

Integration of Digital Skills for Innovative Library Services Delivery in Distance Learning Programme by Librarians in National Open University of Nigeria

Dr. Lucy Ndidiamaka NEBEOLISE OKONKWO

&

Dr. Igwe UKOHA

National Open University of Nigeria

University Village, Plot 91,

Cadastral zone, Nnamdi

Azikiwe Express Way, Jabi, Abuja

lnebeolise@noun.edu.ng +2348033613301

iukoha@noun.edu.ng+2348164825001

Abstract

This study investigated digital skills acquisition among librarians and its influence on innovative library service delivery in the National Open University of Nigeria (NOUN). The study adopted a descriptive survey research design. The population comprised professional librarians working in selected NOUN study centres across the six geopolitical zones of Nigeria and the university headquarters. Data were collected using a structured questionnaire designed to obtain information on the types of digital skills acquired, methods of skills acquisition, application of digital skills in distance learning library services, and challenges affecting effective digital skills development. Data were analysed using descriptive statistics, including frequency counts, percentages, mean scores, and standard deviations. The findings revealed that librarians possessed basic digital competencies such as online information searching, use of electronic databases, and management of digital resources. However, competencies in advanced digital areas essential for distance learning environments, including virtual reference services, learning management system integration, digital content creation, and online user engagement, were relatively low. The study further identified major challenges affecting digital skills acquisition and application, including limited training opportunities, inadequate ICT infrastructure, insufficient institutional support, and workload pressures. The findings also indicated that the acquisition and application of digital skills contributed positively to innovative library service delivery for distance learners. The study concluded that the extent of application of digital skills among librarians for innovative library service delivery in NOUN was moderate, as librarians demonstrated competence in basic digital operations but showed limited proficiency in advanced digital skills required for delivering innovative services in distance learning environments. The study recommended regular capacity-building programmes, improved ICT infrastructure, and stronger institutional support to enhance librarians' digital competencies and promote more innovative library service delivery.

Keywords: Acquisition, Digital, Competencies, Skills Innovative

Introduction

The rapid transformation of the global information environment, driven by advances in Information and Communication Technologies (ICTs), has significantly reshaped the roles and responsibilities of librarians. In contemporary academic settings, particularly within distance learning institutions, traditional library practices are increasingly being complemented by digitally mediated services that support remote access, virtual learning, and real-time information delivery. This paradigm shift has made digital skills acquisition an indispensable requirement for librarians who are expected to provide innovative, user-centered, and technology-driven services (Adeleke & Olorunsola, 2020; Ezeani & Igwesi, 2012). Digital skills refer to the competencies required to effectively use digital technologies for accessing, evaluating, creating, and disseminating information. These competencies encompass a wide range of abilities, including information retrieval, database management, digital content creation, online communication, data creation, and the use of library management systems. Librarians equipped with such skills are better positioned to function efficiently in modern digital library environments and to support teaching, learning, and research activities in higher institutions (Ilomäki *et al.*, 2016; Ng, 2012). In the context of the evolving knowledge economy, digital literacy is no longer optional but a core professional requirement for librarians seeking relevance in the 21st century (Aina, 2014). In Nigeria, the emergence of digital librarianship has been influenced by the increasing adoption of electronic resources, institutional repositories, and online learning platforms. However, studies have shown that while many librarians possess basic digital competencies, there are still gaps in advanced skills necessary for innovative service delivery. Challenges such as inadequate ICT infrastructure, inconsistent power supply, and limited access to training opportunities, and insufficient funding continue to hinder effective digital skills acquisition among librarians (Okiy, 2010; Salaam & Okezie, 2018). These limitations are particularly significant in distance learning environments where digital proficiency is essential for supporting geographically dispersed learners.

