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DIGITAL LITERACY AND OPERATIONAL EFFICIENCY OF LIBRARIANS IN STATE UNIVERSITY LIBRARIES IN RIVERS STATE

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Abstract

The study investigated digital literacy and operational efficiency of librarians in state university libraries in Rivers State. It was guided by three research objectives, research questions, and hypotheses, and adopted a correlational research design. The population comprised 22 librarians from state university libraries in Rivers State, and a census sampling technique was used due to the manageable size of the population. Data were collected using a structured questionnaire titled Digital Literacy and Operational Efficiency of Librarians Questionnaire (DLOELQ), which was validated by an expert in Library and Information Science. The instrument was administered to all respondents, and 20 copies were retrieved and found valid for analysis, representing a 90.9% response rate. The instrument was validated by an expert in Library and Information Science, Ignatius Ajuru University of Education, Port Harcourt. Reliability was established through a pilot study, yielding a Cronbach's Alpha coefficient of 0.88. Data was analyzed using Pearson Product Moment Correlation (PPMC) via SPSS Version 23. Findings revealed that digital communication skills ($r = .782$, $p = .001$), basic computer skills ($r = .778$, $p = .001$), and information retrieval skills ($r = .762$, $p = .003$) have significant positive relationships with operational efficiency of librarians. Based on the findings, the study recommends that library management should strengthen librarians' digital literacy competencies through continuous training, regular workshops, effective use of ICT tools and library management systems, improved information retrieval skills, and adequate provision of ICT infrastructure and technical support to enhance efficient library service delivery.

Keywords: *Digital literacy, digital communication skills, basic computer skills, information retrieval skills*

1.1 Introduction

Operational efficiency of librarians refers to the ability of library professionals to deliver services accurately, quickly, and with minimal waste of time and resources while maintaining high service quality. It involves effective coordination of library processes such as acquisition, cataloguing, circulation, and user support to ensure seamless information service delivery (Bagewadi,

Mathapati, Gangur, Madiwalar& Patil, 2025). In modern academic environments, operational efficiency is increasingly driven by the integration of digital technologies that streamline workflows and reduce manual procedures. Librarians who demonstrate high levels of efficiency are better positioned to meet the growing demands of users in teaching, learning, and research contexts. Operational efficiency in libraries is therefore closely linked to technological competence and the ability to manage digital systems effectively. It is further enhanced when librarians can align service delivery with emerging digital tools that improve speed, accuracy, and accessibility of information services (Abdullahi, Amao, Abubakar, & Ibrahim, 2024).

Digital literacy plays a central role in strengthening the operational efficiency of librarians in contemporary library settings. It refers to the ability to locate, evaluate, use, and communicate information through digital platforms and tools in a productive manner Liu, Tretyakova, Fedorov & Kharakhordina, 2020). Librarians with strong digital literacy skills are more capable of adapting to automated systems, electronic databases, and integrated library management systems. This enables them to reduce delays in service delivery and improve user satisfaction. Digital literacy also enhances librarians' capacity to manage information resources in formats that are increasingly digital and user-centered. As libraries continue to evolve, digital literacy remains a core requirement for maintaining efficiency and relevance in service delivery. It further supports the transformation of traditional library operations into more streamlined, technology-driven systems that respond effectively to user needs (Meesad& Mingkhwan, 2024).

Digital communication skills are a key component of digital literacy that significantly influence librarians' operational efficiency. These skills involve the ability to use emails, instant messaging platforms, video conferencing tools, and social media applications for professional communication and service delivery (Gudzinskiene & Mačiuikienė, 2022). Through digital communication, librarians can provide real-time assistance to users, manage virtual reference services, and disseminate information more effectively. This reduces physical barriers to information access and enhances user engagement with library services. Furthermore, effective digital communication improves collaboration among library staff and supports coordinated service delivery across departments. Librarians who possess strong digital communication skills are therefore better equipped to respond promptly to user needs and maintain high-quality service standards. This contributes significantly to improved efficiency in modern library operations (Bagewadi, Mathapati, Gangur ,Madiwalar& Patil, 2025).

