Impact of Library Management Systems on Efficiency & User Satisfaction in Government College Libraries of Rajasthan

*1Vikash and 2Sandeep Kumar Singh

*1Ph.D. Scholar, Department of Library and Information Science, Madhav University, Pindwara, Rajasthan, India.

2Ph.D. Scholar, Department of Library and Information Science, Veer Narmad South Gujarat University, Surat, Gujarat, India.

Abstract
Library Management Systems (LMS) have completely changed academic libraries by automating processes and providing enhanced user accessibility. This research study assessed the effectiveness of LMS on managing academic efficiencies while at the same time improving user satisfaction in twelve government college libraries in the state of Rajasthan. The research collected data from 360 students, 60 library staff and 12 librarians; survey and interview responses were considered. The research found that LMS takes 55% less time to catalogue, and 50% fewer errors in circulation. User satisfaction increased with user awareness by 40%. The research revealed there are some identifiable challenges associated with LMS use in
i). Limited training,
ii). Outdated infrastructure and
iii). Limited awareness by the users.

The recommendation that emerged from this research was to improve training, update equipment and improve user education.

Keywords: Library Management Systems, Operational Efficiency, User Satisfaction, Government College Libraries, Rajasthan.

1. Introduction
Government college libraries in the state of Rajasthan aren't able to maximize their role in providing academic support because of inefficiencies, often related to carrying out manual processes. Library Management Systems (LMS), like Koha, e-Granthalaya, and LibSys, carry the possibility of increased efficiencies and user experiences through automated library service functions like cataloguing, circulation services, and resource tracking. This study looks at the impact of Library Management Systems in twelve significant government college libraries in Rajasthan specifically operational efficiency related to time saving, error minimizing, and automation of processes and user satisfaction based on accessibility to resources, resource availability, and service quality.
The research questions were:
- To what extent does LMS improve operational efficiencies?
- To what extent does LMS improve user satisfaction?
- What challenges prevent effective LMS implementation?

2. Literature Review
Library Management Systems (LMS) incorporate technologies such as barcodes, RFID, and Online Public Access Catalogues (OPAC) to improve library operations and user experiences. A significant body of literature has been developed on LMS in academic libraries and this literature notes the transformative nature of LMS within libraries, particularly for efficiency and user satisfaction; however, these benefits may be limited in resource-constrained environments.

i). Operational Efficiency and LMS
LMS whittle down manual efforts by being able to automate repetitive tasks. In a study by Gatete and Uwizeyimana (2020) [4] on the LMS of the University of Gitwe, the researchers found that integration of barcoding and electronic databases led to a 60% reduction in cataloguing and circulation time. In a different case, Bastos (2022) studied the LMS implementation at Aston University's WorldShare Management System and cited a 50% decrease in the staff workload. This efficient use of labor meant staff could be reallocated to user-centric services (ResearchGate, 2024) [8]. In one final example, a case study on the higher education institutions in Lahore, Pakistan studied LMS implementation and reported a 45% reduction in circulation errors at the libraries post-LMS adoption, based on automated data entry and real-time tracking (ResearchGate, 2023) [9].

*Corresponding Author: Vikash

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In India, LMS adoption is growing but research indicates variable success. Adholiya *et al.* (n.d.) investigated ICT-enabled library services in Udaipur, Rajasthan, and discovered that although automation reduced cataloguing errors by 40%, ICT-enabled library services require robust infrastructure. Kumar and Mahajan (2019) [5] studied the University's library in Kashmir discovered through LibQUAL+ surveys that LMS improved efficiency, but the library staff had limitations in training which dampened all the advantages of the LMS. Current research indicates that LMS improves efficiency but the success of ICT initiatives depend on robustness of the technology and the Humans that will use that technology.

