Role of E-library Resources in Supporting Academic Performance of Computer Science Education students, in the Faculty of Education, Federal University Lokoja

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Abstract

This study examined the role of e-library resources in supporting academic performance of Computer Science Education students, in the Faculty of Education, Federal University Lokoja. The research investigated the impact of e-library on the academic performance of students in the Faculty of Education Federal University Lokoja and barriers for effective utilization of e-resources. The study adopted a descriptive survey design, with a population of 495 computer science education students, and data were collected using structured online questionnaires. A sample of 217 was selected using a random sampling procedure determined by Krejcie and Morgan's (1970) table, and a total of 133 online questionnaires were filled out and submitted, representing a 61.8% response rate. Findings revealed that e-library resources positively influence academic performance by enhancing access to scholarly materials, promoting collaboration, supporting independent learning, and improving research outcomes. However, barriers such as poor internet connectivity, inadequate ICT infrastructure, limited computer access, and lack of updated resources significantly hinder effective utilization. The study concludes that maximizing the benefits of e-library resources requires both infrastructural development and user capacity building, which are essential for improving students' academic performance and digital competence. It was recommended that the university invest in modern ICT facilities, including servers and upgraded hardware, to support large-scale access and improve the efficiency of the e-library system.

Key words: E-library, E-resources, information resources, students' performance, resources utilization, ICT.

Introduction

The role of libraries as intellectual repositories within tertiary institutions remains indispensable, owing to their immense contribution to the core functions of higher education teaching, learning, and research (Ogunwede et al., 2024). As noted by Bribena et al. (2021), a major development shaping academic libraries in recent years has been the rapid advancement of information and communication technologies. These innovations have transformed access to knowledge, enabling users to retrieve information seamlessly through e-libraries and other digital platforms (Moorthy et al., 2018). In this regard, Udoudoh et al. (2021) contend that the integration of electronic technologies into library services is primarily aimed at fostering active, engaged learners, thereby discouraging passivity in the educational process.

Nigerian tertiary institutions, particularly universities, have increasingly invested in digital transformation, diffusion, and preservation of educational resources (Omotayo & Haliru, 2020). The adoption of e-library platforms has significantly enhanced accesses to a wide range of cross-border information, allowing students, faculty, and other members of the academic community to obtain resources in real-time with relative ease (Moorthy et al., 2018). According to Chime and Ekwueme (2023), the resources provided through e-libraries serve as critical enablers of academic research and scholarship.

Given the evolving nature of information management, the traditional methods of maintaining libraries are no longer adequate for efficient storage, retrieval, and dissemination of knowledge. Consequently, the application of modern technological approaches has become indispensable for improving library services to students. A well-structured computerized library enables users to receive prompt and efficient services, thereby enhancing the overall learning experience. In this regard, a digital library may be understood as an automated or electronic information system in which processes such as access, storage, and resource sharing are facilitated through computer technologies. The concept of "digital" extends beyond mere computerization; it encompasses the design and development of electronic systems that support various information services, including word processing, micrographics, reprographics, video-based resources, and electronic communication tools such as fax, voice mail, email, and the internet (Encyclopedia, 2013).

The Library of Congress Collections Policy Statements Supplementary Guidelines (2008) stressed that electronic resource is any work encoded and made available for access through the use of a computer. It includes electronic data available by remote access referring to the use of electronic resources via computer networks; and direct access (fixed media) referring to the use of electronic resources via carriers (e.g. discs/disks, cassettes, cartridges) designed to be inserted into a computerized device or its auxiliary equipment. Ugwu and Onyegiri (2013) clearly gave examples of electronic resources which include, but are not limited to: web sites, online databases, e-journals, e-books, electronic integrating resources, and physical carriers in all formats, whether free or fee-based, required to support research in the subject covered, and may be audio, visual, and/or text files. They further enlisted specific types of electronic information resources as consisting of electronic books (e-books), electronic journals (e-journal), and indexes, collections of journal articles, reference works, digital collections and databases.

