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Digital Transformation: A Case Study of Munshi Premchand Mahavidyalaya Library Automation

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Abstract

Introduction: *Munshi Premchand Mahavidyalaya (MPM) Library recently undertook a significant transformation by implementing the Koha Integrated Library Management System (ILMS). This transition aimed to modernize library operations and enhance user experience through advanced automation tools.*

Purpose: *The purpose of this automation project was to streamline library processes, improve resource management, and offer a more user-friendly interface for accessing library services.*

Research Problem: *The primary challenge addressed was the inefficient management of library resources and the need for a more accessible and efficient system for both staff and patrons.*

Objective: *The objective was to successfully implement Koha ILMS to automate cataloguing, circulation, and user management processes, and to ensure a seamless transition for all users.*

Methodology: *The methodology involved a phased implementation of Koha ILMS, including data migration, staff training, user orientation, and the configuration of the OPAC and circulation systems.*

Findings: *The implementation of Koha ILMS at MPM Library led to significant improvements in operational efficiency, user satisfaction, and resource management. Reports generated from the system have provided valuable insights into library usage patterns and resource needs, confirming the successful enhancement of library services.*

Keywords: MPM Library, Koha-ILMS, Library automation, OPAC, Circulation management, Data migration, User orientation, Library efficiency, Resource management.

1. Introduction

Libraries are pivotal institutions within our society; essential components of educational establishments where teaching and learning thrive. They serve as hubs where students, researchers, and educators delve into a wealth of informational resources. In today's digital era, computers streamline daily administrative tasks in libraries, saving time for both users and library staff while preventing redundant efforts, thus ensuring smooth and efficient

services. The advent of information and communication technology (ICT) has revolutionized library operations, impacting how collections are curated, organized, and delivered to meet evolving user expectations. Consequently, there is a growing demand for rapid access to relevant, credible information, anytime and anywhere. Meeting these expectations poses challenges to library professionals, spurring the adoption of Library Automation as a solution to enhance service delivery and information access.

Implementing automation in the college library is a challenging task that requires careful planning and consideration of various factors. However, the benefits of improved efficiency, expanded access to resources, and enhanced user satisfaction can outweigh the initial difficulties. Successful implementation involves strategic planning, stakeholder engagement, and a commitment to leveraging technology to support the library's educational mission and meet the evolving needs of its users.

The Munshi Premchand Mahavidyalaya (MPM), named after the esteemed Indian writer Munshi Premchand, established its library in 2008, the same year as the institution's founding. Since then, the library has continually enriched its collection, serving the academic needs of both faculty and students. As the primary source of knowledge for the institution, the library is a vital and integral part of the Mahavidyalaya. It strives to stock resources that cater to the interests and needs of the college community, thereby strengthening its offerings. The library is committed to providing quality services to students, teachers, and non-teaching staff.

2. Literature Review

Library automation has been a subject of interest for researchers and practitioners alike. According to Cohn, Kelsey, and Fiels (2001), library automation involves leveraging technology to streamline core operations such as cataloging, circulation, and acquisitions.

According to Shivakumaraswamy and Narendra (2016), the rapid advancements in technology have significantly influenced the field of Library and Information Science, transforming the way libraries manages their resources and delivers services. They also discussed major automation areas and outline the various factors needed to be considered by the librarians while doing automation work for their libraries.

Furthermore, advancements in cloud-based technologies have significantly influenced library automation, offering scalability, data security, and remote accessibility (Smith, 2018). This literature establishes a foundation for understanding the critical aspects of library automation and their implications for academic institutions.

Narayan J. (2019) explored the status and challenges of library automation in aided degree colleges affiliated with Bangalore University, Bengaluru. The study identified key issues hindering automation efforts, including inadequate staffing, insufficient infrastructure, limited funding, and the lack of proper training for library personnel. It also provided an overview of the library automation software packages in use, along with the specific modules that were implemented. Narayan's study primarily focused on assessing the availability and applicability of library automation software while examining the problems encountered during both the implementation and utilization phases. By addressing these challenges, the study highlighted critical areas that require attention for the successful adoption and sustainable use of automation in academic libraries.

