

Effect of Digital Library Resources on Information Literacy Skills of Undergraduate Students in Nigerian Higher Institutions

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Abstract

The proliferation of digital library resources in Nigerian higher institutions has repositioned the university library from a passive repository of print materials to an active hub for electronic information access. This article examines the effect of digital library resources on the information literacy skills of undergraduate students in Nigerian higher institutions. Adopting a desk-review methodology, the study synthesises empirical and conceptual literature published mainly between 2017 and 2024 to interrogate the extent to which electronic databases, institutional repositories, e-journals and online public access catalogues (OPACs) shape students' ability to locate, evaluate, and ethically use information. The review shows that digital library resources have a generally positive effect on information literacy, particularly in search formulation and information retrieval, but that gains are uneven and are frequently constrained by epileptic power supply, poor internet connectivity, inadequate funding, and a shortage of structured digital-skills training. A synthesis table and a summary chart drawn from nine reviewed studies illustrate the recurring pattern of challenges across Nigerian university libraries. The article recommends the institutionalisation of credit-bearing information literacy courses, sustained investment in ICT infrastructure, and continuous digital-skills training for both students and librarians as strategies for optimising the benefits of digital library resources in Nigerian higher education.

Keywords: Digital library resources; information literacy; digital literacy; undergraduate students; Nigerian higher institutions; academic libraries

1.0 Introduction

The transition of academic libraries worldwide from print-dominated collections to hybrid and fully digital environments has fundamentally altered how undergraduate students discover, evaluate, and use information for learning and research. Digital library resources comprising electronic databases, e-journals, e-books, institutional repositories, and online public access catalogues have become central to teaching, learning, and research in higher education (Anunobi & Ape, 2019). In Nigeria, government agencies, university managements, and development partners have invested substantially in digitizing library collections and subscribing to international databases, with the expectation that undergraduates would develop the requisite competencies to exploit these resources effectively. Information literacy, defined by the Association of College and Research Libraries (2015) as the set of integrated abilities encompassing the reflective discovery of information, an understanding of how information is produced and valued, and its use in creating new knowledge and participating ethically in communities of learning, is widely regarded as a core graduate competency. It extends beyond the

mechanical ability to operate digital tools (digital literacy) to encompass critical thinking, source evaluation, and the ethical application of information (Agina-Obu & Okwu, 2023). For Nigerian undergraduates, whose secondary education rarely provides systematic exposure to electronic research tools, the university library is often the first structured point of contact with digital information environments. Despite considerable investment in digital infrastructure, several studies suggest that Nigerian undergraduates' information literacy competencies remain uneven, with students frequently over-relying on general web search engines rather than library-subscribed databases (Alex-Nmecha & Ejitagha, 2023; Udoh, Ekpenyong & Olowookere, 2020). This article reviews and synthesises the available Nigerian and comparative literature to examine the extent and nature of the effect that digital library resources have on undergraduates' information literacy skills, the challenges that mediate this effect, and the strategies that could strengthen it.

2.0 Statement of the Problem

University libraries in Nigeria have progressively adopted digital resources such as electronic databases (e.g., HINARI, AGORA, JSTOR, EBSCOhost), institutional repositories, and e-learning portals to widen access to scholarly information. However, anecdotal and empirical evidence suggests a persistent gap between the availability of these resources and undergraduates' capacity to use them proficiently. Alex-Nmecha and Ejitagha (2023) found that final-year Library and Information Science students, who might be expected to be more digitally proficient than their peers in other disciplines, were unaware of resources such as electronic theses and dissertations and e-reference collections. Similarly, service-delivery reviews attribute weak utilisation of digital resources to infrastructural deficits rather than to an absence of the resources themselves (Okafor, 2022). This disconnect between resource availability and effective use constitutes the central problem this article interrogates: to what extent, and under what conditions, do digital library resources actually translate into improved information literacy skills among Nigerian undergraduates?

3.0 Objectives of the Study

This article is guided by the following objectives. It sets out to:

1. examine the extent to which digital library resources are available to and used by undergraduate students in Nigerian higher institutions;
2. assess the reported level of information literacy skills among Nigerian undergraduates as documented in the literature;
3. determine the effect of digital library resources on the information literacy skills of undergraduate students;
4. identify the challenges that limit the effective use of digital library resources for information literacy development; and
5. recommend strategies for strengthening the contribution of digital library resources to information literacy in Nigerian higher institutions.

