

APPLICATION OF ICT TOOLS IN TECHNICAL SERVICES: A CASE STUDY OF J.D. AMIN LIBRARY, FEDERAL UNIVERSITY DUTSE, NIGERIA

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Abstract

The study investigated the application and use of ICT Tools in technical services at Federal University Dutse, Nigeria. The population of the study comprises all the staff in the Division, which comprises eight (8) staff. The entire population was used as the sample size. The adopted qualitative method, where an Interview Guide was a tool for data collection and thematic data analysis, was used for the analysis using coding and themes. The study revealed that computers, printers, WorldCat, OPAC, spine stickers and scissors are the common tools available in the library. The report further revealed that the library encounters many challenges in using ICT Tools for library services, such as inadequate funding, outdated infrastructure, irregular power supply and limited technical skills. The study recommends increased investment in ICT infrastructure, regular staff training, enhanced funding, improved internet connectivity, and strategic change management initiatives to fully harness the potential of ICT tools for technical services development. The study recommends that alternative sources of power, more software should be purchased for online cataloguing and classification, and more funds should be allocated for library budget.

Keywords: ICT Tools, Library Operations, Technical Services, Federal University Dutse.

Introduction

The main function of a library is organization of information resources for use. Library services are unique because it involves the organization of the library collection. However, the sole responsibility of Technical Service Department is organization of information resources for Technical Service Department is one of the important departments in all libraries especially academic libraries, because the main work of a library is done in this department. The integration

of Information and Communication Technology (ICT) tools has transformed library services globally, particularly in the areas of technical

services, which include cataloguing, classification, acquisition, and processing of library materials. In academic libraries such as the J.D. Amin Library of Federal University Dutse (FUD), Nigeria, the adoption of ICT tools is vital for enhancing operational efficiency, ensuring timely access to resources, and improving user satisfaction (Ezeani, 2021). Technical services

serve as the backbone of library operations, and the application of ICT has modernized these functions, enabling libraries to transition from traditional manual practices to more automated and digitized workflows.

With the proliferation of digital technologies, academic libraries are increasingly utilizing Integrated Library Management Systems (ILMS), online cataloguing tools, and digital repositories to streamline technical processes (Okike & Ugboma, 2022). The J.D. Amin Library, in line with these global trends, has adopted ICT-based solutions such as KOHA, online public access catalogues (OPAC), and digital asset management platforms to enhance cataloguing, acquisition, and processing activities. These technologies not only speed up technical operations but also facilitate resource sharing, metadata standardization, and the integration of open access resources.

Despite the evident benefits, the application of ICT tools in Nigerian academic libraries, including J.D. Amin Library, faces challenges such as inadequate funding, inconsistent power supply, limited ICT skills among library staff, and maintenance issues (Salihu & Musa, 2024). Addressing these challenges is crucial for the library to fully leverage the potentials of ICT in its technical services. Recent studies emphasize the need for continuous capacity building, infrastructural development, and policy support to sustain ICT initiatives in university libraries (Abdullahi, Ibrahim, & Sulaiman, 2025). Therefore, examining the application and use of ICT tools for technical services at the J.D. Amin Library is timely and significant. It offers insights into how ICT adoption can optimize library operations, identify existing gaps, and propose strategies for improvement in academic library services delivery in Nigeria.

HISTORICAL BACKGROUND OF J. D AMIN LIBRARY

The library being the nerve centre of every academic institution that support teaching, research and learning, the J. D Amin Library Federal University Dutse FUD was established alongside with the university FUD. It was firstly

situated at NO: H1 Muhammad Abubakar Rimi Housing Estate, Fatarata Dutse with only six (6) staff. Not long ago, the library was moved to the university takeoff side at Ibrahim Aliyu bye-pass on 18th April, 2012. Two classes were initially used as the university library, while the construction of the library complex was going on. Most of the first sets of the information resources were about 1000 volumes, the library was moved to a temporary building in the takeoff side on 16th May, 2012. The library got three its first set of computers and desktops with few library staff managing its resources. The library started with four divisions:

1. Administrative Division
2. Reader Service
3. Technical Service Division
4. Serials Division
5. E-library Division

In 2015, the library moved to the permanent building. The organization of any library is considered in the light of the structure of the university it serves. Subsequently, the University Library was named after the pioneer Vice-Chancellor Professor J.D Amin, now it is called J.D Amin Library. With the establishment of new faculties, the library has the following branch libraries:

