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Assessing the Availability and the Level of Success of ICT Projects in Public University Libraries in Northwest Nigeria

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Abstract

The aim of the study was to assess the availability and level of success of Information and Communication Technology (ICT) projects in public university libraries in Northwest Nigeria, Two research questions were formulated to guide the study. Descriptive survey research design was employed for the study. The populations of the study are two hundred and ten (210). The entire sample chosen was one hundred and twenty-six (126) using purposive sampling technique. This comprises six Public Universities. The sample size from the population was considered adequate as it conforms in Krejcie and Morgan table for determining sample size. The questionnaire was used as instrument for data collection. The instrument was face validated by three experts one from Measurement and Evaluation unit and two experts from library department, Sokoto State University, Sokoto. Data collected was analyzed using Mean and Standard Deviation. Findings revealed that, ICT adoption and functionality of ICT project, ABU Zaria and BUK emerged as leaders by demonstrating advanced ICT facilities that were both available and functional. Conversely, JigSU and KSUSTA recorded low levels of ICT functionality. Findings also shows that ICT projects like automation, OPAC, CCTV and Open Educational Resources were rated successful, while others such as RFID, digital preservation and virtual meeting tools were rated less successful. The overall mean indicated a moderate level of success in ICT project implementation across the institutions. The study concludes that ICT infrastructure has improved service delivery in leading libraries, but significant gaps remain in others, and recommended urgent intervention to ensure equity and sustainability in ICT-driven library services.

Keywords*:* Assessment, ICT, Project, Public University, Libraries

Introduction

University libraries serve as vital hubs of knowledge, supporting the teaching, learning, and research missions of higher education institutions. Central to this role is the provision of access to vast collections of books, journals and various digital resources facilitated by deployment of advanced technologies. However, due to growing collections of print and digital information resources, and changes in user demands and preferences, application of Information and Communication Technology (ICT) has become a necessity in every library. Thus, several efforts have been made over the years to ensure transition and transformation of libraries in Nigeria from traditional to digital systems Saka et al., (2021) noted that through the application of ICT, some digital transformation efforts were made by university libraries in Nigeria, which include digitization, deployment of online public access catalogue, developing institutional repository, and online reference services.

In libraries like other sectors, ICT project has become a critical success factor for efficiency of operations, effective performance, and getting the expected outcomes towards attaining the set goals and objectives of parent institutions. Therefore, application of ICT in any library requires serious consideration and integration of project management processes. These processes as stated by Liana et al., (2023) are project initiation, planning, execution, monitoring, controlling, and closing. A careful consideration of these processes will help ensure the success of project delivery. However, the expected success can be achieved by ensuring effective project management.

In modern libraries, ICT project planning, implementation and sustenance has become one of the most essential successes factors for the overall technology integration. However, there is the general assumption that ICT project is just involved a set of activities requires only hardware, software, computer networking systems, and other operating and application packages that will ultimately bring some technological changes into an organization (Wu et al., 2018). Indeed, library ICT project projects require effective project management from its initial stage up to completion level, and followed by continuous monitoring and evaluation for sustenance. According to Liana et al., (2023) assert that many ICT projects in the public sectors of the developing countries fails partially or completely due to deficiencies in the planning and lack of proper understanding of expected outcomes and sustainability strategies.

Information and Communication Technology (ICT) encompasses a wide range of digital tools and resources used to generate, manage, store, and disseminate information effectively. In the context of university libraries, Amaka and Angela (2018) describe ICT as consisting of all forms of communication equipment and software employed to generate, store, transmit, interpret, and manipulate information across various formats. Recent advances in IT have not only increased tremendously the ability to access, store and process information within the library but also have brought significant changes in the concept, organisation, functioning and management of library and information systems (Kodytek et al., 2023). The IT revolution has facilitated the processes of searching for and recovering information; ICT improves the efficiency of organizational management processes and provides new ways of improving the capacity of response to its users (Alzahrani and Alfouzan 2022) The integration of ICT-based products and services emerges as the solution to these issues, enabling libraries to keep pace with the increasing information load and user expectations.