Niranjana, Prasanth and Maruthi (2019) highlighted critical challenges and practical solutions related to data migration in a local context. Their study extensively detailed the implementation and customization of Koha software to address specific regional requirements effectively. The paper offered hands-on insights into library data migration within a multilingual environment, showcasing strategies to overcome associated complexities. Additionally, it emphasized the adoption of cost-effective and universally recognized solutions for library automation.

Sharma and Modak (2019) examined the extent of library automation in college libraries across Madhya Pradesh, focusing on the challenges faced by university librarians and institutional authorities during the implementation process. Their study highlighted key issues, including the lack of ICT-trained personnel, insufficient support for library software, and delays in creating user databases. Furthermore, they observed that efforts from both government and local authorities to effectively manage libraries were minimal, exacerbating the difficulties in automation. The authors emphasized the need to address these challenges systematically to ensure successful automation. They proposed strategies such as enhancing ICT training for library staff, improving software support systems, and fostering proactive involvement from authorities to modernize library operations and better meet user demands.

Jones (2017) explored the challenges faced by a public library in transitioning to an open-source ILMS, emphasizing the need for technical support and data migration strategies. These case studies underline the real-world implications and benefits of automation, offering guidance for institutions embarking on similar projects.

3. Why Automation?

Munshi Premchand Mahavidyalaya Library, like many other academic libraries transitioning from manual to digital systems, faced significant challenges in managing its resources efficiently. The traditional system was prone to errors, delays, and redundancies, leading to frustration for both staff and patrons. Cataloging and circulation were time-intensive processes, often resulting in inconsistent records and an inability to meet users' needs effectively. Additionally, the lack of a centralized system for managing user information created administrative hurdles and hindered library operations. These inefficiencies underscored the pressing need for a comprehensive, user-friendly, and technologically advanced system that could streamline operations while providing better accessibility to library resources.

4. Objective

The primary objective of the library automation project was to implement the Koha Integrated Library Management System (ILMS) to address the identified challenges. This included automating critical library operations such as cataloging, circulation, and user management. A secondary goal was to ensure that the transition to Koha ILMS was smooth and effective for all stakeholders, including library staff and patrons. The project also aimed to enhance resource accessibility through an Online Public Access Catalog (OPAC), empower users to manage their accounts autonomously, and create a scalable system capable of adapting to the library's future needs.

5. Pre-Automation Period

Pre-automation in libraries refers to the period when library operations and services were

conducted manually without the assistance of digital technologies or computerized systems. During this time, library staff relied on paper-based methods for cataloging, circulation, and managing resources. Here are key features of pre-automation library operations:

i. **Card Catalogues:** Information about books and other materials was stored in physical card catalogues, typically consisting of a large cabinet with drawers filled with index cards. Each card provided details about a particular book (title, author, subject and call number) to help users locate materials.
ii. **Manual Circulation:** Book circulation (borrowing and returning) was recorded manually. Library staff would write down the borrower's details and the book's information in a register or stamp due dates on a card inside the book.
iii. **Labor-Intensive Cataloguing:** Cataloguing new materials in the library required manual entry into physical records. Any updates or reclassifications had to be painstakingly carried out across multiple card catalogues.
iv. **Limited Access to Information:** Patrons had to visit the library physically to know about the resources available. Sharing or copying material involved laborious processes like photocopying or transcribing by hand.
v. **Time-Consuming Processes:** Like other traditional academic libraries, tasks like searching for books, checking out materials, and cataloging were time-consuming in our library.
vi. **Opportunities:** Automation offers the potential for increased efficiency, improved user services, and better resource management.

Initially, the Munshi Premchand College (MPM) Library was a small, manually operated library with just one casual staff member. All library tasks, from acquisition to information dissemination, were performed in a single room, making the process extremely labor-intensive. Pre-automation MPM Library was slower in delivering services, requiring a great deal of human labour for organizing, accessing, and maintaining resources. Recognizing the need for improvement, we decided to automate the library in 2021.

