USE AND MIGRATION OF LIBRARY MANAGEMENT SOFTWARE IN ACADEMIC LIBRARIES: A DESCRIPTIVE STUDY

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Abstract :

This descriptive study examines the use and migration of Library Management Software (LMS) in academic libraries, with a specific focus on the Indian context. It provides an overview of the role of these systems in modern libraries, from automating routine tasks to enhancing user services. The study identifies key factors that compel a transition from a legacy system to a newer one, such as technological obsolescence, cost inefficiency (e.g., proprietary licensing fees), and a demand for advanced features like remote accessibility and cloud-based solutions. It then details the multi-stage migration process, including meticulous planning, data cleaning, transformation, and testing. The paper also highlights significant challenges faced during migration, such as data loss, compatibility issues due to mismatched data structures, and staff resistance, and proposes a set of best practices, including comprehensive staff training and feasibility studies, to ensure a successful and smooth transition.

Keywords : Library Management Software (LMS), Integrated Library System (ILS), Academic Libraries, Migration, Indian LMS Market, Open-source Software.

Introduction :

This study looks at the crucial function of Library Management Software (LMS), sometimes referred to as an Integrated Library System (ILS), in contemporary academic libraries as well as the delicate process of switching between different systems. The automation of intricate library procedures has been made possible in large part by software, which is the digital set of instructions controlling computer hardware. From a basic cataloging tool to a complex, integrated system that oversees all facets of library services, including acquisitions, cataloging, circulation management, and selection, the LMS has developed in Library computerization, which started in India in the late 1970s, is now a basic requirement since operations and services must be more effective and efficient. For efficient customer service and collection administration, relational database architecture is the foundation of today's integrated LMS platforms. Since the Indian LMS market has matured, academic libraries have adopted it widely, using a range of open-source (like Koha and NewGenLib) and commercial (like LibSys and SOUL) choices.academic contexts because technology is always evolving, academic libraries need to relocate or upgrade their LMS on a regular basis to stay up to date. While this system migration procedure is essential, there are a number of possible obstacles to

overcome, such as data loss, incompatibilities, and financial limitations. Thus, this study offers a thorough analysis of the steps and difficulties involved in switching from one system to another, as well as a descriptive look at the current usage of LMS in academic libraries.

Definitions :

- **LMS :** Library management software is a digital system that automates and streamlines all of a library's operations, from cataloging and managing user accounts to tracking borrowed materials and handling returns.
- **Integrated Library System (ILS) :** A software suite designed to manage all internal operations of a library, including acquisitions, cataloging, circulation, serials management, and an online public access catalog (OPAC).
- **Software Migration :** The process of moving software applications and data from a legacy platform to a new and often more modern one.
- **Open-source Software (OSS) :** Software with a source code that is made available to the public for use or modification from its original design. **Koha** is a prime example of an open-source LMS.
- **Proprietary Softwar :** Software licensed under the exclusive legal right of the copyright holder. It is often accompanied by a purchase fee and restrictions on use. **LIBSYS** and **SOUL** are examples of proprietary LMS.
- **Online Public Access Catalog (OPAC) :** The public-facing module of an ILS, which allows users to search the library's collection and view their account information.

Objective and Need for the Study :

The main objective of this study is to provide a comprehensive analysis of the use of Library Management Software and the subsequent challenges and best practices related to its migration in academic libraries. Specifically, the study aims to:

- To examine the functional utility and features of an LMS in modern academic libraries.
- To identify the primary reasons that compels academic libraries to migrate their LMS.
- To Detail the systematic process of software migration.
- To Investigate and document the key technical, financial, and organizational challenges encountered during the migration process.
- To propose actionable best practices and suggestions for a successful and seamless migration.

The need for this study arises from the fact that library automation is a fundamental requirement for modern libraries. The choice of a suitable LMS is a constant challenge for librarians, as is the need for periodic upgrades. The constant advancement in technology requires periodic upgrades to an LMS. This migration process requires careful planning to avoid major issues like data loss and compatibility problems. Therefore, a study that examines the most suitable software and the process of seamless migration is essential for the growth and development of libraries.

Review of literature :

1. Oinam and Nongbri (2016) emphasize the **criticality of software choice** during the initial planning phase of library automation, particularly within large academic (university) library systems. They assert that the chosen **Integrated Library Management System (ILMS)** directly impacts the eventual evaluation and performance of the modern library.

   The authors note that modern library software integrates numerous features into its workflow, which may not be immediately obvious to a new user but are **inherent to the ILMS design**. The fundamental objective of the library to **manage its collection, users, and provide the right information to the right user at the right time** must be flawlessly executed by the operational ILMS.