Effective practices for ICT project success, as outlined by Ifinedo (2018), include understanding the complexity of implementation, tailoring projects to specific needs, retraining staff for upcoming ICT changes, selecting appropriate and easily implementable technologies. The integration of ICT into Nigerian university libraries has profoundly transformed their operations and service delivery. Dawa (2022) observes that ICT has shifted the core functions of libraries from mere acquisition and storage of information to a focus on access, dissemination, and practical utilization. This technological revolution has also altered user expectations, positioning libraries as active centers for information dissemination rather than just repositories of books. Vijayalakshmi (2019) discussed that, one of the main objectives of ICT in library settings is to familiarize users with the functionalities of electronic media and digital tools, thereby enhancing their information literacy and operational understanding. Similarly, Srinivasa (2023) emphasizes that in the 21st century, the role of ICT in library operations is crucial; many manual routines have been automated, which results in faster and more efficient service delivery to users. The primary aim of integrating ICT is to improve information accessibility, elevate the quality of services, and support academic research and learning activities. However, the successful implementation of ICT projects hinges on critical factors such as adequate infrastructure and the presence of skilled personnel.

Furthermore, in the Nigerian context, ICT has substantially enhanced service delivery in many libraries. According to Essien et al. (2022), the adoption of ICT facilitates the digitization of storage, retrieval, and dissemination of academic resources, thus helping to modernize library functions. Overall, ICT's integration in libraries worldwide—and particularly in Nigeria has led to significant progress in providing efficient, accessible, and technology-driven services that meet evolving user needs. The prominence of ICT projects such as automation and digitization in Nigerian libraries reflects a strategic move towards modernizing information management and service delivery. The developments in digital technologies and specifically the paradigm shift in library services with the advent of Information and Communication Technologies (ICTs), internet services, electronic resources, digital collections and other digital technology services have led to advancement in digital literacy in academic libraries and among librarians (Atram Ku PN, 2017).The facilities supporting these ICT initiatives are diverse, encompassing computer workstations, internet access, offline resources, digital cameras, printers, scanners, DVDs, and CD-ROMs (Anthonia & Vincent, 2022).

Objectives of the Study

The aim of this study is to Assess the availability and level of success of ICT project in Public University Libraries in North West geopolitical zone, Nigeria. Specifically, the study is intended to:

1. Ascertain the availability of library ICT projects in public University Libraries in North-West Nigeria.
2. Determine the level of success of the implemented Library ICT projects among Public University Libraries in North-West Nigeria,

Methodology

Descriptive survey design was adopted for the study. The descriptive survey is appropriate and suitable as a guide to examine the opinion of the respondents on the subject under study. The population of the study is two hundred and ten (210). Purposive sampling technique or was used based on the characteristics of the population to sample one hundred and twenty-six (126) with the view of getting adequate information. The sample size from the population was considered adequate as it conforms in Krejcie and Morgan table that determined the sample size. Data was collected through the use of questionnaire as an instrument for data collection, were one hundred and

twenty-six (126) copies of questionnaire were filled, returned and analysed. The instrument was validated by three expert one from measurement and evaluation unit and two experts from the library department Sokoto State University, Sokoto. The data collected was analyzed using Mean and Standard deviation.

Results

Table 1: Status of ICT Projects in Selected University Libraries in Northwest Nigeria

S/N	Type of Library ICT Project	ABU Zaria	BUK Kano	Jigawa SU	UMYU Katsina	UDUS Sokoto	KSUSTA Aliero
1	Automation	AF	AF	ANF	AF	AF	ANF
2	Radio Frequency Identifier (RFID)	ANF	AF	NA	NA	ANF	NA
3	Digitization	AF	AF	A	AF	AF	A
4	CCTV	AF	AF	AF	AF	AF	AF
5	Open Educational Resources (OER)	AF	AF	A	AF	AF	A
6	Institutional Repository	AF	AF	NA	AF	AF	A
7	Online Public Access Catalogue (OPAC)	AF	AF	ANF	AF	AF	ANF
8	Online Reference & Information Service	AF	AF	NA	A	AF	A
9	Database Management & Access	AF	AF	A	AF	AF	A
10	Online Catalogues & Discovery	AF	AF	ANF	AF	AF	A
11	Communication & Outreach Tools	AF	AF	A	AF	AF	A
12	Digital Archiving	AF	AF	NA	A	AF	A
13	Digital Preservation Tools	AF	AF	A	AF	AF	A
14	Virtual Meeting Tools	AF	AF	A	AF	AF	ANF
15	Others (e.g.,	A	AF	NA	A	AF	NA