The National Open University of Nigeria (NOUN), as the foremost open and distance learning institution in the country, operates within a technology-driven educational framework that relies heavily on digital information systems. Unlike conventional universities, NOUN delivers instruction through online platforms, electronic course materials, and virtual learning environments. Consequently, librarians in NOUN are required to go beyond traditional roles of information custodians to become digital facilitators, information literacy instructors, e-resource managers, and virtual support providers. Their ability to acquire and apply digital skills directly influences the effectiveness of library service delivery and the overall learning experience of distance learners (Ojedokun & Owolabi, 2003; Yusuf & Balogun, 2011). Furthermore, the integration of emerging technologies such as artificial intelligence, big data, and cloud computing has expanded the scope of librarianship. Librarians are now expected to participate in knowledge creation, digital scholarship, and collaborative learning ecosystems, thereby enhancing student engagement and academic productivity in open and distance learning contexts (Lippincott, 2015; Cox, 2016). This evolution underscores the need for continuous professional development and strategic capacity building in digital competencies. Innovative library service delivery in distance learning environments involves

the use of digital tools and platforms to provide seamless access to information resources, including e-books, online journals, databases, and institutional repositories. It also includes virtual reference services, online user education, digital archiving, and personalized information services. The effectiveness of these services depends largely on the extent to which librarians have acquired and can apply relevant digital skills. Without such competencies, the potential of digital library services to support flexible and inclusive education cannot be fully realized (Ezeani & Igwesi, 2012; Aina, 2014).

Statement of the Problem

The increasing adoption of digital technologies in open and distance learning institutions has transformed the nature of library services, requiring librarians to acquire and apply a wide range of digital skills to support remote learners effectively. In the National Open University of Nigeria (NOUN), library services are expected to be delivered through digital platforms that facilitate access to information resources, virtual assistance, online information literacy instruction, and other technology-driven services. However, concerns have been raised regarding the level of digital skills possessed by librarians and the extent to which such skills are applied in the delivery of innovative library services. Notwithstanding the investments in information and communication technologies, several factors such as inadequate ICT infrastructure, limited professional development opportunities, insufficient institutional support, and technological changes may affect librarians' acquisition and application of digital skills. These challenges have the potential to influence the quality and effectiveness of library services provided to distance learners. More so, although previous studies have examined ICT competencies and digital literacy among librarians, there is limited empirical evidence on how digital skills acquisition influences innovative library service delivery within the context of open and distance learning institutions, particularly the National Open University of Nigeria. This gap in knowledge creates the need for a study that investigates the digital skills acquired by librarians, the methods through which such skills are obtained, the extent to which the skills are applied in service delivery, and the challenges affecting their effective utilization.

The Objectives of the Study

The study is guided by the following specific objectives:

1. To find out the level of digital skills possessed by librarians in the National Open University of Nigeria.
2. To identify the types of digital skills required for innovative library service delivery in a distance learning environment.
3. To investigate the extent to which librarians apply digital skills in delivering library services in the National Open University of Nigeria.
4. To find out the challenges affecting digital skills acquisition among librarians in the National Open University of Nigeria.

Research Questions

The following research questions will guide the study:

1. What is the level of digital skills possessed by librarians in the National Open University of Nigeria?
2. What types of digital skills are required for innovative library service delivery in a distance learning environment?
3. To what extent do librarians apply digital skills in delivering library services in the National Open University of Nigeria?
4. What are the challenges affecting digital skills acquisition among librarians in the National Open University of Nigeria?

Literature Review

The literature review examines existing scholarly works related to digital skills acquisition and its influence on innovative library service delivery. The review is organized in line with the objectives of the study, focusing on the level of digital skills possessed by librarians, the types of digital skills required for innovative service delivery in distance learning environments, the application of digital skills in library services, challenges affecting digital skills acquisition, and strategies for enhancing digital competencies among librarians. The review also identifies gaps in existing studies and provides a foundation for understanding the role of digital skills in improving library service delivery within open and distance learning institutions such as the National Open University of Nigeria (NOUN).

