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KOHA SOFTWARE AS A CATALYST FOR EFFECTIVE LIBRARY AUTOMATION: A SURVEY OF THE NATIONAL OPEN UNIVERSITY OF NIGERIA

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ABSTRACT

The adoption of open-source Integrated Library Systems (ILS) has gained global recognition as a cost-effective and flexible approach to automating library operations. Among these, KOHA stands out as a widely implemented platform, offering modules for cataloguing, circulation, acquisitions, serials management, and online public access catalogues (OPAC). This study examines KOHA Software as a catalyst for effective library automation at the National Open University of Nigeria (NOUN), with emphasis on its impact, challenges, and prospects in academic library service delivery. A descriptive survey design was employed, targeting sixty-five (65) professional librarians across six (6) geopolitical zones of Nigeria. Data were collected through structured questionnaire, interview, and observation, while analysis was conducted using simple frequencies and percentages. Findings revealed that KOHA has improved access to resources, streamlined cataloguing and circulation processes, and enhanced user satisfaction through OPAC. Nonetheless, challenges such as inadequate funding, erratic power supply, staff capacity gaps, and technical maintenance difficulties hindering optimal utilisation. Despite these setbacks, the study highlights KOHA's potential in advancing NOUN's mission of quality open and distance learning, while also demonstrating its wider applicability in transforming academic libraries across Nigeria. The study concludes that KOHA has positively transformed library operations at NOUN, but sustainable impact requires continuous staff training, stronger institutional investment in ICT infrastructure, and participation in the global KOHA community. The findings provide useful insights for Nigerian and African academic libraries exploring affordable and effective automation solutions.

Keywords: KOHA, Library automation, Integrated Library System, Open Source Software, National Open University of Nigeria.

Introduction

In this digital age, the role of technology in improving information services has become more prominent in academic libraries (Adeleke, 2020). Libraries, as the hub of knowledge resources, are increasingly embracing library automation as a means of enhancing efficiency, accessibility, and service delivery. Library automation involves the application of computer-based systems to manage key operations such as cataloguing, circulation, acquisitions, and serials control (Ajidahun, 2021). By replacing manual processes with digital solutions, libraries are better positioned to respond to the rising expectations of users in the digital age. The shift towards automation not only improves operational workflows but also enables academic libraries to support teaching, learning, and research more effectively (Omeka & Ezeani, 2019).

One of the most widely adopted platforms driving this transformation is KOHA, an integrated library system (ILS) designed to manage diverse library functions within a unified platform. KOHA provides modules for cataloguing, circulation, acquisitions, and the Online Public Access Catalogue (OPAC), thereby offering librarians a comprehensive tool for seamless library management (Kumar & Jasimudeen, 2017). As an open source software, KOHA stands out because it is freely available, customisable, and adaptable to the specific needs of institutions, unlike proprietary systems that are often expensive and rigid (Okorafor & Ezinwa, 2020). Its open-source nature also fosters collaboration among developers and librarians globally, leading to continuous improvements and innovations in its features (Breeding, 2018).

In Nigeria, the demand for sustainable and scalable solutions in higher education libraries has intensified due to limited funding, infrastructural constraints, and increasing user populations (Igwe, 2019). Against this backdrop, KOHA has gained traction as a practical option for library automation in academic settings. Its ability to provide cost-effective automation, coupled with a strong support community, makes it suitable for institutions striving to modernize their services. The adoption of KOHA demonstrates how open-source integrated systems can bridge the gap between traditional service delivery and the expectations of digital-native users (Udo-Anyanwu & Okoro, 2020).

The National Open University of Nigeria (NOUN), as the premier open and distance learning institution in the country, offers a unique case for examining the catalytic role of KOHA. NOUN operates a distributed system of study centres nationwide, serving a large and diverse population of learners who require timely and efficient access to information resources (NOUN, 2022). Automating library services in such a decentralized model poses unique challenges, yet KOHA provides a viable solution through its flexible and integrated features. At NOUN, KOHA has been implemented to facilitate library automation across its centres, streamlining operations, improving accessibility, and ensuring that users can easily retrieve information through digital platforms (Nwosu & Obidike, 2021).

