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Library Management Systems in Use for Digital Resource Management in Nigeria: A Survey of University Libraries in South-West

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Abstract

The management of digital resources has become a critical function of university libraries in the digital age. However, Library Management Systems (LMS) plays a vital role in facilitating the organization, access, and preservation of these resources. The main objective of the study is to identify the types of library management systems adopted for digital resource management in university libraries in South-west, Nigeria. Resource-Based View (RBV) Theory was the theory adopted. Convergent parallel Mixed Method design was employed. The population of the study consisted of 354 librarians and 7 system analysts in selected university libraries using total enumeration techniques which gives a total of 361 respondents out of which 7 e-librarians were interviewed. Questionnaire and interview form are the research instruments for data collection and was validated using face and content validity with the help of two research experts. Reliability test was done by using Cronbach's Alpha method with an average reliability coefficient of 0.74. Quantitative data were analyzed using descriptive and inferential statistics, while qualitative data were transcribed using TurboScribe software and analyzed thematically. Findings revealed that KOHA and Dspace are the major LMS adopted. Librarians used LMS to a great extent ($\bar{x}$=3.27). Results showed that technical know-how, user friendliness and ease of use jointly have a significant influence on digital resource management practices ($F= 18.234$, $p< 0.05$). The study concludes that library management systems applications influence digital resource management. The study recommends continuous capacity building for librarians and e-librarians, particularly in system configuration, integration, and troubleshooting.

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Keywords; technical know-how, user friendlinesss, ease of use of library management system, digital resources management

Introduction

The emergence of information and communication technologies (ICTs) has transformed the operations and services of university libraries across the world. University libraries are no longer limited to the acquisition and management of printed materials alone; they now provide access to a wide range of digital resources such as electronic books, online journals, institutional repositories, databases, multimedia collections, and electronic theses and dissertations. Consequently, the effective management of these digital resources requires librarians to possess adequate knowledge and competencies to ensure their organisation, accessibility, preservation, and efficient utilisation. Digital resources management has become an essential component of modern university library operations due to the rapid advancement of ICTs and the increasing demand for electronic access to scholarly information in this 21st century (Abdou & Jasimuddin, 2020).

Digital resources management refers to the systematic processes involved in the acquisition, organisation, licensing, storage, preservation, accessibility and evaluation of electronic information resources in libraries (Nnatu, Lynda, & Okechukwu, 2026). These digital resources include electronic journals, e-books, online databases, digitised archival materials, institutional repositories, research datasets, and audiovisual materials. Therefore, the effective management of these resources requires adequate technological infrastructure, skilled personnel, digital preservation strategies and efficient information retrieval systems to ensure continuous and reliable access for library users (Adeleke, Ojokuku, & Ojo, 2022). In the same vein, Idhalama, Oredo and Makori (2025) opined those digital resources management as the processes of acquiring, organising, storing, preserving, retrieving and providing access to electronic information resources in universities libraries. The researchers explained further that digital resources management has been identified as a critical component of library service delivery in the era of digital scholarship, as it ensures efficient access to academic content and supports research productivity.

One of the most important technological tools used in managing digital resources in university libraries is the Library Management System (LMS). A Library Management System is an integrated software platform designed to automate and streamline library operations such as acquisitions, cataloguing, circulation, serials management, user services, and electronic resource management (Saikia, 2025). LMS platforms such as Koha, DSpace, Alma, Evergreen and other integrated library management systems have become essential tools in university libraries for managing both physical and digital collections. These systems provide librarians with the ability to organise large volumes of information efficiently, improve access to digital resources, and enhance overall library service delivery

The importance of technical know-how of library personnel in the use of LMS for digital resources management in university libraries cannot be overemphasised due to the fact that librarians who possess adequate technical knowledge and have the capacity to use LMS are tend to organise electronic resources, manage institutional repositories, maintain metadata standards, and provide effective user support services. Also, they will be able to troubleshoot technical problems associated with library management systems and ensure uninterrupted access to digital resources. Similarly,

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librarians with strong ICT skills can effectively manage electronic resources by ensuring accurate cataloguing, efficient metadata management, seamless user access, and proper digital preservation practices. They are also capable of troubleshooting system errors, managing institutional repositories, and supporting users in accessing digital resources (Adeoye & Quadri, 2023). Technical know-how therefore enhances the ability of librarians to maximize the functionalities of library management systems and improve the accessibility of digital resources within academic institutions.