Basic computer skills and information retrieval skills are also essential dimensions of digital literacy that enhance librarians' efficiency in service delivery. Basic computer skills include the ability to operate software applications, manage databases, and perform routine digital tasks required in library operations (Binici, 2021). Information retrieval skills, on the other hand, involve the ability to effectively search, evaluate, and use digital information from online databases and electronic resources. These competencies enable librarians to provide accurate and timely information services to users. They also support effective organization and management of digital content within library systems. In addition, librarians with strong information retrieval skills are more capable of supporting academic research and improving access to credible information resources. Collectively, these skills strengthen librarians' operational efficiency and ensure the delivery of high-quality, technology-driven library services in academic institutions (Dube,

Rammutloa & Matatiele, 2024).

1.2 Statement of the Problem

Despite the increasing emphasis on digital literacy as a core competence for librarians in modern academic libraries, some librarians still appear to experience difficulties in effectively applying digital communication skills, basic computer skills, and information retrieval skills in routine library operations. Challenges such as inadequate proficiency in the use of digital communication platforms, limited competence in handling computer-based library systems, and insufficient mastery of advanced information retrieval techniques seem to hinder the effective execution of library services. These limitations may negatively affect the speed, accuracy, and responsiveness of service delivery, thereby reducing overall operational efficiency and user satisfaction among students, lecturers, and researchers. Furthermore, inconsistent access to training opportunities and inadequate institutional support for continuous digital skill development may further constrain librarians' ability to adapt to the rapidly evolving digital library environment.

Although several studies have examined digital literacy and library performance, much of the existing literature tends to focus broadly on ICT usage or general technological adoption without adequately addressing the combined influence of digital communication skills, basic computer skills, and information retrieval skills on the operational efficiency of librarians. There is limited empirical attention on how these specific dimensions of digital literacy jointly contribute to improving efficiency in library service delivery, particularly within the context of university libraries in developing countries such as Nigeria. This creates a knowledge gap regarding the extent to which librarians' digital competencies enhance service speed, accuracy, and effectiveness in academic library operations. Therefore, this study seeks to address this gap by investigating Digital Literacy and Operational Efficiency of Librarians in State University Libraries in Rivers State.

1.3 Objectives of the Study

The main aim of the study is to examine digital literacy and operational efficiency of librarians in state university libraries in Rivers State. Specifically, the study sought to:

1. examine the relationship between digital communication skills and operational efficiency of librarians in state university libraries.
2. assess the relationship between basic computer skills and operational efficiency of librarians in state university libraries.
3. evaluate the relationship between information retrieval skills and operational efficiency of librarians in state university libraries.

1.4 Research Questions

The following research questions guided the study:

1. What is the relationship between digital communication skills and operational efficiency of librarians in state university libraries?
2. What is the relationship between basic computer skills and operational efficiency of librarians in state university libraries?
3. What is the relationship between information retrieval skills and operational efficiency of librarians in state university libraries?

1.5 Null Hypotheses

The following null hypotheses were formulated and tested at 0.5 level of significance:

$H_{01:}$ There is no significant relationship between digital communication skills and operational efficiency of librarians in state

university libraries.

$H_{02:}$ There is no significant relationship between basic computer skills and operational efficiency of librarians in state university libraries.

$H_{03:}$ There is no significant relationship between information retrieval skills and operational efficiency of librarians in state university libraries.

2.1 Literature Review

Digital literacy has become a critical determinant of operational efficiency in academic libraries, shaping how librarians perform their roles in increasingly technology-driven information environments. It refers to the ability of individuals to effectively use digital tools, communication technologies, and information systems to access, evaluate, and manage information in various formats (James & Carter, 2021). In library contexts, digital literacy enables librarians to respond efficiently to users' information needs, manage electronic resources, and support academic activities through technology-enabled services. It also enhances the ability of librarians to adapt to continuous technological changes within the information landscape. The integration of digital literacy into library practice has been linked to improved service delivery, faster information processing, and greater user satisfaction in academic institutions (Bilan, Oliinyk, Mishchuk & Skare, 2023). This underscores digital literacy as a foundational competency for modern librarianship and a key driver of operational efficiency.