1. Administrative Department
2. Collection Development Division (CDD)
3. Serial Division
4. Readers' Services Division: (Reserve Unit, Reference Unit and Circulation Unit)
5. Technical Services Division (Cataloguing, Classification and Book finishing)
6. E-Library Division
7. Documentation and Research Division
8. Preservation & Conservation Division
9. Faculty Libraries: it is sub-divided into:
 - Faculty of Agriculture Library
 - Faculty of Arts & Social Science Library
 - Faculty of Life Science Library
 - Faculty of Physical Science Library
 - College of Medicine Library
 - Faculty of Entrepreneurship Library
 - Faculty of Management Science Library
 - Faculty of Computing Library
 - School of Postgraduate Studies Libraries

- The Medical Library at the Teaching Hospital
- School of postgraduate studies library
- IJMB Library
- Faculty of education library
- Medical library, Federal University Teaching Hospital, Rasheed shekoni
- Faculty of law library

STATEMENT OF THE PROBLEM

Application of information and communication technology is used for various activities in library operations. The main objective of a library is to acquire, process, organized and disseminate information to users. As such, cataloguing and classification of information resources is essential operation in libraries. With the advent of ICT in library, so many library operations are now online or digital. Despite the advantages of adopting ICT for information organization, many university libraries in Nigeria, including the J.D. Amin Library, continue to experience challenges in fully integrating these technologies into their technical services (Ezeani, 2024). It is against this background that the study aims to investigate and the application and use of ICT for technical services in J.D Amin Library, Federal University Dutse-Nigeria.

RESEARCH OBJECTIVES

1. To identify the types of ICTs Tools available in Technical Service Division of J.D Amin Library, Federal University Dutse-Nigeria;
2. To find out how ICTs are applied in providing technical services in the library under study.
3. To identify challenges in applying and using ICT Tools for Technical Services in the Library;

LITERATURE REVIEW

I. Types of ICT available in Technical Service Division in Libraries

Cataloguing and classification, among other library services, have witnessed reasonable changes in the era of Information and

Communication Technologies (ICTs). ICTs cataloguing has grown more important as library users can now log on to online catalogues from the comfort of their homes. (Alabi, 2018). ICT has made cataloguing more efficient. Routines for manual cataloguing have proved to be drudgery, repetitive, boring in nature and often times seen as “hard” area of librarianship. Some of the software for library automation to include ALICE for Windows, Virtua, Techlib Plus, Libsys, CDS/ISIS, Lib Info, WINISIS, LMS, SOUL, TINLIB, X-LIB, GLAS, KOHA, SLAM and OPAC. Online Public Access Catalogue (OPAC), is a database containing the library’s collection that can be accessed by anyone online, cataloguing-in-publication (CIP) data, involvement of non-professionals in copy cataloguing, introduction of software, cataloguing of internet resources and other electronic files.

However, for cataloguers to fit in competently into the expanded role brought about by application of ICTs into libraries, new expertise such as ability to operate different library software, ability to use online packages such as MARC21 standard online, WEB Dewey, Web LC and Search interfaces; ability to manipulate different metadata schemes and ability to catalogue resources for diverse user environments and audiences. Alabi (2018), in his study show the online catalogue databases are used by cataloguers in Nigerian libraries. About half of the respondents use the Library of Congress Online catalogue in their cataloguing procedures, 21.4% of the respondents indicated that they use the OCLC, WorldCat. Empirically, there are many libraries software used for library operations around the world, but only few are known and applied in our libraries in Nigeria. Therefore, there is a knowledge gap with regard to the application and use of ICT for library operations in this part of the world. The application of Information and Communication Technology (ICT) tools in the technical service divisions of libraries has been instrumental in modernizing operations such as cataloguing, classification, acquisition, and processing of library materials. Various types of ICT tools are

now being employed to automate these functions, thereby enhancing efficiency, accuracy, and service delivery. According to Ezeani and Ezema, (2019), the types of ICT Tools used in libraries for technical activities include:

- Integrated Library Management Systems (ILMS)
- Online Public Access Catalogues (OPAC)
- Digital Repositories and Content Management Systems
- Barcode and Radio Frequency Identification (RFID) Technology
- Cataloguing Tools and Standards
- Acquisition and Subscription Management Platforms
- Cloud-based Library Services