Level of Digital Skills Possessed by Librarians

Digital skills have become an essential requirement for librarians in contemporary information environments. These skills extend beyond basic computer literacy to include competencies in digital literacy, information management, online communication, and the use of emerging technologies. According to Ng (2012), digital skills encompass the ability to locate, evaluate, create, and communicate information using digital technologies. Similarly, van Laar *et al.* (2017) emphasized that librarians require a combination of technical, cognitive, and social competencies to function effectively in digital environments. In academic and distance learning institutions, librarians are expected to possess skills that enable them to support users in accessing and utilizing electronic information resources efficiently. Studies have shown that many librarians possess basic digital competencies such as internet searching, word processing, email communication, and database usage. However, proficiency levels vary across institutions and regions, particularly in developing countries where access to training and technological resources may be limited (Aina, 2014). Assessing the level of digital skills possessed by librarians is therefore necessary for determining their preparedness to deliver modern library services.

Types of Digital Skills Required for Innovative Library Service Delivery in Distance Learning Environments

The digital transformation of library services has created a demand for diverse digital competencies among librarians. Innovative service delivery requires skills in digital content creation, electronic resource management, virtual reference services, online information literacy instruction, database administration, learning management system integration, and

social media engagement. The American Library Association (2019) noted that librarians must continuously update their technological competencies to remain relevant in changing information environments. In distance learning environments, librarians require additional skills that enable them to support users remotely. These include competencies in virtual communication, online collaboration tools, cloud-based technologies, and digital repository management. Hussain (2020) observed that the effectiveness of innovative library services depends largely on librarians' ability to utilize digital technologies creatively and efficiently. Consequently, identifying the specific digital skills required in distance learning environments is important for improving library service delivery.

Application of Digital Skills in Library Service Delivery

The acquisition of digital skills is meaningful only when such skills are effectively applied in library operations and services. Digital skills enable librarians to provide innovative services such as virtual reference assistance, online user education, institutional repository management, electronic resource provision, and remote access support. These services enhance accessibility, efficiency, and user satisfaction, particularly in institutions that serve geographically dispersed learners. Distance learning has significantly expanded the responsibilities of librarians beyond traditional service models. According to Moore and Kearsley (2012), librarians in distance education institutions play critical roles in facilitating access to information resources and supporting independent learning. UNESCO (2020) further emphasized that digital technologies have transformed library services into predominantly online and user-centred systems. In institutions such as the National Open University of Nigeria, effective application of digital skills is essential for meeting the information needs of distance learners.

Challenges Affecting Digital Skills Acquisition among Librarians

Despite the growing importance of digital competencies, several challenges hinder effective digital skills acquisition among librarians. Inadequate ICT infrastructure remains a major obstacle, particularly in developing countries where internet connectivity and technological facilities are often insufficient. Okiy (2010) identified poor funding, inadequate equipment, and limited access to training opportunities as significant barriers to digital skills development among librarians. Other challenges include resistance to technological change, heavy workloads, and limited institutional support for professional development. The World Bank (2021) also highlighted the digital divide and unequal access to technological resources as factors affecting digital competence development in many developing nations. These challenges can limit librarians' ability to acquire and apply the digital skills required for innovative service delivery.

Strategies for Enhancing Digital Skills Acquisition among Librarians

Enhancing digital skills acquisition requires deliberate institutional and professional interventions. Continuous professional development programmes, workshops, seminars, and online training opportunities are among the most effective approaches for improving librarians' competencies. The International Federation of Library Associations and Institutions (IFLA, 2021) emphasized the need for lifelong learning and continuous skills upgrading to address

rapidly changing technological demands. Other important strategies include increased funding for ICT infrastructure, integration of digital competencies into Library and Information Science curricula, mentorship programmes, and collaboration among libraries and educational institutions. The Association of College and Research Libraries (2016) noted that institutional support is critical for sustaining digital competence development among librarians. These strategies can contribute significantly to improved library service delivery in digital and distance learning environments.

Empirical Review

Available studies indicate that digital skills play a significant role in enhancing library service delivery. However, most existing studies have focused on digital literacy, ICT competencies, or technology adoption among librarians in conventional academic libraries. There is limited empirical evidence specifically examining digital skills acquisition and its influence on innovative library service delivery in open and distance learning institutions such as the National Open University of Nigeria. This gap in the literature justifies the need for the present study.

