Extent of Use and Application of Integrated Library Management System in the University Libraries of Assam

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Abstract

Purpose*: To examines the implementation of Integrated Library Management System (ILMS) in university libraries of Assam and also investigates software platforms, version distribution, hosting practices, and module performance.*

Design/Methodology/Approach*: The study utilized a descriptive survey research design to gather quantitative data. A structured questionnaire was systematically distributed across ten university libraries, purposefully selected to represent a cross-section of central, state, and private institutions. To interpret the findings, descriptive statistical methods—specifically frequency distribution and percentage analysis—were employed to ensure a rigorous evaluation of the data.*

Findings*: The findings reveal that 50% of libraries utilize Koha and 40% use SOUL 2.0. The vast majority (90%) of libraries host their ILMS on institutional servers. Overall, 80% of users are satisfied, with 20% reporting high satisfaction with ILMS platforms currently in practice. Module analysis reveals great satisfaction in circulation and cataloguing, but lower satisfaction levels in acquisition and serial control modules.*

Research Limitations/Implications*: The study is confined to ten universities and more detailed and extensive research are recommended.*

Practical Implications*: This study highlights the need for better module functionality, improved technical capacity, and stronger support for infrastructure.*

Originality/Value*: India has moved toward automation, however, the digital divide in the Northeast makes this specific study critical for policy planning. The study offers context-specific evidence on ILMS adoption and performance in university libraries of Assam, filling a regional research gap.*

Keywords*: ILMS, Library Automation, University Libraries, Assam*

1. Introduction: The transition from traditional libraries to hybrid and digital environments has made Integrated Library Management Systems (ILMS) a key part of modern academic library operations. In higher education, ILMS serve as important systems that enable bibliographic control, streamline circulation workflows, support resource discovery, and improve service efficiency and user satisfaction.

An Integrated Library Management System has interrelated modules, including acquisition, cataloging, circulation, serial control, and Online Public Access Catalog (OPAC). These modules operate within a unified database environment. Genaway (1984) defined an integrated online library system as "a library system that uses common machine-readable data and has two or more subsystems operational and accessible online" (Lopata, 1995). This integration ensures consistency, interoperability, and efficient data exchange across all library functions.

The global library technology landscape reflects two parallel trends: proprietary commercial systems that offer structured vendor support but come with significant licensing and maintenance costs, and open-source software (OSS) that provides flexibility, transparency, and lower total cost of ownership, but requires sufficient in-house technical expertise. Reddy and Kumar (2013) noted that open-source systems like Koha and NewGenLib have gained popularity in libraries due to their adaptability and cost-effectiveness. It is worth mentioning that systems like Greenstone and DSpace, while listed alongside ILMS, mainly support digital libraries and institutional repositories instead of core ILMS functions.

The adoption of ILMS in India shows a diverse and evolving landscape. Khode and Chandel (2015) reported that many institutions have started using open-source software for library management and OPAC services, along with developing open-access repositories. This trend mirrors broader global patterns where academic libraries, especially in resource-limited areas, increasingly adopt sustainable and cost-effective technological solutions without sacrificing functional requirements.

Despite the growing literature on ILMS, studies focusing specifically on university libraries in Assam are still scarce. The state has a varied higher education ecosystem, including central, state, private, and specialized universities established at different times. This diversity in institutions is accompanied by differences in infrastructure, technological readiness, and staff capacity, all of which affect the adoption and effective use of ILMS.

Investigating region-specific issues is crucial since the challenges related to library automation often depend on local infrastructure, policy frameworks, and institutional capabilities. Jayamma and Krishnamurthy (2017) emphasized that research on library automation in developing countries must consider regional differences and highlighted the lack of empirical studies from Northeast India. This gap points to a need for targeted investigation into ILMS adoption, implementation, and usage within university libraries in Assam.

2. Review of Literature: The research on Integrated Library Management Software (ILMS) has developed across multiple areas, including adoption patterns, system assessment, implementation experiences, and user-focused evaluations. Recent scholarship suggests that ILMS effectiveness should be seen as a combination of technological capability, institutional context, and human factors. This review is divided into four thematic sections: adoption trends, comparative evaluation, implementation experiences, and user perception.