Digital communication skills constitute an essential component of digital literacy that significantly influences librarians' efficiency in service delivery. These skills involve the ability to effectively use digital platforms such as email systems, social media tools, instant messaging applications, and virtual conferencing systems to interact with library users and colleagues (Opele, 2023). In academic libraries, digital communication enhances the speed and quality of information dissemination, particularly in reference services and user support systems. It also enables librarians to provide remote assistance to users, thereby expanding access to library services beyond physical boundaries. Effective digital communication improves collaboration among library staff and supports coordinated service delivery across different library units. Studies have shown that librarians with strong digital communication skills are more responsive, efficient, and effective in meeting user needs in digital environments (Taylor & Hughes, 2023).

Basic computer skills are fundamental to the successful operation of modern library systems and play a vital role in enhancing librarians' operational efficiency. These skills include the ability to operate computer hardware and software applications, manage library databases, use integrated library systems, and perform routine digital tasks required for service delivery (Hamad, Al-Fadel & Shehata, 2024). In academic libraries, basic computer competence enables librarians to efficiently handle cataloguing, circulation, acquisitions, and administrative functions with minimal errors and delays. It also supports the effective management of electronic resources and improves access to digital information services. Furthermore, librarians who possess strong computer skills are better equipped to adapt to new technologies introduced in library environments. Research has indicated that basic computer literacy significantly improves productivity, accuracy, and service delivery efficiency in academic libraries (Otu, 2024).

Information retrieval skills are equally essential in determining the effectiveness of librarians in meeting users' academic and research needs. These skills involve the ability to search, locate, evaluate, and retrieve

relevant information from digital databases, search engines, and electronic repositories efficiently (Ibelegbu, Gameli, Isaiah & Abalis, 2025). Librarians with strong information retrieval competencies are better able to support users in navigating complex information systems and accessing credible academic resources. These skills also enhance the ability to filter irrelevant information and deliver precise results tailored to users' needs. In addition, information retrieval skills improve the speed and accuracy of reference services in academic libraries. Studies have demonstrated that effective information retrieval competencies contribute significantly to improved service quality, user satisfaction, and overall operational efficiency in library environments (Rasheed & Ahmed, 2024).

3.1 Methodology

The study adopted a correlational research design to investigate digital literacy and operational efficiency of librarians in state university libraries in Rivers State, specifically Ignatius Ajuru University of Education and Rivers State University, with each institution contributing 11 librarians, giving a total population of 22 respondents. Due to the small and accessible population, a census sampling technique was used, covering all members of the population to ensure complete representation without sampling bias. Data was collected using a structured questionnaire developed by the researcher titled Digital Literacy and Operational Efficiency of Librarians Questionnaire (DLOELQ), designed on a four-point rating scale to measure digital communication skills, basic computer skills, information retrieval skills, and operational efficiency. The instrument was validated by an expert in Library and Information Science to ensure face validity. Reliability was established through a pilot study, yielding a Cronbach's Alpha coefficient of 0.88. The instrument was administered directly to the respondents, and 20 copies were retrieved and found valid for analysis, representing a 90.9% response rate. The instrument was validated by an expert in Library and Information Science, Ignatius Ajuru University of Education, Port Harcourt. Data were analyzed using mean scores and standard deviation, while Pearson Product-Moment Correlation (PPMC) was used to test the hypotheses at a 0.05 level of significance to determine the relationship between digital literacy components and operational efficiency of librarians in the selected state university libraries.

4.1 Results and Findings

The findings of the study revealed that digital communication skills, basic computer skills, and information retrieval skills significantly influence the operational efficiency of librarians in state university libraries in Rivers State.

