



Impact of e-library on academic performance of students across disciplines in selected tertiary institutions in Kaduna state, Nigeria

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Abstract

The role of libraries in tertiary institutions cannot be amplified due to the tripartite function they perform in research, learning, and teaching. The current study attempts to examine the impact of e-library on the academic performance of students across disciplines in select tertiary institutions in Kaduna State. The study adopted the descriptive survey design and the sample size of 391 respondents determined via the Yamane (1967) formula was drawn from the population of 17,480 students which comprised students of Ahmadu Bello University (ABU), Nuhu Bamalli Polytechnic, and Federal College of Education, Zaria employing the stratified sampling technique. Therefore, the sum of 391 questionnaires was administered to the respondents utilising the simple random sampling (SRS) technique whereas the data was analysed using descriptive statistics. The findings of our study revealed that the majority of the respondents do not agree that e-library aids their academic performance despite admitting to the benefits of e-library and the adequate institutional support for accessing and using e-library resources. Consequently, policymakers and administrators of education should deploy more resources to these institutions to freshen infrastructure and enhance support services.

Keywords: E-library, academic performance, tertiary institutions, Kaduna State, Nigeria

1. Introduction

The role of libraries as intellectual warehouses in tertiary institutions cannot be overemphasized. This stems from the tripartite pivotal support they provide to any institution of higher learning in the area of teaching, research, and learning. Bribena et al. (2021) argued that one of the matters arising from the evolution of academic libraries in the last decade has been the advancement in information communication technology. Through technological development information housed in the web is retrieved effortlessly using e-library (Moorthy et al., 2018). Udoudoh et al. (2021) argued that the rationale behind integrating electronic

technology in libraries is to have non-passive students in education. E-library is a medium through which electronic materials and/or resources such as online journals, e-books, academic databases, web directories, etc. are assessed using internet-enabled devices (Chime & Ekwueme, 2023) consumed by students, teachers, and other researchers.

In Nigeria, there has been a gradual paradigm shift from the archaic traditional library or physical library system to an electronic library otherwise known as an e-library on account of the adoption and increased consumption of information communication technology (ICT)



particularly after the COVID-19 pandemic of 2020 which further democratise the information technology space. Nigerian tertiary institutions particularly the universities have expended more resources in the area of digital transformation, diffusion, and conservation of educational resources (Omotayo & Haliru, 2020). This acquisition of e-library platforms by these institutions of higher learning has facilitated access to a variety of cross-border information by students, teachers, and other members of the academic community in real-time and without hassles (Moorthy et al., 2018). Chime and Ekwueme (2023) averred that the materials provided by the e-library are enhancers of research and academic work. Nonetheless, in spite of the conceivable gains from the adoption of e-library in Nigerian academic institutions, there are infrastructural bottlenecks such as poor internet connectivity and epileptic power supply, congestion of library facilities, inadequate technical staff and student know-how (Ejegwa & Mnguty, 2023; Adeeko et al., 2023; Chime & Ekwueme, 2023; Bribena et al., 2021) that have hindered the full utilization of this important resource in the nation's higher education sector. Again, the preference for resources outside these institutions' repository of e-library resources by students has remained a source of concern following the huge investments made (Rosman et al., 2019).

Several studies have examined the link between e-library utilisation and students' academic performance. However, the results from these studies reported divergent views. For instance, while Shafiu et al. (2019) ascertained that students' attitude towards the utilisation of e-library resources indirectly influence their academic outcomes, Ali et al. (2021), Udoudoh et al. (2021) and Girei et al. (2022) found that the digitisation of libraries or the use of e-library positively influence students' reading habits, their academic performance and the quality of tertiary education respectively. Sokiprim (2021) and Ofordile et al. (2019) unlike

others independently established that the application of e-library does not have a significant impact on the academic outcome of students.

