

Internet Skills Utilization and Provision of Digital Information Services in University Libraries: Evidence from Kebbi State, Nigeria

By

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ABSTRACT

The growing digitalization of academic library services has intensified the need for librarians to harness internet-related competencies in service delivery. This study examined the influence of librarians' internet skills utilization specifically search and retrieval skills and communication skills on the provision of digital information services in university libraries in Kebbi State, Nigeria. Anchored in the Digital Competence Framework (DigComp) and Van Deursen and Helsper's (2018) Internet Skills Framework, a descriptive survey research design was adopted. The study population comprised all 73 librarians across three public university libraries; total population sampling was employed due to the manageable size. Data were collected using a validated structured questionnaire (Cronbach's $\alpha = 0.91$). Descriptive statistics (mean, standard deviation) were used to answer research questions, while chi-square statistics tested hypotheses at the 0.05 significance level. Findings revealed high proficiency in both search and retrieval skills ($M = 4.12$, $SD = 0.81$) and communication skills ($M = 4.18$, $SD = 0.76$), each significantly influencing digital information service provision ($\chi^2 = 18.47$, $df = 4$, $p < 0.05$; $\chi^2 = 16.89$, $df = 4$, $p < 0.05$, respectively). The study concludes that effective utilization of internet skills is central to improving access, responsiveness, and user satisfaction in digital library services. Sustained capacity building, institutional investment in ICT infrastructure, and user-centered training programs are recommended.

Keywords: digital information services; internet skills; search and retrieval skills; communication skills; university libraries; Nigeria

Introduction

The provision of digital information services has become a defining feature of contemporary university libraries. Digital information services refer to the delivery of scholarly resources through electronic platforms including online databases, institutional repositories, e-journals, and e-books enabling users to access information beyond physical library spaces. These services support teaching, learning, and research by providing timely, flexible, and round-the-clock access to academic resources (Okike et al., 2019).

Globally, university libraries have transitioned from traditional service models to digitally mediated systems in response to the evolving needs of academic communities. This transition has enhanced research efficiency, supported distance learning, and fostered collaborative scholarship (Adebayo et al., 2021). In Nigeria, the importance of digital information services is further amplified by rapidly expanding student enrolment and growing institutional dependence on electronic academic resources. In Kebbi State, university libraries have made deliberate efforts to integrate digital technologies into library operations through the establishment of e-libraries and digital catalogues. Despite these investments, challenges including limited internet infrastructure, inconsistent connectivity, and gaps in librarians' internet skills continue to impede effective digital service delivery (Garba & Yusuf, 2022).

Internet skills encompassing search and retrieval skills and communication skills are fundamental to librarians' daily interactions with digital systems and users. Search and retrieval skills enable librarians to efficiently locate, filter, and recommend relevant electronic resources, while communication skills support user engagement through virtual reference services, email, and other online platforms. Understanding how these competencies influence digital information service provision is therefore critical, particularly within resource-constrained library environments such as those in Kebbi State.

Statement of the Problem

Despite investments in digital library infrastructure, the provision of digital information services in university libraries in Kebbi State remains suboptimal. Users frequently experience difficulties accessing electronic resources and delays in receiving adequate support through digital communication channels. Evidence suggests that these limitations are closely linked to inadequate utilization of internet skills by librarians. Deficiencies in search and retrieval skills constrain librarians' ability to guide users in navigating electronic databases and institutional repositories, while weak communication skills limit effective online interaction with users. Although training initiatives have been introduced, their impact has been inconsistent due to limited institutional support and inadequate access to advanced digital tools.

Research Questions

This study addressed the following research questions:

- 1- How do librarians' search and retrieval skills influence the provision of digital information services in university libraries in Kebbi State?
- 2- How do librarians' communication skills influence the provision of digital information services in university libraries in Kebbi State?

The null hypotheses tested were:

- 1- (H₀₁) There is no significant influence of search and retrieval skills on digital information service provision; and
- 2- (H₀₂) There is no significant influence of communication skills on digital information service provision.