4.0 Conceptual Review

4.1 Digital Library Resources

A digital library may be understood as an organized collection of digital content such as text, images, audio, and video made accessible through computer networks, together with the services needed to acquire, organise, preserve, and disseminate that content (Anunobi & Ape, 2019). In the Nigerian university context, digital library resources typically include subscribed and open-access

electronic databases, e-journals and e-books, institutional digital repositories built on platforms such as DSpace, online public access catalogues, and, increasingly, mobile-accessible e-learning portals.

4.2 Information Literacy and Digital Literacy

Information literacy and digital literacy are related but conceptually distinct. Digital literacy refers primarily to the technical competence required to operate digital devices and software, while information literacy is the broader cognitive capacity to recognise an information need, locate relevant sources, critically evaluate them, and use them ethically (Agina-Obu & Okwu, 2023). The American Library Association's Presidential Committee on Information Literacy (1989) had earlier described an information-literate person as one who can recognize when information is needed and has the ability to locate, evaluate, and use it effectively. The ACRL (2015) Framework for Information Literacy for Higher Education subsequently reorganized the concept around six interconnected frames including "Authority Is Constructed and Contextual", "Information Creation as a Process", and "Research as Inquiry" that move beyond a checklist of mechanical skills toward the cultivation of critical, reflective information practices. Complementing this, the Big Six model (Eisenberg & Berkowitz, 1990) breaks information problem-solving into task definition, information-seeking strategies, location and access, use of information, synthesis, and evaluation, offering a practical instructional sequence that many Nigerian library orientation programmes implicitly follow.

5.0 Theoretical Framework

This review is anchored on the ACRL (2015) Framework for Information Literacy for Higher Education and the Big Six Skills model (Eisenberg & Berkowitz, 1990). The ACRL framework supplies the conceptual lens for what constitutes information literacy in a digital environment, while the Big Six model provides a practical, stage-based structure from recognizing an information need through to evaluating the product of research against which the effect of digital library resources on specific undergraduate skills can be assessed.

6.0 Review of Related Empirical Studies

A growing body of Nigerian library and information science literature has examined digital and information literacy among undergraduates. Table 1 synthesizes key studies reviewed for this article, indicating their focus, principal findings, and the level of digital/information literacy they report.

Table 1: Summary of Reviewed Empirical Studies on Digital Library Resources and Information Literacy in Nigerian Higher Institutions

Author(s) & Year	Location / Focus	Key Finding	Reported Skill Level
Udoh, Ekpenyong & Olowookere (2020)	LIS undergraduates, MOUAU Umudike & Uniuyo	Final-year LIS students showed uneven digital literacy skills in using e-resources; questionnaire survey of 122 respondents (93.3% response rate) analysed with descriptive statistics.	Moderate

Author(s) & Year	Location / Focus	Key Finding	Reported Skill Level
Odu (2024)	Public university libraries, Lagos State	Digital literacy skills significantly predicted electronic resource utilisation ($\beta = 0.434$, $p < 0.05$) among 351 undergraduates surveyed.	High
Alex-Nmecha & Ejitagha (2023)	LIS undergraduates, six federal universities, Nigeria	279 final-year LIS students trusted their own search proficiency but were unaware of resources such as e-theses, e-reference books and e-books.	Moderate
Agina-Obu & Okwu (2023)	LIS undergraduates, South-South Nigeria (nine universities)	408 respondents showed moderate digital literacy, strongest in basic ICT skills and digital communication, weaker in advanced evaluative skills.	Moderate
Ekong & Ekong / peer-leadership study (2023–24)	Federal universities, South-South Nigeria	Digital literacy proficiency among LIS undergraduates was linked to their capacity for peer leadership and mentoring in university libraries.	Moderate
Mole (2017)	University of Nigeria, Nsukka	Assessed academic utilisation of online information resources; usage was constrained by limited awareness and search competence.	Low–Moderate
Adetunji, Kareem & Omotayo (2020)	Nigerian university libraries (national)	ICT adoption in university libraries was hampered more by infrastructural and skills deficits than by resource unavailability.	Low–Moderate
Okafor / service-delivery study (2022)	Nigerian universities (digital era review)	Epileptic power supply, poor bandwidth, inadequate computers and a shortage of digitally skilled staff undermined digital library sustainability.	Not assessed