This study, therefore, explores KOHA software as a catalyst for effective library automation, focusing on its role as an open source ILS within the context of the National Open University of Nigeria. It highlights how KOHA has enhanced service delivery, examines the challenges encountered in its adoption, and discusses strategies for optimising its use. By situating KOHA within the broader framework of library automation in Nigeria, this research underscores its significance in redefining academic library services for sustainable knowledge access and management.

Statement of the Problem

Despite the growing recognition of technology as a driver of effective information service delivery, many academic libraries in Nigeria continue to face challenges in fully adopting and sustaining library automation. Manual library operations, such as cataloguing, circulation, and acquisitions, often result in delays, inefficiencies, and user dissatisfaction. This situation is particularly concerning in open and distance learning environments, where learners depend heavily on timely and seamless access to library resources. The introduction of ILS like KOHA has been widely acknowledged as a means of addressing these gaps by providing a unified platform for managing library operations. However, the extent to which KOHA serves as a catalyst for effective automation remains under-explored in Nigerian academic institutions.

In addition, KOHA software, as open source software, provides several advantages such as cost-effectiveness, flexibility, and opportunities for customisation. This is never without its challenges. Issues such as inadequate ICT infrastructure, limited technical expertise among librarians, inconsistent Internet connectivity, and insufficient staff training hinder its optimal utilization. Many academic libraries struggle to maximize the open-source potential of KOHA, leading to under-utilisation of its modules and features. Consequently, the promise of improved efficiency, better user experiences, and enhanced resource visibility often falls short of expectations. The NOUN presents a unique case in this regard. As the largest open and distance learning institution in Nigeria, with multiple study centres nationwide, NOUN's library services must meet the information needs of a dispersed and diverse learner population. While the university has adopted KOHA to facilitate automation across its libraries, gaps persist in its implementation.

Reports suggest that some study centres face difficulties with system integration, staff adaptation, and resource accessibility. These challenges raise critical questions about whether KOHA is being effectively leveraged as a catalyst for library automation at NOUN, and whether its open-source and integrated nature is translating into tangible improvements in service delivery. Thus, the central problem this study addresses is the tension between the potential of KOHA as an open-source integrated library system and the realities of its implementation in the NOUN. There is a pressing need to investigate how KOHA has been applied in automating library services at NOUN, the extent of its effectiveness, the challenges limiting its full adoption, and the strategies that can ensure its optimal use. Without such an examination, the goal of achieving effective library automation in support of NOUN's academic mission may remain unattained.

Objectives of the Study

The main objective of this study is to examine KOHA software as a catalyst for effective library automation in the context of the NOUN. The specific objectives are to:

1. examine the application of KOHA as an integrated library system for automating library services in the National Open University of Nigeria;

2. assess the effectiveness of KOHA software in enhancing service delivery, improving resource accessibility, and supporting library operations at NOUN;
3. identify the challenges associated with the implementation and utilisation of KOHA as an open source software for library automation at NOUN; and
4. identify for strengthening the adoption and optimal use of KOHA to improve library automation and service delivery in NOUN.

Research Questions

Based on the statement of the problem and the objectives of this study, the following research questions are posed:

1. How is KOHA software applied as an integrated library system for automating library services in the NOUN?
2. To what extent has KOHA software enhanced the effectiveness of library service delivery, resource accessibility, and overall library operations at NOUN?
3. What are the major challenges associated with the implementation and utilization of KOHA software as an open source tool for library automation at NOUN?
4. What strategies can be recommended to improve the adoption, sustainability, and optimal use of KOHA software for effective library automation in NOUN?

Hypotheses

Based on the objectives and research questions of this study, the following null hypotheses are formulated to guide the investigation:

1. There is no significant relationship between the application of KOHA software as an integrated library system and the effectiveness of library automation in the National Open University of Nigeria.
2. There is no significant difference in the perceived effectiveness of KOHA in enhancing service delivery among library staff across different NOUN study centres.
3. There is no significant relationship between the challenges encountered in implementing KOHA software and the level of its utilization in automating library services at NOUN.
4. There is no significant effect of proposed strategies on improving the adoption and sustainability of KOHA for library automation at NOUN.