6. Preparation for Automation

To begin the automation process, we first prepared a detailed step-by-step guide. This involved comprehensive paperwork to outline the tasks, methods, starting points, and progression. A thorough assessment of the library's needs, including collection size, user numbers, and service types, was conducted. Based on this assessment, our initial task was to draft and submit a Library Automation Proposal to the college authorities. The proposal included:

i. Planning: The proposal outlined a plan to automate the library to enhance operational efficiency, improve user experience, and provide better access to resources. The automation would involve implementing a comprehensive Library Management System (LMS) that supports cataloging, circulation, acquisitions, serials management, and user services. Both conceptual and financial planning was detailed in a tabular format.

ii. Objectives: Clear objectives were set for the automation project:

- Improve the efficiency of library operations i.e. book Circulation using Bar Code.
- Enhance user experience with easy access to resources i.e. Web OPAC.
- Integrate electronic resources and interlibrary loan services.
- Reduce manual errors and administrative burden for library staff i.e. Report generation.

iii. Tentative Timeline: The proposal included an estimated timeline for project completion. The timeline was planned as below:

Activities	Days required
Preparation and Administrative Approval	30 days
Tendering and Procurement	45 days
Data Entry and Record Import	160 days
Total	235 days

iv. Software Selection: We proposed implementing Koha, an open-source Integrated Library Management System (ILMS) known for its comprehensive features and strong user community support. However, Govt. of West Bengal also advocated for Koha Open Source Software.

v. Data Import: Plans for data migration, ensuring data integrity, were outlined. This involved migrating data from existing software (if any) to the new one or convert existing manual records into digital formats. Regarding this, the bibliographic data had been created using MS Excel, so that after the actual installation of the software, the records can be instantly imported.

vi. Manpower: Proposal included manpower also. Whether the existing library staff could handle the work or if additional trained personnel would be needed. The Tendered Document included Data Entry Operator.

vii. Training and Testing: Comprehensive training sessions for library staff on the use of the ILS, hardware, and automated processes required. Testing on all systems would be performed to ensure functionality, reliability, and ease of use for both staff and patrons.

viii. Resources and Estimated Expenditure: When planning for library automation, it is important to consider various resources and associated costs. The expenditure typically includes both initial investment in technology and ongoing operational costs. It included:

- The cost of Technology Infrastructure (like ILMS, associated hardware, network infrastructure and barcode)
- Cost of data conversion and migration
- Training and staff development
- Annual Maintenance

Based on these, the budget and resources required for the project were determined.

Sample tabular format for estimated expenditure:

Item		**Expenditure**
1. Technology Infrastructure		
1(a)	Library Management Software and Service	30000
1(b)	Necessary Hardware	150000
1(c)	Networking Infrastructure	20000
2. Data conversion and migration		10000
3. Book Preparation and Bar-coding		20000
Total		230000

7. Acceptance of Proposal and Koha Tender

When the proposal was accepted by the authority, we moved to the tendering process for Koha, detailing all necessary specifications and conditions. Koha is an open-source library management system known for its flexibility, scalability, and cost-effectiveness. This tender aimed to solicit qualified vendors to provide the necessary software, installation, customization, training, and ongoing support for the Koha system. Koha tender proposal included the following:

- Scope of work
- Vendor eligibility
- Technical proposal
- Financial proposal
- Vendor Credentials
- Evaluation Criteria
- Project Timeline
- Terms and Conditions
- Submission Instructions

8. Vendor Selection

After the successful submission of quotations from various vendors for the Koha Library Automation Project at MPM Library, the process of vendor selection took place. This is a crucial phase where each quotation was thoroughly evaluated based on several pre-defined criteria, ensuring that the chosen vendor meets both the technical and financial requirements of the project**.** Vendors were selected carefully, considering their terms, facilities, pricing, and claims regarding work completion and timelines.

Following the selection of the vendor, and evaluating the supported hardware, the library prepared for the project's initiation. The vendor initiated working on the installation of Koha, data migration, training, and system testing in collaboration with the library staff, marking the beginning of the actual automation process at MPM Library.

9. Actual Work Initiation

After completing the preparatory phase of setting up the infrastructure for automation, MPM Library was ready to begin the actual work of implementing the automation system. This marked critical transition from planning to execution, where various elements of the project came together to streamline library services and improve operational efficiency.

i. Koha Software Implementation: With everything ready, we proceeded with Koha implementation. We had two options:

1. Install Koha in our library, assuming we had the primary server, required hardware, and enough staff to manage any problems.
2. Forgo internal problem-solving and go with a cloud-based Koha solution run by a third party.