a) Trends in ILMS Adoption: Research shows a growing movement toward open-source ILMS, especially in developing countries where cost and customization are key factors. Khode and Chandel (2015) reported widespread use of open-source platforms in India for library management and repository development. Similarly, Omeluzor and Oyovwe-Tinuoye (2016) found that adopting ILMS improved service delivery in Nigerian academic libraries. Uzomba, Oyebola, and Izuchukwu (2015) also observed an increasing reliance on Koha because of its flexibility and affordability. Jayamma and Krishnamurthy (2017) pointed out that, despite global advancements, empirical studies focusing on specific regions—especially in Northeast India—are still limited.

b) Comparative Evaluation of ILMS: Comparative studies indicate that open-source ILMS can compete with commercial systems. Madhusudhan and Singh (2016) found that while Virtua ranked highest, Koha performed well, challenging the idea of commercial superiority. Rai and Kumar (2011) highlighted a trend toward web-based integrated systems, while Singh and Sanaman (2012) stressed the importance of institutional context in choosing a system. Shimrey and Ahmed (2017) demonstrated differences in OPAC performance, showing that platform effectiveness varies based on functional needs.

c) Implementation Experiences: Implementation studies reveal both benefits and challenges of ILMS deployment. Neelakandan et al. (2010) and Senthilkumaran and Sreeja (2017) showed that Koha enhances operational efficiency and scalability in academic libraries. However,

Reddy and Kumar (2013) noted that open-source systems need technical expertise despite their cost benefits. Importantly, Asim and Mairaj (2019) identified major obstacles, including a lack of technical staff, insufficient training, and limited institutional support, indicating that organizational factors greatly impact implementation success.

d) User Perception and Satisfaction: User-focused studies highlight the importance of skills and training in ILMS effectiveness. Kumar, Naick, and Rao (2018) found that while professionals are aware of ILMS, there are gaps in advanced skills like customization and module use. Asim and Mairaj (2019) pointed out challenges such as inadequate training and technical support. These findings suggest that ILMS success relies not only on system features but also on user skills and institutional support.

3. Research Gap: The literature on Integrated Library Management Systems (ILMS) has provided valuable insights into system adoption, functional capabilities, and comparisons of software platforms. However, existing research shows both geographical and analytical limitations.

In India, most empirical studies have focused on specific regions and institutions, while the northeastern region, particularly Assam, has garnered relatively little academic attention. Given the unique infrastructural conditions, institutional diversity, and varying levels of technological readiness in this area, the lack of context-specific evidence is a significant research gap.

Moreover, existing studies have centered on ILMS selection, adoption trends, and feature comparisons, with less focus on the actual use of modules in operational settings. Key components like acquisition, cataloging, circulation, and serial control have not been consistently evaluated for their practical effectiveness across institutions.

Additionally, user-centered aspects, especially satisfaction with specific modules among library staff, remain underexplored, even though they are important for assessing system performance and effectiveness. Consequently, there is limited empirical evidence that simultaneously looks at adoption patterns, software usage, functional performance, and user satisfaction within a unified framework.

This study addresses these gaps by offering a thorough, context-specific analysis of ILMS adoption and use in university libraries of Assam, contributing to a better understanding of library automation practices in the region.

4. Research Objectives

a) To examine the status and trends of Integrated Library Management System adoption in university libraries of Assam, focusing on software platforms, version distribution, and hosting practices.

b) To analyse the software preferences of information professionals and assess their overall satisfaction with the currently implemented ILMS platforms.

c) To assess library staff satisfaction across important functional areas of Integrated Library Management Systems, such as acquisition, cataloging, circulation, serial control, and administration.

d) To develop evidence-based recommendations for improving the effectiveness and efficiency of ILMS-based library automation practices in university libraries of Assam.

5. Research Methodology

a) Research Design: The study uses a descriptive survey research design to investigate the adoption, use, and effectiveness of Integrated Library Management Systems (ILMS) in university libraries of Assam. This approach is suitable for systematically documenting existing ILMS practices, including software usage patterns, system configurations, and user satisfaction levels within institutional contexts.

The study is quantitative and relies on structured responses gathered through a standardized questionnaire.

b) Sample and Sampling: The study focuses on university libraries in Assam. Assam has 21 accredited universities, including national, state, and private institutions. Ten universities were chosen from this demographic using purposeful sampling ensuring proportional representation of Central, State, and Private institutions. The sample accounts for around 48% of the total population, providing a valuable cross-section of the state's higher education landscape.