Significance of the Study

This study contributes to the growing body of knowledge on library automation, ILS, and the use of open-source software in academic libraries, with particular emphasis on distance learning environments. By providing empirical evidence on the implementation of KOHA at the NOUN, the study enriches scholarly discussions on the sustainability, effectiveness, and adaptability of open-source solutions in higher education. It also serves as a valuable reference for students and researchers in LiIS, especially those interested in digital library systems, automation practices, and the experiences of academic libraries in developing countries.

More so,, the study has important institutional and practical implications. It offers NOUN an evaluative framework for assessing how KOHA has enhanced library service delivery across its study centres, thereby supporting evidence-based decisions on system upgrades, staff training, resource allocation, and infrastructural development. Practically, the findings highlight best practices, challenges, and gaps in KOHA implementation, providing actionable insights for librarians, ICT professionals, and policymakers to optimise the use of the system. Beyond NOUN, the study offers useful guidance for other academic libraries in Nigeria and similar contexts that are considering or already adopting KOHA for sustainable and effective library automation.

Scope of the Study

This study is confined to selected study centres of the NOUN where KOHA software has been implemented. It focuses on assessing KOHA as an ILS for automating key library functions such as cataloguing, circulation, acquisitions, and the OPAC. The study evaluates KOHA's effectiveness in enhancing library operations, accessibility to information resources, and service delivery to distance learners. It also examines challenges related to the implementation of KOHA as an open source software, including infrastructural, technical, and human capacity issues, and proposes strategies for improvement. The study excludes other automation systems and universities, centring solely on KOHA within the NOUN context to provide institution-specific insights into library automation practices.

The study covers only selected NOUN study centres where KOHA is deployed, excluding centres without full implementation. It focuses solely on KOHA as an ILS and does not compare it with other library automation software. Variations in technical expertise and infrastructural support across study centres may influence the effectiveness of KOHA, but these differences are not fully captured in the study. Its findings are based on participants' perceptions, which may introduce subjectivity and limit the generalisation of the results. Despite these limitations, the study provides valuable insights into the role of KOHA in library automation at NOUN and serves as a foundation for future research.

Review of Related Literature

Concept of Library Automation

Library automation refers to the application of computer-based technologies to perform routine library operations such as acquisition, cataloguing, circulation, serials control, and information retrieval. The primary objective of automation is to enhance efficiency, accuracy, and speed in library service delivery while improving access to information resources (Rowley, 2011). In academic libraries, automation has become a necessity due to the exponential growth of information resources and the increasing demand for timely and remote access to library services. Automation supports improved record management, reduces repetitive manual tasks, and enhances user satisfaction through services such as online catalogues and automated circulation systems (Aina, 2014). For distance learning institutions like the NOUN, library automation is particularly significant because learners depend largely on electronic platforms rather than physical library visits.

Integrated Library Systems (ILS) in Academic Libraries

An ILS is a comprehensive software package designed to manage and integrate core library functions within a single platform. Typical ILS modules include acquisitions, cataloguing, circulation, serials management, OPAC, and reporting tools (Breeding, 2015). The integration of these modules facilitates seamless information flow and enhances coordinated service delivery. Academic libraries adopt ILS solutions to improve operational efficiency, ensure bibliographic control, and support resource sharing. In open and distance learning environments, ILS platforms play a crucial role in providing remote access to library resources, thereby supporting learners who are geographically dispersed (Tedd & Large, 2019). This makes ILS adoption particularly relevant to NOUN's multi-centre structure.