Summary of Literature Review

The literature reviewed indicates that digital skills are essential for effective and innovative library service delivery, particularly in distance learning environments. Librarians require a wide range of digital competencies to support electronic information services and remote learners. However, challenges such as inadequate infrastructure, insufficient training opportunities, and limited institutional support continue to affect digital skills acquisition. The reviewed studies also reveal limited empirical evidence on the influence of digital skills acquisition on innovative library service delivery within the context of open and distance learning institutions in Nigeria, thereby necessitating the present study.

Methodology

The design enabled systematic collection and quantitative analysis of data without manipulation of variables. The study was conducted at the National Open University of Nigeria (NOUN), an Open and Distance Learning (ODL) institution with study centres across Nigeria, where digital technologies are central to library service delivery. The population comprised 65 professional and para-professional librarians, and due to the manageable size, a census sampling technique was employed, allowing all members of the population to participate. Data were collected using a structured questionnaire titled Digital Skills Acquisition and Innovative Library Service Delivery Questionnaire (DSAILSDQ), organized into sections covering demographic information, digital skills, service delivery, challenges, and improvement strategies. The instrument was based on a four-point Likert scale. The collected data were analyzed using descriptive statistics of mean and standard deviation, with a criterion mean of 2.50 used for decision-making, and inferential statistics (Pearson Product Moment Correlation).

Data Presentation and Discussion of the Findings

This study examined digital skills acquisition among librarians and its implications for innovative library service delivery in a distance learning context. The findings are discussed in relation to existing literature.

Table 1: Level of Digital Skills Acquisition (N = 65)

S/N	Digital Skills Acquisition	SA	A	D	SD	Mean	Decision
1	I possess basic computer operation skills (e.g., MS Word, Excel, PowerPoint).	40	20	5	0	3.54	Accepted
2	I am proficient in the use of library management software (e.g., KOHA).	30	25	10	2	3.31	Accepted
3	I have the ability to manage electronic databases effectively.	25	28	12	2	3.20	Accepted
4	I am skilled in online information retrieval and advanced search techniques.	35	22	8	2	3.42	Accepted
5	I can effectively use institutional repositories for information storage and retrieval.	20	30	15	3	3.08	Accepted
6	I possess skills in digital cataloguing and metadata creation (e.g., MARC).	18	27	20	5	2.97	Accepted
7	I am competent in using online communication tools (e.g., Zoom, Google Meet).	33	24	8	2	3.38	Accepted
8	I have skills in managing digital library platforms and services.	22	26	17	5	3.08	Accepted
9	I am capable of troubleshooting basic ICT-related problems.	15	20	30	10	2.46	Rejected
10	I engage in continuous learning to improve my digital competencies.	28	25	12	3	3.25	Accepted

Table 1 indicated that librarians in the National Open University of Nigeria possess a moderate to high level of digital skills, as reflected in the generally high mean scores across most items. Core competencies such as basic computer operations (Mean = 3.54), online information retrieval (Mean = 3.42), and use of online communication tools (Mean = 3.38) were strongly affirmed, suggesting that librarians are well-equipped with foundational digital capabilities required for contemporary library services. Similarly, competencies in database management (Mean = 3.20), use of library management software (Mean = 3.31), and engagement in continuous digital learning (Mean = 3.25) were also rated positively, indicating a reasonable level of professional adaptability in a technology-driven environment. However, a notable exception is ICT troubleshooting skills (Mean = 2.46), which fell below the acceptance threshold. This suggests a critical gap in technical problem-solving abilities, which may hinder efficient service delivery, especially in a digital and remote learning context. Overall, the findings imply that while librarians demonstrate competence in general digital operations, there is a need to strengthen advanced and technical digital skills to enhance service effectiveness.

