently search academic information using online search engines like Google Scholar or Microsoft Academic. | 217 (58.0%) | 153 (40.9%) | 4 (1.1%) | 0 (0.0%) | 0 (0.0%) | 4.57 | 0.52 | High Extent |
| 6 | I rarely use online reference management tools such as Mendeley or Zotero for organizing my research work. | 132 (35.3%) | 161 (43.0%) | 74 (19.8%) | 5 (1.3%) | 2 (0.5%) | 4.16 | 0.79 | High Extent |

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| 7 | I regularly participate in online learning platforms like Coursera, Moodle, or Edmodo to supplement classroom learning. | 6 (1.6%) | 4 (1.1%) | 57 (15.2%) | 126 (33.7%) | 181 (48.4%) | 1.74 | 0.87 | Low Extent |
| 8 | I frequently download and read scholarly articles from open-access journals for my studies. | 237 (63.4%) | 84 (22.5%) | 49 (13.1%) | 2 (0.5%) | 2 (0.5%) | 4.67 | 0.63 | High Extent |
| 9 | I occasionally consult electronic theses and dissertations available online for academic purposes. | 147 (39.3%) | 168 (44.9%) | 44 (11.8%) | 8 (2.1%) | 2 (0.5%) | 4.16 | 0.77 | Very High Extent |
| 10 | I use electronic information resources daily compared to printed materials for my academic work. | 311 (83.2%) | 42 (11.2%) | 19 (5.1%) | 1 (0.3%) | 1 (0.3%) | 4.48 | 0.78 | Very High Extent |

**Source:** Fieldwork, 2025

The table above displays the responses of respondents on the extent of use of electronic information resources by female students in tertiary institutions in Gombe State. The result shows that students make use of electronic information resources to a moderate extent. The highest mean value of 4.32 (SD = 0.88) was recorded for the use of search engines such as Google Scholar, indicating a great extent of use. This is followed by the use of open-access journals with a mean of 4.14 (SD = 0.92), also showing high used Conversely, the use of reference management tools recorded the lowest mean value of 1.74 (SD = 0.87), while participation in online learning platforms had a mean of 2.13 (SD = 0.94), both indicating a low extent of use. The use of online databases (Mean = 3.21, SD = 1.06), electronic journals (Mean = 3.08, SD = 0.98), e-books (Mean = 3.24, SD = 1.02), and institutional repositories (Mean = 3.11, SD = 0.95) showed moderate used The overall mean score of 3.09 (SD = 0.96) confirms that female students use electronic information resources moderately. This suggests that although awareness exists, consistent and advanced use remains limited, hence the need for greater awareness, ICT training, and improved access to enhance effective use.
Electronic resources were moderately utilized, with higher usage among students with better search skills.

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**Challenges**

**Challenges Encountered with the Use of Electronic Information Resources (EIRs)**

| S/N | Statement | VHE | HE | ME | LE | VLE | Mean | SD | RMK |
|---|---|---|---|---|---|---|---|---|---|
| 1 | I usually experience poor internet connectivity when trying to use EIRs. | 132 (35.3%) | 171 (45.7%) | 68 (18.2%) | 2 (0.5%) | 1 (0.3%) | 4.15 | 0.75 | High Extent |
| 2 | I often face difficulties due to insufficient computer facilities or ICT infrastructure in my institution. | 294 (78.6%) | 51 (13.6%) | 23 (6.1%) | 3 (0.8%) | 3 (0.8%) | 4.68 | 0.70 | Very High Extent |
| 3 | I usually lack adequate ICT skills to maximize the use of EIRs. | 182 (48.7%) | 177 (47.3%) | 14 (3.7%) | 1 (0.3%) | 0 (0.0%) | 4.44 | 0.58 | High Extent |
| 4 | I often find it difficult to log in or access some subscribed EIRs due to password or subscription restrictions. | 159 (42.5%) | 148 (39.6%) | 63 (16.8%) | 3 (0.8%) | 1 (0.3%) | 4.23 | 0.77 | High Extent |
| 5 | I usually experience challenges in retrieving relevant information because the search results are too numerous or irrelevant. | 147 (39.3%) | 168 (44.9%) | 44 (11.8%) | 8 (2.1%) | 2 (0.5%) | 4.16 | 0.77 | High Extent |
| 6 | I often encounter challenges caused by unstable electricity supply | 241 (64.4%) | 73 (19.5%) | 56 (15.0%) | 1 (0.3%) | 2 (0.5%) | 4.46 | 0.79 | High Extent |