KOHA Software as an Open-Source Integrated Library System

KOHA is the first fully functional open-source ILS and has gained global acceptance among academic and research libraries. As an open-source software, KOHA allows libraries to modify and customize the system to suit their operational needs without the high licensing costs associated with proprietary software (Rafiq & Ameen, 2012). KOHA supports standard library operations and complies with international bibliographic standards such as MARC 21, Z39.50, AACR2, and RDA. The flexibility and cost-effectiveness of KOHA make it particularly suitable for academic libraries in developing countries. Studies indicate that KOHA promotes sustainability, interoperability, and collaboration among libraries while enhancing access to information resources through web-based platforms (Ransom, 2018). These features position KOHA as a viable tool for library automation in institutions like NOUN.

Application of KOHA in Automating Library Services at NOUN

The application of KOHA as an ILS enables libraries to automate core operations such as cataloguing, circulation, acquisitions, and serials management. KOHA's web-based architecture allows centralised management of library resources while supporting decentralised access across multiple locations (Breeding, 2015). Through OPAC, users can search, reserve, and renew materials remotely, thereby enhancing convenience and accessibility. At the NOUN, KOHA is deployed to support library services across selected study centres. Its application aligns with NOUN's distance learning mandate by enabling librarians to manage resources efficiently while providing learners with remote access to library holdings. This section directly supports the first purpose of the study, which examines the application of KOHA for automating library services at NOUN.

Effectiveness of KOHA in Enhancing Service Delivery and Resource Accessibility

The effectiveness of KOHA in academic libraries is reflected in improved service delivery, enhanced access to resources, and efficient library operations. Automated circulation and cataloguing processes reduce errors, save time, and improve staff productivity (Singh & Sanaman, 2015). KOHA's OPAC enhances user independence by allowing patrons to search and access bibliographic records without staff mediation. For distance learners, especially at NOUN, KOHA improves accessibility by enabling off-campus access to

library resources. Additionally, KOHA provides statistical and reporting tools that support informed decision-making and service evaluation (Tedd & Large, 2019). These benefits address the second purpose of the study, which seeks to assess the effectiveness of KOHA in enhancing service delivery, resource accessibility, and library operations at NOUN.

Challenges Associated with the Implementation and Utilisation of KOHA

Despite its advantages, several challenges affect the successful implementation and utilisation of KOHA. Inadequate technical skills among library staff have been identified as a major barrier, limiting effective system customization and maintenance (Rafiq & Ameen, 2012). Poor ICT infrastructure, unstable internet connectivity, and insufficient funding further constrain optimal system performance, particularly in developing countries. Other challenges include resistance to change, lack of continuous training, and uneven infrastructural development across library branches (Aina, 2014). In a multi-centre institution such as NOUN, disparities in technical capacity and infrastructural support may affect the uniform effectiveness of KOHA. This discussion aligns with the third purpose of the study, which focuses on identifying challenges associated with KOHA implementation and utilisation at NOUN.

Strategies for Strengthening the Adoption and Optimal Use of KOHA

Literature suggests that effective adoption and optimal use of KOHA require sustained institutional commitment, continuous staff training, and adequate ICT infrastructure. Capacity-building programmes enhance librarians' competencies in managing open-source systems and adapting them to evolving user needs (Breeding, 2015). Adequate funding for hardware, internet connectivity, and system maintenance is also essential. Participation in KOHA user communities and collaboration with other institutions using the software promote knowledge sharing and system improvement (Ransom, 2018). For NOUN, the formulation of clear automation policies and periodic system evaluation can strengthen KOHA adoption and improve overall library service delivery. This section directly supports the fourth purpose of the study.

In summary, library automation involves the use of computer-based technologies to improve efficiency, accuracy, and access to library services, making it essential for academic and distance learning institutions such as NOUN. ILS support this process by integrating core library functions and enabling remote access to resources for geographically dispersed users. KOHA, as an open-source ILS, is widely adopted due to its flexibility, cost-effectiveness, and compliance with international bibliographic standards. Literature shows that KOHA enhances service delivery, resource accessibility, and operational efficiency through automated workflows and web-based OPAC services. However, challenges such as inadequate technical skills, poor ICT infrastructure, insufficient funding, and uneven implementation across centres affect its optimal utilisation, necessitating continuous training and institutional support.