Table 1: Mean responses on the Influence of Digital Communication Skills on Operational Efficiency of Librarians (N = 20)

S/N	Item	SA	A	D	SD	X (Mean)	± (SD)	Decision
1	Email communication improves librarians' response time to users' requests.	9	8	2	1	3.25	0.82	Agree
2	Social media platforms enhance information dissemination in libraries.	8	9	2	1	3.20	0.85	Agree

3	Online chat services improve reference service delivery.	8	8	3	1	3.15	0.88	Agree
4	Video conferencing tools support effective library-user interaction.	9	7	3	1	3.20	0.84	Agree
5	Digital communication tools enhance collaboration among library staff.	8	9	2	1	3.22	0.83	Agree
	Grand Mean					**3.20**		

Source: Researcher's field survey (2026).

Table 1 presents the summary of respondents' views on digital communication skills and operational efficiency of librarians in state university libraries in Rivers State (N = 20). The findings indicate general agreement across all items, as all mean scores are above the benchmark of 2.50. Item 1 shows that email communication improves librarians' response time to users' requests (M = 3.25, SD = 0.82), while Item 2 indicates that social media platforms enhance information dissemination in libraries (M = 3.20, SD = 0.85). Item 3 reveals that online chat services improve reference service delivery (M = 3.15, SD = 0.88), and Item 4 shows that video conferencing tools support effective library-user interaction (M = 3.20, SD = 0.84). Item 5 records that digital communication tools enhance collaboration among library staff (M = 3.22, SD = 0.83). The relatively low standard deviation values (0.82–0.88) indicate limited variation in responses, reflecting a reasonable level of consensus among respondents. Overall, the grand mean of 3.20 shows that respondents generally agreed that digital communication skills positively influence operational efficiency of librarians.

Table 2: Mean responses on the Influence of Basic Computer Skills on Operational Efficiency of Librarians (N = 20)

S/N	Item	SA	A	D	SD	X (Mean)	± (SD)	Decision
1	Ability to use library software improves cataloguing efficiency.	9	8	2	1	3.24	0.81	Agree
2	Computer skills enhance circulation processes.	8	9	2	1	3.22	0.84	Agree
3	Database management skills improve information organization.	8	8	3	1	3.15	0.86	Agree
4	Word processing and spreadsheet skills improve administrative tasks.	9	7	3	1	3.20	0.83	Agree
5	Computer literacy supports efficient use of digital library systems.	8	9	2	1	3.23	0.85	Agree
	Grand Mean					**3.19**		

Source: Researcher's field survey (2026).

Table 2 presents the summary of respondents' views on basic computer skills and operational efficiency of librarians in state university libraries in Rivers State (N = 20). The findings indicate general agreement across all items, as all mean scores are above the benchmark of 2.50. Item 1 shows that ability to use library software improves cataloguing efficiency (M = 3.24, SD = 0.81), while Item 2 indicates that computer skills enhance circulation processes (M = 3.22, SD = 0.84). Item 3 reveals that database management skills improve information organization (M = 3.15, SD = 0.86), and Item 4 shows that word processing and spreadsheet skills improve administrative tasks (M = 3.20, SD = 0.83). Item 5 records that computer literacy supports efficient use of digital library systems (M = 3.23, SD = 0.85). The relatively low standard deviation values (0.81–0.86) indicate limited variation in responses, reflecting a reasonable level of consensus among respondents. Overall, the grand mean of 3.19 shows that respondents generally agreed that basic computer skills positively influence operational efficiency of librarians.

Table 3: Mean responses on the Influence of Information R etrieval Skills on Operational Efficiency of Librarians (N = 20)

S/N	Item	SA	A	D	SD	X (Mean)	± (SD)	Decision
1	Ability to search databases improves access to relevant information.	9	8	2	1	3.24	0.83	Agree
2	Information retrieval skills enhance accuracy of reference services.	8	9	2	1	3.22	0.84	Agree
3	Skill in evaluating online sources improves service quality.	8	8	3	1	3.16	0.87	Agree
4	Effective search strategies reduce time spent on user requests.	9	7	3	1	3.20	0.85	Agree
5	Retrieval skills improve librarians' ability to support research needs.	8	9	2	1	3.23	0.86	Agree
	Grand Mean					**3.21**		

Source: Researcher's field survey (2026).