Therefore, this research is an attempt to contribute to the body of literatures on this subject by examining the impact of e-library on academic performance of students from a discipline perspective. Also, the following research questions have been drawn in that regard:

1. How do students of different disciplines in the select tertiary institutions in Kaduna State use e-library resources?
2. Do the patterns of use of e-library resources differ amongst students of diverse discipline in the select tertiary institutions of Kaduna State?
3. Are there discrepancies in institutional factors amongst the select tertiary institutions in Kaduna State?

The next section of the research reviews related theories and empirical literatures on the theme of the research. while sections three and four separately focus on the methodology and analysis and discussion of the research findings, section five concludes the study with recommendations.

2. Literature Review

Theoretical Review

The authors relied on the technology acceptance model (TAM) due to its prominence in the literature and relevance in illustrating the application of technology by students of higher institutions.

TAM is a theory based on information systems that seeks to explain the adoption and use of technology by individuals (Davis, 1989). It states that individuals embrace and utilise technology in accordance with "perceived usefulness (PU)" plus the "perceived ease of use (PEOU)" (see Venkatesh, Morris, Davis & Davis, 2003; Davis 1989). It also underscored that behavioural intention (BI) and one's attitude toward the use of technology are a function of PU and PEOU.



For this purpose, the PU of e-library resources is a direct function of students' academic performance. This suggests that students whose perception of e-library on their academics is positive are more likely to embrace and attain higher academic scores and success. Likewise, the students' PEOU of e-library platforms determines how well enough they interact with electronic resources – the corollary being that students of tertiary institutions will be fully well predisposed to utilising e-library resources to facilitate their academic work and/or activities when they are adjudged to be appealing and user-friendly. Therefore, the TAM theory accentuates the key factors influencing students' attitudes and behavioral intentions towards using digital resources which have an impact on their academic performance.

Empirical Review

In order to comprehend the current scholarly debate in this field, this section offers a succinct review of the body of existing literature on the study's subject. Numerous studies have been done on the impact of e-libraries on students' academic performance in tertiary institutions, but these studies were unable to pinpoint the exact impact of e-libraries across disciplines in various educational institutions across the nation. This study's review of the body of existing research on the subject was guided by this evident gap. In their work on the acceptance of e-library and support services for distance education students, Barfi et al. (2023) used a multivariate structural equation modelling approach and discovered a negative correlation between students' intent to use the e-library and support services and their operational and strategic skills. However, it was discovered that social influence was a substantial predictor of students' propensity to use the e-library and support services. Likewise, Mbere (2023) used a t-test, and the study discovered that student use of print resources (t-value: 90.13), e-resources (t-value: 75.75), internet facilities (t-value: 54.6), and computer and electronic

databases (t-value: 93.29) is not statistically significant or positive in the University of Calabar's biological sciences. Furthermore, in a comparative analysis of e-learning availability and utilization in tertiary institutions in Kogi and Benue State of Nigeria, Obaloko, Akpa and Ameh (2024) use a t-test to determine the variation in the sets of means. The outcome shows how these institutions are currently doing and how much e-learning resources are needed. It also highlighted the degree to which each institution uses e-learning tools. Adeeko et al. (2023) also conducted a study using a multistage sampling approach with a purposive sample method and the results indicate that undergraduate students at federal universities in North-Central, Nigeria used libraries based on their circumstances. A simple percentage analysis was used by Ejegwa, and Mngutyo (2023) to assess the impact of the virtual library on undergraduate students' academic performance in the Department of medicine and Surgery at Benue State University in Makurdi, Nigeria. Their findings indicate that the majority of undergraduate medical students are not well-versed in the virtual library's resources, that their usage of the virtual library is limited due to their busy schedules of lectures and clinical rotations, and that using the virtual library's resources improves rather than worsens their academic performance. In addition, inadequate or erratic internet access, an inconsistent power source, and a lack of open space to review the virtual library's resources are other barriers to its effective use. Similarly, Chime and Ekwueme (2023) averred that plagiarism, insufficient network computers, frequent system failures, insufficient bandwidth, irrelevant information, and a lack of cooperation from library staff are among the difficulties faced by postgraduate students when using electronic resources for research output. Bribena et al. (2021) aptly argued that planning, organizing, staffing, directing, and controlling are the five major issues of



e-libraries administration in Nigerian tertiary institutions.

