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Review Article

ADOPTION AND USE OF LIBRARY AUTOMATION SYSTEMS IN KARL-KUMM UNIVERSITY LIBRARY, JOS, NIGERIA

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Abstract: This study examines the adoption and utilization of library automation systems at Karl-Kumm University Library, Jos, Nigeria. A qualitative descriptive approach was used to synthesize recent literature on Integrated Library Systems (ILS), particularly Koha, and Online Public Access Catalogues (OPAC). Relevant empirical studies and institutional literature were analyzed thematically to identify trends, benefits, challenges, and research gaps. Findings indicate that library automation enhances cataloguing, circulation, information retrieval, resource accessibility, and service efficiency. However, inadequate ICT infrastructure, funding, technical expertise, staff training, and user awareness continue to limit effective utilization. The study concludes that sustainable automation requires reliable ICT infrastructure, continuous staff capacity development, user education, and strong institutional support. It further identifies limited empirical evidence on the effectiveness and utilization of automation systems in newly established private universities in Nigeria, including Karl-Kumm University Library.

Keywords: Library Automation, Koha ILS, OPAC, Academic Libraries, ICT, Nigeria

INTRODUCTION

The employment of computer-based systems to carry out routine library tasks like cataloging, circulation, acquisition, serials control, and user services is known as library automation. According to Borgman (2000), automation turns manual library activities into effective digital systems that improve information processing speed, accuracy, and dependability, hence boosting access to information resources. Automation has emerged as a crucial element in academic libraries to enhance service delivery and satisfy users'

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changing information needs in a digital learning environment. Additionally, it lowers human error, promotes improved resource management, and frees up librarians to concentrate more on user-centered services rather than repetitive manual work. In contemporary academic institutions, library automation is now required rather than optional because to the growing demand for real-time access to information.

In a similar vein, Rosenberg (2010) highlights that the availability of robust ICT infrastructure, institutional support, and qualified staff is critical to the success of library automation systems. These systems are completely integrated with academic library services in industrialized nations, guaranteeing smooth access to both electronic and physical materials and facilitating remote access and digital learning environments. Global library automation has significantly improved with the development of Integrated Library Systems (ILS) and Online Public Access Catalogues (OPAC), which allow users to efficiently and independently search, retrieve, and administer library resources. These solutions reduce redundancy in library activities and improve productivity by consolidating many library functions onto a single platform. Mansfield and Warwick (2005) claim that automation increases operational efficiency by streamlining library processes and improving service delivery. Due to Koha's price, versatility, and open-source nature—all of which make it appropriate for institutions with low funding—academic libraries in Nigeria are progressively implementing automation systems. The degree of implementation and utilization, however, is still varied among institutions in spite of this advancement. Full and successful implementation is nevertheless hampered by issues including insufficient ICT infrastructure, erratic power supplies, inadequate funding, and a lack of technical know-how. Additionally, limited user ICT literacy and library staff opposition to change further restrict the best use of automated systems. These difficulties are especially noticeable in recently founded organizations like Karl-Kumm University Library in Jos, where library systems are still evolving and adapting to the needs of contemporary technology. The degree of adoption and usage of library automation technologies in such developing academic settings must therefore be rigorously examined.

LITERATURE REVIEW

2.1 Concept of Library Automation Systems

The employment of computer-based technology to carry out conventional library tasks like cataloguing, circulation, acquisition, serials control, and user services is known as library automation. According to Borgman (2000), automation turns manual library procedures into effective digital systems that improve information handling speed, accuracy, and accessibility. Automation is now crucial for enhancing service delivery in academic libraries and meeting the demands of contemporary teaching, learning, and research.

Library automation, according to Ngozi (2020), is the effective management of library resources and services through the integration of ICT tools. This includes the use of Online Public Access Catalogues (OPAC) and Integrated Library Systems (ILS), which let

users search and access library items on their own, increasing user satisfaction and lessening the strain for library employees.

2.2 Integrated Library Systems (ILS) and OPAC

Software platforms known as Integrated Library Systems (ILS) integrate several library operations into a single system. By combining cataloguing, circulation, acquisition, and user management into a single database system, ILS improves operational efficiency, claim Mansfield and Warwick (2005). According to Rosenberg (2010), institutional preparedness and ICT infrastructure play a major role in the successful deployment of ILS.

OPAC, an essential part of ILS, enables electronic library collection searches. According to Rowley (2005), OPAC is a gateway that improves resource access and discovery. Additionally, Marchionini (2012) points out that OPAC enhances information-seeking behavior by allowing users to find materials without the help of a librarian. However, Bawden (2014) contends that users' ability to use the OPAC effectively depends on their level of digital literacy.