II. Application and use of ICT Tools for Technical Services

The Application and use of ICT in library operation has modernize how libraries provide the information needs of their users, the application of ICT in library is seen in each and every library department such as: serials, reader service, technical, reference and so on. In view of this, Adefunke, Olayinka & Toyin (2018), opined that the advent of ICT is indeed a boost to the library services as it now assists many librarians to use their ICT potentials to reach out to library users. Some of the ICT-based services that are provided by libraries as follows: Provision of web access to OPAC: Libraries are providing access to web-based Online Public Access Catalogue (OPAC) interfaces. The OPAC makes it easier for users to access and use information resources uh a particular library. OPAC is the computer form of library catalogue, to access materials in the library.

However, Akidi and Okezie (2018), revealed that there is low patronage of librarians to adopt application of ICT in the cataloguing and classification of information resources. Furthermore, all the items in the cluster scored mean scores below the criterion mean and were therefore rejected. It shows that there is relative low extent of use of e-tools in cataloguing and classification of information resources in the

digital age. Consequently, the respondents showed that few libraries automated their cataloguing and classification practices. Uses OCLC bibliographic formats is also low as well as Use of metadata formats/ schemas/ standards. Based on the ongoing discussion, the most common library software available in Nigerian libraries are OPAC, KOHA and worldcat.

The integration of Information and Communication Technology (ICT) tools into library technical services has transformed the way libraries manage, organize, and process their collections. Technical services comprising cataloguing, classification, acquisition, and processing are foundational to effective library operations, and the adoption of ICT tools has significantly enhanced their efficiency, accuracy, and accessibility. The application and use of ICT Tools for Technical Services:

- ICT in Cataloguing and Classification
- ICT in Acquisition and Collection Management
- Digital Repositories and Archiving
- Automation and Workflow Enhancement
- Cloud Computing and Remote Access
- Staff Training and Competency Building
- Challenges and Limitations
- Challenges in applying and using ICT Tools for Technical Services

III. Challenges of Application and use of ICT Tools for Technical Services

According to Akidi and Okezie (2014), indicates in their study that the challenges of application of ICT to cataloguing and classification of information resources in Nigeria Libraries are inadequate funding, lack of adequate infrastructural facilities, incessant power outage, lack of Internet facility, inadequate bandwidth, lack of vendor technical support, lack of encouragement from the management and lack of maintenance culture. In a study conducted in Nigeria by Vitoria et al (2017), revealed that the challenges affecting the application of ICTs in technical service operations of the library were inadequate training programs for cataloguing and classification staff, problem of epileptic

electricity supply, inadequate provision of ICT facilities.

One major challenge is inadequate infrastructure and poor connectivity. Reliable power supply, fast internet connections, and modern ICT hardware are essential for seamless technical services. However, many institutions, particularly in developing countries, lack these foundational resources (Olatunji, 2020). Without a stable infrastructure, ICT tools fail to operate efficiently, leading to delays and inefficiencies in service delivery. Financial limitations also pose a significant barrier. Acquiring, maintaining, and upgrading ICT tools require substantial investment, which is often unavailable to many libraries and technical units (Chukwuemeka & Okafor, 2021). Budget constraints result in outdated technologies and a lack of funds for staff training, software licensing, and infrastructure upgrades.

Another critical challenge is the lack of technical skills among library and information science professionals. While ICT tools have become more user-friendly, effectively applying them in specialized technical services requires specific training and expertise. Studies have shown that many staff members feel inadequately prepared to handle emerging technologies, leading to underutilization of available tools (Eze & Ogar, 2022). Resistance to change, particularly among older employees, has been identified as a hindrance to the adoption of ICT tools. Some staff members are reluctant to abandon traditional methods for digital alternatives due to fear of technology, perceived job insecurity, or unfamiliarity with new processes (Aina & Balogun, 2023). Such resistance slows down the digitization and modernization of technical services.