One of the important dimensions of digital resource management is preservation and sustainability. Digital resources are vulnerable to technological obsolescence, data loss, and system failures; therefore, DRM includes strategies for long-term preservation such as migration, backup systems, and digital archiving. Ncube and Ngulube (2025) emphasized that effective digital resources management includes structured systems and policies that ensure long-term accessibility and sustainability of digital academic content. Additionally, DRM is influenced by data analytics and usage evaluation. Modern libraries use digital tools to track user interactions, download statistics, and resource usage patterns to guide collection development decisions. This performance-based approach ensures that library resources are aligned with user needs and institutional priorities (Echeverria & Bustamante, 2025). Thus, DRM is not only operational but also evaluative in nature. Ogunleye and Ibitoye (2023) described digital resources management as conglomeration of hybrid centers combining physical and digital resources to foster intellectual engagement and innovation through accessible, user-focused services. This definition highlights the shift from traditional collections to integrated digital platforms. Digital Resource Management encompasses time management, help-seeking, effort regulation, and peer learning mechanism which is increasingly recognized as critical components of academic success (Anthonysamy, 2021).

However, many librarians struggle with applying digital resource management effectively, particularly in the digital domain where distractions are abundant and support systems less visible (Anthonysamy et al., 2020). Ajayi and Bello (2023), described digital resources management as spaces and services converge to enhance collaborative learning, critical thinking and academic development.

Majumder (2024) defined LMS as a software used to handle library's day to day activities. LMS are library management and automation systems that enable libraries to manage and disseminate information in diverse formats. LMS have two user interfaces, one for staff and the second for patrons. The staff can store bibliographic record of library materials in databases, place order for books, purchase books, and create patron database through the use of library software, while patrons can also access Online Public Access Catalogue (OPAC), search for items (books), view book lists which are available in library, place books on hold or reserve information resources. The basic modules in LMS include acquisition, cataloguing, circulation, serials and OPAC. LMS exist in distinct programs called module, each of them integrates with a unique interface that handles specific operation of the library activities (Majumder, 2024). According to Osunbiyi and Adebayo (2023), library management software is a system designed to enhance user experience by providing efficient search, access, and reservation capabilities, alongside features for library staff to easily manage the circulation and cataloging of resources. This definition emphasizes the user-friendly interface and the importance of improving user engagement.

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For libraries seeking operational efficiency, library management software is defined as an automated tool that streamlines and simplifies various library operations, such as cataloging, loan management, and inventory checks, to reduce manual workload and improve resource accessibility (Ajayi & Bello, 2022). This view emphasizes the efficiency brought by automation in daily library tasks.

The growing complexity of digital tools and platforms has further elevated the importance of technical know-how in the knowledge economy. Technical know-how often includes both, especially in operational environments like libraries where staff must troubleshoot issues and adapt to system upgrades without formal instruction manuals. In the Nigerian context, particularly within universities in the South-west region, empirical evidence indicates that the level of ICT proficiency among library personnel significantly influences the effective utilisation of LMS For instance, Ejeofobiri et al. (2024), using a descriptive survey design, examined the challenges confronting academic libraries in maximising LMS functionalities and identified inadequate training and limited exposure to digital tools as major constraints to optimal system use. The study further suggests that continuous professional development and ICT capacity-building initiatives are essential for equipping library personnel with the required technical know-how. Moreover, technical know-how is not static.

Due to the fact that new technologies emerge and existing systems change, staff must engage in ongoing learning to stay updated. This highlights the role of institutional support, including investment in training programs, access to technical resources, and creation of a learning culture within libraries. Hussain and Jan (2025) argue that without sustained efforts to develop technical competencies among staff, even the most advanced library systems will fall short of delivering their intended benefits. Technical know-how is a foundational component of technology utilisation in library environments. It plays a critical role in the adoption, customisation, and full exploitation of LMS, especially in academic institutions where information access and management are central to teaching, learning, and research.