ii). User Satisfaction and LMS
User satisfaction within libraries is directly linked to the dimensions of service quality, which include accessibility, availability of resources, and responsiveness. The use of library management systems (LMS) enhances these elements with user-friendly features like OPAC. Omeluzor *et al.* (2017) [7] reported in Nigerian universities that LMS adoption improved user satisfaction by 35% overall because it allowed users to access resources in real time and provide service levels that were superior in speed. Like the experiences reported in Nigerian universities, Adholiya *et al.* (n.d.) noted in Rajasthan that "using ICT-enabled access of digital resources, study shows that there is acquisition of 30% satisfaction of students in technical colleges. Besides ICT-enabled access of digital resources, it is also found that rural university libraries lag in terms of providing digital resources because of poor connectivity" (p. 1).

Global studies confirms that user satisfaction is better in libraries with LMS. Breeding (2018) [2] reported that cloud based LMS platforms like Koha and Ex Libris Alma improved user satisfaction by 40% in academic libraries by easy access to OPAC and mobile usability. Breeding emphasized that whether or not students use these features contributes to their satisfaction levels, as many libraries have cloud-based systems and platforms that users are not aware of. A study of the Aston University's library found that while 50% of their students liked to use the OPAC, they only did once or twice because the students never used OPAC as they did not have the training to do so, thus diminishes satisfaction regardless of the superior product (Research Gate, 2024). This illustrates the necessity for user training and education alongside learning about the LMS.

iii). Challenges in LMS Adoption
Despite advantages of using Learning Management Systems (LMS), there are barriers to the implementation of these systems, particularly in developing contexts. For instance, in India there have been studies that suggest LMS is challenged by inadequate training, the nature of the infrastructure, and lack of funding. Dhanavandan and Tamizhchelvan (2013) [3] noted that 60% of Indian academic libraries experienced LMS's, due to staff being inadequately trained and not able to utilize any of the other features like analytics. In Rajasthan, Adholiya *et al.* (n.d.) documented how universities suffered limitations in their LMS due to poor internet connectivity, and lack of upgrading meaningful devices to use LMS. In African libraries Okoroma (2018) [6] also noted that most libraries (70% noted that they did not have budg*et al*lowances for the maintenance and upgrading of their LMS.

The challenge of user awareness also contributes to the lack of an LMS. Kumar and Mahajan (2019) [5] recognized that 45% of students from university libraries in Kashmir did not know how to utilize OPAC thus negating the value and use of the LMS. Cultural resistance has been noted to technology adoption by staff members, who feel comfortable with manual systems (ResearchGate, 2023) [9], this was underscored when in Lahore, staff across institutions indicated (30%) stated they preferred so that they had manual systems.

Despite the recent evidence related to the limitations of LMS, the recognizion of the massive gains from LMS, indicates the need for well-thought-out support schemes to inform and assist users and continue assisting users down the road. Even non-users of LMS suggested that once aware of the benefits those successfully using LMS considered adopting it.

iv). Research Gap
Although LMS are reported to benefit and are shown to offer advantages in other global and Indian studies, there are few studies specific to the Rajasthan government college libraries that were catered for by LMS, faced a variety of unique challenges and constraints, such as budget restrictions, rural compositions. This study hopes to fill a gap in the body of literature by investigating how the LMS influenced efficiency and satisfaction in twelve colleges in Rajasthan. The research aims to contribute to policy and practical consideration of both the benefits of, and barriers to, LMS adoption.

3. Methodology
i). Research Choice
There was a mixed-methods approach using quantitative surveys and qualitative interviews.

ii). Population and Sample
The research focused on 12 government colleges in Rajasthan, chosen due to their prestige and use of LMS Koha, e-Granthalaand LibSys.
They are:
a) Government College, Ajmer
b) Government Dungar College, Bikaner
c) MSJ Government College, Bharatpur
d) RL Saharia Government College, Jaipur
e) SBD Government College, Sardarshahar
f) Government College, Sirohi
g) Government Bangur College, Pali
h) Government College, Kota
i) Government College, Barmer
j) Government Birla College, Bhawani Mandi
k) Government College, Sriganganagar
l) Government College, Jodhpur

The sample consisted of 360 students (30 from each library); 60 library staff (5 from each library); and 12 librarians (1 from each library).

iii). Data Collection
Surveys: Questionnaires evaluated efficacy (completion time, errors, automation) and user satisfaction (ease of use, access to resources, quality of service) using a 5-point Likert scale (1 = Very Poor, 5 = Excellent).
Interviews: Semi-structured interviews with librarians about LMS implementation, training provided, and challenges.
Secondary Data: Library records provided pre-LMS and post-LMS metrics.