The incompatibility of various ICT tools and library management systems (LMS) also complicates technical services. Some institutions find it difficult to integrate new software with existing systems, causing disruptions and data migration problems (Ibrahim et al., 2024). Compatibility issues often necessitate expensive customizations or even complete system

overhauls. As libraries and information centers digitize more of their technical services, cybersecurity threats become a pressing concern. Unauthorized access, data breaches, and ransomware attacks threaten the integrity of digital records and discourage broader adoption of ICT tools (Okeke, 2025). Institutions often lack the technical capacity to implement robust cybersecurity measures.

Finally, the absence of regular training and continuous professional development opportunities exacerbates the challenges faced. Staff need consistent updates on emerging ICT tools, trends, and best practices, but many institutions fail to provide such opportunities (Nwankwo & Suleiman, 2021). Without ongoing learning, technical services risk becoming obsolete in the face of rapid technological advancements. In summary, while ICT tools offer significant potential for enhancing technical services, their application is hindered by infrastructural deficits, financial constraints, skill gaps, resistance to change, system incompatibilities, cybersecurity risks, and a lack of continuous training. Addressing these challenges requires a holistic approach involving institutional commitment, funding, capacity-building, and strategic technology planning.

THEORETICAL AND CONCEPTUAL FRAMEWORK

According to Adom and Hussien (2018), theoretical framework is the blueprint or guide for research. It is a framework based on an existing theory in a field of inquiry that is related and/or reflects the hypothesis of a study. Likewise, the theoretical framework guides the researcher so that she/he would not deviate from the confines of the accepted theories to make his/her final contribution scholarly and academic. The theoretical framework consists of theoretical principles, constructs, concepts, and tenants of a theory. While, a conceptual framework is a structure which the researcher believes can best explain the natural progression of the phenomenon to be studied. The framework makes it easier for the researcher to easily specify and define the concepts within the problem of the

study. This study is underpinned on the Technology Acceptance Model (TAM). TAM, is originally proposed by Davis (1989), it is the theoretical framework underpinning this study. TAM is considered relevant for this study because it explained the relationship between perception and attitude of individual toward the existence of a new technology.

RESEARCH METHODOLOGY

Qualitative research method was employed for the purpose of this study. The population of the study comprises all the staff of the Technical Service Division of Federal University Dutse-Nigeria, which are eight (8). The entire population was used as the sample size because it can be managed by the researcher. The instrument for data collection was structured interview in with the staff. Thematic data analysis was used to analyse the data collected. This type of analysis was used to identify, analyze and report

information collected from the respondents. Coding and theme were used in this approach using the following: familiarization with the data, coding, searching for themes, reviewing themes, defining and naming themes and writing up.

ANALYSIS AND DISCUSSION

The data collected was presented and discussed based on the major themes that were derived out of the variables of the study. The themes that include:

THEME 1: BACKGROUND INFORMATION OF THE RESPONDENTS

This section includes names of the federal university libraries studied, their individual coding for data analysis, year the university library was established, total number of staff in the library, rank of the participants, their years of working experience, their educational qualifications as well as the date and time of the interview.

Table 1: Background Information of the Participants

Participants	Position	Code	Experience	Interview Date
Librarian II	Head, Technical Division	LB1	9 years	05/03/2021
LIBRARIAN II	Head, Cataloguing	LB2	8 years	05/03/2021
Assistant Librarian	Head, Classification	LB3	7 years	03/03/2021
Assistant Librarian	Head, Book Finishing	LB4	7 years	03/03/2021
Assistant Librarian	Cataloguer	LB5	7 years	05/03/2021
Assistant Librarian	Classifier	LB6	4 years	05/03/2021
Library Officer	Staff	LB7	4 years	05/03/2021
Library Officer	Staff	LB8	8 years	03/03/2021

Key:

LB = Librarian

Table 1 indicated that *LB1, LB2, LB3, LB4, LB5 and LB6* are senior librarians in the Technical Service Division. While *LB7 and LB8* are subordinate staff. *LB1, LB2, LB3, LB4, LB7 and LB8* have more than seven years of library experience. Therefore, it can be said, that the staff in the technical service division have adequate working experience in librarianship since the university was established in 2011.

THEME 2: TYPES OF ICT TOOLS

AVAILABLE

With regards to the ICT Tools available in the technical service division of J.D Amin Library, *BL1, LB2, LB3, LB3, LB4, LB5 and LB6* reported that there are computers, printers, OPAC, worldcat, OCLC and internet are the ICT facilities available in the library. While *LB7 and*

LB8 reported that there are simple technologies such as spine stickers, scissors and FIRD tag are other facilities available in the library.