Sl. No.	Institution Type	Name of the Institution
1)	Central University	Assam University, Silchar
2)		Tezpur University
3)	State University	Gauhati University
4)		Cotton University
5)		Bhattadev University, Bajali
6)		Bodoland University
7)		National Law University & Judicial Academy, Assam
8)		Dibrugarh University
9)	State Open University	Krishna Kanta Handiqui State Open University
10)	Private University	Assam Down Town University

Table 1: Sampled Universities by Institutional Category in Assam

c) Data Collection and Instrument: Data were collected using a structured questionnaire made up entirely of closed-ended questions. This tool gathered information on ILMS adoption, software platforms, version details, hosting arrangements, software preferences, satisfaction levels, and performance by module. The questionnaire was reviewed by subject experts to ensure clarity and content validity.

d) Data Collection Procedure: The questionnaire was administered online to chief librarians of the selected universities from January to March 2020. Follow-up reminders were sent to ensure full participation, leading to complete responses from all institutions.

6. Data Analysis and Findings: Data were analyzed using descriptive statistical techniques, specifically frequency distribution and percentage analysis. The results were presented in tabular form for interpretation.

a) ILMS Adoption and System Characteristics: The findings clearly indicate a preference for open-source ILMS platforms. KOHA is the most extensively used system, accounting for 50% of all libraries, followed by SOUL at 40%. Only one university reported using an alternate system (Orange 2.0), and no LIBSYS adoption was detected. This pattern demonstrates a significant institutional preference for adaptable and cost-effective software solutions.

Software Package	No. of Universities	Percentage
Koha	5	50 %
SOUL	4	40 %
LIBSYS	0	0 %
Other	1	10 %
Total	**10**	**100 %**

Table 2. Distribution of ILMS Platforms Across University Libraries

b) Software Version: Table 3 shows the specific software versions reported by each of the ten university libraries included in the survey. This information is critical since the version number indicates how recently a library updated its system. The table clearly illustrates that SOUL

implementations are completely version consistent, with all libraries using SOUL 2.0 exclusively. Meanwhile, Koha deployments vary in their versions. Again, while SOUL 2.0 is a static commercial release, Koha is a rolling release. Not knowing the version (e.g., 19.05 vs. 22.11) means the library may be missing critical security patches. The lack of knowledge about the version of the software used by libraries suggests a lack of technical expertise on the part of the library staff.

Name of the Library	Software Version
Krishna Kanta Handiqui Library, Gauhati University	SOUL 2.0
Dr. Surya Kumar Bhuyan Central Library, Cotton University	SOUL 2.0
Krishna Kanta Handiqui State Open University Library	SOUL 2.0
Lakhminath Bezbaruah Central Library, Dibrugarh University	SOUL 2.0
Rabindra Library, Assam University	Koha
Bhattadev University Library, Bajali	Koha
Padma Shri Madaram Brahma Central Library, Bodoland University	Koha
National Law University & Judicial Academy Library, Assam	Koha 19.05.02
Tezpur University Central Library	Koha 18.11
Assam Down Town University Library	Orange 2.0

Table 3. Software Versions Across University Libraries

c) Software Hosting Location: The findings demonstrate that 90% of libraries host their ILMS on institutional servers, with only 10% using commercial hosting and none using international cloud services. The statistics indicates a strong preference for locally managed infrastructure.

Hosting Location	No. of Universities	Percentage
University Server	9	90 %
Commercial Server	1	10 %
Total	**10**	**100 %**

Table 4: Software Hosting Location

d) Software Preference and Overall Satisfaction: The analysis of library software preferences reveals that 50% of university libraries in Assam prefer using open-source software. Forty percent of libraries prefer commercially designed software, while the remaining ten percent prefer in-house produced software. While Khode and Singh (2015) noted a national trend toward Open Source, our study confirms that Assam is following this trajectory closely, with 50% open-source adoption, though the reliance on local hosting (90%) persists as a regional characteristic.

Type	No. of Libraries	Percentage
Open Source	5	50 %
Commercial Customized	4	40 %
In-house	1	10 %
Total	**10**	**100 %**

Table 5: Software Preference Type

e) Overall Satisfaction with ILMS: In terms of overall ILMS satisfaction, the statistics demonstrate that all libraries report positive results, with 80% satisfied and 20% highly satisfied. It demonstrates that the ILMS platforms currently in practice are typically effective

in supporting library operations. However, the low proportion of "very satisfied" responses suggests that systems are not fully optimized and that there is room for development.