Statement of the Problem

The Electronic Library (E-library) of the Federal University Lokoja, situated within the main library, provides seamless access to a wide range of digital resources that support innovative teaching, learning, and research. Prior studies, such as Ogunwede et al. (2024), have examined the roles and impacts of e-libraries in selected tertiary institutions in Kaduna State. However, limited attention has been given to the Faculty of Education in Nigerian universities, and to date, no research has specifically investigated the challenges and opportunities of the E-library at the Federal University Lokoja. Although existing studies have explored the general contributions of e-libraries to students' academic performance in tertiary institutions, they have not sufficiently delineated the specific impacts across different faculties and disciplines. This lack of discipline-specific evidence underscores a critical research gap. Accordingly, the present study seeks to investigate the role of the E-library in enhancing academic activities among students in the Faculty of Education, Federal University Lokoja, with the aim of identifying strategies to strengthen its effectiveness in promoting student learning and academic success.

The following research questions guided the study:

1. To determine the impacts of E-library supporting the academic performance of students in Faculty of Education, Federal University Lokoja.
2. To identify the barriers that hinder students' effective use of e-library resources in Faculty of Education, Federal University Lokoja.

Literature Review

The emergence of e-libraries has significantly transformed how students access, use, and engage with academic resources, thereby influencing their overall academic performance. One of the most notable impacts is improved access to scholarly materials. Unlike traditional libraries with physical and time limitations, e-libraries provide students with round-the-clock access to a vast collection of e-books, journals, databases, theses, and multimedia resources. This ensures that students can retrieve relevant information anytime and anywhere, thereby supporting timely completion of assignments, projects, and research work (Nguyen & Nguyen, 2022).

Furthermore, e-libraries contribute to enhanced learning outcomes by exposing students to current and peer-reviewed information that strengthens the quality of their academic work. Suleman and Gul (2023) observed that students who frequently use e-library resources develop stronger analytical and critical thinking skills, which reflect in improved grades and research quality. In addition, e-libraries foster independent and lifelong learning, enabling students to go beyond the prescribed curriculum and build a deeper understanding of subjects (Tammaro, 2024). Another crucial impact is time efficiency and equity of access. With advanced search tools, students can quickly retrieve specific and credible information, reducing the time spent on research. At the same time, e-libraries ensure that all students, regardless of financial background, have equal access to high-quality learning materials (IFLA, 2021). This democratization of knowledge allows for fairer competition and improved overall performance across diverse groups of students.

Ekong & Ekong (2018) conducted a study titled "Impact of Information Literacy Skills on the Use of E-Library Resources among Tertiary Institution Students in Akwa Ibom State." The study adopted an empirical survey design, administering 500 questionnaires which were analyzed using ANOVA. Findings revealed that students' ability to effectively utilize e-

library resources was strongly dependent on their computer and information literacy skills. It concluded that the quality and volume of academic work are largely influenced by students' competence in handling e-resources. The authors recommended that tertiary institutions should prioritize regular training to improve students' information literacy skills for better academic outcomes.

Ogunbona & Onaolapo (2024) examined "Assessing the Impact of Library Electronic Resources on Students' Academic Performance in Economics in Private Universities in Lagos State, Nigeria." Using a descriptive survey design, a sample of 80 economics students was selected via simple random sampling. Data were gathered with a self-structured questionnaire and analyzed with frequency tables, percentages, and Pearson Product Moment Correlation (PPMC) at a 0.05 significance level. Findings showed a significant positive relationship between the use of library electronic resources and students' performance in assignments, projects, exams, and overall academic achievement. The study concluded that e-resources enhance comprehension and academic success in economics and recommended government policy on digital libraries, adoption of global best practices, and regular awareness programs such as trainings and workshops by university libraries.

Despite the numerous advantages e-libraries offer, several barriers hinder students from fully utilizing these resources for academic purposes. A major challenge is limited digital literacy skills among students. Many users lack adequate training in information retrieval, database searching, or proper citation management, which restricts their ability to maximize the resources available in e-libraries (Adebayo & Ahmed, 2022). Without proper orientation, students may find it difficult to navigate platforms and may default to less reliable sources such as free web contents.