Table 2: Innovative Library Service Delivery (N= 65)

S/N	Library Service Delivery	SA	A	D	SD	Mean	Decision
1	I provide virtual reference services to users.	30	28	5	2	3.32	Accepted
2	I participate in online user education and information literacy programmes.	28	27	8	2	3.25	Accepted
3	I support remote access to electronic information resources.	32	26	5	2	3.35	Accepted
4	I contribute to the development and management of digital repositories.	25	27	9	4	3.12	Accepted
5	I use social media platforms to deliver library services.	20	25	12	8	2.88	Accepted
6	I assist users through email and online chat services.	33	25	5	2	3.37	Accepted
7	I develop digital content for library users (e.g., tutorials, guides).	18	25	14	8	2.82	Accepted
8	I support e-learning platforms with relevant library services.	30	26	7	2	3.29	Accepted
9	I provide current awareness services (CAS) using digital tools.	28	27	8	2	3.25	Accepted
10	I participate in collaborative digital library initiatives.	25	28	8	4	3.14	Accepted

Grand Mean = 3.18

Table 2 revealed that a broad range of digital service-related competencies are widely recognized and required, as evidenced by the high grand mean of 3.18. Librarians strongly affirmed the importance of skills such as email and online user support (Mean = 3.37), remote access facilitation (Mean = 3.35), and virtual reference services (Mean = 3.32), highlighting the centrality of digital interaction in service delivery. Additionally, competencies related to e-learning support (Mean = 3.29), current awareness services (Mean = 3.25), and participation in collaborative digital initiatives (Mean = 3.14) further emphasize the evolving role of librarians in digitally mediated learning environments. Although slightly lower, skills such as digital content development (Mean = 2.82) and social media service delivery (Mean = 2.88) were still accepted, indicating emerging but less fully developed areas of practice. Overall, the results underscore that innovative library service delivery in distance learning environments requires a diverse set of digital, communication, and content development skills, with particular emphasis on user-centered and remote service capabilities.

Table 3: Relationship between Digital Skills and Service Delivery (N = 65)

S/N	Relationship Between DS and SD	SA	A	D	SD	Mean	Decision
1	Digital skills enhance my ability to deliver innovative library services.	40	22	2	1	3.55	Accepted
2	My level of ICT proficiency influences the quality of services I provide.	38	24	2	1	3.52	Accepted
3	Digital competencies improve user satisfaction in library services.	42	20	2	1	3.57	Accepted
4	Lack of digital skills limits effective service delivery.	35	25	4	1	3.45	Accepted
5	Continuous digital training improves library service innovation.	39	23	2	1	3.54	Accepted
6	Digital literacy is essential for supporting distance learners.	41	21	2	1	3.55	Accepted
7	My digital skills enable me to adapt to emerging technologies.	37	24	3	1	3.49	Accepted
8	There is a strong link between digital skills and library service efficiency.	38	23	3	1	3.51	Accepted

Grand Mean = 3.52

Table 3 findings showed that digital skills are applied to a high extent in library service delivery, as reflected in the grand mean of 3.52. Respondents strongly agreed that digital skills enhance service delivery (Mean = 3.55), improve user satisfaction (Mean = 3.57), and support distance learners (Mean = 3.55). Furthermore, the results indicate that ICT proficiency significantly influences service quality (Mean = 3.52) and enables librarians to adapt to emerging technologies (Mean = 3.49). The strong agreement that digital skills improve service efficiency (Mean = 3.51) and innovation (Mean = 3.54) highlights the strategic importance of digital competence in modern librarianship. The consistent high ratings across all items suggest that librarians are not only aware of digital tools but are actively leveraging them to enhance service delivery.

Overall, the findings demonstrate that digital skills are integral to effective and innovative library services, particularly in a distance learning environment.