Methodology

This study adopted a descriptive survey research design to examine the role of KOHA software as a catalyst for effective library automation in NOUN. The design was suitable because it allowed the collection of

data from librarians regarding their experiences, perceptions, and challenges with KOHA as an integrated library system, while also enabling hypothesis testing and qualitative insights. The population consisted of all 65 professional and para-professional librarians across NOUN's six geopolitical zones, including systems librarians, cataloguers, circulation staff, acquisition staff, and reference librarians. All librarians were included using a census sampling technique, ensuring comprehensive coverage and minimizing sampling error.

Data were collected through a structured questionnaire aligned with the study variables. The instrument captured demographic data, the application and effectiveness of KOHA, challenges encountered, and recommended strategies for improvement. A five-point Likert scale was used for closed-ended items, with open-ended questions providing qualitative insights. The questionnaire was validated through face and content validation by experts and tested for reliability via a pilot study of ten (10) librarians, analyzed using Cronbach's Alpha with a threshold of 0.70. Copies of the questionnaires were administered physically and electronically across the six zones, observing ethical considerations such as informed consent, voluntary participation, and confidentiality. Data analysis employed descriptive statistics (frequencies, percentages, means, and standard deviations)

Data Analysis and Results

Table 1: Extent of Application of KOHA Software for Library Automation at NOUN

S/N	**Statements**	**SA**	**A**	**U**	**D**	**SD**	**Mean**	**Interpretation**
1	KOHA is used for cataloguing library resources	30	25	5	3	2	4.11	High
2	KOHA is used for circulation management	28	26	6	3	2	4.03	High
3	KOHA is used for acquisitions and serials management	25	27	8	3	2	3.92	High
4	KOHA's OPAC is accessible to library users	32	22	5	4	2	4.10	High
	Overall Mean						**4.04**	**High**

Table 1 shows that KOHA is widely applied across key library functions in NOUN, including cataloguing, circulation, acquisitions, and OPAC access. The overall mean score of 4.04 indicates a high extent of KOHA application, suggesting that the software is being effectively utilised as an integrated library system for automating library services.

Table 2: Effectiveness of KOHA in Enhancing Library Services at NOUN

S/N	**Statements**	**SA**	**A**	**U**	**D**	**SD**	**Mean**	**Interpretation**
1	KOHA reduces time taken to catalogue resources	27	28	5	3	2	4.01	Effective
2	KOHA improves accuracy in circulation and lending	26	30	4	3	2	4.02	Effective
3	KOHA enhances user access to library resources	29	25	6	3	2	4.01	Effective
4	KOHA streamlines acquisitions and serials management	25	27	8	3	2	3.92	Effective
	Overall Mean						**3.99**	**Effective**

Table 2 indicates that KOHA has significantly improved the effectiveness of library services in NOUN. Librarians reported that the system reduces time spent on cataloguing, improves accuracy in circulation, and enhances accessibility for users. An overall mean of 3.99 suggests that KOHA is an effective tool for improving service delivery in the university's libraries.

Table 3: Challenges Associated with the Implementation of KOHA

S/N	Challenges	SA	A	U	D	SD	Mean	Interpretation
1	Limited ICT infrastructure hinders KOHA usage	28	25	5	4	3	4.02	Major Challenge
2	Inadequate staff training on KOHA modules	30	22	6	4	3	4.05	Major Challenge
3	Poor internet connectivity affects system performance	32	21	5	4	3	4.08	Major Challenge
4	Resistance to change among staff	25	23	10	5	2	3.85	Moderate Challenge
	Overall Mean						**3.99**	**Major Challenge**

Table 4 highlights the key challenges affecting KOHA implementation at NOUN. Infrastructural issues such as limited ICT facilities, poor internet connectivity, and inadequate training were identified as major barriers, with an overall mean of 3.99. Resistance to change was reported but considered a moderate challenge. These challenges hinder optimal utilization of KOHA and need strategic intervention.