   A key factor driving system change is the influence of the **Internet and new ICT applications** (especially social media), which have fundamentally altered the characteristics and expectations of library users, including their document preferences and search strategies. To remain relevant and meet these evolving demands, the authors **recommend a policy of migration** from an older to a newer software system. However, they stress that this migration must be executed using a **proven methodology based on best practices** to ensure minimal errors. This rigorous approach is viewed as essential for **easing future adaptations, reducing data extraction and transfer time, and lowering costs.**

2. Sahoo and Saikia (2019) present a study focused on academic libraries in **Oyo State, Nigeria**, with the goal of documenting their experiences regarding **Integrated Library System (ILS) migration projects**. This research provides a localized review that contributes to a broader national discussion on the role of **Information and Communication Technology (ICT)** and library services in promoting sustainable development within the Nigerian Education sector. Employing a **systematic approach** and utilizing **stratified sampling** for questionnaire administration, the study offers a snapshot of adopted ILS functions and the **key factors** influencing migration outcomes. The findings delineate the **challenges and opportunities** facing these academic libraries as they operate in an environment characterized by rapidly evolving technology and

increasingly sophisticated academic users. Based on these results, the authors offer practical recommendations for system improvement, including the necessity of conducting an **extensive feasibility study**, providing comprehensive **staff training** in crucial aspects of migration, and using **additional incentives** to motivate personnel.

3. Sahoo and Saikia (2019) focus on **library automation** within the **academic library system**, recognizing it as a fundamental activity necessitating the use of proprietary or open-source Integrated Library Management System (ILMS) software. Their study addresses the critical challenge of **data migration** that arises when library administrators decide to transition between these systems. The central objective of their research was to introduce and validate a **systematic approach** for migrating data from the existing proprietary ILMS, **Libsys**, to the new open-source system, **Koha**. Through a successful experimental implementation at the Tezpur University library system, the authors established the methodology's accuracy. The key finding was the confirmation that both the **bibliographical data and patron data** in the resultant Koha system were **identical** to the data in the original Libsys system, thereby affirming the viability and fidelity of their systematic data migration framework.

4. Mathar, Marwansyah, and Ardinata (2020) conducted a **descriptive case study** to chronicle the experience of the **Alauddin UIN Library** in migrating data from an old library automation system to a new one, a transition driven by the replacement of conventional services with technology-based ones. The study found that the necessity for system change stemmed from **several obstacles in the old system**. Data gathered from observations and the experiences of library staff involved in the migration process revealed that a successful transition **required established planning**, taking into account vital resources like **time, cost, funds, and competent human resources**. The authors specifically identified the **hardest obstacle** encountered during the migration as the **data conversion section**, which was complicated by **differences in data structures** between the two systems. This practical case study serves as a valuable reference for other libraries contemplating or planning a migration to a new integrated library system.

5. Msonde et al. (2025) detail an **experimental design study** that investigates the critical process of **bibliographic data migration** within Higher Education Institutions (HEIs) in developing nations. Their work establishes that a transition from proprietary to open-source **Library Management Systems (LMS)** is a necessary measure, driven by the significant drawbacks of commercial software, such as **high prices, stringent license agreements, limited access to training, and a lack of data control**. The researchers successfully mapped and

demonstrated the **functional pathways** for moving data from the proprietary **ADLIB** system to the open-source **KOHA** system at the Muhimbili University of Health and Allied Sciences (MUHAS). This meticulous process, involving the migration of approximately **63,000 bibliographic records** over an eight-month period, was carried out by experienced academic librarians proficient in both data migration and systems integration. The study is particularly valuable for its practical application, as it offers **insights and recommendations** based on the actual successes and shortcomings encountered at MUHAS, thereby guiding other HEI libraries in similar transitions to ensure the effective delivery of modern library services.

Use of Library Management Software in Academic Libraries :

In the modern academic landscape, an LMS is the central nervous system of a library. It is vital for:

- **Circulation Management :** Automating the issuing, returning, and renewing of library materials, as well as managing fines and holds.
- **Cataloging and Metadata Management :** Creating and maintaining accurate bibliographic records for the library's collection using international standards like MARC.
- **Acquisitions :** Streamlining the ordering and payment process for new materials.
- **Serials Control :** Managing subscriptions and issues of journals and magazines.
- **Online Public Access Catalog (OPAC) :** Providing a user-friendly web interface for students and faculty to search for resources and access their accounts from anywhere.