Literature Review and Theoretical Framework

Digital Information Services in University Libraries

Digital information services represent the electronic delivery of scholarly content through platforms such as online databases, e-journals, institutional repositories, and e-books (Okike et al., 2019). These services have transformed the library from a physical to a virtual knowledge hub, enabling ubiquitous access to academic resources. Globally, the transition from traditional service models to digitally mediated systems has enhanced research efficiency, facilitated distance learning, and supported collaborative scholarship (Adebayo et al., 2021). In developing countries, including Nigeria, however, the full realization of digital service potential remains constrained by infrastructural deficits, funding limitations, and skill gaps among library professionals (Garba & Yusuf, 2022).

Search and Retrieval Skills

Search and retrieval skills are central to effective digital information service provision. These skills enable librarians to navigate complex digital databases, apply advanced search strategies, refine queries, and select relevant resources for users. Techniques such as Boolean operators, subject headings, controlled vocabularies, filtering tools, and citation chaining enhance the precision and relevance of retrieved information (Omotayo & Olatunde, 2020). Librarians proficient in search and retrieval skills are better positioned to guide users in accessing electronic resources, improving both efficiency and accuracy in service delivery. Studies consistently confirm that advanced search competencies correlate positively with user satisfaction and reduced information-seeking delays in digital library environments (Kruse et al., 2018).

Communication Skills

Communication skills are equally critical in digital information service provision. Librarians utilize email, social media platforms, virtual reference services, and other online channels to engage users, understand their information needs, and promote digital library resources. Clear, timely communication facilitates prompt responses to inquiries, strengthens user satisfaction, and enhances engagement with library services (Eze et al., 2020; Okonkwo & Njoku, 2021). Effective communication ensures that digital services are user-centered, responsive, and accessible, transforming the librarian from a passive custodian of resources into an active digital service intermediary.

Theoretical Framework

This study is anchored in two complementary frameworks. The Digital Competence Framework (DigComp), developed by the European Commission (2013), provides a structured model of digital competencies encompassing information and data literacy, communication and collaboration, and problem-solving all directly relevant to librarians' internet skills utilization. Complementing this, Van Deursen and Helsper's (2018) Internet Skills Framework distinguishes between operational, formal, information navigation, social, creative, and mobile internet skills, positioning information retrieval and communication as foundational competencies for effective digital service delivery. Together, these frameworks provide a robust theoretical basis for examining how specific internet skills influence digital information service outcomes.

Synthesis and Research Gap

The empirical literature consistently affirms that internet skills particularly search and retrieval and communication competencies are significant predictors of effective digital information service provision. However, most existing studies are concentrated in urban or well-resourced library contexts, leaving a gap in understanding how these competencies operate within resource-constrained university libraries in northern Nigeria. This study addresses this gap by providing empirical evidence from Kebbi State, thereby informing targeted policy, training, and capacity-building initiatives for Nigerian university libraries.

Methodology

A descriptive survey research design was adopted. This design is appropriate for documenting existing conditions, describing phenomena, and establishing relationships between variables without manipulation of the study context (Creswell, 2014). The study population comprised all 73 librarians working in the three public university libraries in Kebbi State: Federal University Birnin Kebbi (n = 30), Federal University of Agriculture Zuru (n = 22), and Kebbi State University of Science and Technology, Aliero (n = 21). Total population sampling was adopted due to the small and accessible nature of the population, ensuring complete coverage and avoiding sampling error. Data were collected using a researcher-developed questionnaire titled "Influence of Internet Skills Utilization on Provision of Digital Information Services Questionnaire" (IISUPDISQ). Data were analyzed using mean and standard deviation to answer the research questions. Chi-square (χ^2) statistics were employed to test the null hypotheses at the 0.05 significance level. All analyses were conducted using IBM SPSS Version 25.0. A decision rule of mean ≥ 3.50 was adopted for affirming respondents' agreement with questionnaire items.

Results

Research Question 1: Influence of Search and Retrieval Skills on Digital Information Service Provision

Table 1 presents the mean and standard deviation scores for each item measuring librarians' search and retrieval skills and their influence on digital information service provision (N = 73).