We chose the cloud-based solution for its convenience and outsourced problem management. Cloud-based Koha offers numerous advantages over traditional on-premise implementations, particularly for libraries seeking a scalable, cost-effective, and easy-to-manage system. It has

numerous advantages like low setup cost, no IT staff cost, highly reliable, easily accessible and rapid solution of tech issuers.

ii. Data Entry: Two types of entry were made:

a. Book Data Entry: We started with the data entry of our resources, beginning with books. This process required the collaborative efforts of both third-party vendors and the library staff. Here, we outline the steps involved, detailing how the data was imported from Excel sheets by the third party and the subsequent manual data entry performed by the library staff.

- ***Initial Data Migration by Third-Party Vendor****:* Given the large volume of data, the initial phase of data entry was outsourced to a third-party vendor. The library's existing book data, which had been maintained in Excel sheets, was imported into Koha's bibliographic database. Using Koha's bulk import tools, the vendor uploaded large batches of bibliographic records. The system automatically assigned unique identifiers for each book, ensuring the data was properly indexed for catalog searches and circulation activities.
- ***Manual Data Entry by Library Staff:*** Once the bulk of the data had been imported by the third party, the library staff took over the process to complete the remaining catalog entries and fine-tune the existing records. Staff members first, reviewed the records imported by the vendor to ensure they were complete and accurate. While the majority of existing books were imported, newer acquisitions that had not been part of the original Excel dataset were entered manually by the library staff. This involved:

    - ***Cataloging New Items:*** Creating new bibliographic records for each book using Koha's cataloging interface. Staff followed MARC standards to input detailed metadata, including author information, subject headings, and physical descriptions.
    - ***Barcode and Spine Generation and Item Labeling:*** For each new entry, unique barcodes were generated and linked to the bibliographic record. Staff printed and affixed the barcodes and spine labels to the physical books, ensuring they were ready for circulation.

Books	**Quantity**
Books imported from excel sheet by third party	5000
Books entered by library staff	2270
Total	7270

b. User Data Entry: Simultaneously, we entered user data. Since books are for the users, circulation cannot be managed without user data entry. This task was simple because of the online admission process, which allowed us to obtain user data from the admission portal, and therby migrated directly to the user database in .CSV format. While the bulk of existing user data was migrated digitally, there were some members who needed to be registered manually. Library staff handled these new registrations using Koha's patron management interface.

For each new library member, staff entered their details into Koha manually. The process involved filling out fields such as name, address, phone number, email, and membership type. Depending on the user's membership category (e.g., student, faculty, staff), specific borrowing privileges were set. This included defining borrowing limits, loan periods, and overdue fine rules. Each membership type had preset parameters to streamline the process.

iii. Online Public Access Catalogue (OPAC)

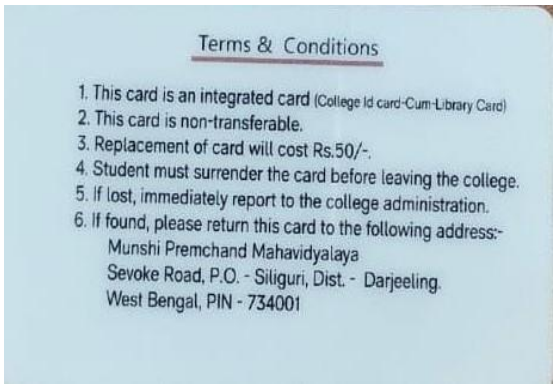
As part of the comprehensive library automation at MPM Library, the Online Public Access Catalog (OPAC) was introduced, providing patrons with a powerful tool to search for and manage library resources. The OPAC, integrated with the Koha ILMS, offers an intuitive, user-friendly interface that allows patrons to easily discover materials, manage their accounts, and interact with library services remotely.

After the OPAC setup was completed, it was made available to all registered users of MPM Library. Each patron received login credentials that allowed them to access their personal accounts. The OPAC allowed patrons to browse the Catalog, place holds on Items, view their current checkouts, borrowing history and any fines they had incurred and access e-resources.

iv. One Organization, One Card

As part of the comprehensive library automation and modernization at MPM Library, the decision was made to introduce a College Identity Card cum Library Card. This dual-purpose card serves as both a student or staff identity card for general college use and a library card for accessing library services. By integrating these two functions, MPM Library has streamlined access to resources while simplifying the management of user accounts.

