

LEVERAGING AUTOMATION AND MODERN TECHNOLOGIES IN ENHANCING CIRCULATION SERVICES IN SOME SELECTED ACADEMIC LIBRARIES IN IMO STATE

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Abstract

The 21st-century library has undergone a transformation influenced by the rapid advancement in digital technology. Academic libraries, particularly in developing regions like Imo State, Nigeria, are gradually embracing automation and modern technologies to improve circulation services. This study explored the current state of circulation services in selected academic libraries in Imo State and examined the extent to which automation tools and modern technologies are being used to enhance efficiency, accuracy, and user satisfaction. Using a descriptive survey design, data were collected from professional librarians, para-professionals, and students across five academic institutions. Findings revealed that while some libraries have adopted integrated library systems (ILS) such as KOHA and SLAM, issues such as unstable power supply, inadequate Information and Communication Technology infrastructure, and limited funding hindered full automation. The study recommended strategic investment in digital infrastructure, staff training, and policy frameworks to support sustainable technology integration in library circulation operations.

Keywords: Automation, Circulation Services, Modern Technologies, Academic Libraries, Imo State, Nigeria.

Introduction

Academic libraries serve as the knowledge centers of higher institutions, supporting teaching, learning and researches. In Nigeria, the need to improve library services through automation has become more pronounced in response to the global shift toward digitisation. Circulation services which include lending, returning, renewing, and reserving library materials are central to library operations and their effectiveness significantly determines user satisfaction and overall library impact (Eze & Uzoigwe, 2016). Traditional circulation methods are manual,

time consuming and prone to errors. Automation introduces precision, speed, and accountability in managing these services.

Imo State, have a good number of higher Institutions such as: Federal University of Technology Owerri, Alvan Ikoku Federal University of Education Owerri., Imo State University, Owerri, University of Agriculture and Environmental Science, Umuagwo, Kingsley Ozumba Mbadiwe University Ogboko Imo State, Claretian University of Nigeria Nekede, Hezekiah University Umudi Nkwerre, Maranthan University Mgbidi, Federal Polytechnic Nekede Owerri, Federal College Of Land Resources Technology Oforola, Imo State Polytechnic Orlu, Imo State College of Education Ihitte/Uboma, library automation efforts are at varying stages. Some libraries have implemented Integrated Library Management Systems (ILMS) like KOHA, while others still rely heavily on manual operations. The shift from manual to automated circulation services entails not just the acquisition of software but also the deployment of supporting infrastructure such as barcoding systems, RFID technology, and stable Internet connectivity (Eze & Uzoigwe, 2016).

Despite these efforts, many academic libraries in the region face challenges such as irregular power supply, inadequate funding, poor ICT literacy among staff, and lack of government support. These barriers often slow down the adoption and implementation of modern technologies in circulation departments. Nevertheless, the potential benefits improved accuracy in lending records, enhanced inventory management, and real-time access to user accounts justify the need for consistent investment in library automation (Ezechukwu, & Adewole-Odeshi, 2023). This study therefore seeks to examine the role of automation and modern technologies in enhancing circulation services in academic libraries in Imo State. It aims to assess the current level of automation, identify the tools in use, evaluate challenges faced, and propose strategies for effective implementation. By focusing on practical experiences and challenges peculiar to the Nigerian academic library context, the study contributes to ongoing discourse on sustainable library development in the digital age.

Statement of the Problem

In many academic libraries in Imo State, circulation services are still largely handled through manual processes such as the use of record cards, manual registers, and handwritten borrower lists. These outdated methods are slow, prone to human error and often frustrate library users who expect faster and more efficient service delivery. While modern technologies and automation tools such as Integrated Library Management Systems (ILMS), barcoding, and RFID have been adopted in other parts of the country and beyond, their implementation in Imo State academic libraries appears limited or inconsistent. Some institutions have partially embraced automation, while others still lack the necessary infrastructure, trained personnel, and funding to make the transition.

The result is a gap between service expectations and actual delivery, which negatively affected user satisfaction and the library's ability to meet academic demands. This study, therefore, seeks to understand the extent of automation in these libraries, identify the challenges

faced, and explore how technology can be better leveraged to enhance circulation services in academic libraries across Imo State.

