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Library automation problems and prospects in university libraries, Bhopal

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ABSTRACT

This paper described about the status of university libraries, library's collection, university library automation, about information software using in university libraries, problems and their prospects of university library automation. The core data was gathered from librarians and other employees involved in automation activities, a well-structured questionnaire approach was used. The present study has been conducted to know the problems and prospects of library automation in the 3 university libraries of Bhopal (Rajiv Gandhi Technical University, Barktullah University, Makhanlal Chaturvedi Rashtriya Patrakarita Vishvavidhyalaya). The studies reveal significant obstacles to rapid automation in Bhopal's libraries, with universities becoming more aware of the potential benefits of automation.

1. Introduction

University Library is the resource centre of higher education through which UG, PG and research scholars of the University get the resources they need and . The university library has a large collection: books, Journals, CDs, DVDs, thesis, dissertation, magazines, newspapers and a database, e-resources etc. University library is called the heart of the university. It is the centre of the university where educational resources are available. Earlier the operation of the library was done manually in a traditional manner. Presently, automation has started, being used in the library and various software are used. Manual problems have been eliminated by using automation in the library.[1] Various types of problems arose in pre-library automation. It was a time-consuming process and there was a high possibility of duplication of work. Post library automation, users and library staff require training related to automation software. Sometimes the work stops due to the network not being found. The biggest problem of post-library automation is the network problem.

2. Objectives

The objective of a study or report titled "Library Automation Problems and Prospects in University Libraries, Bhopal" would likely focus on several key areas, including:

Assessing the Current State of Automation. Identifying Challenges and Problems: Investigating the challenges faced by university libraries in adopting automation, including budget constraints, lack of trained staff, infrastructure issues, software compatibility, and resistance to change.

3. University Library Automation Software

3.1. E-Granthalaya software

E-Granthalaya is a comprehensive library automation software developed by National Informatics Centre (NIC), Ministry of Electronics and Information Technology, Government of India.[2]

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It is designed to streamline library management processes and provide digital library services to various institutions, including schools, colleges, universities, and public libraries.

3.2. KOHA software

KOHA is a widely used open-source Integrated Library System (ILS) that enables libraries to automate and manage their operations. Developed initially in 1999, Koha is free to use, highly customizable, and offers a comprehensive set of features. It is suitable for libraries of various sizes, including public, academic, and special libraries.

3.3. SOUL (Software for University Libraries)

SOUL is an Integrated Library Management Software (ILMS) designed and developed by the *Inflibnet Centre* (Information and Library Network Centre), India. It is widely used in academic and research libraries in India for automating library operations. SOUL is known for its affordability, compliance with Indian library standards.

4. Scope and Methodology

The study has shown the problems and prospects of library automation in University libraries in Bhopal (Rajiv Gandhi Technical University, Barktullah University, Makhanlal Chaturvedi Rashtriya Patrakarita Vishvavidhyalaya). The present study has been completed through a structured questionnaire and observation method. The methodology employed for this research involves two primary methods. The detailed explanation of how these methods were applied in the study. A well-designed structured questionnaire was employed to collect data from library staff, administrators, and users of the university libraries. The purpose of the questionnaire was to gather information on various aspects of library automation, including: current automation status, challenges faced, prospects of automation.

5. Literature Review

Rajput and Gautam (2010)[3] study on special libraries found that The reasons for these limitations include , inadequate staff training for operation handling and shortage of skilled staff, insufficient finance, post library automation problems are lack of authority support and users are not aware regarding library automation software.

According to Shakuntla Singh (2022)[4] the study underscores two primary issues: user awareness and resource constraints in college libraries. To ensure successful automation, there must be a concerted effort to increase user awareness through training programs while simultaneously investing in the necessary resources and infrastructure. A phased approach, leveraging open-source tools, and seeking external funding or partnerships can help overcome resource constraints. Finally, empowering library staff with the necessary skills to manage automation is crucial for long-term success. Study on college libraries came to the realization that the Users are not aware of automation required user awareness training, automation is not possible due to the lack of resources required.