Many librarians and library users such as students and faculty may not have advanced technical skills, and a system that is difficult to navigate or operate may discourage use, lead to errors, or result in underutilisation of key functionalities. Adeyemi (2022) notes that in many Nigerian university libraries, the usability of LMS significantly influences the extent to which librarians adopt and integrate these systems into daily operations. Where systems are not user-friendly, librarians tend to revert to manual processes, thereby negating the benefits of automation. A user-friendly LMS is characterised by features such as clear navigation menus, consistent interface design, logical workflows, helpful feedback mechanisms, and multilingual support. It also offers flexibility for customization, which allows institutions to adapt the system to their specific operational needs. Ogbe and Uchechukwu (2024) emphasize that LMS that lack these features often require more technical support, incur higher training costs, and reduce staff productivity. Furthermore, user friendliness plays a vital role in system adoption as explained by the Technology Acceptance Model (TAM) developed by Davis (1989), which posits that perceived ease of use and perceived usefulness are key predictors of whether users will accept and effectively use a new technology. A system that users perceive as user-friendly is more likely to be accepted, trusted, and continuously used.

Moreover, in today's mobile and app-driven environment, ease of use is not merely about reducing effort but also about providing seamless interactions that meet user expectations. Fernandez (2024) emphasised that systems should be simple and consistent, minimise memory load, and provide clear

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feedback principles that contribute directly to ease of use. These perceptions are particularly relevant for digital product designers and IT professionals developing systems for a broad, diverse user base. However, the perception of ease of use is not static. It can be influenced by user characteristics such as age, education, computer literacy, cultural background, and prior experience with similar technologies. For instance, novice users may require more guidance and support to perceive a system as easy to use, while experienced users may expect advanced features and customizable options.

Many libraries management systems options are available for use in university libraries, and the choice of software often depends on its effectiveness, ease of use, and adaptability for library staff. Some of the most commonly used LMS platforms include Koha, Dspace, Eprint, Evergreen, Tinlib, Bibliotex, and Fedora among others. The selection of effective library system not only plays an important role for students, academic staff and the library staff but also helps an institution by having the library management system more centralised (Ratheel, et al. 2020). Therefore, the adoption of library management system (LMS) in university libraries has been extensively studied, reflecting a wide range of preferences and applications based on institutional needs, resource availability, and technological advancements. Empirical findings from the previous research highlight the types of library management software commonly used. For example, A study by Ngugi and Wanyama (2023) on the types of LMS adopted and the factors influencing their adoption. The study focused on universities and tertiary institutions in Kenya, Uganda, and Tanzania. The study adopted a descriptive survey research design by using stratified random sampling technique to ensure representation across different categories of institutions. The study found that majority of the surveyed university libraries in East Africa preferred Koha for its user-friendly interface and compliance with international standards like MARC 21. Libraries emphasized its modular design and multi-branch capabilities as key features.

Agboola and Salawu (2023) conducted an empirical study to examine the adoption and utilisation of Library Management Systems (LMS) among higher education institutions in Nigeria and the wider West African by using descriptive survey design. A total of 25 institutions were selected across Nigeria, Ghana, and other parts of West Africa using purposive sampling, focusing on those with active e-learning programs. Data were collected through structured questionnaires distributed to ICT directors, e-learning coordinators, lecturers, and students. The researchers found that KOHA and DSpace were the most widely adopted software in Nigerian universities, chosen for its robust metadata support and ability to promote open access to scholarly content.

The Resource-Based View (RBV) theory is a strategic management framework that focuses on the internal resources of an organisation as the primary drivers of competitive advantage and superior performance. Proposed by Jay Barney in 1991, the RBV emphasizes the importance of leveraging valuable, rare, inimitable, and non-substitutable (VRIN) resources to create sustainable competitive advantages (Barney, 1991). This theory contrasts with external-focused frameworks, such as Michael Porter's Five Forces, by shifting attention from market positioning to the unique resources and capabilities within an organisation.

According to RBV, an organisation can be considered as a collection of physical resources, human resources and organisational resources (Barney, 1991; Amit & Shoemaker, 1993). Resources of organisations that are valuable, rare, imperfectly imitable and imperfectly substitutable are main source of sustainable competitive advantage for sustained superior performance (Barney, 1991).

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Similarly, Barney opined that valuable resource must enable a firm to do things and behave in ways that lead to high sales, low costs, high margins, or in others ways add financial value to the firm. The core principle of RBV theory posits that not all resources possessed by an organisation contribute to its competitive advantage. Only those resources that meet the VRIN criteria can provide sustainable competitive advantages. For example, resources must add value to an organisation by improving efficiency or effectiveness. Also, resources must be scarce and not widely available among competitors. In the same vein, resources must be difficult or costly to imitate or replicate. Lastly, resources must not have equivalent alternatives that could achieve similar results.