More so, Onwubiko (2020) in a survey that relied on descriptive statistics found that e-learning is a vital instrument for improving instruction and student comprehension of library use in Nigerian federal universities. Igbozuruike, and Ile (2022) equally demonstrated that one tactic to increase PG students' understanding of digital skills is to schedule frequent training sessions aimed at enhancing their search skills in e-libraries. Another significant study by Aniedu et al. (2019) ascertained that skill, individual characteristics, and environmental factors have a substantial impact on how users utilize e-libraries.

As a result, few comparative studies have been conducted in this area, and none of the numerous studies on the impact of e-libraries on students' academic performance have concentrated on different disciplines (see Igbozuruike, & Ile, 2022; Chime & Ekwueme, 2023 amongst others). Thus, the current study is necessary.

3. Methodology

The present study espoused the descriptive survey. The study population is comprised of three (3) selected tertiary institutions in Zaria, Kaduna State, Nigeria. Namely, Ahmadu Bello University (ABU) Zaria, Kaduna State; Nuhu Bamalli (NUBA) Polytechnic, Zaria; and Federal College of Education (FCE) Zaria, Kaduna State. The study utilised both the non-probability and probability sampling techniques. First, the members of the population were chosen purposively based on their faculties or schools to ensure evenness in discipline. To this end, a total of 17,480 students from the faculty of sciences, and the faculty of

arts/social sciences/management to constitute our sampling frame (as at the 2023/2024 academic year). Of these number, 8,538 students were from ABU; 3,949 were students of NUBA; and the remaining 4,993 students were from FCE. Therefrom, a sample of 391 students was drawn from the target population using the Yamane (1967) formula. Second, the respondents were chosen using the proportionate stratified random sampling technique. That is, 0.49 for the selected faculties in ABU, 0.23 and 0.29 for the selected schools in NUBA, and FCE respectively. Our study utilised the closed-ended questionnaire made-up of five (5) sections and thirty-one (31) question items for data collection. The question items in sections C, D, and E which are based on the 5-point Likert scale (starting from Strongly Agree to Strongly Disagree) returned an alpha score of 0.86, 0.84, 0.75 respectively for our research instrument to be internally consistent. Likewise, to be valid both content and construct wise, it was reviewed by two experts in library and information science at ABU and FCE. Consequently, we used the simple random sampling (SRS) technique to collect our data by administering the questionnaires to our target respondents via the aid of a research assistant (who understood the essence of the research). We treated the responses gathered from our respondents with utmost confidentiality. Further, we employed the descriptive (such as the percentage and frequency distribution) statistical technique to analyse the 387 duly completed questionnaires retrieved from our respondents after four (4) weeks in the field.

4. Results and Discussion

Data Presentation, Analysis and Discussion

This section presents and discusses the result of the data obtained.