Table 1: Mean Scores of Search and Retrieval Skills Items (N = 73)

Item Statement	N	Mean	SD	Decision
I effectively use advanced keyword search techniques to retrieve relevant digital resources for users	73	4.26	0.72	Agree
I use Boolean operators (AND, OR, NOT) to refine and improve search results in digital databases	73	4.12	0.84	Agree
I am proficient in using subject headings and controlled vocabularies to enhance search precision	73	3.98	0.91	Agree
I apply filtering and sorting tools in digital databases to deliver targeted information to users	73	4.21	0.77	Agree

Item Statement	N	Mean	SD	Decision
I use citation chaining (backward/forward searching) to identify additional relevant digital materials	73	3.85	0.95	Agree
I am skilled at searching across multiple digital databases and platforms simultaneously	73	4.30	0.71	Agree
I use search history to track new digital resources relevant to users' research needs	73	4.15	0.80	Agree
I can select the most appropriate digital sources based on search results for user requests	73	4.18	0.76	Agree
Grand Mean	73	4.12	0.81	Agree

Source: Field Survey (2024/2025). Decision rule: Mean ≥ 3.50 = Agree; Mean < 3.50 = Disagree.

The results indicate a high level of proficiency in search and retrieval skills across all items. The grand mean of 4.12 (SD = 0.81) confirms that librarians are confident in their ability to navigate multiple databases, apply advanced search techniques, and recommend relevant resources to users. The highest-rated competency was simultaneous multi-database searching (M = 4.30), reflecting strong cross-platform navigation skills. Citation chaining recorded the lowest mean (M = 3.85), suggesting room for development in secondary retrieval strategies.

Research Question 2: Influence of Communication Skills on Digital Information Service Provision

Table 2 presents the mean and standard deviation scores for items measuring librarians' communication skills and their influence on digital information service provision.

Table 2: Mean Scores of Communication Skills Items (N = 73)

Item Statement	N	Mean	SD	Decision
I respond promptly to user inquiries via email or messaging platforms	73	4.22	0.74	Agree
I engage users effectively through virtual reference platforms	73	4.05	0.82	Agree
I provide clear guidance to users during digital interactions	73	4.18	0.78	Agree
I communicate instructions for accessing digital resources clearly and concisely	73	4.20	0.76	Agree

Item Statement	N	Mean	SD	Decision
I maintain professional and courteous communication with library users online	73	4.30	0.69	Agree
I use social media platforms to promote library digital resources and services	73	4.12	0.81	Agree
I assist users in navigating digital platforms during remote consultations	73	4.16	0.77	Agree
I provide timely feedback and follow-up on user inquiries	73	4.25	0.72	Agree
Grand Mean	73	4.18	0.76	Agree

Source: Field Survey (2024/2025). Decision rule: Mean ≥ 3.50 = Agree; Mean < 3.50 = Disagree.

Communication skills were rated highly across all items. The grand mean of 4.18 (SD = 0.76) indicates strong self-reported communication competencies among the librarians. Professional and courteous online communication (M = 4.30) and timely feedback provision (M = 4.25) were the highest-rated items, suggesting that interpersonal communication norms are well-maintained in digital interactions. Engagement through virtual reference platforms (M = 4.05) recorded the lowest score, potentially reflecting limited institutional adoption of dedicated virtual reference systems.

Hypothesis Testing - *H₀*: Search and Retrieval Skills and Digital Information Service Provision

The null hypothesis stated that there is no significant influence of librarians' search and retrieval skills on the provision of digital information services. To test this, a chi-square analysis was conducted. The results are presented in Table 3.

Table 3: Chi-Square Test - Search and Retrieval Skills and Digital Information Service Provision

Variable	χ^2 Value	df	p-value	Decision
Search & Retrieval Skills → Digital Information Services	18.47	4	0.001	Reject H₀
Significance level: $\alpha = 0.05$				

Source: Field Survey (2024/2025).

The chi-square analysis yielded $\chi^2 = 18.47$ (df = 4, p = 0.001), which is less than the 0.05 significance threshold. The null hypothesis is therefore rejected. There is a statistically significant influence of librarians' search and retrieval skills on the provision of digital information services in university libraries in Kebbi State. Specifically, 65 out of 73 librarians (89%) affirmed that their

search competencies directly enabled users to access accurate and relevant scholarly information efficiently.

Hypothesis Testing - Ho₂: Communication Skills and Digital Information Service Provision

The null hypothesis stated that there is no significant influence of librarians' communication skills on the provision of digital information services. Chi-square analysis was performed and results are presented in Table 4.