Another barrier is inadequate infrastructure and unstable internet connectivity, particularly in developing countries. E-libraries depend heavily on reliable internet services and adequate bandwidth; however, poor network coverage, frequent power outages, and limited access to personal devices make it difficult for students to access materials consistently (Ogunlade & Adegbesan, 2020). Additionally, subscription and licensing issues often limit access to a wide range of current journals and databases. Universities in resource-constrained environments may not afford subscription fees for multiple databases, leaving students with fewer scholarly materials compared to counterparts in well-funded institutions (Nguyen & Nguyen, 2022).

Furthermore, user attitudes and low awareness play a role in underutilization. Some students prefer traditional print materials or are unaware of the scope of e-library resources available to them. Lack of promotional strategies by libraries and insufficient user support also exacerbate this problem (IFLA, 2021).

1. Limited ICT and Digital Literacy Skills: Many students lack the technical skills needed to search databases, use search operators, manage references, or evaluate information quality. This reduces the effectiveness of their use of e-library platforms. Information literacy is the set of skills required to identify, locate, evaluate, and use information effectively and ethically (Ishola and Oduwole, 2021). Many undergraduates lack the necessary competencies to navigate online catalogs, databases, and other sophisticated digital tools provided by academic libraries. Due to inadequate training, students often feel overwhelmed by search processes or fail to understand how to evaluate sources for accuracy and credibility. This result in

underutilization of quality academic materials and a tendency to rely on unverified information found through general web searches. Strengthening information literacy is essential for empowering students to make full use of library resources and to become independent lifelong learners (EzeandUzoigwe, 2021).

2. Poor Internet Connectivity and Power Supply: In many developing regions, unstable internet networks and frequent power outages make it difficult for students to access e-resources consistently. Internet connectivity refers to the ability to access and maintain a stable, high-speed connection to online networks, which enables access to electronic library resources such as e-books, e-journals, online databases, and digital repositories (Adegbilero-Iwari&Igwe, 2021). In many universities, students experience frequent disconnections, slow download and upload speeds, and network congestion, especially during peak hours. These challenges hinder access to academic databases and online learning platforms and discourage students from attempting to use electronic library resources altogether. Furthermore, high data costs force some students to limit their time online or avoid using electronic resources entirely (OkaforandEze, 2021). The lack of robust internet connectivity diminishes the relevance of digital library initiatives and undermines the investments made in e-resources.
3. Inadequate Infrastructure and Devices: Limited availability of computers in university libraries, high costs of laptops/smart phones, and insufficient bandwidth restrict access. Information and Communication Technology (ICT) infrastructure refers to the basic physical and organizational structures needed to operate digital library services, including computer systems, internet facilities, power supply, and software tools (Ishola&Oduwole, 2021). Most academic libraries are plagued with insufficient or outdated ICT infrastructure. Limited computer terminals, lack of modern equipment (e.g., scanners, projectors), and poor maintenance of existing facilities discourage students from visiting the library. In addition, erratic electricity supply and absence of backup generators or inverters disrupt access to electronic services. Without adequate ICT infrastructure, students cannot fully benefit from digital collections, regardless of their availability. The poor state of ICT resources also affects the overall image of libraries, making them less attractive as centers of learning and innovation (Obinyanand Eke, 2021).
4. Low Awareness and Promotion: Some students are not aware of the full range of e-resources available in their institution's library. Poor orientation and lack of user education limit utilization.
5. User Attitudes and Preferences: Some students prefer traditional print materials, either because of reading habits or discomfort with electronic screens, leading to low use of e-resources.

Despite the growing provision of e-library resources in Nigerian universities, several barriers continue to hinder their effective use among students. One of the most frequently reported challenges is poor infrastructure, particularly unreliable electricity supply and unstable internet connectivity. These infrastructural gaps disrupt consistent access to online databases and digital resources, especially in universities across southern and southeastern Nigeria (Nwokedi, 2022; Okorie & Agu, 2023). Limited access to functional computers and personal devices further compounds the problem, leaving many students unable to maximize the available e-resources (Eze & Uzoigwe, 2021).