Table 3 presents the summary of respondents' views on information retrieval skills and operational efficiency of librarians in state university libraries in Rivers State (N = 20). The findings indicate general agreement across all items, as all mean scores are above the benchmark of 2.50. Item 1 shows that ability to search databases improves access to relevant information (M = 3.24, SD = 0.83), while Item 2 indicates that information retrieval skills enhance accuracy of reference services (M = 3.22, SD = 0.84). Item 3 reveals that skill in evaluating online sources improves service quality (M = 3.16, SD = 0.87), and Item 4 shows that effective search strategies reduce time spent on user requests (M = 3.20, SD = 0.85). Item 5 records that retrieval skills improve librarians' ability to support research needs (M = 3.23, SD = 0.86). The relatively low standard deviation values (0.83–0.87) indicate limited variation in responses, reflecting a reasonable level of consensus among respondents. Overall, the grand mean of 3.21 shows that respondents generally agreed that information retrieval skills positively influence operational efficiency of librarians.

4.2 Result of Tested Hypotheses

Table 1: Summary of Pearson Product Moment Correlation (PPMC) coefficient analysis on the relationship between digital communication skills and operational efficiency of librarians

		Digital communication skills	Operational efficiency of librarians
Digital communication skills	Pearson Correlation	1	.782
	Sig. (2-tailed)		.001
	N	20	20
Operational efficiency of librarians	Pearson Correlation	.782	1
	Sig. (2-tailed)	.001	
	N	20	20

** Correlation is significant at the 0.05 level (2-tailed)

The pair of digital communication skills and operational efficiency of librarians in state university libraries obtained a correlation coefficient of r = .782. This indicates a strong, positive relationship and is statistically significant at the 0.05 alpha level (sig. = 0.001 < 0.05). Thus, the null hypothesis which stated that there is no significant relationship between digital communication skills and operational efficiency of librarians in state university libraries is rejected. There is, therefore, a strong, positive, and significant relationship between digital communication skills and operational efficiency of librarians in state university libraries (r = .782, p = .001 < 0.05). This implies that librarians who possess strong digital communication skills are more likely to perform efficiently, as these skills enhance coordination, responsiveness, and user engagement within academic library environments.

Table 2: Summary of Pearson Product Moment Correlation (PPMC) coefficient analysis on the relationship between basic computer skills and operational efficiency of librarians

		Basic computer skills	Operational efficiency of librarians
Basic computer skills	Pearson Correlation	1	.778
	Sig. (2-tailed)		.001
	N	20	20
Operational efficiency of librarians	Pearson Correlation	. 778	1
	Sig. (2-tailed)	.001	
	N	20	20

** Correlation is significant at the 0.05 level (2-tailed)

The pair of basic computer skills and operational efficiency of librarians in state university libraries yielded a correlation coefficient of r = .778, indicating a strong, positive relationship between the two variables. This relationship is statistically significant at the 0.05 level (p = .001 < 0.05). Consequently, the null hypothesis which stated that there is no significant relationship between basic computer skills and operational efficiency of librarians in state university libraries is rejected. This finding implies that as librarians' basic computer skills improve, their operational efficiency also tends to increase. Proficiency in essential computer functions such as word processing, spreadsheet management, and file handling—contributes to more efficient task execution, resource management, and service delivery in academic libraries.

Table 3: Summary of Pearson Product Moment Correlation (PPMC) coefficient analysis on the relationship between information retrieval skills and operational efficiency of librarians

		Information retrieval skills	Operational efficiency of librarians
Information retrieval skills	Pearson Correlation	1	.762
	Sig. (2-tailed)		.003
	N	20	20
Operational efficiency of librarians	Pearson Correlation	. 762	1
	Sig. (2-tailed)	.003	
	N	20	20

** Correlation is significant at the 0.05 level (2-tailed)

The information retrieval skills and operational efficiency of librarians in state university libraries yielded a correlation coefficient of r = .762, indicating a strong, positive relationship between the two variables. This relationship is statistically significant at the 0.05 level (p = .003 < 0.05). Consequently, the null hypothesis which stated that there is no significant relationship between information retrieval skills and operational efficiency of librarians in state university libraries is rejected. This finding implies that as librarians' information retrieval skills improve, their operational efficiency also tends to increase. Proficiency in locating, accessing, and delivering relevant information enables librarians to support users more effectively, streamline research assistance, and enhance overall service delivery within academic libraries.