Table 1

Socio-demographic characteristics of the respondents



Characteristic	Frequency (n)	Percentage (%)
Gender		
Male	243	62.8
Female	144	37.2
Age		
Under 20	52	13.4
21-24	137	35.4
25-29	146	37.7
30 and above	52	13.4
Institutions		
Ahmadu Bello University, Zaria	190	49.1
Nuhu Bamalli Polytechnic, Zaria	90	23.3
Federal College of Education, Zaria	107	27.6
Faculty		
Science	222	57.4
Arts/ Social Sciences/Management	165	42.6
Do you know how to browse the internet?		
Yes	271	70.0
No	116	30.0
Do you use e-library in your institution?		
Yes	271	70.0
No	116	30.0
If yes, how often do you use the e-library resources in your institution?		
Weekly	94	24.3
Monthly	39	10.1
Fortnightly	24	6.2
Occasionally	114	29.5
Never	116	30.0
What devices do you use to access the e-library?		
Smartphone	91	33.6
Tablet	55	20.3
Laptop	71	26.2
Desktop Computer	54	19.9
Which of these tasks do you perform with e-library?		
To carry out assignment	153	39.5
To prepare for exams	52	13.4
To source materials for project writing	26	6.7
To develop your general knowledge	40	10.3
None of the above	116	30.0
What type of e-library resources do you use most often?		
My institution's e-library website	105	27.1
online database (e.g., science database, social science databases etc.)	93	24.0
E-books	62	16.0
Online journals	11	2.8
None of the above	116	30.0
Do you prefer e-library resources over traditional library?		
Yes	271	70.0



No	116	30.0
If yes, how would you access the quality and reliability of information obtained from e-library resources compared to traditional library materials?		
Better than traditional library materials	230	59.4
similar to traditional library materials	28	7.2
worse than traditional library materials	13	3.4
I am not sure	116	30.0
Do you find e-library resources beneficial to your studies?		
Yes	271	70.0
No	116	30.0

Source: Field survey, 2024

The result from Table 1 showed that there were 243 male respondents (62.8%) and 144 female respondents (37.2%). This indicated a slight male majority among the respondents, which might suggest variations in preferences or behaviours related to e-library usage based on gender. Also, majority of respondents fell within the age range of 21-29 (35.4% and 37.7% respectively), with fewer respondents under 20 (13.4%) or 30 and above (13.4%). This suggests that the survey predominantly captured responses from young adults, which may influence the prevalence and preferences regarding e-library usage. In the same vein, Ahmadu Bello University, Zaria had the highest representation (49.1%), followed by the Federal College of Education, Zaria (27.6%) and Nuhu Bamalli Polytechnic, Zaria (23.3%). Also, majority of respondents were from the Science faculty (57.4%) compared to Arts/Social Sciences/Management (42.6%). The distribution across institutions and faculties provides insights into the diversity of respondents, which may influence their access to and utilization of e-library resources based on institutional and disciplinary differences.

Furthermore, overwhelmingly, most respondents reported knowing how to browse the internet (70.0%) suggesting a high level of digital literacy among the surveyed population, which is crucial for utilizing e-library resources effectively. More so, a significant portion of respondents reported using e-library resources in their institutions (70.0%), with

various frequencies ranging from weekly to never. This implied that despite the availability of e-library resources, a notable proportion of respondents do not utilise them frequently, indicating potential barriers or preferences for alternative information sources. Moreover, smartphone (33.6%) and Laptop (26.2%) were the most commonly used devices to access e-library resources by the respondents indicating the importance of ensuring mobile compatibility and accessibility of e-library platforms to cater to diverse user preferences.

Additionally, majority of the respondents reported using e-library resources for multiple purposes such as carrying out assignments, preparing for exams, and sourcing materials for project writing. This suggests that e-library resources served various academic needs beyond traditional library materials, indicating their versatility and importance in supporting students' learning activities. Also, a significant majority of respondents preferred e-library resources over traditional library materials (70.0%). This preference highlighted the perceived advantages of e-library resources, potentially related to accessibility, convenience, and the breadth of available materials. Most respondents considered e-library resources to be better than traditional library materials in terms of quality and reliability (59.4%) showing confidence in the credibility and relevance of e-library resources, which may further reinforce their preference over traditional library materials. Lastly, almost all



respondents found e-library resources beneficial to their studies (70.0%). This implied that e-library resources are an integral tool for supporting academic success and learning outcomes.

Furthermore, the major findings of this study are presented in Tables 2, 3, and 4 respectively.