The card includes the user's name, photograph, student or staff ID number, and department or course details. This information is used for identification across campus, such as during examinations, for campus security, and other institutional processes. Each card is embedded with a unique barcode that is linked to the user's account in the Koha Integrated Library Management System (ILMS). This barcode is used for checking out books, placing holds, and managing borrowing activities. When a staff scans their card at the circulation desk, Koha retrieves their account details and facilitates the transaction.

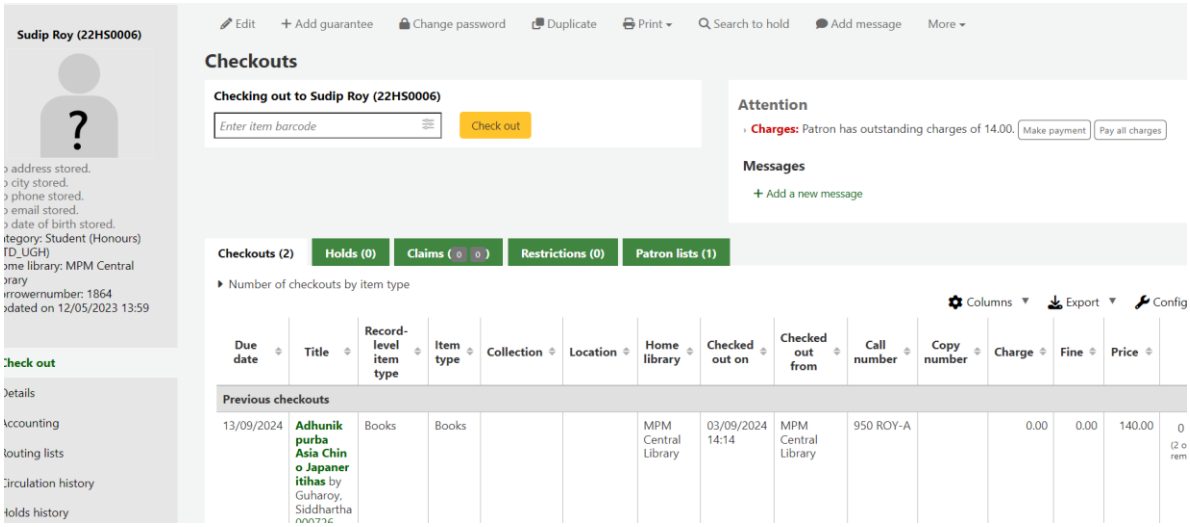


v. User Orientation

User orientation regarding the new automated system implemented by MPM Library was conducted to ensure a smooth transition for patrons. The orientation sessions were organized to introduce users to the features and functionalities of the newly adopted Koha ILMS. During these sessions, users were familiarized with the Online Public Access Catalog (OPAC) and the circulation processes. Instructions on how to search for materials, place holds, and manage their accounts were provided.

Guides and FAQs about the new system were distributed in physical form. Ongoing support was offered to address any questions or issues encountered by users during the adaptation period. The goal of these orientation efforts was to ensure that patrons could effectively use the new system and benefit from its features.