2.3 Global Trends in Library Automation (2000–2025)

Because of ICT breakthroughs, library automation has changed dramatically on a global scale. According to Wang (2013), automation enhances academic library circulation efficiency and cataloging accuracy. According to Patel (2014) and Johnson (2016), finance, employee training, and technology infrastructure all have an impact on adoption.

Due to their flexibility and affordability, open-source systems like Koha are becoming more popular, according to recent surveys. According to a systematic review by Asim and Arif (2025), Koha is extensively used in academic institutions since it facilitates effective cataloguing, circulation, acquisitions, and OPAC operations. In a similar vein, Ikwuanusi et al. (2024) observe that automation improves user engagement, accessibility, and efficiency in academic libraries.

Library Automation in Africa

Automation of libraries is currently evolving unevenly throughout African institutions. Many university libraries are still making the switch from manual to automated systems, according to Ocholla (2008). According to Mchombu (2010), a significant obstacle to successful automation is the lack of ICT proficiency among library employees.
According to Chisenga (2012), Sub-Saharan Africa's automation development is hampered by insufficient finance and subpar infrastructure. Aina (2004) identifies early issues in Nigeria, including inadequate ICT infrastructure and restricted technical capability. Another obstacle to the successful use of automation, according to Ani et al. (2014), is staff reluctance to change in libraries.

Library Automation in Nigeria

In order to increase productivity and service quality, university libraries in Nigeria are progressively implementing automated solutions. Automation enhances customer happiness and library services, according to Oduwole and Ajiboye (2016). According to

Nwalo (2017), institutional and policy support are essential for automated systems to be sustainable.

Due to budgetary limitations, Okiki (2018) observes that Nigerian libraries are progressively implementing open-source platforms like Koha. Igbeka (2018) notes that ICT literacy and user awareness are still low. Ogunlana (2020) adds that consumers' lack of awareness and training is the reason why OPAC usage is restricted.

According to a recent empirical study by Omeluzor et al. (2020), several Nigerian universities have partially automated cataloguing and OPAC, but complete integration of library services is still lacking because of infrastructure problems.

Koha Integrated Library System (ILS)

One of the most popular open-source integrated library systems in underdeveloped nations is Koha. Koha is favored because of its flexibility and cost, according to Anyira (2020). Koha enhances cataloging and circulation procedures in academic libraries, according to Basiru and Adebayo (2019).

According to a systematic study by Asim and Arif (2025), Koha covers important library functions like OPAC, acquisitions, and serials administration, which makes it ideal for universities with limited resources.

According to Okonkwo, Ige, and Ibrahim (2025), Koha increases user happiness and resource accessibility, but its efficacy is constrained by financial limitations, staffing shortages, and infrastructure issues.

In a similar vein, Maharazu and Malumfashi (2021) discovered that while Koha enhances automation in Nigerian university libraries, problems like power outages and technical maintenance continue to exist.

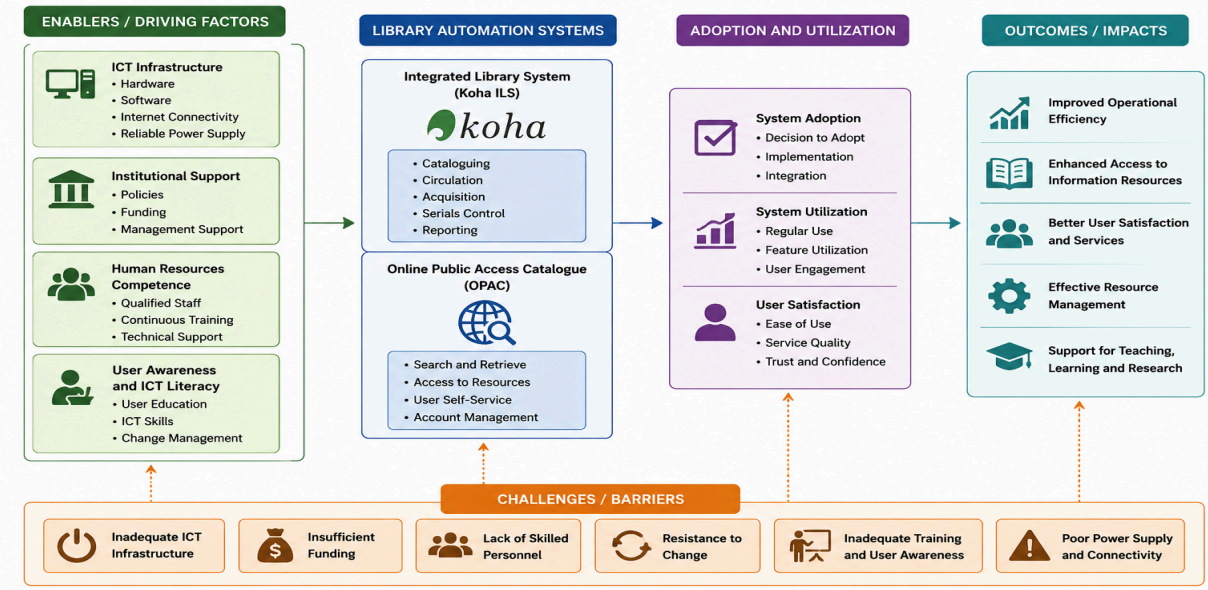
Challenges of Library Automation Systems