THEME 3: APPLICATION AND USE OF

ICT TOOLS FOR TECHNICAL SERVICES

All participants, *BL1, LB2, LB3, LB3, LB4, LB5, LB6, LB7* and *LB8* revealed that computers, printers, Worldcat, OCLC, internet, spine stickers, scissors and FIRD tag are used for technical services in the library. These facilities are applied for the following services: computers are used for typing card catalogues, saving softcopy of the cards and internet is used to facilitate the use of Worldcat for online classification of library resources. Printers are used to print the class mark of a book and the card catalogues for displaying in the catalogue cabinet (author, title and subject) entry, spine stickers are used to place a class mark of a book on the spine for easy identification, while scissors are used to cut the spine stickers into pieces.

THEME 4: CHALLENGES IN USING ICT TOOLS FOR TECHNICAL SERVICES

All participants *BL1, LB2, LB3, LB3, LB4, LB5, LB6, LB7* and *LB8* reported that they have problem of constant power supply, inadequate internet connectivity and lack of IT knowledge-based from some staff in carrying out activities in the library. However, *LB2* and *LB3* expressed that, “*we don’t have enough to purchase all the facilities to processed the books, as such our work is always slow*” *LB2, LB3, LB3* and *LB4*, said that “*we don’t have adequate staff to classify, catalogue and process many books in one point in time whenever the library acquired many books for a particular time*”. *LB7* and *LB8* also revealed that, “*there is inadequate working tools (stationaries) to process the new arrivals in the technical Service Division, therefore, our work is always delayed*”.

SUMMARY OF THE FINDINGS

The study revealed that most of the library staff in the Technical Service Department have appreciable number of working experiences. The

study found that computers, printers, internet, worldcat, spine stickers and the most common ICT Tools available in technical service division of J.D Amin Library of Federal University Dutse-Nigeria. Computer, worldcat, printers, spine stickers and scissors are used more for cataloguing activities while Internet and OCLC are used for classification. The study further reveals that problem of constant power supply, inadequate internet connectivity and lack of IT knowledge-based, inadequate staff lack of working are major challenges facing the library staff of the Technical Service Division in Federal University Dutse. This is in line with the study of Victoria et al (2017), who also revealed that inadequate training programs, problem of epileptic electricity supply and inadequate provision of ICT facilities are problems facing cataloguers and classifiers in another library in Nigeria.

CONCLUSION

The study concluded that the distribution of staff in the Technical Division is not balance because there are more senior staff than subordinate staff. The study concluded that the Technical Service Division in Federal University Dutse has limited ICT Tools use for technical services. The study further concluded that the online technical services is not well practiced because some ICT Tools are lacking. The study also concluded that the staff in the library encounter various challenges in applying and using ICT Tools for cataloguing and classification in the technical service division of Federal University Dutse Library. The study concluded that the application and use of ICT tools have become an essential aspect of technical services at J.D. Amin Library, Federal University Dutse. The findings revealed that the only ICT tools available in the library are computers, KOHA, barcode scanners and internet facilities. The study concluded that using ICT tools can significantly improve efficiency, accuracy and speed of technical operations, reduce manual handling of records and facilitate better information organization. The study concluded that the library staff encountered various challenges such as inadequate funding,

limited technical skills, network disruptions and insufficient power supply continue to limit the full optimization of ICT tools in the library.

RECOMMENDATIONS

Based on the findings of the study, the study made following recommendations in order to address the identified challenges:

1. Alternative power supply should be provided in the library particularly for Technical Division.
2. The cataloguers and classifiers should be trained on the online processing of library resources.
3. More library software should be subscribed in order to make the library staff more digital
4. The library management should invest in upgrading outdated ICT equipment and expanding the availability of computers, servers, scanners, and internet facilities. This will ensure that technical services operations are faster, more reliable, and capable of meeting modern library standards.
5. The library should organize regular and advanced ICT training workshops for technical services staff. Special attention should be given to training in digital cataloging, metadata management, database maintenance, and the use of integrated library systems (ILS) like KOHA.
6. A dedicated technical support team should be established or strengthened to handle routine ICT maintenance, troubleshoot software and hardware issues, and ensure the continuous operation of technical services without prolonged downtime.

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