Mulla and other (2010)[5] According to the study shows that most engineering college libraries in Karnataka lack sufficient computers. The absence of stable internet connections, outdated equipment, and insufficient power supply contribute to the delays in adopting automation. This shortage restricts the ability to implement automated library management systems effectively. Libraries that do have computers may not have enough to meet the needs of both staff and users, hampering the automation process. This study highlight the fact that, while there is an interest in automating library services in engineering college libraries in Karnataka, various challenges, including a lack of computers and skilled staff, are holding back progress. Despite these difficulties, the study suggests that with adequate support, better training, and improved infrastructure, these libraries have the potential to modernize and improve their service delivery through automation.

Thapa and Sahoo (2007)[6] many special libraries in Bhopal face financial constraints that limit their ability to invest in necessary automation tools, software, and infrastructure. According to the study lack of skilled professionals trained in library automation is a significant issue. The staff often lacks the expertise required to operate and maintain automated systems efficiently. As with many organizations transitioning from manual to digital systems, the article highlights resistance among library staff and users to adopt new technologies. A critical problem identified was the lack of standardization in software and cataloging systems across different libraries, which made resource sharing and interoperability difficult. The study noted that many special libraries in Bhopal do not have the requisite infrastructure, such as reliable power supply, computers, or internet access, which hampers the smooth implementation of automation.

5.1. Data analysis

This paper aspired to analyze and find the problems and prospects of University Libraries in Bhopal. Research is based on the analysis presented in the following tables response/feedback, provided by the librarians to the questionnaire distributed for the intimate purpose. To get important and accurate results, we separated and studied the sample data in different ways, as shown in the tables based on the data obtained, the collection of the libraries are shown in the (Table 1) below, and the books, magazines and newspapers available in the university library are shown.

Books Barktullah University holds the largest collection of books with 95,000, RGPV University has 88,000+ books, which is slightly less than Barktullah's but still substantial. MCRPV University has the smallest collection with 48,000+ books**.** Journals: Barktullah University has the highest journal count with 1,000+ journals, RGPV University follows with 150 journals, significantly fewer than Barktullah., MCRPV University trails with only 29 journals., Newspapers: MCRPV University offers the most variety in newspapers with 40available. , RGPV University has 20+ newspapers, indicating slightly more flexibility than a fixed count. Barktullah University provides 15 newspapers, the smallest number among the three.

Table 1: University libraries collection

S/l No.	Name of University	No. of Books	Journals	News Papers
1	Barktullah University	95000	1000+	15
2	RGPV University	88000+	150	20+
3	MCRPV	48000+	29	40

Below (Table 2) shows that automation software is being used in university libraries. In studying the libraries of universities, it was found that work is being done in the libraries through automation software. KOHA software is being used in the RGPV University Library. Soul software is used at Makhanlal Chaturvedi National University of Journalism and Communication. E-Granthalaya software is being used at Barkatullah University. This diversity in software usage reflects that the libraries are adopting different solutions based on their specific needs, budgets, and preferences

Table 2: University libraries automation software

Using library Automation Software	Number of Libraries	Percentage %
KOHA Software	01	
SOUL Software	01	100%
E-Granthalaya Software	01	

Currently, automation software is used in all three university libraries of the research area. Enhance the library operation of library management software through updates. 100% Implementation: Library management software has been adopted and is being used by all three of the study's libraries. This suggests that the libraries under examination are moving in the right direction toward automation and contemporary library practices. Non-Users: The fact that no library in the survey lacked library management software indicates that automation is widely acknowledged as being essential to effective library operations. This data (Table 3) reflects the successful implementation of LMS in the surveyed libraries, but additional factors such as user satisfaction, the specific modules being used (e.g., cataloging, circulation, etc.), and the impact on library services would provide deeper insights into its effectiveness.