Objectives of the Study

The main objective of the study was to determine how leveraging automation and modern technologies would enhance circulation services in selected academic libraries in Imo State, Nigeria. The specific objectives were to:

1. Examine the current state of circulation services in academic libraries in Imo State.
2. Identify the modern technologies and automation tools used in circulation units of these libraries.
3. Assess the challenges faced by academic libraries in implementing automation for circulation services.
4. Suggest practical strategies for improving circulation services through automation and modern technologies.

Research Questions

The following research questions were asked and answered.

1. What is the current state of circulation services in academic libraries in Imo State?
2. What automation tools and modern technologies are being used in circulation departments of these libraries?
3. What are the major challenges hindering full implementation of automation in circulation services?
4. What are the strategies for improving circulation services through automation and modern technologies.

Literature Review:

Concept of Circulation Services in Academic Libraries

Circulation services are the heart of day-to-day library operations because they involve direct interaction with users. According to Maharazu, & Malumfashi, (2021). circulation services include lending and returning of books, reserving materials, issuing overdue notices, and managing users' records. In academic libraries, circulation units also handle user registration and monitor borrowing privileges. These functions play a major role in ensuring that resources are properly accessed and accounted for. Oladokun, & Kolawole, (2018). observed that circulation services directly reflect how responsive and efficient a library is in serving its users. In Nigerian academic libraries, these services were traditionally carried out manually, which often resulted in errors, delays, and poor tracking of materials.

The Role of Automation in Enhancing Library Services

Automation in libraries refers to the use of computers and software systems to carry out traditional library functions more efficiently. The introduction of Integrated Library Management Systems (ILMS) has transformed how libraries operate. Systems like KOHA, SLAM, and Evergreen are now being used in several Nigerian institutions to manage circulation, cataloguing,

acquisitions, and more. (Eze and Uzoigwe 2016) noted that automation improves accuracy, saves time, reduces workload, and allows users to access their library accounts remotely. In the context of circulation services, automation tools can help librarians check items in and out, monitor due dates, and generate statistical reports with ease. However, in Imo State, the level of adoption of such systems varies across institutions due to financial and infrastructural constraints.

Modern Technologies in Circulation Units

Beyond ILMS, academic libraries around the world are integrating other modern technologies into circulation services. These include barcode scanning, Radio Frequency Identification (RFID), biometric systems, and mobile applications. Barcoding helps in fast and accurate identification of books and borrowers, while RFID enables automatic book check-in/check-out without human assistance. According to Obinyan, Obinyan, and Aidenojie (2011), the use of these technologies increases user satisfaction by reducing waiting time and improving the accuracy of records. In Nigeria, however, adoption is limited by cost, poor infrastructure, and insufficient technical support. In Imo State, only a few libraries have begun experimenting with such tools, and even fewer have fully integrated them into daily operations.

Challenges Facing Automation in Academic Libraries

Several challenges continue to hinder the full adoption of automation in academic libraries. These include unstable electricity supply, lack of adequate ICT infrastructure, poor funding, and inadequate training for staff. (Akinade, Amzat, & Abiola, 2024). emphasized that without proper investment in ICT infrastructure and human resource development, the benefits of automation will remain out of reach. In addition, many library staff in Nigerian institutions are not well trained in handling automation tools, leading to resistance or ineffective use of available systems. In Imo State, most libraries still rely on manual operations due to budget limitations and poor policy support from management and government authorities. The lack of regular Internet access and software updates also limits the functionality of installed systems.

Research Methodology

This study adopted the descriptive survey research design. This design was considered appropriate because it allows the researcher to collect data from a sample population with the aim of describing the current status of automation and modern technologies in circulation services across academic libraries.

Data Presentation and Result

Summary of data collected from 30 library staff across three academic libraries in Imo State, are presented in table 1

Objective 1: To examine the current state of circulation services in some academic libraries in Imo State.