	Mobile Library Apps, LMS)

Note. AF = Available and Functional; ANF = Available but Not Functional; A = Available; NA = Not Available.

The data from Table 1 revealed six institutions under study are: Ahmadu Bello University (ABU) Zaria, Bayero University Kano (BUK), Sule Lamido University Jigawa, Umaru Musa Yar'adua University (UMYU) Katsina, Usmanu Danfodiyo University Sokoto (UDUS), and Kebbi State University of Science and Technology Aliero (KSUSTA) there is evidence of significant effort to integrate ICT in library operations, though the level of functionality differs.

At ABU Zaria and BUK Kano, ICT projects are the most advanced. Nearly all listed projects are both available and functional. From automation, digitization, CCTV, online public access catalogues, institutional repositories, to modern tools like virtual meeting platforms and digital preservation, these two universities demonstrate leadership in ICT adoption. Their libraries stand out as models where most ICT infrastructure is not only present but also actively functional.

In contrast, Jigawa State University (JigSU) and KSUSTA Aliero lag behind in ICT functionality. For instance, while automation, OPAC, and online catalogues are available, they are often not functional. Some projects such as RFID, institutional repositories, digital archiving, and virtual meeting tools are completely unavailable. This indicates structural and operational gaps that need addressing to bring them up to par with other institutions.

At UMYU Katsina, ICT availability is relatively strong, with many tools such as automation, digitization, CCTV, OPAC, institutional repository, and online catalogues being available and functional. However, gaps remain in advanced ICTs like RFID, digital archiving, and mobile library apps, which are either unavailable or limited in functionality. This suggests moderate progress but also points to areas that require greater investment.

UDUS Sokoto presents a fairly advanced ICT environment, comparable to ABU and BUK. Most ICT projects, including automation, digitization, CCTV, OPAC, digital preservation, and even emerging tools like mobile library apps, are available and functional. However, RFID technology appears to be a common challenge, being either not functional or absent in most universities, including UDUS.

Generally, the data indicates that while ABU Zaria, BUK Kano, and UDUS Sokoto are leading in ICT functionality, universities like JigSU and KSUSTA Aliero are significantly behind, with many ICT tools either non-functional or unavailable. UMYU sits in the middle, reflecting partial progress. A common weakness across almost all institutions is the limited adoption and functionality of RFID technology, which points to challenges in implementing more advanced security and resource management systems.

Table 2: Respondents on the Level of Success of ICT Projects in Public University Libraries in Northwest Nigeria

S/N	Statements	VHL	HE	VLE	LE	N	FX	$\bar{X}$	STD	Decision
1	Automation	38	47	28	13	126	341	2.71	1.02	Agreed
2	Radio Frequency Identifier (RFID)	20	30	40	36	126	298	2.37	0.96	Disagreed
3	Digitization	25	44	39	18	126	318	2.52	0.91	Disagreed
4	CCTV	32	49	28	17	126	335	2.66	1.01	Agreed
5	Open Educational Resources (OER)	40	41	30	15	126	341	2.71	1.05	Agreed
6	Institutional Repository	29	46	37	14	126	327	2.6	0.94	Agreed
7	Online Public Access Catalogue (OPAC)	41	48	25	12	126	349	2.77	1.1	Agreed
8	Online Reference & Information Service	36	45	31	14	126	335	2.66	1.08	Agreed
9	Database Management & Access	28	47	34	17	126	326	2.59	1.01	Agreed
10	Online Catalogues & Discovery	34	42	31	19	126	328	2.6	1.07	Agreed
11	Communication & Outreach Tools	30	46	33	17	126	326	2.59	1.03	Agreed