Table 3: Library management software status

Library Management software	Number of Libraries	Percentage %
Yes	03	100%
No	00	

This (Table 4) shows the status of Library automation. Since they have to automate their activities compulsorily hence 2 have Makhanlal Chaturvedi National University of Journalism and Communication and RGPV University already been fully automated and 1 Barktullah University (implementation) has partially automated already proceeded acquisition and circulation process.

Table 4: Present status of automation

Present Status of Library Automation	Number of Libraries	Percentage %
Fully Automated	02	66.66%
Partially	01	33.33%
The automation has not commenced yet.	00	00

6. Main Area of Library Automation

Acquisition: Under this, entries are made from book requirement to taking quotation from the vendor, invoice, order books, budget payment, arrival of new books, etc. Vendors and suppliers can also be tracked in this.[7]

Circulation: Library automation significantly enhances the circulation process in libraries by streamlining tasks, improving efficiency, and providing better user experiences. Here's how automation impacts circulation:

Barcode Scanners/RFID: Patrons can check out and return books quickly using automated systems like barcode scanners or RFID tags.

Serial Control: Serial control of periodicals in a library using automation involves the use of integrated library systems (ILS) or specialized software to manage the acquisition, cataloging, tracking, and circulation of serial publications such as journals, magazines, and newspapers.[8] Automated serial control streamlines operations and ensures that periodicals are efficiently managed and accessible to library users. Acquisition and Subscription Management, Check-in and Tracking, Cataloging and Metadata Management by MARC and ISSN No. etc.

Cataloging: Creating a bibliography of a new collection of books, magazines, CDs in the library. Under this module, the entry of new records is done based on title, author, publication place etc. Creating a bibliography of every item

that has arrived. There is a collection inside the library also, whatever new collection has come, entry of books, magazines, CDs, DVDs etc. comes under the cataloging module. The library collection is stored in the form of a machine-readable catalog and encoded with Unicode. Old data is also updated, whenever an entry has to be checked or any edit has to be made to it, then this is also done under the catalog.

7. Library Automation Problems

Library automation refers to the use of technology and software to manage library operations such as cataloging, circulation, acquisition, and user services. While library automation can greatly enhance efficiency and user experience, it is not without challenges.

1. Cost and Budget Constraints**:** Library automation systems can be expensive to implement and maintain. This includes costs for hardware, software, training, and ongoing support.
2. Data Migration Issues: Migrating data from traditional systems or older software can lead to data loss, duplication, or errors.
3. Customization Limitations: Many library automation systems lack flexibility and may not meet specific needs of the library or its patrons.
4. Training and Change Management: Library staff and users may resist or struggle to adapt to new systems due to lack of training or familiarity.
5. Security Concerns: Automated systems may be vulnerable to cyberattacks, data breaches, or unauthorized access

8. Prospects of Library Automation

The prospects of addressing library automation problems involve significant opportunities for improvement, but also highlight ongoing challenges. As technology continues to evolve, libraries are increasingly recognizing the benefits of automation, while also working through its challenges. Below are the future prospects and potential solutions to some common issues in library automation:

9. Advanced Technologies for Data Management

The future of library automation holds vast opportunities with Automation used for better cataloging, data analysis, and predictive recommendations, while machine learning algorithms can help refine search results, automate classification, and predict user needs. As libraries adopt library automation softwaretools can automate routine tasks like metadata generation and classification, reducing manual errors and improving efficiency.

10. Cost-Effective Open-Source Solutions

Open-source systems are becoming increasingly popular as they provide libraries with the flexibility to customize solutions and avoid high licensing fees. There are growing communities of developers working on open-source Integrated Library Systems (ILS), like Koha and E-Granthalaya. Open-source systems have the potential to lower costs and provide more control to libraries, particularly in resource-constrained settings. They may require more technical expertise.[1,3]

11. Cloud-Based Library Management Systems

Cloud computing is revolutionizing library automation by offering scalable, cost-effective solutions. Cloud-based systems eliminate the need for expensive local infrastructure and allow for easier software updates and access to data from anywhere. Many cloud-based solutions, such as Koha, SOUL allow for seamless integration, enhanced accessibility, and lower operational costs. This reduces IT overhead and ensures better disaster recovery processes.[6]

12. Improved Interoperability

Standards for data exchange, such as OpenURL, SRU/SRW (Search/Retrieve via URL), and MARC21**,** are advancing. Future systems may be able to integrate more easily with external databases, digital libraries, and other academic tools, enhancing interoperability. Continued development of API-based solutions and Linked Data technologies will make it easier for libraries to integrate various services and platforms, improving collaboration between institutions.