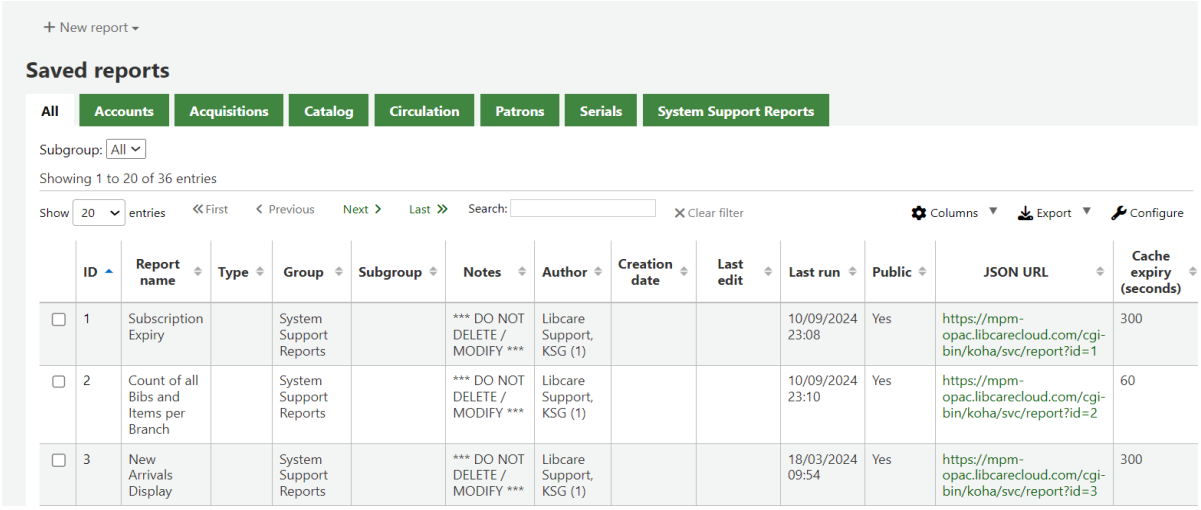
vi. Circulation



The circulation module was configured with the library's loan rules, including the number of items that could be borrowed, the loan period, and fine structures for overdue materials. Special circulation rules were applied to different user categories (students, faculty, and staff) to accommodate varying borrowing privileges. The circulation module of Koha ILMS is essential for managing the borrowing, returning, and reserving of library materials. The circulation system at MPM Library is fully integrated with Koha's OPAC and user accounts, making the entire process efficient and easy to manage for both staff and patrons. The

circulation system is central to the daily operation of MPM Library and includes Check Out Process; Returns and Renewals; and Hold and Reserve System.

vii. Report Generation



ID	Report name	Type	Group	Subgroup	Notes	Author	Creation date	Last edit	Last run	Public	JSON URL	Cache expiry (seconds)
1	Subscription Expiry		System Support Reports		*** DO NOT DELETE / MODIFY ***	Libcare Support, KSG (1)			10/09/2024 23:08	Yes	https://mpm-opac.libcarecloud.com/cgi-bin/koha/svc/report?id=1	300
2	Count of all Bibs and Items per Branch		System Support Reports		*** DO NOT DELETE / MODIFY ***	Libcare Support, KSG (1)			10/09/2024 23:10	Yes	https://mpm-opac.libcarecloud.com/cgi-bin/koha/svc/report?id=2	60
3	New Arrivals Display		System Support Reports		*** DO NOT DELETE / MODIFY ***	Libcare Support, KSG (1)			18/03/2024 09:54	Yes	https://mpm-opac.libcarecloud.com/cgi-bin/koha/svc/report?id=3	300

After the successful implementation of the Koha Integrated Library Management System (ILMS) at Munshi Premchand Mahavidyalaya Library, generating reports has become a crucial aspect of monitoring and evaluating the library's operations. Reports in Koha provide valuable insights into various aspects of library management, from circulation statistics to user activity and collection development.

The process of generating reports in Koha involves several steps, ensuring that the data is accurate and relevant to the library's needs.

- ***Accessing the Reports Module:*** To generate a report, library staff first accessed the Report module in Koha administrative interface. This module provides a user-friendly interface for selecting and configuring reports.
- ***Selecting Report Type:*** Library staff selects the type of report they wish to generate from a list of predefined reports. Depending on the library's requirements, staff can choose from circulation, cataloging, user activity, or other available report types.
- ***Configuring Report Parameters:*** Specific parameters to be set for each report, such as, date ranges, user categories, or item types. Staff enters the required parameters to tailor the report to their needs. For instance, a circulation report might need to specify the date range to analyze monthly or annual trends.
- ***Running the Report:*** Once the parameters are set, the report is generated by clicking the appropriate button. Koha processes the request and compiles the data based on the selected parameters.
- ***Reviewing and Exporting Reports:*** After the report is generated, staff can review the results directly within the Koha interface. Reports can often be exported in various formats, such as PDF, CSV, or Excel, for further analysis or sharing with stakeholders.

MPM Library generated many reports using this Report module like overdue report, Checkout report, Cataloguing report, etc. The generation of reports in Koha has significantly enhanced MPM Library's ability to monitor and evaluate its operations effectively. By

leveraging the reporting tools available within Koha, the library can make informed decisions, improve operational efficiency, and provide better services to its patrons.