The principle of RBV classifies resources into three main types: Physical capital resources (physical, technological and equipment); Human capital resources (training, experience, insights), and Organisational capital resources (formal structure). The physical capital resources refer to the tangible assets a firm possesses. These include physical infrastructure such as buildings, factories, warehouses, and machinery, as well as technological assets like production equipment, information systems, software platforms, and logistics infrastructure. In RBV terms, physical capital resources can contribute to competitive advantage when they are sophisticated, efficiently deployed, or uniquely configured in ways that competitors cannot easily replicate. For instance, advanced manufacturing systems or proprietary technologies may allow a firm to produce higher-quality goods at lower cost, or to innovate more rapidly than rivals. However, physical resources alone are often less defensible unless they are combined with unique processes or embedded within a broader organisational system, because tangible assets can sometimes be purchased or imitated over time.

This theory is relevant to this study in the sense that the physical capital resources refer to the tangible assets that an organisation possesses and uses in its operations. These include physical infrastructure, technological tools, equipment, and information systems. In the context of university libraries, physical capital resources encompass library buildings, computers, servers, internet connectivity, Library Management Systems (LMS), digital storage devices, scanners, and networking infrastructure. These resources form the technological backbone that supports the acquisition, storage, organisation, and dissemination of digital information resources. Without adequate physical capital, even well-designed library systems may fail to function effectively, as the technological environment determines the capacity for digital service delivery. In modern academic libraries, physical capital resources are particularly critical because they enable access to electronic databases, institutional repositories, and other digital platforms that support research and learning. According to Wernerfelt (1984), resources must be deployable through organisational routines and capabilities; thus, a system that is easier to use enhances the ability of staff to capitalise on the institution's information assets.

Problem Statement

The advancement of information and communication technologies (ICTs) has transformed the operations and services of university libraries globally, leading to increased adoption of Library Management Systems (LMS) for the organisation, preservation, retrieval and dissemination of digital resources. This has led the university libraries to depend heavily on digital resources such as electronic books, electronic journals, institutional repositories, electronic databases and multimedia collections to support teaching, learning, and research activities (Ebhonu, Omosekejimi, & Dada, 2021). It is important to note that effective use of LMS for digital resource management requires librarians to possess competencies in information technology, database management, metadata

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creation, digital preservation, networking, software maintenance, and electronic resource management (Yahaya & Bappah, 2016). However, many librarians in Nigerian university libraries reportedly lack sufficient ICT skills and technical expertise needed to effectively utilize automated library systems (Adeleke et al., 2022). This may lead to poor management of electronic resources. Consequently, the enormous investments made in the LMS may not yield the expected outcomes in terms of efficient digital resource management and service delivery. In addition to technical know-how, the user friendliness and ease of LMS has become a critical issue influencing the effectiveness of digital resource management in university libraries. Idhalama, Oredo and Makori (2025) revealed that many LMS platforms used in Nigerian university libraries are characterized by complex interfaces, poor navigation structures, technical operational difficulties and inadequate customization features. Therefore, systems that are not user friendly and easy to use may discourage librarians from effectively utilising LMS to manage digital resources.

Objective of the study

The specific objective of the study is to identify the type of library management systems adopted for digital resource management in university libraries in South-west, Nigeria.

Research question

What are the types of library management systems adopted for digital resource management in university libraries in South-west, Nigeria?

Methodology

The convergent parallel mixed method design was employed. The population of this study consist of 361 respondents working in selected universities in South-west, Nigeria, which comprised of seven (7) university libraries in the six states namely; Lagos, Oyo, Ogun, Osun, Ondo, and Ekiti State in the South-west, Nigeria. The total number of professional librarians and e-librarians that were selected in South-west, Nigeria were 345 and 7 respectively. This gives a total of 361. The sample size of this study is 361. This is because the sampling technique adopted for this study is total enumeration. This method is adopted because the population is small and of manageable size. A self-developed questionnaire was used to collect data from the respondents. In addition to the questionnaire, structured interview was conducted with e-librarians to gather qualitative data on the types of library management systems adopted for digital resources management systems.