Table 4: Challenges Affecting Digital Skills Acquisition (N = 65)

S/N	Challenges	SA	A	D	SD	Mean	Decision
1	Inadequate ICT infrastructure affects my digital skills acquisition.	42	20	2	1	3.58	Accepted
2	Poor internet connectivity hinders effective use of digital tools.	45	18	1	1	3.66	Accepted
3	Lack of regular training programmes limits skill development.	38	22	4	1	3.49	Accepted

4	Insufficient funding affects access to digital tools and training.	40	20	4	1	3.52	Accepted
5	Resistance to change affects adoption of digital technologies.	20	28	12	5	2.97	Accepted
6	Limited access to modern library technologies hinders performance.	35	25	4	1	3.45	Accepted
7	Heavy workload limits time for acquiring digital skills.	30	25	8	2	3.28	Accepted
8	Lack of institutional support affects digital skills acquisition.	35	25	4	1	3.45	Accepted

Grand Mean = 3.42

Table 4 results indicated that librarians face significant challenges in acquiring and utilizing digital skills, with a high grand mean of 3.42. The most prominent challenges include poor internet connectivity (Mean = 3.66), inadequate ICT infrastructure (Mean = 3.58), and insufficient funding (Mean = 3.52). These findings highlight systemic and infrastructural limitations that constrain digital capacity development. Additionally, lack of training opportunities (Mean = 3.49) and limited access to modern technologies (Mean = 3.45) further compound the problem, suggesting that both resource availability and capacity-building initiatives are insufficient. Although comparatively lower, resistance to change (Mean = 2.97) still emerged as a notable factor, indicating some level of behavioral or organizational inertia. Overall, the findings suggest that institutional, technological, and financial barriers significantly impede digital skills acquisition, thereby limiting the effectiveness of library service delivery.

Implications of the Study

The study underscores the importance of digital skills in promoting effective and innovative library service delivery in Open and Distance Learning environments. It implies that librarians require continuous professional development to enhance their digital competencies and adapt to emerging technologies. The study further highlights the need for adequate institutional support through improved ICT infrastructure, funding, and enabling policies to facilitate digital transformation in libraries. Enhanced digital competence among librarians can improve access to electronic resources, increase user satisfaction, and strengthen support for teaching, learning, and research. Overall, digital competence, continuous training, institutional support, and technology adoption remain essential for sustaining innovative library services and improving the effectiveness of academic libraries.

1. Level of Digital Skills Possessed by Librarians

The findings revealed that librarians in the National Open University of Nigeria possess a moderate to high level of digital skills, particularly in basic computer operations, online information retrieval, and the use of communication tools. This suggests that librarians have adapted to the digital transformation of library services, especially in Open and Distance Learning (ODL) environments. This result aligns with the work of Ezeani and Igwesi, who reported that librarians in Nigerian academic institutions

demonstrate competence in basic ICT applications but require further training in advanced digital tools. Similarly, Aina emphasized that while librarians possess foundational digital literacy, the rapid evolution of information technologies demands continuous upgrading of skills. However, the study identified a significant gap in ICT troubleshooting skills, indicating limited technical depth. This supports findings by Ogunsola, who noted that inadequate technical expertise remains a major constraint in the effective deployment of digital library systems in developing countries.

2. Types of Digital Skills Required for Innovative Service Delivery

The study further revealed that a wide range of digital competencies including virtual reference services, remote access support, e-learning facilitation, and digital communication are essential for innovative library service delivery. This finding corroborates the position of Davis, whose Technology Acceptance Model (TAM) emphasizes that the usefulness and ease of use of technology significantly influence its adoption in professional settings. In the context of librarianship, digital skills enhance the perceived usefulness of library services among users. Additionally, the importance of digital content creation and social media usage, though less strongly developed, reflects emerging trends in librarianship. This is consistent with studies that highlight the evolving role of librarians as digital content curators and online service facilitators, rather than mere custodians of print resources.

3. Extent of Application of Digital Skills in Service Delivery

The findings indicate that librarians apply digital skills to a high extent, particularly in enhancing service delivery, improving user satisfaction, and supporting distance learners. This suggests that digital competencies are not only present but are being effectively utilized in practice. This aligns with findings by Ezeani, who observed that ICT integration in library services significantly improves access to information resources and service efficiency. The ability of librarians to adapt to emerging technologies also reflects a growing culture of innovation within the profession. Furthermore, the strong agreement that digital skills enhance service efficiency and innovation supports the argument that digital competence is a key driver of modern library performance, particularly in ODL institutions where physical interaction is limited.