Despite automation's advantages, a number of obstacles prevent academic libraries from adopting and utilizing it. They consist of:

- Insufficient infrastructure for ICT
- Inadequate financing and upkeep
- Insufficient technical expertise
- Opposition to changes in technology
- Low digital literacy and user awareness

According to Umaru et al. (2020), these difficulties cause several Nigerian colleges to partially automate their operations. Adetoro (2021) and Yakubu (2024) both stress that institutional support and ongoing personnel training are essential to the sustainability of automation.

Figure 1: Conceptual Framework of Library Automation Adoption and Utilization in Academic Libraries



Empirical Synthesis and Research Gap

It is clear from the literature review (2000–2025) that:

- Automation in libraries increases productivity, accessibility, and patron pleasure (Wang, 2013; Oduwole & Ajiboye, 2016).
- In emerging nations, Koha is the most popular system (Anyira, 2020; Asim & Arif, 2025).
  Due to inadequate knowledge and instruction, OPAC usage is still minimal (Sanni, 2016; Ogunlana, 2020).
- Funding and infrastructure constraints continue to be significant obstacles in Africa (Chisenga, 2012; Ani et al., 2014).

Knowledge Gap

Despite a wealth of research, little of it focuses on:

- Nigeria's newly established private institutions
- Automation systems' actual usage level, not merely their adoption
- The success of post-adoption in recently founded establishments, such as Karl-Kumm University Library

Summary of Literature Review

According to the literature, library automation technologies have drastically changed academic library services all over the world. However, issues with infrastructure, finances, and human capability continue to limit widespread adoption and efficient utilization in developing nations like Nigeria. Because of its flexibility and price, Koha ILS is still the most used system. However, there are still gaps in the research on automation

systems at recently founded universities, especially with regard to sustainability and usage effectiveness**.**

METHODOLOGY

With a focus on Karl-Kumm University Library in Jos, Nigeria, this study used a qualitative descriptive research approach backed by literature-based synthesis to critically examine the adoption and use of library automation systems in academic libraries. The qualitative descriptive approach was deemed suitable because it provides a thorough grasp of the phenomenon being studied by enabling an in-depth interpretation of current knowledge, patterns, and empirical data without changing factors.

Peer-reviewed journal papers, conference proceedings, institutional reports, theses, and empirical research on library automation systems published between 2000 and 2025 were among the secondary sources of data used in the study. The time period was chosen to encompass both early and current advancements in library automation, especially in emerging and developing academic settings.

During the review process, four main categories of literature were examined:

- International literature, including classic and modern works like Wang (2013) and Borgman (2000), which demonstrate the development and effectiveness of library automation systems in high-level academic settings.
- African research, such as Ocholla (2008) and Chisenga (2012), which look at the obstacles to ICT adoption in Sub-Saharan African library systems.
- Studies conducted in Nigeria, including Aina (2004) and Okiki (2018), offer insights into the local context of library automation acceptance, implementation difficulties, and institutional limitations.
- Studies that are special to Koha, such as Anyira (2020) and Otunla et al. (2022), which concentrate on the implementation, advantages, and difficulties of the Koha Integrated Library System (ILS) in academic libraries.

Content analysis, a methodical approach to find recurrent themes, patterns, trends, and gaps in the adoption and usage of library automation systems, was used to the gathered material. The researcher was able to synthesize findings from various institutional and geographical contexts using this analytical approach, leading to significant conclusions that are pertinent to Karl-Kumm University Library.

RESULTS

Several important conclusions about the acceptance and use of library automation systems in Nigerian, African, and worldwide contexts were found by synthesizing the literature.

First, research consistently shows that automation greatly increases library productivity, especially in areas like information retrieval, circulation, acquisition, and cataloging. Automation increases operational speed, decreases human error, and raises the

general standard of library services, according to studies by Wang (2013) and Oduwole and Ajiboye (2016).

Second, research indicates that the most popular automation system in emerging nations, particularly in Africa and Nigeria, is the Koha Integrated Library System (ILS). This is mostly because of its flexibility, affordability, and open-source nature. Both Okiki (2018) and Anyira (2020) highlight how Koha's ability to serve a variety of library services, such as cataloguing, circulation, OPAC, and user management, has made it a popular option for academic libraries with minimal funding.