Another significant barrier is the low level of digital and information literacy skills among students. Many undergraduates and postgraduates lack adequate training in navigating electronic databases, applying advanced search strategies, and evaluating the quality of digital information. As highlighted by Tella and colleagues (2024), insufficient information literacy is a strong predictor of under-utilization of digital resources, even when access is available. Similarly, Afolabi (2023) noted that preference for open web sources such as Google often replaces more scholarly databases due to skill deficits.

Access and usability issues also pose barriers. Students frequently encounter login difficulties, fragmented platforms, and unfriendly user interfaces, which discourage effective usage (Onuoha & Anyaegbu, 2022). Subscription and licensing restrictions also limit the scope of databases accessible to students, as many universities cannot afford up-to-date journals and e-databases due to financial constraints (Ademola & Fagbohun, 2023).

Finally, awareness and support services remain inadequate. Studies show that many students are not fully aware of the breadth of e-resources available in their institutional libraries, largely due to poor orientation and weak promotional strategies by librarians (Adeniran, 2022). Without sustained sensitization, training, and user-support systems, e-library resources remain underutilized.

Methodology

A total of 495 undergraduate students from the Department of computer science education across 100 to 400 level, constituted the study population. To ensure representativeness and statistical significance, a sample of (217) students was selected using a random sampling procedure. The sample size for this study was determined using Krejcie and Morgan's (1970) table for determining sample size from a given population. The sample size was proportionally distributed across all academic levels based on the total population of undergraduate students in the department. This study adopted the descriptive survey design. A self-designed google form served as the primary instrument for gathering data from respondents. This study utilized descriptive statistical methods to analyze the collected data. The analysis was carried out using the Statistical Package for the Social Sciences (SPSS), version 25. Descriptive statistical tools such as frequency counts, percentages, and arithmetic means was employed to summarize and interpret the responses obtained from the questionnaires. The results were presented in tables, with scores converted into frequencies and simple percentages for clearer interpretation.

Result and Discussion

Table 1: Impacts of the e-library on the academic performance of students in the Faculty of Education Federal University Lokoja

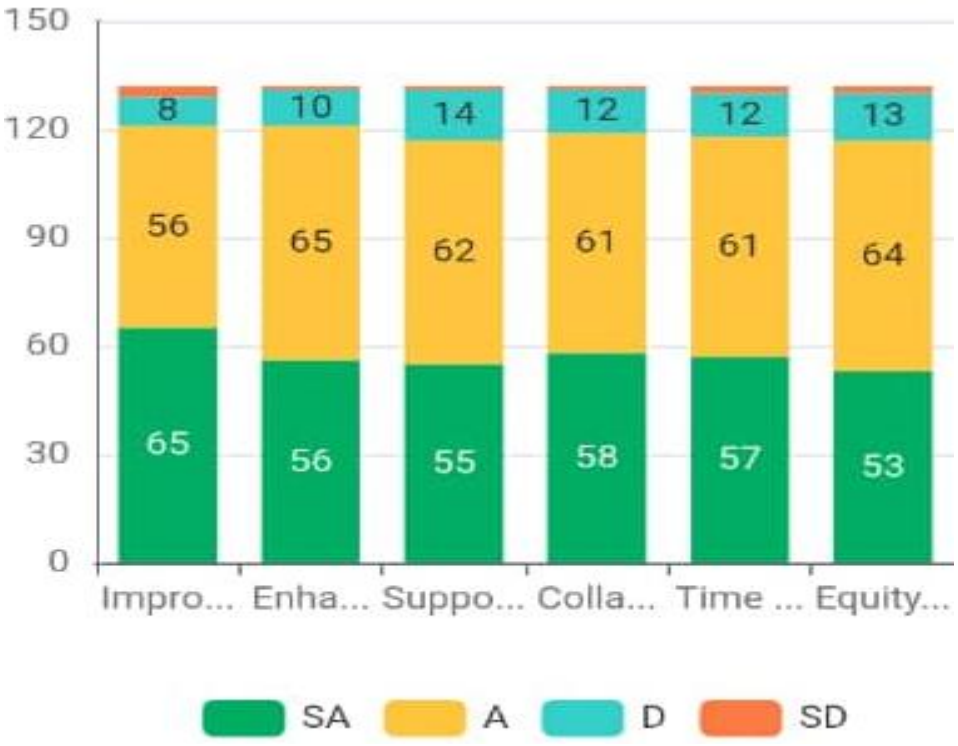
S/N	Impacts	SA	A	D	SD	X	RMK
1	Improved access to scholarly resources	65 (48.87%)	57 (42.86%)	8 (6.02%)	3 (2.26%)	3.33	Agree
2	Enhanced learning outcome	56 (42.11%)	66 (49.62%)	10 (7.52%)	1 (0.75%)	3.33	Agree
3	Support for independent and lifelong learning	55 (41.35%)	63 (47.37%)	14 (10.53%)	1 (0.75%)	3.29	Agree