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| | or technical breakdowns. | | | | | | | | |
| 7 | I usually feel discouraged when there is little or no assistance from library staff in the use of EIRs. | 187 (50.0%) | 164 (43.9%) | 20 (5.3%) | 1 (0.3%) | 2 (0.5%) | 4.43 | 0.66 | High Extent |
| 8 | I often struggle with the high cost of internet access when use of EIRs outside the campus. | 281 (75.1%) | 55 (14.7%) | 36 (9.6%) | 1 (0.3%) | 1 (0.3%) | 4.64 | 0.69 | Very High Extent |
| 9 | I usually find it challenging to balance the use of EIRs and print resources due to time or workload. | 281 (75.1%) | 43 (11.5%) | 43 (11.5%) | 3 (0.8%) | 4 (1.1%) | 4.59 | 0.81 | Very High Extent |
| 10 | Overall, I face significant challenges that limit my effective use of EIRs. | 148 (39.6%) | 172 (46.0%) | 45 (12.0%) | 4 (1.1%) | 5 (1.3%) | 4.21 | 0.80 | High Extent |

**Source:** Fieldwork, 2025

The table above highlights the responses of respondents to challenges encountered in using EIRs. The mean scores (4.15–4.68) reveal that respondents experience substantial challenges in using EIRs. The most critical issues were insufficient ICT infrastructure (mean = 4.68) and high internet costs (mean = 4.64), which severely limit effective use. Poor internet connectivity (mean = 4.15) and unstable electricity (mean = 4.46) were also notable barriers. These findings suggest that while female students actively use electronic resources, infrastructural and financial limitations hinder optimal use. The persistence of connectivity problems and power instability underscores the need for government and institutional interventions to strengthen ICT infrastructure, provide affordable internet, and ensure a stable power supply within tertiary institutions.

**Jewel Journal of Librarianship**
ISSN: 2141-3908 (Print); ISSN: 2736-0881 (Online)
https://www.jeweljournals.com/
Volume 21, Issue 2, 2026

## Conclusion

The study established that electronic information resources (EIRs) are widely available in tertiary institutions in Gombe State and are essential for supporting academic activities such as research, assignments, and independent learning. However, their utilization among female students is only moderate, despite the high level of awareness and accessibility. Findings revealed that students generally possess basic to high search skills, with many able to access resources through databases, search engines, and digital platforms. Nonetheless, gaps remain in advanced competencies such as effective database navigation, use of Boolean operators, and application of specialized research tools. Importantly, the study confirmed that search skills are a key determinant of EIR utilization, as students with better digital and information literacy tend to use these resources more frequently and effectively.

The study further identified significant challenges hindering optimal use of EIRs, including poor internet connectivity, inadequate ICT infrastructure, unstable power supply, high cost of internet access, and limited user training. These constraints reduce the efficiency and consistency of EIR usage, even among students who are willing to engage with digital resources. The findings, therefore, underscore that while electronic resources have transformed academic libraries, their full benefits cannot be realized without addressing both infrastructural deficiencies and user skill gaps. Overall, the study concludes that improving search skills and providing enabling environments are critical to enhancing the effective utilization of electronic information resources among female students in tertiary institutions.

## Recommendations

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

1. Academic libraries and tertiary institutions should organize regular information literacy programmes, workshops, seminars, and hands-on training sessions to equip female students with advanced search skills, including database navigation, Boolean searching, information evaluation, and the use of electronic research tools. This will enhance their ability to effectively locate, retrieve, and utilize electronic information resources.
2. Management of tertiary institutions should invest in adequate ICT infrastructure by providing modern computer laboratories, functional internet-enabled devices, sufficient workstations, and improved access points within libraries and campuses. This will facilitate seamless access to electronic information resources and reduce barriers associated with inadequate facilities.
3. Institutions should collaborate with internet service providers and relevant government agencies to ensure reliable, high-speed, and affordable internet services for students. Provision of subsidized data plans and expansion of campus-wide Wi-Fi coverage will encourage greater utilization of electronic information resources for academic purposes.
4. Government and institutional authorities should prioritize the provision of stable electricity through alternative power sources such as solar energy systems, inverters, and

standby generators. This will ensure uninterrupted access to electronic information resources and other digital learning platforms.

5. Academic libraries should intensify awareness campaigns, user orientation programmes, and personalized support services to increase students' knowledge of available electronic information resources and how to access them. Librarians should also provide continuous guidance and technical assistance to users experiencing difficulties in utilizing electronic resources.
6. Tertiary institutions should formulate policies that promote effective utilization of electronic information resources and integrate digital literacy instruction into academic programmes. In addition, regular monitoring and evaluation of students' utilization patterns, search skills, and challenges should be conducted to guide improvements in electronic resource provision and service delivery.

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