The Indian LMS Market: An Overview :

The Indian LMS market for academic libraries is characterized by a strong presence of both open-source and proprietary software. This market is currently undergoing a significant transformation, with a clear trend toward more flexible and cost-effective solutions.

Types Of Library Management Software :

Open-Source Software Dominance :

Open-Source Software (OSS) provides **cost-effective solutions** for libraries, especially academic ones, by offering the flexibility to **modify and customize** the system to meet specific needs. Open-source and free **Library Management Systems (LMS)** are designed to assist in managing a library's resources, such as books, articles, journals, and multimedia materials.

These tools automate essential library operations, including **cataloguing, inventory management, tracking overdue items, overseeing the user database, and generating reports**. Libraries of every size and type public or academic can utilize this software for convenient access to their resources.

Top Ten Mentioned Open Source/Free LMS

Here is a standardized table of the top ten open-source or free Library Management Systems mentioned:

No.	Library Management System (LMS)	General Status/Key Feature
1.	**Koha**	Highly popular, fully open-source Integrated Library System (ILS).
2.	**Evergreen ILS**	Robust open-source ILS, often used by public library consortia.
3.	**OPALS**	Open-source/free option frequently utilized by school libraries.
4.	**OpenBiblio**	Simple, open-source automation system suitable for small libraries.
5.	**Invenio**	Flexible open-source framework for building digital libraries and repositories (developed at CERN).
6.	**PMB**	Professional ILS with a free/open-source version available.
7.	**New Gen Lib**	ILS with a free community edition (formerly open source).
8.	**CodeAchi**	Offers a free edition for smaller libraries; commercial versions may also exist.
9.	**Librarian**	*Note: This is a generic term; refers to various simple library software options.*
10.	**BiblioteQ**	Open-source, cross-platform software primarily for simple cataloging.

Proprietary Library software packages :

Despite the rise of open-source options, proprietary systems like **LIBSYS** and **SOUL** from the INFLIBNET Centre maintain a strong foothold, particularly in larger and more established universities. These systems are often chosen for their robust features, comprehensive support, and long-standing reputation in the Indian academic library sector. SOUL, developed with the specific needs of Indian universities in mind, benefits from institutional backing and dedicated support from a government-funded body. Here are given some other Commercial LMS National and International Software.

National Library management Software :

Software Name	Category/Key Detail
Autolib	Integrated Library System (ILS)
EasyLib	Integrated Library System (ILS)
E-Granthalaya	Developed by **NIC (National Informatics Centre)**, widely used in government and public libraries.
Libra 2000	Integrated Library System (ILS)
Library Manager	Integrated Library System (ILS)
Libris	Integrated Library System (ILS)
Libsoft	Integrated Library System (ILS)
Libsuite	Integrated Library System (ILS)
Libsys	**Major Proprietary LMS** in India, known for extensive installations.
NexLib	Integrated Library System (ILS)
SANJAY	An older Indian LMS, primarily developed using CDS/ISIS.
SLIM (System for Library Information and Management)	**Major Proprietary LMS** in India (Algorhythms Consultants).
SOUL (Software for University Libraries)	**UGC/INFLIBNET** proprietary software, popular among university and college libraries.
SWIRL	Software for Information Retrieval (Primarily for Cataloguing).

International Library management Software :

Software Name	Category/Key Detail
ADLIB Library for Windows	Commercial LMS
Alice Library Automation Software	Commercial LMS
Book Librarian for Windows	Commercial LMS
CDS/ISIS Software (WINISIS)	UNESCO-developed software, widely used historically, especially in developing countries.
Endeavor/Voyager	Major commercial ILS (now part of Ex Libris/Clarivate).
EOS Library Systems	Commercial LMS
Innovative Interfaces Millenium	Major commercial ILS (now part of Ex Libris/Clarivate).

Software Name	Category/Key Detail
Keystone Library Automation System 6.1	Commercial LMS
Micro Librarian Systems	Available in two types: **Eclipse** and **Jr. Librarian**.
OLIB 7	Commercial LMS (often used for special libraries).
Sagebrush Library Automation Systems	Commercial LMS
SIRS Mandarin M3	Commercial LMS
SIRSI Integrated Library Management System	Major commercial ILS (now part of SirsiDynix).
STAR Libraries	Commercial LMS
Surpass Integrated Library Management System	Commercial LMS
Techlib	Commercial LMS
TLC Integrated Library Systems	Commercial LMS (The Library Corporation).
URICA Version 7	Commercial LMS
VTLS	Commercial LMS (now part of the Libsys family of products).
Weblis	Web-based Library System.