Across the studies summarized in Table 1, a consistent pattern emerges: undergraduates generally possess functional, entry-level digital skills such as browsing the internet, using search engines, and performing basic keyword searches but comparatively weaker higher-order information literacy skills, including advanced search-string construction, systematic evaluation of source authority, and ethical synthesis of multiple sources. Udoh et al. (2020) found that Library and Information Science students in two federal universities demonstrated moderate proficiency in utilising electronic resources, with notable gaps in advanced database searching. In contrast, Odu (2024) reported a comparatively high level of digital literacy among undergraduates in Lagos State

public universities, with digital skill significantly predicting electronic resource utilization. Alex-Nmecha and Ejitagha (2023) similarly found that students trusted their own internet search proficiency, yet remained unaware of specialized scholarly resources such as electronic theses, dissertations, and e-reference works, illustrating a gap between perceived and actual information literacy competence. Agina-Obu and Okwu (2023) reported a moderate overall digital literacy level among LIS undergraduates across nine South-South Nigerian universities, with strength in basic ICT operations but weakness in more advanced digital communication and evaluative tasks.

7.0 Methodology

This article adopts a qualitative, desk-review (documentary) research design. Relevant literature comprising peer-reviewed journal articles, institutional repository reports, and conference papers published mainly between 2017 and 2024 was identified through targeted searches of academic databases and repositories using combinations of the terms "digital library", "information literacy", "digital literacy", "undergraduate students", and "Nigeria". Retrieved sources were screened for relevance to Nigerian higher institutions and thematically analyzed to identify recurring findings on the availability of digital library resources, reported literacy levels, and the challenges limiting their effective use. This method allows for a broad synthesis of dispersed empirical evidence, although it does not generate new primary survey data; the tabulated skill levels and challenge frequencies reported in Sections 6 and 8 therefore reflect a content synthesis of the reviewed literature rather than an original field survey, and should be read as an indicative, not statistically representative, picture.

8.0 Discussion: Effect of Digital Library Resources on Information Literacy Skills

8.1 Positive Effects

The reviewed literature indicates several positive effects of digital library resources on undergraduates' information literacy. First, exposure to online databases and OPACs improves students' basic search formulation skills, as repeated use of search boxes and filters familiarizes students with Boolean logic and keyword refinement (Udoh et al., 2020). Second, access to full-text e-journals and e-books widens the range of sources students can consult, supporting the ACRL (2015) emphasis on "Research as Inquiry", since students are no longer constrained by the limited holdings of a physical collection. Third, where librarians provide structured orientation, digital library use appears to strengthen students' evaluative skills, as they must distinguish between subscribed scholarly databases and open, unmoderated web content (Odu, 2024). Collectively, these findings support the view that digital library resources, when properly harnessed, act as both a delivery mechanism for content and an implicit training ground for information literacy skills.

8.2 Constraining Challenges

The positive effect of digital library resources on information literacy is, however, substantially moderated by infrastructural and institutional challenges. A synthesis of the challenges reported across nine of the reviewed Nigerian studies is presented in Table 2 and Figure 1.

Table 2: Frequency of Challenges to Digital Library Use Reported in Reviewed Nigerian Literature

Challenge	Studies Reporting It (of 9 reviewed)	% of Reviewed Studies
Epileptic / unstable power supply	7	78%
Poor internet connectivity / inadequate bandwidth	7	78%
Inadequate funding for digital infrastructure	5	56%
Lack of digital/ICT skills training for students & staff	5	56%
Inadequate computers and digital facilities	3	33%
Poor maintenance culture / obsolete equipment	2	22%