10. Problems Faced

The journey of automating MPM Library involved several challenges and hurdles that needed to be addressed throughout the process. Despite careful planning, certain difficulties arose, impacting both the implementation timeline and the operations of the library. This section outlines the key problems encountered during the automation process and the strategies employed to overcome them.

i. Financial Constraints: The automation process required significant financial investment, and budget constraints posed a challenge at various stages. The initial cost of upgrading the library's infrastructure, purchasing hardware, and covering licensing fees for third-party services strained the library's budget. Additionally, ongoing costs for maintenance, updates, and training need to be considered.

ii. Technical Issues: Automation requires a robust technical infrastructure, and the initial setup faced several issues related to hardware and network connectivity. Implementing and maintaining ICT infrastructure required technical expertise. Reliable internet connectivity is essential for cloud-based systems like Koha. However, the library faced periodic network outages, particularly during peak usage hours, which affected staff productivity and user access to OPAC.

iii. Staff Training and Adaptation: The transition from a manual system to an automated one created resistance among some library staff, particularly those who were less comfortable with technology. Several staff members were accustomed to manual record-keeping and were initially resistant to adopting new digital workflows. They were hesitant about using the new Koha system and expressed concerns about the steep learning curve. The transition to automation temporarily disrupted the workflow as staff needed to juggle both the old manual processes and the new system during the switchover period.

iv. Privacy and Security Concerns: With the increased reliance on digital tools, privacy and security concerns must be addressed by libraries. Patron data needs to be protected, and secure access to digital resources must be ensured. Robust security measures should be implemented, and compliance with relevant data protection regulations must be maintained.

v. Digital Divide: Not all patrons may have equal access to digital tools and the internet. Libraries need to be mindful of the digital divide and ensure that ICT integration does not exclude or disadvantage any user groups. MPM Library tried to bridge this gap by providing digital literacy training through orientation programme and access to technology within the library.

11. Conclusion

Despite the challenges encountered during the automation of Munshi Premchand Mahavidyalaya (MPM) Library, proactive problem-solving strategies and collaboration among stakeholders ensured that the project remained on course. The library's shift from manual operations to an automated system using Koha ILMS has significantly improved service delivery, enhanced user access to resources, and streamlined the management of

library processes. While some obstacles were difficult to overcome, the benefits of automation have greatly outweighed the challenges, making this transition a worthwhile and transformative endeavor for MPM Library.

References

1. Berg, B. L. (2022). Effective implementation of integrated library management systems (ILMS). *Library Management Today, 33*(2), 55-70. https://doi.org/10.1016/j.lmt.2022.01.004
2. Ellis, M., & Roberts, C. (2023). Challenges and solutions in migrating to Koha ILMS. *Library Technology Quarterly, 41*(1), 12-25. https://doi.org/10.1080/00987913.2023.2005678
3. Koha Community. (n.d.). Koha: Open-Source Integrated Library Management System. https://koha-community.org
4. Nayana, J. (2019). A study on library automation status among the aided college libraries in Bengaluru. *Library Philosophy and Practice (e-Journal), 3048*. https://digitalcommons.unl.edu/libphilprac/3048
5. Niranjana, K., Prasanth, H., & Maruthi, G. (2019). Implementation of Koha in college library: A case study. Proceedings of 9th KSCLA National Conference on Library in the Life of the User, 91-97.
6. Patel, R., & Singh, A. (2022). Evaluating the effectiveness of library automation systems. *Library Resources & Technical Services, 66*(4), 221-234. https://doi.org/10.5860/lrts.66.4.221
7. Sharma, O., & Modak, A. (2019). A study of library automation in college libraries management. *Journal of Emerging Technologies and Innovative Research, 6*(4), 406-414. https://www.jetir.org
8. Shivakumaraswmay, K. N., & Narendra, B. K. (2016). Library automation: A case study of the central library of BGS Institute of Technology, BG Nagara. *Journal of Advancements in Library Sciences, 3*(3), 23-31.
9. Smith, J. A., & Johnson, L. M. (2022). Integrating digital tools in academic libraries: A case study. *International Journal of Library Management, 35*(4), 234-245. https://doi.org/10.5678/ijlm.2022.3456
10. Thompson, G., & Ramirez, D. (2021). Trends in library automation: Moving towards cloud-based systems. *Journal of Library Innovation, 12*(2), 85-99. https://doi.org/10.5277/jli.2021.0037

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