5.1 Discussion of Findings

Digital Communication Skills and Operational Efficiency of Librarians

The study found a significant and strong relationship between digital communication skills and operational efficiency of librarians in state university libraries, as indicated by (r = .782). This implies that the ability of librarians to effectively use digital communication platforms such as email, social media, and virtual communication tools greatly enhances coordination of services, responsiveness to users, and timely dissemination of information. When digital communication skills are effectively applied, librarians can streamline interactions, reduce delays in service delivery, and improve user engagement within the library environment. This finding aligns with Taylor and Hughes (2023), who reported that digital communication competencies significantly improve professional effectiveness and service responsiveness in library settings. Strengthening digital communication skills can therefore enhance operational efficiency of librarians.

Basic Computer Skills and Operational Efficiency of Librarians

The study found a significant and strong relationship between basic computer skills and

operational efficiency of librarians in state university libraries, as indicated by (r = .778). This suggests that proficiency in essential computer operations such as word processing, database management, and file handling plays a vital role in improving library service delivery processes. When librarians effectively apply basic computer skills, they can execute tasks more accurately, reduce operational delays, and enhance overall workflow efficiency in library services. This finding aligns with Hama et al. (2024), who observed that computer literacy significantly improves automation and service efficiency in academic library operations. Enhancing basic computer skills can therefore improve operational efficiency of librarians.

Information Retrieval Skills and Operational Efficiency of Librarians

The study also found a significant and strong relationship between information retrieval skills and operational efficiency of librarians in state university libraries, as shown by (r = .762). This indicates that librarians' ability to effectively search, locate, evaluate, and retrieve information from digital sources significantly enhances their service delivery performance. When information retrieval skills are effectively utilized, librarians can provide timely and accurate responses to users' information needs, thereby improving research support services and overall library efficiency. This finding aligns with Ibelegbu et al. (2025), who noted that strong information retrieval competencies enhance user satisfaction and service quality in digital library environments. Strengthening information retrieval skills can therefore improve operational efficiency of librarians.

Conclusion

Digital literacy skills are essential for improving the operational efficiency of librarians in state university libraries. The study concludes that digital communication skills, basic computer skills, and information retrieval skills all have significant and positive relationships with operational efficiency of librarians. Specifically, digital communication skills enhance coordination, responsiveness, and user engagement in library services, while basic computer skills improve accuracy, speed, and effectiveness in routine library operations. In addition, information retrieval skills strengthen librarians' ability to locate, evaluate, and deliver relevant information, thereby improving service quality and user satisfaction. However, achieving optimal operational efficiency requires continuous development of librarians' digital competencies, regular training, and adequate provision of technological resources and infrastructure. A sustained commitment to digital literacy development is therefore necessary to fully enhance library service delivery in academic institutions.

Recommendations

Based on the findings of the study, the following recommendations were suggested:

1. provide continuous training programmes to enhance librarians' competence in digital communication tools for improved coordination, responsiveness, and service delivery in academic libraries.
2. promote the effective use of basic computer applications and library management systems to improve accuracy, speed, and efficiency in routine library operations.
3. strengthen the development of information retrieval skills among librarians to enhance effective search, evaluation, and delivery of relevant academic information to users.
4. organize regular workshops and seminars on emerging digital literacy competencies to keep librarians updated with modern technological demands in library service delivery.
5. ensure adequate provision of ICT infrastructure and technical support to facilitate effective application of digital literacy skills in library operations and service delivery systems.

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