Third, the review demonstrates that even though OPAC is available in many academic libraries, its utilization by students and library patrons is still very low. According to Sanni (2016) and Ogunlana (2020), this is due to low user awareness, low ICT literacy, and a lack of training on how to use automated systems efficiently. This implies that having access to technology does not guarantee that it will be used effectively.

Fourth, research shows that institutional and structural issues considerably impede the use of library automation technologies, such as insufficient ICT infrastructure, erratic power supplies, insufficient financing, and staff reluctance to technological change. These difficulties are more noticeable in developing nations with inadequate technology support systems, according to Aina (2004) and Ani et al. (2014).

Fifth, there is compelling evidence that effective automation adoption and utilization depend heavily on staff training and capacity building. In comparison to libraries without ongoing training programs, Johnson (2016) and Bamidele (2019) discovered that libraries with well-trained staff exhibit higher levels of automation utilization, better system maintenance, and superior user services. And public colleges, leaving little recorded data on the efficiency, long-term viability, and user involvement of library automation systems in new educational establishments

Lastly, empirical research on recently founded private universities like Karl-Kumm University is severely lacking in the literature. There is little recorded information about the efficacy, sustainability, and user involvement of library automation systems in new academic institutions because the majority of current research focuses on older, more established federal and state universities.

DISCUSSION

The results of this study demonstrate that library automation technologies greatly improve the effectiveness, efficiency, and caliber of services provided by academic libraries. In particular, automation increases information processing speed, cataloging accuracy, and library resource accessibility. These results are in line with the opinions of Mansfield and Warwick (2005) and Borgman (2000), who stress that the incorporation of ICT into library operations radically changes traditional library services into more dynamic, user-centered systems. In this sense, automation facilitates quicker and more dependable access to information resources, improving both operational workflows and user experience.

Notwithstanding these benefits, the results also show enduring obstacles that prevent library automation's full benefits from being realized, especially in developing nations. This discovery is in line with Chisenga (2012) and Nwalo (2017), who contend that the efficacy of automation systems in African academic libraries is still constrained by low financing, inconsistent power supplies, and inadequate ICT infrastructure. This view is further supported in the Nigerian context by Ani et al. (2014) and Okiki (2018), who point out that the acceptance and best use of automated systems are greatly impacted by library staff's aversion to technological change and low ICT proficiency. Systems are installed but not completely exploited as a result of these institutional and human variables, which frequently lead to incomplete deployment.

The Koha Integrated Library System (ILS) has emerged as the predominant automation platform in Nigerian university libraries, according to the study. Its price, adaptability, and open-source nature—all of which make it appropriate for organizations with low funding—are major factors in its domination (Anyira, 2020). Libraries may handle cataloging, circulation, acquisitions, and OPAC services in a single system thanks to Koha's modular design, which enhances operational coordination. However, despite its extensive use, research by Otunla et al. (2022) and Adetoro (2021) shows that technical issues like low institutional commitment, insufficient ICT support staff, and poor system maintenance frequently limit Koha's usefulness. These restrictions make the system less effective overall and make it less sustainable in the long run in many academic libraries.

The results also point to an important and developing gap in the literature about the use of library automation systems at recently founded private universities. The degree of automation adoption, actual system utilization, and post-implementation success of organizations like Karl-Kumm University Library, Jos, have not been adequately investigated. There is a big knowledge vacuum about how rising universities are adjusting to digital library systems because the majority of previous research has been on older federal and state universities. Because new private colleges sometimes operate under distinct administrative, financial, and infrastructure constraints, which may affect their adoption and use of automation technologies differently, this disparity is especially significant.

Overall, the conversation emphasizes how contextual elements like infrastructure, finance, staff capacity, and institutional commitment are critical to the success of library automation, even though it has the potential to completely transform academic library services. Therefore, resolving these issues is crucial to optimizing automation's advantages in developing educational institutions.

CONCLUSION

This study examined the adoption and use of library automation systems in Karl-Kumm University Library, Jos, Nigeria, based on literature from 2000 to 2025. It concludes that library automation significantly improves academic library services by enhancing efficiency, accuracy, and accessibility of information resources, thereby improving user satisfaction and service delivery. However, the effectiveness of these

systems depends on key factors such as ICT infrastructure, funding, staff competence, and institutional support. Where these are inadequate, automation systems are often underutilized.

Furthermore, the study confirms that the Koha ILS stands as the most prominent automation system in developing nations, valued for its cost-effectiveness and versatility; however, its potential is often constrained by systemic challenges such as inadequate infrastructure, limited technical support, and low user awareness. Consequently, achieving sustainable and efficient automation requires prioritizing strategic investments in ICT infrastructure alongside comprehensive staff capacity building and targeted user education. Ultimately, this research highlights a critical gap in the existing literature regarding automation within newly established private universities, such as Karl-Kumm University Library, thereby underscoring the urgent need for further empirical investigation into the operational success and long-term sustainability of library systems in these emerging academic environments.

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