Quantitative data collected through the questionnaire was coded into IBM-SPSS version 26.0, and the data were analysed by using descriptive statistics of frequency count, simple percentage, and mean. These methods were adopted because they are suitable to the study. Meanwhile, data collected through interview was transcribed and analysed using thematic analysis according to the research questions of the study.

Results

What are the types of library management systems adopted for digital resource management in university libraries in South-West, Nigeria?

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Table 1: Types of LMS Adopted for Digital Resources Management in University Libraries in South-west, Nigeria

S/N	Items	Yes	No
A	**Integrated Library Systems (ILS) / Library Services Platforms (LSP)**		
1	Koha (Open-Source ILS)	325 (91.8%)	29 (8.2%)
2	Alice for Windows (Proprietary ILS)		354 (100.0%)
3	NewGenLib (Open-Source ILS)	28 (7.9%)	326 (92.1%)
4	ABCD (Open-Source ILS)	-	354 (100.0%)
5	PhpMyLibrary (Open-Source ILS	-	354 (100.0%)
6	Evergreen (Open-Source, ILS, designed for consortia)	-	354 (100.0%)
7	OpenBiblio (Open-Source, simpler ILS)	-	354 (100.0%)
8	Alexandria (Presumed open-source)	5 (1.4%)	349 (98.6%)
B	**Digital Asset Management Systems**		
9	DSpace (Open-Source Institutional Repository Platform)	95 (26.8%)	259 (73.2%)
10	E-Prints (Open-Source Institutional Repository platform)	13 (3.7%)	341 (96.3%)
11	Greenstone (Open-Source Digital Library software for building collections)	-	354 (100.0%)

N=354 (Source: Field Survey, 2026)

Table 1 presents the types of Library Management Systems (LMS) adopted for digital resources management in university libraries in South-West Nigeria. The results showed that under the category of Integrated Library Systems, KOHA is the most widely adopted LMS represented by 325 (91.8%) respondents while only 29 (8.2%) reported otherwise. In contrast, Alice for Windows, ABCD, PhpMyLibrary, Evergreen, OpenBiblio proprietary system, recorded no adoption at all, with 100% of the respondents indicating non-adoption. Other open-source ILS options such as NewGenLib and Alexandria recorded very low levels of adoption, with 28 (7.9%) and (5) 1.4% respectively. Under Digital Asset Management Systems, the results show comparatively lower levels of adoption with DSpace being the less utilized platform in this category, with 95 respondents (26.8%) indicating poor usage. Although this represents a notable level of adoption, it is still significantly lower than that of KOHA, suggesting that digital repository development is not yet as

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widespread as traditional library automation. E-Prints recorded minimal usage at 3.7% while Greenstone was not adopted by any of the surveyed libraries.

Supporting this studies, qualitative data was collected and transcribe thematically. The findings of the study showed that majority of the library management systems adopted for various library operations, including cataloguing, circulation, acquisitions, and user management are poorly utilized. These systems are preferred due to its open-source nature, flexibility, and cost-effectiveness. Respondents also noted that KOHA has improved resource organisation, accessibility and overall efficiency in library operations. This suggests that the university libraries in South-west, Nigeria has adopted an integrated library management system to manage their resources and to support their operations. The interview responses are as follow:

Participant 1. In University A. asserted that:

The participant stated that their library had adopted KOHA software for the management of their resources in their libraries. He went further to state that the Koha software is more user friendly.

Participant 2. In University B. are of the opinion that:

"In our libraries, we adopted KOHA library management software for resources management and to render other information services." Going further they asserted that Koha management software requires less technical know-how. "The LMS used in our library is KOHA. It has been in use for several years and has improved how we manage and organize our resources"

Participant 3. In University C. pointed that: "*Our library are using both KOHA and Dspace for day-to-day activities of the library operation. Let me also point out that KOHA is fully implemented while the full implementation of Dspace is still in progress." This indicated that KOHA is widely adopted in Osun state university in comparison to Dspace*.

Participant 4 In University D. pointed that: The participant submitted that "Actually, NewGenlib is the LMS widely adopted in our library." Going further the avers that its more user friendly and ease of use in compare to KOHA and Dspace.