Key Market Trends :

- **Shift to Open-Source :** The prevailing trend is a growing preference for open-source systems, driven primarily by the need for cost reduction as these solutions eliminate recurring licensing fees.
- **Rise of Cloud-Based Solutions :** Increasingly, libraries are moving towards cloud-based LMS. This shift is motivated by the desire for greater flexibility and remote accessibility, which reduces the burden of maintaining on-premise hardware and software.
- **Focus on Remote Accessibility and Flexibility :** The demand for an LMS that supports remote access has been accelerated by the need for digital education and research, particularly in a post-pandemic world. Libraries are seeking systems that offer a seamless user experience across different devices and locations, making their resources more accessible.

Need and Process for Software Migration :

Need for Migration :

Libraries undertake a software migration for several compelling reasons, primarily to

address the limitations of outdated systems and to better meet the evolving needs of their users.

- **Technological Obsolescence :** Legacy systems are often built on outdated architectures, leading to slow performance and a lack of support for modern web standards, mobile access, and security protocols.
- **High Cost of Ownership :** Proprietary software comes with expensive, recurring licensing fees and annual maintenance contracts, which can significantly strain a library's budget. Migration to open-source solutions eliminates these costs.
- **Enhanced Functionality :** Older systems often lack the advanced features and integrations required by modern libraries, such as improved federated search capabilities, data analytics tools, and integration with technologies like RFID.
- **Avoiding Vendor Lock-in and Meeting User Expectations :** Proprietary systems can create a vendor lock-in scenario, making a library overly dependent on a single company. Users today expect a seamless and intuitive experience, which a modern, user-friendly system can provide.

Migration Process :

A successful migration is a methodical process that can be broken down into several phases:

1. **Preparation and Planning :** This is the most critical phase. It involves forming a project team, defining clear objectives, budgeting, and conducting a thorough audit of existing data to identify inconsistencies.
2. **Data Extraction and Cleaning :** Data is extracted from the old system and meticulously cleaned to ensure it is accurate and ready for transfer. Data formats like MARC, XML, and CSV are commonly used for this.
3. **Data Transformation and Loading :** The extracted data is transformed to be compatible with the new system's format and then loaded into the new software.
4. **Testing and Validation :** A test environment is set up to validate the migrated data and test all system functionalities. This phase is crucial for identifying and rectifying errors before full-scale deployment.
5. **Training and Deployment :** Library staff are trained on the new system. Once the team is ready and the new system is validated, the old system is retired, and the new one goes live.

7. Challenges in Library management software Migration :

Despite careful planning, migration can be fraught with challenges:

- **Data Integrity and Loss :** The risk of data loss or corruption during the transfer is a significant concern due to mismatched data fields and incompatible formats.
- **Technical Expertise :** A lack of in-house technical expertise for data mapping, scripting, and troubleshooting can stall the process.

- **Financial Constraints :** Even with open-source software, there are costs associated with hardware, implementation, customization, and technical support.
- **Staff Resistance :** Library staff may be resistant to adopting a new system due to the perceived complexity of learning new workflows and the fear of losing their expertise on the old system.
- **Downtime :** The transition from the old system to the new one often requires a period of downtime, which can disrupt essential library services.

8. Best Practices and Suggestions :

To overcome these challenges, a strategic approach is essential:

- **Form a Dedicated Team :** Assemble a team with diverse skills, including librarians, IT staff, and a project manager, to oversee the migration.
- **Prioritize a Phased Approach :** Consider a phased migration strategy to minimize disruption. Instead of a "big bang" approach, migrate modules one by one.
- **Clean Data Meticulously :** Invest time in data cleaning and quality control before the migration begins. The quality of the new system is directly dependent on the quality of the migrated data.
- **Comprehensive Training :** Provide extensive and hands-on training for all staff members. Tailor the training to different user roles to maximize effectiveness.
- **Maintain Vendor Communication :** For proprietary systems, maintain a clear line of communication with the vendor. For open-source systems, leverage community forums and hire external experts for support.
- **Plan for Post-Migration Support :** Have a support plan in place for the period immediately following the go-live date to address any unforeseen issues.

Conclusion :

The migration of Library Management Software is an inevitable and transformative process for academic libraries striving to remain relevant in the digital age. It represents a strategic investment that aims to improve operational efficiency and enhance the user experience. While the process is complex and presents significant challenges—including data integrity risks, technical hurdles, and staff resistance—these can be successfully navigated through **careful planning, a meticulous approach to data handling, and comprehensive staff training**. By adopting modern, flexible systems, particularly the growing trend of open-source and cloud-based solutions, and following the outlined best practices, academic libraries can ensure a seamless transition that positions them to better serve the evolving needs of their academic communities.

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