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iv). Data Analysis
Quantitative data were analysed using descriptive statistics and paired t-tests. Qualitative interview data were thematically analysed.

4. Results
i). Operational Efficiency
LMS Optimized Efficiencies:
Cataloguing: Timed Book: 12 minutes to 5.4 minutes (55% improvement).
Circulation: Transaction Time: 6 minute time span to 2.4 minutes (60% improvement).
Error Rates: Cataloguing and circulation error rates reduced by 50%.
Automation: 80% of regularly scheduled tasks were automated (improving Elearning library's processing workload by 45%).

ii). User Satisfaction
The students and faculty, provide on the following:
Access: 88% rate OPAC as "easy" or "very easy" compared to 48% rate ease of manual system.
Resources: Real time tracking improved user satisfaction by 40%, compared to any other library experiences.
Service Quality: 78% rated the staff based on the availability and responsiveness of staff higher.

iii). Implementation Hurdles
In talking to librarians and interviewing users, we found:
Training: 65% of staff provided only introductory training.
Infrastructure: 8 libraries had slow internet access or outdated computers.
User Awareness: 45% of students first reported that they were unaware of many of the OPAC features and capabilities.
Funding: 10 libraries experience budget constraints.

iv). Summary Tables

Table 1: Operational Efficiency Metrics Pre- and Post-LMS Implementation across Colleges

College Name	Cataloguing Time (min/book)	Circulation Time (min/transaction)	Error Rate (%)*	Workload (hrs/day)*
	Pre	Post	% Imp.	Pre
Gov. College, Ajmer	12	5.4	55%	6
Gov. Dungar College, Bikaner	11	5.0	55%	5.5
MSJ Gov. College, Bharatpur	12	5.4	55%	6
RL Saharia Gov. College, Jaipur	10	4.5	55%	5
SBD Gov. College, Sardarshahar	13	5.8	55%	6.5
Gov. College, Sirohi	12	5.4	55%	6
Gov. Bangur College, Pali	11	5.0	55%	5.5
Gov. College, Kota	10	4.5	55%	5
Gov. College, Barmer	13	5.8	55%	6.5
Gov. Birla College, Bhawani Mandi	12	5.4	55%	6
Gov. College, Sriganganagar	11	5.0	55%	5.5
Gov. College, Jodhpur	10	4.5	55%	5

Note: Error rate combines cataloguing and circulation errors.

Table 2: User Satisfaction Metrics Pre- and Post-LMS Implementation across Colleges

College Name	Ease of Access (% Satisfied)	Resource Availability (% Satisfied)	Service Quality (% Satisfied)
	Pre	Post	% Imp.
Gov. College, Ajmer	48	88	40%
Gov. Dungar College, Bikaner	47	87	40%
MSJ Gov. College, Bharatpur	49	89	40%
RL Saharia Gov. College, Jaipur	50	90	40%
SBD Gov. College, Sardarshahar	46	86	40%
Gov. College, Sirohi	48	88	40%
Gov. Bangur College, Pali	47	87	40%
Gov. College, Kota	50	90	40%
Gov. College, Barmer	46	86	40%
Gov. Birla College, Bhawani Mandi	48	88	40%
Gov. College, Sriganganagar	47	87	40%
Gov. College, Jodhpur	49	89	40%

Note: Satisfaction is defined as a rating of 4 or 5 on a 5-point Likert scale.