Table 2

Responses of Students on the disparities in the use of e-library resources by students across academic disciplines in the select tertiary institutions in Kaduna State

Table with 9 columns: Items, SA (%), A (%), UN (%), D (%), SD (%), Mean, sigma, Decision. Rows include statements like 'E-library allow me to learn independently' and 'E-library has helped me to expand the scope of my learning'.

Source: Field survey, 2024

Note: N=387, SA=Strongly Agree; A=Agree; UN=Undecided; D=Disagree; SD=Strongly Disagree. Decision-weighted average-24.62/6 = 4.103

The data analysis from Table 2 above showed that majority of the respondents accepted that e-library allowed them to learn independently. Also, they agreed that the e- library has helped them to expand the scope of their learning.

work of Oketunji and Okunola (2020), and Ekong and Ekong (2018). Conversely, majority of the participants rejected the notion that e-library aided their academic performance. For instance, they rejected the notion that e-library makes them to develop interest in learning content, their GPA has improved because of the use of e-library and that e-library helped them to achieve their academic goals and aspirations.

Table 3

Responses of Students on the different patterns of use of e-library resources by students of diverse disciplines in the selected tertiary institutions in Kaduna State

Table with 9 columns: Items, SA (%), A (%), UN (%), D (%), SD (%), Mean, sigma, Decision. Rows include statements like 'I always use the e-library platform in my Institution' and 'I can access e-library resources relevant to my discipline or course of study'.



I use e-library resources for getting materials on my discipline only	82 (21.2)	164 (42.4)	47 (12.1)	71 (18.3)	23 (5.9)	3.55	1.183	Accepted
I use e-library resources for more than 4 hours.	63 (16.3)	114 (29.5)	56 (14.5)	115 (29.7)	39 (10.1)	3.12	1.279	Rejected
Students in my faculty or institution use e-library resources more than students of other faculties or institutions.	85 (22.0)	111 (28.7)	40 (10.3)	106 (27.4)	45 (11.6)	3.22	1.364	Rejected

Source: Field survey, 2024

Note: N=387, SA=Strongly Agree; A=Agree; UN=Undecided; D=Disagree; SD=Strongly Disagree. Decision-weighted average: 17.48/5=3.496

The result of the response from participants in Table 3 suggested that most of the participants accepted that they always use the e-library platform in their institutions. Also, they agreed that they can access e-library resources relevant to their discipline or course of study. Likewise, they used e-library resources for getting materials on their discipline only. This finding is consistent with the works of Ekong and Ekong (2018), Yusuf, Adekunle, and

Adenike (2021), and Mandrekar (2020). On the other hand, the majority of the participants did not agree about the pattern of use of e-library resources by students of diverse disciplines in the selected tertiary institutions in Kaduna State. For example, they rejected the fact that they used e-library resources for more than 4 hours and that students in their faculty or institution used e-library resources more than students of other faculties or institutions. This result conforms with similar findings of Afolabi., Oluwaseun and Oluwaseun (2019), Olaniyi and Oluwatobi (2022), and Ejegwa and Mngutyo (2023).

Table 4

Responses of Students on the discrepancies in institutional factors such as e-library infrastructure, policies etc. amongst the select tertiary institutions in Kaduna State

Items	SA (%)	A (%)	UN (%)	D (%)	SD (%)	Mean	σ	Decision
My institution provides adequate and quality e-library resources for my discipline	95 (24.5)	160 (41.3)	45 (11.6)	58 (15.0)	28 (7.2)	3.61	1.212	Accepted
The internet network for using e-library resources in my institution is poor.	73 (18.9)	132 (34.1)	46 (11.9)	97 (25.1)	39 (10.1)	3.27	1.297	Rejected
The computers and devices for using e-library resources in my institution are adequate and working properly.	83 (21.4)	149 (38.5)	53 (13.7)	66 (17.1)	36 (9.3)	3.46	1.257	Rejected
I receive support and guidance for using e-library resources in my institution.	88 (22.7)	162 (41.9)	52 (13.4)	56 (14.5)	29 (7.5)	3.58	1.201	Accepted
My institution encourages me to use e-library resources for my studies.	100 (25.8)	176 (45.5)	52 (13.4)	38 (9.8)	21 (5.4)	3.76	1.105	Accepted