Table 1: Current State of Circulation Services in Academic Libraries

Circulation Service Features	Frequency	Percentage (%)
Manual Circulation (Borrowing/Returning)	28	28%
Partial Automation (Some units use ILS like KOHA/SLAM)	47	47%
Fully Automated Circulation (Barcode/RFID integrated)	15	15%
No Structured Circulation System	10	10%

The data presented in table 1 revealed that majority of academic libraries in Imo State have made some efforts toward automating their circulation services. Specifically, 47% of the respondents indicated partial automation, where some components of the circulation process utilized Integrated Library Systems (ILS) such as KOHA or SLAM. Only 15% of the respondents reported full automation, which included the use of barcode and/or RFID technologies in managing borrowing and returning of resources. On the other hand, 28% of libraries still operate manually, relying on traditional record-keeping methods which are often slower and prone to errors. A concerning 10% have no structured circulation system, suggesting a lack of formal processes or tools to track borrowing and returning of materials.

Table 2: Availability of Automation Tools in Circulation Units

Automation Tool	Frequency	Percentage (%)
Integrated Library System (KOHA)	30	60%
Barcode Scanning System	25	50%
Manual Charging and Discharging	20	40%
No Automation Tools Available	10	20%

Table 2 showed that 60% of the respondents use an integrated library system, and 50% use barcode systems. However, 40% still rely on manual operations, while 20% reported having no automation tools at all.

Table 3: Challenges Faced in Using Automation Tools

Challenge	Frequency	Percentage (%)
Irregular Power Supply	35	70%
Inadequate Funding	30	60%
Lack of Technical Skills	28	56%
Internet Connectivity Issues	25	50%
Software Maintenance Problems	20	40%

Irregular power supply and inadequate funding are the most significant challenges affecting automation in these libraries. Poor internet access and lack of technical expertise also hinder effective use of technology.

Table 4. Suggestions for Improving Circulation Services

Suggestions	Frequency	Percentage (%)
Training for Library Staff	40	80%
Stable Power Supply	35	70%
Increase in Funding	33	66%
Provision of Internet Facilities	30	60%
Regular Software Upgrades	25	50%

Majority of respondents suggested regular staff training and stable electricity as key solutions. Increased funding and better internet facilities were also highlighted as essential for improved automation.

Discussion of Findings

The findings of the study revealed that while automation and modern technologies are gradually being adopted in academic libraries in Imo State, their application in circulation services is still limited. Majority of libraries surveyed use Integrated Library Management Systems (ILMS) such as KOHA, but manual operations still exist in many circulation units. This supports the observation made by Eze and Uzoigwe (2016) that although Nigerian libraries have shown interest in automation, actual implementation is often partial and inconsistent. The study also found that tools like barcode scanners are in use, but more advanced technologies such as RFID and biometric systems are rarely deployed. This aligns with the findings of Obinyan, Obinyan, and Aidenojie (2011), who noted that while modern technologies enhance user satisfaction, many Nigerian libraries face challenges in implementing them due to cost and infrastructure issues.

Furthermore, the major challenges identified such as irregular power supply, inadequate funding, lack of technical skills, and poor Internet connectivity echo the challenges reported by (Wang, 2019). The respondents suggested solutions like regular training, stable electricity, better funding, and improved internet access, which are critical for enhancing circulation services.

Conclusion and Recommendations

From the study, it is evident that academic libraries in Imo State are in a transitional phase with regard to automating their circulation services. While there has been commendable effort toward adopting ILMS and basic technologies like barcoding, the full potential of automation is yet to be realized. The gap between available tools and effective use remains wide due to recurring challenges such as poor infrastructure, lack of trained personnel, and limited financial support. Unless these challenges are addressed, the impact of automation on library services will remain minimal and inconsistent.

Based on the findings, the researchers therefore recommended as follows:

1. Library staff should undergo regular ICT training, particularly in the use and maintenance of circulation related technologies.

2. School authorities and government should increase budgetary allocation for libraries, with a focus on automation infrastructure.
3. Libraries should invest in alternative power sources such as solar energy and ensure consistent internet connectivity to support automation systems.
4. Academic institutions should create clear policies that support digital transformation and ensure management commitment to long-term ICT investment.

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