Satisfaction Level	No. of Universities	Percentage (%)
Very satisfied	2	20%
Satisfied	8	80%
Total	**10**	**100%**

Table 6: Overall satisfaction with ILMS

f) Module-wise Satisfaction: The analysis of module-wise satisfaction statistics shows that the circulation module has the highest level of satisfaction, with seven libraries reporting high levels of satisfaction. The table also shows that six libraries are highly satisfied with cataloguing and administration modules. There are no extremely satisfied responses in the acquisition module, however eight libraries are satisfied and two are somewhat satisfied. Four libraries are just slightly satisfied with the performance of the serial control module, while only two libraries are extremely satisfied.

Module	Slightly Satisfied	Satisfied	Highly Satisfied
Acquisition	2	8	0
Cataloguing	0	4	6
Circulation	0	3	7
Serial Control	4	4	2
Administration	0	4	6

Table 7: Satisfaction Across ILMS Modules

g) Module-Wise Satisfaction Ranking: According to the module-wise satisfaction ranking shown in Table 8, the Circulation module has the highest percentage of satisfied users (70%). Cataloguing and administration rank second with 60% of highly satisfied users. The acquisition module has no highly satisfied responses, although 20% are slightly satisfied. Serial Control performs poorly, with only 20% highly satisfied and 40% slightly satisfied. This indicates serious imperfections in the Acquisition and Serial modules, which must be addressed immediately.

Rank	Module	Highly Satisfied (%)	Slightly Satisfied (%)
1	Circulation	70	0
2	Cataloguing	60	0
2	Administration	60	0
3	Acquisition	0	20
4	Serial Control	20	40

Table 8: Module-Wise Satisfaction Ranking

7. Recommendations: Based on the observed patterns of ILMS adoption, system characteristics, and user satisfaction, the following recommendations are drawn directly from the empirical findings.

a) Emphasizing Improvements in Functionality of Serial Control and Acquisition Modules: Module-wise analysis reveals significant performance differences among ILMS components. The serial control module has the lowest satisfaction ratings, with 40% of libraries expressing "slightly satisfied" and only 20% indicating "highly satisfied" (Table 8). Similarly, the acquisition module yields no "highly satisfied" responses, indicating minimal effectiveness (Table 7). These findings indicate that both modules require specific feature enhancements,

notably for managing complicated workflows like serial tracking, subscription control, vendor cooperation, and financial operations.

b) Strengthening Standardization in Software Version Management: The investigation finds total version uniformity across SOUL users, who all of them are using SOUL 2.0, but Koha implementations vary in versioning, with some institutions failing to give version specifics (Table 3). This disparity suggests uneven updating processes and probable gaps in system maintenance. Implementing more coordinated and consistent version management methods may enhance system stability, interoperability, and overall user experience.

c) Improving Technical Capacity for Advanced Module Utilization: Variation in module-level satisfaction indicates that while core operational modules such as circulation, cataloguing, and administration perform effectively, more complex modules show comparatively lower performance (Table 7 and 8). This suggests the need to strengthen technical capacity in handling advanced functionalities, including configuration, customization, and integration of ILMS modules to support complex library operations.

d) Strengthening Infrastructure Reliability and System Management Practices: The predominance of institution-based hosting (90%) highlights a strong dependence on local server infrastructure (Table 4). While this ensures administrative control, it also requires robust system management practices to ensure reliability and continuity. Strengthening backup mechanisms, system monitoring, and maintenance practices is essential to support uninterrupted ILMS operations.

e) Promoting Collaborative Approaches to ILMS Implementation: The widespread adoption of a limited number of platforms, particularly Koha and SOUL, indicates potential for collaborative approaches among institutions. Shared practices in system maintenance, version management, and technical problem-solving may contribute to improved standardization and efficiency in ILMS implementation across university libraries.

f) Improving Technical Capacity: The data in Table 3 reveals a significant gap in system literacy; specifically, the instances where respondents were unable to identify their current Koha version. Based on this finding, it is recommended that the institution moves beyond basic operational training and focuses on comprehensive technical capacity building.

8. Conclusion: With regard to findings of the investigation, it can be stated that ILMS adoption in Assam's university libraries has attained functional maturity, as evidenced by its widespread deployment and generally positive user perceptions. The predominance of open-source platforms, especially KOHA, suggests a long-term trend toward flexible and affordable solutions. The results, however, highlight critical constraints to optimal system performance. Lower levels of satisfaction with acquisition and serial control modules, along with variations in software versioning techniques, indicate that current systems are more suited to handling regular duties than complex functional requirements. The results suggest that strengthening underperforming modules, boosting infrastructure robustness, and enhancing system uniformity should be the main goals of future library automation efforts. Addressing these issues is critical for moving beyond basic operational capabilities to a more integrated and efficient digital library environment.

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