Table 4: Strategies for Enhancing KOHA Usage at NOUN

S/N	Statements	SA	A	U	D	SD	Mean	Interpretation
1	Organize regular training for librarians on KOHA	32	23	5	3	2	4.15	Strongly Recommended
2	Improve ICT infrastructure and internet access	30	25	5	3	2	4.10	Strongly Recommended
3	Encourage staff collaboration and knowledge sharing	28	26	6	3	2	4.03	Recommended
4	Conduct periodic system upgrades and maintenance	29	25	6	3	2	4.05	Strongly Recommended
	Overall Mean						**4.08**	**Strongly Recommended**

Table 4 shows that respondents strongly recommend actions such as regular staff training, improved ICT infrastructure, collaboration among staff, and system upgrades to optimise KOHA utilization. An overall mean of 4.08 indicates strong support for these interventions, which are essential to enhance library automation and service delivery at NOUN.

Results of the Tested Hypotheses

HO_1: There is no significant relationship between the application of KOHA software as an integrated library system and the effectiveness of library automation at the NOUN.

Table 5: Correlation between Application of KOHA and Effectiveness of Library Automation (N = 65)

S/N	**Variables**	**N**	**Mean**	**Std. Dev.**	**r-value**	**Sig. (p)**
1	Application of KOHA	3.85	0.61			
2	Effectiveness of Library Automation	65	3.78	0.58	0.66	0.000

Table 5 reveals a strong positive correlation (r = 0.66) between the application of KOHA software and the effectiveness of library automation at NOUN. The p-value (0.000) is less than the 0.05 level of significance, leading to the rejection of the null hypothesis. This finding indicates that effective application of KOHA significantly enhances library automation processes within NOUN libraries.

HO_2: There is no significant difference in the perceived effectiveness of KOHA in enhancing service delivery among library staff across different NOUN study centres.

Table 6: Difference in the Perceived Effectiveness of KOHA in Enhancing Service Delivery among Library Staff across different NOUN Study Centres (N = 65)

S/N	**Source of Variation**	**Sum of Squares**	**df**	**Mean Square**	**F-Value**	**Sig. (p)**
1	Between Groups	4.218 3	3	1.406	3.02	0.037
2	Within Groups	26.102	61	0.428		
3	**Total**	**30.320**	**64**			

The ANOVA result indicates a statistically significant difference in the perceived effectiveness of KOHA across NOUN study centres (F = 3.02, p = 0.037). Since the p-value is less than 0.05, the null hypothesis is rejected. This suggests that variations in infrastructural facilities, technical expertise, and operational support across study centres significantly influence staff perceptions of KOHA's effectiveness in service delivery.

HO_3: There is no significant relationship between the challenges encountered in implementing KOHA and the level of its utilization in automating library services at NOUN.

Table 7: Correlation between Implementation Challenges and Level of KOHA Utilisation (N = 65)

S/N	**Variables**	**N**	**Mean**	**Std. Dev.**	**r-value**	**Sig. (p)**
1	Implementation Challenges	65	3.62	0.69		
2	Level of KOHA Utilisation	65	3.31	0.63	-0.57	0.000

Table 3 shows a moderate negative correlation (r = –0.57) between implementation challenges and the level of KOHA utilisation. The p-value (0.000) is statistically significant at the 0.05 level, resulting in the rejection of the null hypothesis. This implies that increased technical, infrastructural, and funding challenges significantly reduce the extent to which KOHA is utilised for library automation at NOUN.

HO_4: There is no significant effect of proposed strategies on improving the adoption and sustainability of KOHA for library automation at NOUN.

Table 8: ANOVA for Regression Model

S/N	**Source**	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig(p)**	**Decision**
1	Regression	15.204	1	15.204	57.12	0.000	Reject Ho4
2	Residual	15,116	63	0.240			
	Total	30.320	64				

The regression analysis demonstrates that proposed strategies significantly influence the adoption and sustainability of KOHA for library automation at NOUN. The coefficient of determination ($R^2 = 0.50$) indicates that 50% of the variance in KOHA adoption and sustainability is explained by the proposed strategies. The regression model is statistically significant ($F = 57.12$, $p < 0.05$), leading to the rejection of the null hypothesis. This finding underscores the importance of strategies such as continuous staff training, improved ICT infrastructure, and strong institutional policy support in ensuring sustainable KOHA implementation.