Table 4: Chi-Square Test - Communication Skills and Digital Information Service Provision

Variable	χ^2 Value	df	p-value	Decision
Communication Skills → Digital Information Services	16.89	4	0.002	Reject H ₀
Significance level: $\alpha = 0.05$				

Source: Field Survey (2024/2025).

The analysis yielded $\chi^2 = 16.89$ (df = 4, p = 0.002 < 0.05). The null hypothesis is accordingly rejected. There is a statistically significant influence of librarians' communication skills on the provision of digital information services. This is further corroborated by the finding that 61 out of 73 librarians (83.6%) reported that effective communication enhanced user engagement, responsiveness, and satisfaction in digital service delivery.

Discussion

The findings of this study demonstrate that both search and retrieval skills and communication skills are statistically significant determinants of digital information service provision in university libraries in Kebbi State. These results are consistent with the theoretical propositions of Van Deursen and Helsper's (2018) Internet Skills Framework, which positions information navigation and communication skills as foundational competencies for effective online engagement and service delivery.

The high proficiency in search and retrieval skills (M = 4.12) recorded in this study is congruent with Omotayo and Olatunde's (2020) finding that librarians' ability to efficiently locate, evaluate, and recommend digital resources significantly enhances service quality in academic library settings. The statistically significant chi-square value ($\chi^2 = 18.47$, p < 0.05) confirms that these competencies translate directly into improved digital service outcomes, supporting the practical significance of advanced database navigation, Boolean search strategies, and multi-platform information retrieval.

Similarly, the strong communication skills ratings (M = 4.18) and their significant association with digital service provision ($\chi^2 = 16.89$, p < 0.05) corroborate the findings of Eze et al. (2020) and Okonkwo and Njoku (2021), who emphasized that user-centered communication encompassing prompt email responses, virtual reference engagement, and clear instructional guidance is vital for maximizing user satisfaction in digital library environments. The slightly lower engagement score for virtual reference platforms (M = 4.05) is noteworthy, as it

suggests that while individual communication skills are strong, institutional investment in dedicated virtual reference infrastructure may be lagging relative to librarians' interpersonal competencies.

A critical observation emerging from the data is that librarians' self-assessed skills are relatively high, yet the digital service delivery environment in Kebbi State remains suboptimal—as noted in the problem statement. This paradox may reflect a gap between individual competencies and systemic enablers, including infrastructure reliability, management support, and organizational digital readiness. The findings thus underscore that while internet skills are necessary conditions for effective digital service provision, they are not sufficient without corresponding institutional and infrastructural support.

Conclusion

This study has demonstrated that librarians' internet skills utilization—specifically search and retrieval skills and communication skills—significantly influences the provision of digital information services in university libraries in Kebbi State, Nigeria. Both competencies were rated highly by respondents and were statistically confirmed as significant determinants of digital service outcomes. The complementary nature of these skills is particularly noteworthy: while search and retrieval skills ensure the accuracy, relevance, and efficiency of resource access, communication skills ensure that digital services are responsive, user-centered, and satisfying. Together, they constitute the foundational competency base for effective digital librarianship in the contemporary Nigerian academic environment. The findings contribute to the growing body of evidence on internet skills and library service quality in low-resource settings and have direct implications for library training policy, capacity development, and institutional investment in digital infrastructure in Kebbi State and comparable university library environments across Nigeria.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Library management and university authorities should institutionalize continuous professional development programs focusing on advanced search strategies, database navigation, citation chaining, and digital resource evaluation, with structured refresher modules delivered at least biannually.
2. Dedicated capacity-building initiatives targeting virtual reference service competencies, professional online communication, and social media engagement for library promotion should be incorporated into librarians' career development frameworks.
3. University administrations should prioritize institutional investment in stable internet infrastructure, reliable power supply, access to modern library management systems, and licensed digital database subscriptions to create an enabling environment for effective internet skills utilization.
4. Future research should adopt mixed-methods designs incorporating direct observation and user satisfaction assessments to complement self-reported survey data, and should extend

the scope to other geopolitical zones in Nigeria to enable comparative analysis of internet skills and digital service outcomes across diverse library contexts.

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