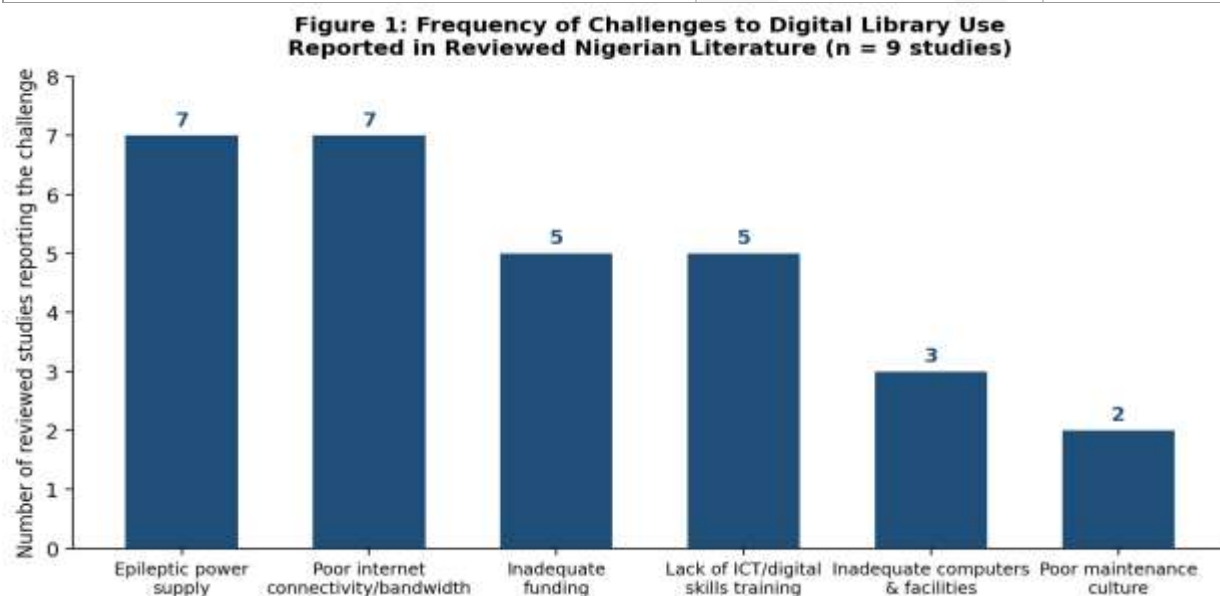


Figure 1: Frequency of challenges reported across nine reviewed studies on digital library use in Nigerian higher institutions.

As Table 2 and Figure 1 show, epileptic power supply and poor internet connectivity are the two most frequently cited barriers, each reported in seven of the nine reviewed studies, consistent with earlier findings on the challenges of library automation and digitization projects in Nigeria (Okafor, 2022). Inadequate funding and a shortage of structured digital-skills training follow closely, each cited in five of the nine studies, while inadequate computer facilities and poor maintenance culture, though less frequently mentioned, remain persistent secondary barriers. These findings suggest that the effect of digital library resources on information literacy is not automatic: it is conditional on a stable technological and pedagogical environment. Where power and connectivity are unreliable, students' opportunities to practice and internalize digital search and evaluation skills are correspondingly reduced, regardless of how well-resourced the digital collection itself may be.

8.3 Implications for Information Literacy Development

Read together, the positive effects and the constraining challenges point to a two-part implication. On one hand, digital library resources possess genuine potential to elevate undergraduates' information literacy beyond what print collections alone could support, particularly in search efficiency and breadth of access. On the other hand, this potential is only partly realized in the Nigerian context because of infrastructural deficits and the near-absence of compulsory, credit-bearing information literacy instruction in many institutions. Alex-Nmecha and Ejitagha (2023) explicitly recommend that digital information literacy be made an integral part of higher education curricula in developing countries — a recommendation strongly echoed by the pattern of findings synthesized in this review.

9.0 Conclusion

Digital library resources hold considerable promise for strengthening the information literacy skills of undergraduate students in Nigerian higher institutions, particularly in search formulation, breadth of access, and source evaluation. However, the reviewed literature consistently shows that this promise is constrained by epileptic power supply, poor internet connectivity, inadequate funding, and insufficient structured digital-skills training. Realising the full benefit of digital library resources for information literacy development will therefore require deliberate, coordinated investment in both infrastructure and pedagogy — treating information literacy not as an incidental by-product of digital access, but as a curriculum outcome to be actively taught, practiced, and assessed.

10.0 Recommendations

Based on the synthesis above, the following recommendations are proposed:

1. University managements should institutionalize credit-bearing information literacy courses, delivered collaboratively by librarians and teaching faculty, rather than one-off orientation sessions.
2. Government and institutional authorities should prioritize stable power supply (including renewable back-up systems) and adequate internet bandwidth for library ICT infrastructure.
3. Library management should budget consistently for the renewal, maintenance, and expansion of digital resources and computer facilities.
4. Regular, hands-on digital-skills training should be organized for both undergraduates and librarians, with emphasis on advanced database searching, source evaluation, and ethical use of information.
5. Further empirical, cross-institutional survey research should be conducted to generate up-to-date, generalizable data on undergraduates' information literacy levels across Nigerian higher institutions.

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