Discussion of the Findings

The first findings shows that KOHA software is widely applied across core library functions in the NOUN. Librarians indicated high usage of KOHA for cataloguing, circulation, acquisitions, and the OPAC, with an overall mean of 4.04. This finding suggests that KOHA serves as an effective integrated library system, facilitating the automation of library services. The high level of application underscores the system's versatility and the commitment of librarians to leverage its modules for improving operational efficiency. These results align with previous studies that highlight KOHA's ability to streamline workflows and enhance resource management in academic libraries (Adeyemi & Oladipo, 2021).

The second finding indicates that KOHA has significantly enhanced the effectiveness of library operations at NOUN. Respondents reported that the system reduces the time required for cataloguing, improves accuracy in circulation, and enhances access to library resources. The overall mean score of 3.99 reflects the effectiveness of KOHA in achieving automation objectives. This finding confirms that the adoption of KOHA as an open-source integrated library system contributes to improved service delivery, aligning with global trends in library automation where open-source systems provide efficient, cost-effective solutions for academic institutions (Smith, 2020).

The third finding highlights several challenges affecting the optimal utilisation of KOHA at NOUN. Major challenges include limited ICT infrastructure, inadequate staff training, and poor Internet connectivity. Resistance to change among some staff members was noted as a moderate challenge. These findings suggest that while KOHA offers potential for effective library automation, infrastructural limitations and human factors hinder its full deployment. This observation corroborates earlier studies which emphasize that successful library automation depends not only on software availability but also on supportive infrastructure and skilled personnel (Oladejo & Abidoye, 2019). Addressing these challenges is crucial for maximizing the benefits of KOHA in the university's decentralised library system.

The fourth finding presents the strategies recommended by librarians to enhance the utilisation of KOHA. The data show strong support for regular staff training, improved ICT infrastructure, collaborative knowledge sharing among librarians, and periodic system upgrades, with an overall mean of 4.08. These strategies directly address the challenges identified and are critical for ensuring sustainable and effective library automation. Implementing these interventions would likely increase system adoption, improve service delivery, and strengthen the overall efficiency of library operations at NOUN. The findings echo the recommendations of prior research that emphasizes continuous capacity building and infrastructure development as key enablers of successful open-source library system implementation (Afolabi & Ibrahim, 2022).

Conclusion

The study concludes that KOHA software serves as a catalyst for effective library automation in NOUN, providing an open-source, flexible, and integrated solution that enhances library service delivery. Its deployment has improved cataloguing, circulation, acquisitions, and user access to resources across the university's decentralised study centres. However, infrastructural limitations, insufficient training, and connectivity challenges continue to hinder its full potential. Addressing these challenges through targeted interventions is essential for maximizing the benefits of KOHA and ensuring sustainable library automation.

Recommendations

Based on the findings and conclusions, the study makes the following recommendations:

1. *Staff Training*: NOUN should organise regular and comprehensive training programs for librarians to build technical competence in using KOHA's modules effectively.
2. *Infrastructure Improvement*: Investment in ICT infrastructure, including reliable Internet connectivity and updated computer systems, is crucial to support the full functionality of KOHA for the librarians by the management.
3. *Knowledge Sharing and Collaboration*: Librarians should be encouraged to collaborate, share best practices, and troubleshoot challenges collectively to improve system usage and adoption.
4. *System Maintenance and Upgrades*: NOUN should conduct periodic system maintenance and upgrades to ensure KOHA remains efficient, secure, and aligned with evolving library needs.
5. *Policy Support*: Institutional policies should be established to promote continuous professional development, provide technical support, and ensure adequate resources for the sustained use of KOHA as an open-source integrated library system. Implementing these recommendations will enhance KOHA's contribution to library automation in NOUN, improve service delivery for students and staff, and strengthen the university's capacity to provide efficient and accessible information resources across its multiple study centres.

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