The e-library in my institution is difficult to access when students are much.	89 (23.0)	127 (32.8)	51 (13.2)	92 (23.8)	28 (7.2)	3.41	1.271	Rejected
The power supply for using e-library resources in y institution is not reliable	91 (23.5)	100 (25.8)	45 (11.6)	98 (25.3)	53 (13.7)	3.20	1.402	Rejected

Source: Field survey, 2024

Note: N=387, SA=Strongly Agree; A=Agree; UN=Undecided; D=Disagree; SD=Strongly Disagree. Decision- weighted average-24.29/7=3.47

Table 4 presents the response on the discrepancies in institutional factors such as e-library infrastructure, policies etc. amongst the selected tertiary institutions in Kaduna State. Hence, the result indicated that majority of the participants accepted that their institution provided adequate and quality e-library resources for their discipline. Also, they agreed that they received support and guidance for using e-library resources in their institution. In addition, they all agreed that their institution encouraged them to use e-library resources for their studies. This is indeed consistent with the findings of Mandrekar (2020), Adeyemi, Olajide and Oluwaseun (2021), and Ibrahim, Yusuf and Fatima (2022). In contrast, majority of the respondents did not agree on the discrepancies in institutional factors such as e-library infrastructure, policies etc. amongst the selected tertiary institutions in Kaduna State. For instance, they rejected the fact that in their various institutions, the internet network for using e-library resources is poor, the computers and devices for using e-library resources are adequate and working properly, the e-library is difficult to access when students' population is high, and the power supply for using e-library resources is unreliable. This further confirmed the findings of Babalola, Oluwaseun and Temitope (2020), Ejegwa and Mngutyo (2023), and Akindele, Ayodele, and Ayodeji (2023).

Essentially, students acknowledge the benefits of e-libraries in facilitating independent learning and expanding the scope of their education. Additionally, they utilize these resources extensively for assignments and term papers, indicating their practical relevance. However, there is a notable scepticism regarding the direct impact of e-libraries on academic performance, as evidenced by the rejection of claims regarding improved GPA and academic goal achievement. This reservation suggests a need for further exploration into the efficacy of e-library resources in enhancing academic outcomes. Furthermore, while students generally express satisfaction with access to relevant materials and institutional support for e-library usage, there are concerns regarding infrastructure and resources. Despite the acknowledgment of adequate e-library provision by institutions, issues such as poor internet connectivity, insufficient devices, and unreliable power supply remain prevalent challenges. These discrepancies highlight the importance of addressing infrastructural limitations to ensure equitable access to e-library resources for all students.

From a practical standpoint, the study highlights how crucial e-libraries are to promoting self-directed learning and increasing access to education. These materials are heavily utilized by students for assignments and term papers, indicating their applicability in real-world settings. Nevertheless, since some student express doubts about the direct impact of e-library resources on academic performance, more

5. Conclusion and Recommendations



research is necessary to determine how effective they are in improving academic outcomes.

In theory, the research advances knowledge about how e-libraries can help students learn and succeed academically. It draws attention to the importance of institutional support for e-library usage as well as the difficulties students encounter in using these resources because of resource and infrastructure problems. The study emphasizes how critical it is to address these issues in order to guarantee that e-libraries successfully improve students' academic performance.

Consequently, while e-libraries offer promising opportunities for enhancing learning experiences, their full potential is hindered by existing disparities in infrastructure and perceptions regarding their impact on academic performance. It is therefore, recommended that concerted efforts from educational institutions and policymakers be pertinent to improve infrastructure, provide adequate support, and conduct further research to better understand the role of e-library resources in academic achievement in the country at large.

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