13. User-Centered Design Enhancements

As library automation solutions evolve, there will be a stronger emphasis on user experience. Future library systems will focus more on intuitive interfaces, personalization, and accessibility to improve both patron and librarian interactions. User-friendly designs, such as mobile-friendly apps, integrated search functions, and simplified self-service kiosks, will enhance patron engagement. Usability testing will ensure that future systems meet the needs of diverse user groups.

14. Integration of Digital and Physical Resources

There is a growing trend to integrate digital and physical resource management into a single automation system. Digital libraries**,** e-books, open access content, and physical assets (like books or DVDs) will be managed seamlessly within the same platform. Future systems will be capable of managing both physical and digital collections efficiently, streamlining acquisitions, circulation, and cataloging into one unified interface.

15. Adaptive and Scalable Systems

With increased cloud adoption, scalability will no longer be an issue for libraries as they expand. Systems will be able to grow with the library, whether it's adding more users, expanding the digital collection, or integrating new technologies. Modern systems will allow libraries to scale operations dynamically, responding to changes in size, user demand, and technology. Future systems will also be modular, allowing libraries to adopt new features as needed without overhauling the entire system.

16. Security and Privacy Improvements

As libraries digitize more of their resources, concerns about data security and privacy will continue to grow. However, advancements in encryption, cybersecurity protocols, and privacy regulations (such as GDPR compliance) will strengthen data protection. Stronger encryption standards**,** multi-factor authentication (MFA)**,** and better access controls will protect both user and library data. Libraries will be able to offer a higher level of data security while ensuring user privacy is maintained.

1. Optimization of resource use through automation
2. Rapid resource sharing
3. Increase library services through automation

17. Result and Discussion

Barktullah University is the most resource-rich for traditional academic and research materials, with a vast collection of books and journals. MCRPV University, despite having fewer books and journals, excels in providing a wider range of newspapers, suggesting a focus on current affairs and news. The university ranks first in resource count, with 66.66% of its libraries fully automated.

18. Findings

Library Strength: Barktullah Universityleads in both the number of books and journals, making it the most resource-rich for traditional academic and research materials. MCRPV University, despite having fewer books and journals, excels in providing a wider range of newspapers, suggesting a focus on current affairs and news. Research vs. News Focus: Barktullah University is more research-oriented with its vast journal collection. MCRPV University, with its emphasis on newspapers, might serve better for media studies or courses focused on contemporary information. General Ranking Based on Resource Count: First: Barktullah University (highest resources overall). Second: RGPV University (good balance but fewer journals).Third**:** MCRPV University (limited books and journals but excels in newspapers).

Based on table representing the present status of library automation based on the data you provided: out of 3 libraries:2 (66.66%) are fully automated,1 (33.33%) is partially automated, andNone (0%) have yet to start automation. About the number of libraries using an "Library Management Software" (possibly a specific type of software).

19. Limitations and Research Gaps

These research gaps can contribute to creating more efficient, inclusive, and sustainable library automation systems. These libraries often have limited resources, funding, and technical expertise, and research on affordable, scalable solutions for these libraries is minimal.

20. Conclusion

Library automation help increase utilization of library resources. House-keeping work of library easily done through library software by automation. Provide training and workshop to library professional and Increase work efficiency of library professional by library automation. In the university library, automation was done to overcome the problems of pre library automation so that the Pre library automation problems that were faced by the time consuming process and probability of work duplication, it was removed by library automation.

21. Source of funding

None.

22. Conflict of interest

None.

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