4	Collaboration and knowledge sharing	58 (43.61)	62 (46.62)	12 (9.02%)	2 (1.5%)	3.34	Agree
5	Time efficiency and information retrieval skills	57 (42.86%)	62 (45.62%)	12 (9.2%)	2 (1.5%)	3.31	Agree
6	Equity of access	53 (39.85%)	65 (48.87%)	13 (9.77%)	2 (1.5%)	3.27	Agree

Benchmark= 2.50

Strongly Agreed (SD): 4, Agree (A):3, Disagree (D): 2, Strongly Disagree (D): 1

The findings indicated in Table 1 which explains the effectiveness of the impact of e-resources on the academic performance of computer science education students, federal university Lokoja. The analysis shows that one of the highest rated impact of e-library on academic performance is that it improved access to scholarly resources with the (mean score= 3.33), respectively, it also greatly impact in enhancing learning outcome with (mean score= 3.33), Support for independent and lifelong learning with (mean score= 3.29), Collaboration and knowledge sharing with (mean score= 3.34), Time efficiency and information retrieval skills with the (mean score= 3.34) and lastly equity of access (mean score= 3.27) which is the least impact but still far greater than the bench mark.



The findings in Table 1 revealed that the impact of e-library resources on students' academic performance was generally high across all indicators. The highest rated impact was on collaboration and knowledge sharing and time efficiency and information retrieval skills, with each recording 90.23% positive responses (SA + A). This shows that students value e-resources for enabling group work, knowledge exchange, and quick access to needed information. Similarly, improved access to scholarly resources and enhancing learning outcomes were also highly rated, with 91.73% positive responses each, reflecting how e-

resources broaden students' access to materials and contribute directly to academic success. On the other hand, the least rated impact was equity of access, with 88.72% positive responses, though still far above the benchmark. This suggests that while students acknowledge improved access, issues such as limited devices and internet challenges may restrict equal opportunities for all users.

Table 2: Barriers hindering students' effective use of the e-library resources in faculty of education, federal University Lokoja

S/N	Barriers	SA	A	D	SD	X	RMK
1	Poor internet connectivity	84 (63.16%)	39 (29.32%)	8 (6.02%)	2 (1.5%)	3.54	Agree
2	Lack of awareness of available e-resources	68 (51.13%)	54 (40.6%)	9 (6.77%)	2 (1.5%)	3.41	Agree
3	Inadequate ICT infrastructure	67 (50.38%)	49 (36.84%)	14 (10.53%)	3 (2.26%)	3.40	Agree
4	Low information literacy skills	63 (47.37%)	46 (34.59%)	20 (15.4%)	4 (3.01%)	3.26	Agree
5	Limited access to computers	65 (48.87%)	49 (36.84%)	16 (12.03%)	3 (2.26%)	3.32	Agree
6	Difficulty in navigating/searching e-resources	61 (45.86%)	51 (38.35%)	17 (12.78%)	4 (3.01%)	3.27	Agree
7	Lack of relevant and updated e-resources	57 (42.86%)	49 (36.84%)	24 (18.05%)	3 (2.26%)	1.8	Disagree