12	Digital Archiving	27	40	36	23	126	319	2.53	0.97	Disagreed
13	Digital Preservation Tools	24	39	41	22	126	315	2.5	0.92	Disagreed
14	Virtual Meeting Tools	22	38	43	23	126	311	2.47	0.95	Disagreed
15	Others (e.g., Mobile Library Apps, LMS)	18	22	20	10	70	196	2.8	1.12	Agreed
								2.61 (AWM)		

Note. Decision Rule: Mean ($\bar{X}$) ≥ 2.50 = Agreed; Mean ($\bar{X}$) < 2.50 = Disagreed. VHL = Very High Extent; HE = High Extent; VLE = Very Low Extent; LE = Low Extent.

The findings from Table 2 revealed a moderate level of success in the implementation of ICT projects in public university libraries in North-West Nigeria, with an overall average weighted mean (AWM) of 2.61. Projects such as OPAC, automation, OER, CCTV, and online reference services were rated successful, while advanced projects such as RFID, digitization, digital preservation tools, and virtual meeting tools were rated less successful.

The relatively high success of OPAC implementation indicates that most libraries in the region have successfully transitioned from manual cataloguing systems to online platforms. This development enhances resource visibility and accessibility, providing users with a more efficient way to retrieve bibliographic information. The success of OPAC reflects deliberate institutional efforts to modernize basic library operations and sets a foundation for the adoption of other ICT projects.

However, sustaining OPAC depends on consistent funding, regular system upgrades, and staff training. Its success demonstrates that with proper investment in infrastructure and human capacity, public university libraries in the region can effectively adopt ICT projects. Thus, OPAC serves as an example of an achievable and sustainable ICT intervention.

Radio Frequency Identification (RFID) was rated the least successful ICT project. Despite its global reputation for improving circulation efficiency and securing library resources, RFID adoption remains minimal in public university libraries in North-West Nigeria. Its low success may be due to high

costs of installation, inadequate technical know-how, and insufficient funding support from institutions.

The poor performance of RFID highlights the technological gap between Nigerian university libraries and global best practices. While RFID could revolutionize resource management and reduce theft, its failure to thrive demonstrates the limitations imposed by financial and infrastructural constraints. This finding suggests that until funding and technical expertise improve, advanced ICT projects will remain difficult to implement successfully.

Conclusion

The study concludes that ICT projects have become essential drivers of effective information service delivery in university libraries. ABU Zaria and BUK Kano stand out as benchmarks of ICT adoption in Northwest Nigeria, successfully implementing a broad range of ICT tools and resources. However, JigSU and KSUSTA face challenges of inadequate infrastructure, poor functionality, and limited project success, which hamper their ability to meet the modern information needs of users. While ICT projects have moderately succeeded in public university libraries in the region, there remains a digital divide among institutions that must be addressed to achieve uniform progress.

Recommendations

3. Strengthening ICT Infrastructure: Universities with low ICT adoption, particularly JigSU and KSUSTA, should prioritize investments in core ICT facilities such as automation, OPAC, institutional repositories, and digital archiving.
4. Government and Stakeholder Support: State governments, the Tertiary Education Trust Fund (TETFund), and development partners should provide targeted funding and policy support to bridge ICT gaps across universities.
5. Capacity Building and Training: Continuous training of librarians and ICT staff is necessary to ensure proper utilization and management of available ICT tools.

6. Sustainability and Maintenance: Institutions should establish maintenance frameworks to ensure that ICT projects remain functional beyond initial implementation.
7. Collaboration and Benchmarking: Less advanced institutions should collaborate with leading universities like ABU and BUK to adopt best practices in ICT-driven library services.
8. Inclusion of Emerging Technologies: Universities should plan for the gradual adoption of modern tools such as RFID, digital preservation systems, and virtual meeting platforms to enhance efficiency and global visibility.

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