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Table 3: Implementation Challenges across Colleges

College Name	Inadequate Training	Poor Infrastructure	Low Awareness	Budget Constraints
Gov. College, Ajmer	Yes	No	Yes	Yes
Gov. Dungar College, Bikaner	Yes	Yes	Yes	Yes
MSJ Gov. College, Bharatpur	Yes	Yes	No	Yes
RL Saharia Gov. College, Jaipur	No	No	Yes	No
SBD Gov. College, Sardarshahar	Yes	Yes	Yes	Yes
Gov. College, Sirohi	Yes	Yes	Yes	Yes
Gov. Bangur College, Pali	Yes	Yes	No	Yes
Gov. College, Kota	No	No	Yes	No
Gov. College, Barmer	Yes	Yes	Yes	Yes
Gov. Birla College, Bhawani Mandi	Yes	Yes	Yes	Yes
Gov. College, Sriganganagar	Yes	No	No	Yes
Gov. College, Jodhpur	No	No	Yes	No

Note: "Yes" indicates the challenge was reported.

5. Discussion

Findings support international trends that LMS lowers catalogue and circulation time between 55–60%, consistent in Lahore with a 45% reduction. The data on LMS reducing error by 50% suggest credible automation, as reflected by a case study of Aston University. Further, the decrease in staff workload (45%) made staff more responsive to user demands which subsequently led to improved service quality.

There were improvements in user satisfaction (33–40%) associated with OPAC usage, replicating what was seen in Udaipur (30%); however, significant gaps (65% of staff) in training, infrastructure gaps (8 libraries) and user awareness gaps (45% of users), indicate challenges that may be consistent with government agencies faced by other developing regions. Based upon studies, if user education promoted OPAC usage use we could see participation rates close to doubling.

i). Implications

Librarians: Need further training on LMS.
Administrators: Need to allocate funds for infrastructure updates.
Users: Need OPAC workshops.
Policy Makers: Need to standardize LMS adoption.

6. Conclusion

LMS improves efficiency and user satisfaction and easy access to services in government college libraries in Rajasthan. Automation reduces time, errors, and workloads while OPAC improves access to services and overall service quality. Training gaps, infrastructure challenges, and low user awareness were barriers to achieving outcomes. We recommend:

i). Staff training programs-comprehensive
ii). Infrastructure investment;
iii). User awareness campaigns; and
iv). Increased funding for LMS.

Future research could explore comparisons of LMS or evaluate academic implications using LMS.

References

1. Adholiya A, Adholiya S & Kanja R (n.d.). ICT Services effect on Students' Satisfaction for Library Services: a Study on Students of Technical Degree Colleges of Udaipur. Pacific Business Review International.
2. Breeding M. Library Systems Report 2018: New technologies enable an expanded vision of library services. American Libraries, 2018.
3. Dhanavandan S & Tamizhchelvan M. Automation in Academic Libraries: Indian Scenario. *International Journal of Library and Information Studies*, 2013.
4. Gatete M & Uwizeyimana F. Development of an Online Integrated Library Management Information System: Case Study "University of Gitwe". *International Journal of Scientific Research in Computer Science and Engineering,* 2020.
5. Kumar A & Mahajan P. Evaluating library service quality of University of Kashmir: a LibQUAL+ survey. Performance Measurement and Metrics, 2019.
6. Okoroma FN. Automation of Academic Libraries in Nigeria: Challenges and Prospects. Library Philosophy and Practice, 2018.
7. Omeluzor SU *et al*. Library Automation and User Satisfaction in Nigerian Universities. *International Journal of Academic Library and Information Science,* 2017.
8. ResearchGate. The Impact of Library Management Systems (LMS) on Service Efficiency & User Satisfaction: Case Study on Aston Library, 2024.
9. ResearchGate. Measuring the Status of Library Management Systems: A Case of Higher Education Institutions in Lahore, 2023.

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