Participant 5. In University E. asserted that: "We currently use KOHA for cataloguing and classification of materials. It helps us maintain accurate bibliographic records and makes retrieval easier"

Participant 6. In University F. asserted that: "Our library uses, NewGenlib as the main library management system" they opined that]It's an open-source platform, and they use it for cataloguing, circulation, and user management.

And finally, Participant 7 In University G. is of the opinion that: *"Actually, NewGenlib is the LMS we adopted in our library."*

Discussion of Findings

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The findings of this study in research question one revealed that KOHA and Dspace are the most widely adopted Library Management System among university libraries in South-west, Nigeria. This dominance can be attributed to several factors, particularly its open-source nature, flexibility, and cost-effectiveness. This may be because as open-source platform, KOHA and Dspace eliminate the burden of expensive licensing fees, making it especially attractive to university libraries operating under limited budgets. This finding is in agreement with the interview response of Participant 1, 2, 3, 5, 6 and 7 who stated that KOHA for digital resource management. Most importantly, Participant 3 stated that *"we are using "both KOHA and Dspace for day to day activities of the library operation"* This supports the findings of Marshall (2015), who noted that open-source ILS solutions such as KOHA and Dspace have gained widespread acceptance due to their affordability and adaptability to local needs. Also, the widespread adoption of KOHA and Dspace can also be connected to global trends in library automation, where institutions increasingly prefer customizable systems that can be modified to suit specific operational requirements. This is in agreement with the work of Sharma (2023) who reported that KOHA and Dspace provide robust functionalities for cataloguing, circulation, acquisitions, and Online Public Access Catalogue (OPAC) which make them a comprehensive solution for resource management. However, the finding contradicts the study of Otunla, Akintola and Omotayo (2022) who reported that despite the increasing popularity of KOHA in Nigeria, adoption levels differed significantly across geo-political zones and types of libraries. Their study showed that some university libraries still preferred integrated library systems due to institutional policies, existing infrastructure, and funding patterns. This finding differs from the current study which established KOHA and DSpace as the most widely adopted systems among selected university libraries in South-West Nigeria. The contradiction may be linked to differences in geographical scope, institutional priorities, and the time the studies were conducted.

Conclusion

This study examined technical know-how, user friendliness and ease of use of library management system and digital resources management in universities in South-west, Nigeria. The findings revealed that LMS adoption is widespread, with a strong preference for open-source platforms most especially KOHA and Dspace, and that these systems are extensively utilized across core library operations such as cataloguing, circulation, acquisition, and user management. The study established that librarians and system analysts possess strong competencies in routine and operational aspects of LMS use, especially in content management and basic ICT functions. However, their proficiency declines in more advanced technical areas such as system configuration, integration, and troubleshooting, indicating a gap that may limit optimal system utilization.

Implications of Findings

The findings of this study have several important implications for library management, policy, and practice in university libraries in South-west Nigeria. This is because the widespread adoption and extensive use of KOHA and Dspace Library Management Systems imply that automation has become central to modern library operations. This underscores the need for sustained investment in LMS infrastructure, including regular system upgrades and maintenance, to ensure continued efficiency in digital resource management. Also, the finding that librarians possess strong operational skills (basic ICT skills) but limited advanced technical competencies has significant implications for capacity building. It indicates a pressing need for continuous professional development programmes

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focusing on advanced ICT skills such as system configuration, integration, and troubleshooting. Therefore, without strengthening these competencies, libraries may not fully utilize the capabilities of their LMS, thereby limiting overall effectiveness.

Recommendations

Based on the findings of this study, the following recommendations are rendered to enhance the effective use of Library Management Systems (LMS) and digital resource management in university libraries in South-west Nigeria:

South-west universities should strengthen institutional policies that support widely adopted LMSs apart from KOHA and DSpace to ensure consistency, interoperability, and improved user proficiency across libraries. University management and relevant stakeholders should invest in reliable ICT infrastructure. Improving internet connectivity and ensuring stable network access will significantly enhance the usability and performance of LMS in library operations. Regular training programmes should be organised for librarians and system analysts, particularly in advanced areas such as system configuration, troubleshooting, and integration with other institutional systems. Library management should prioritise the adoption and customisation of user-friendly LMS platforms. Systems should be designed or configured to ensure intuitive navigation, clear interface design, and accessibility across multiple devices to enhance user experience in south-west university libraries.

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