Bench Mark= 2.50
Strongly Agreed (SD): 4, Agree (A):3, Disagree (D): 2, Strongly Disagree (D): 1

The findings indicated in Table 2 which states the challenges faced while accessing and utilizing library e-resources by computer science education students, Federal University Lokoja, Kogi State. The analysis shows that the highest barriers faced by these students in utilizing e-resources are the lack of internet connectivity with (mean score= 3.54), Lack of awareness of available e-resources with (mean score= 3.41), Inadequate ICT infrastructure with (mean score= 3.40), Low information literacy skills (mean score=3.40), Limited access to computers with (mean score= 3.40), Difficulty in navigating/searching e-resources (mean score= 3.27) however, Lack of relevant and updated e-resources with the (mean score =1.8) was proved to be disagreed. This result shows most of the items listed are the problems faced by students' experience in accessing and utilizing library resources in the university library and it is accepted because the mean is greater than the Benchmark of 2.50 on a four-point rating scale.



The findings revealed that the highest barrier to the effective use of e-library resources is poor internet connectivity, with 92.48% of respondents (63.16% strongly agreed and 29.32% agreed) identifying it as a major challenge. This finding reflects the reality that without stable and fast internet, students face serious limitations in accessing e-books, journals, and online databases, which directly hinders their academic work. Conversely, the lowest barrier reported was the lack of relevant and updated e-resources, with 79.7% of students (42.86% strongly agreed and 36.84% agreed) recognizing it as a challenge. Although still significant, this lower percentage compared to other barriers suggests that while students occasionally encounter outdated or insufficient resources, they still find enough useful materials within the e-library to support their studies.

Discussion

The study revealed that e-library resources have a strong and positive influence on students' academic performance. They provide improved access to scholarly materials, which enriches research and academic work while also contributing to better learning outcomes. The resources promote collaboration and knowledge sharing among students, thereby creating opportunities for group learning and academic interaction. The e-library also ensures equity of access by giving all students equal opportunities to consult the same resources regardless of background. Beyond classroom learning, it supports independent and lifelong learning, encouraging students to develop self-directed study habits. In addition, the e-library enhances time efficiency and builds students' information retrieval skills, enabling them to quickly locate and use relevant materials. Altogether, these impacts underline the vital role of the e-library in supporting academic growth, fostering digital literacy, and strengthening overall student achievement.

The study also revealed several barriers that hinder the effective use of e-library resources by students. The most pressing challenge identified was poor internet connectivity, which limits students' ability to consistently access materials online. Closely related to this is the lack of awareness of available e-resources, as many students are not fully informed about the range of materials and services provided by the e-library. Inadequate ICT infrastructure

was also highlighted, with students pointing out that the facilities and systems available are insufficient to meet their academic needs. Limited access to computers further constrains usage, as many students struggle with competition for the few available systems. In addition, difficulty in navigating and searching e-resources was noted as a barrier, reflecting challenges in finding relevant information quickly. Low information literacy skills also emerged as a factor, as some students lack the training and ability to maximize the full benefits of the e-library. Finally, the lack of relevant and regularly updated resources was identified, making it difficult for students to access the most current and useful academic information.

Conclusion

This study examined the roles of e-library resources in supporting the academic performance of students in the Faculty of Education, Federal University Lokoja. The findings revealed that a variety of e-library resources are available to students. In conclusion, the study affirms that e-library resources play a vital role in supporting students' academic activities and improving their academic performance. However, the full benefits of these resources can only be realized when the identified barriers are adequately addressed through improved internet services, enhanced ICT facilities, increased awareness programs, and continuous information literacy training for students.

Recommendations

1. Creating more awareness and strengthen information literacy programs: Regular workshops and orientations should be conducted to equip students with skills in searching, evaluating, and effectively using electronic information resources.
2. Improve internet connectivity and expand ICT infrastructure: A stable and high-speed internet connection should be provided in federal university Lokoja, to ensure seamless access to e-books, journals, databases, and other e-resources without interruptions, and also the University should invest in modern ICT facilities, including servers and upgraded hardware, to support large-scale access and improve the efficiency of the e-library system

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