4. Challenges Affecting Digital Skills Acquisition

Despite the positive findings, the study identified several significant challenges, including poor internet connectivity, inadequate ICT infrastructure, insufficient funding, and limited training opportunities. These challenges highlight systemic barriers that hinder effective digital skills acquisition. These findings are consistent with earlier studies by Ogunsola, who identified infrastructural deficiencies as a major obstacle to digital library development in Nigeria. Similarly, Aina noted that funding constraints and lack of institutional support limit the capacity of libraries to fully embrace digital transformation.

The issue of workload and resistance to change also suggests organizational and behavioral challenges, which may affect the pace of digital adoption among librarians.

5. Strategies for Enhancing Digital Skills Acquisition

The study identified several effective strategies for enhancing digital competencies, including regular ICT training, improved infrastructure, better internet connectivity, institutional support, and professional development opportunities. These findings are in line with global best practices in librarianship, which emphasize continuous professional development as essential for adapting to technological change. The importance of training and infrastructure support reinforces the argument that digital transformation requires both human capacity development and technological investment. Moreover, the encouragement of self-directed learning and collaboration reflects a shift towards lifelong learning and knowledge sharing, which are critical in a rapidly evolving digital environment.

Summary of Findings

This study demonstrates that while librarians possess and apply digital skills effectively, their full potential is constrained by infrastructural and institutional challenges. The findings reinforce the view that digital skills are central to innovative library service delivery and that improving these skills requires a holistic approach involving training, policy support, and technological investment. In line with the Technology Acceptance Model, the study suggests that enhancing librarians' digital competencies will improve both the perceived usefulness and effectiveness of library services, thereby leading to better user outcomes in distance learning environments.

Conclusion

Digital skills are fundamental to innovative library service delivery in the National Open University of Nigeria (NOUN), where teaching, learning, and information services are largely technology-driven. The application of digital competencies enables librarians to provide innovative services such as virtual reference services, digital content management, remote user support, online information retrieval, and access to electronic resources for distance learners. As the demand for technology-based library services continues to increase, librarians require adequate digital competencies to effectively support teaching, learning, and research activities within the Open and Distance Learning environment. The effectiveness of innovative library service delivery depends largely on librarians' ability to acquire, update, and apply relevant digital skills in their daily operations. Therefore, strengthening digital competencies through continuous professional development, access to modern technologies, and institutional support is essential for sustaining innovation, improving service quality, and enhancing the overall effectiveness of library services in NOUN.

Recommendations

1. Provision of Adequate ICT Infrastructure

The management of the National Open University of Nigeria should invest in modern ICT infrastructure and digital facilities to enhance librarians' opportunities for acquiring and applying digital skills in library operations and service delivery.

2. Improvement of Internet Connectivity

Efforts should be made to provide reliable, stable, and high-speed internet connectivity in libraries to facilitate access to digital resources, online training platforms, and technology-based library services.

3. Organization of Regular Training Programmes

Continuous professional development programmes, including workshops, seminars, and ICT training sessions, should be organized regularly to improve librarians' digital competencies and keep them abreast of emerging technologies.

4. Increased Funding for Digital Skills Development

Adequate financial resources should be allocated to libraries for the acquisition of digital technologies, software applications, and staff training programmes aimed at enhancing digital skills acquisition.

5. Promotion of Positive Attitudes toward Technological Change

Library management should implement awareness programmes and change management initiatives to encourage librarians to embrace technological innovations and reduce resistance to the adoption of digital technologies.

6. Provision of Access to Modern Library Technologies

Libraries should be equipped with up-to-date digital tools, automated systems, and emerging technologies to facilitate practical exposure and improve librarians' technological proficiency.

7. Reduction of Workload Constraints

Library management should review work schedules and provide adequate staffing to enable librarians to devote sufficient time to training, self-development, and digital skills acquisition activities.

8. Strengthening Institutional Support

University authorities and library management should formulate supportive policies and provide incentives that encourage continuous learning, innovation, and the effective utilization of digital technologies among librarians.

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