



ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor (RJIF): 8.4
IJAR 2025; 11(4): 111-115
www.allresearchjournal.com
Received: 17-01-2025
Accepted: 22-02-2025

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Library automation in academic libraries: An overview

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DOI: <https://www.doi.org/10.22271/allresearch.2025.v11.i4b.12464>

Abstract

Library automation in academic libraries enhances efficiency by automating tasks such as cataloging, circulation, and resource management. It improves access to academic resources, streamlines workflows, and reduces manual effort, enabling libraries to offer faster and more accurate services. Automation supports research and learning by providing better information retrieval systems. However, its success depends on regular system updates, adequate staff training, and ensuring that technological solutions complement rather than replace the personalized services offered by librarians, maintaining a balanced and user-focused library environment.

Keywords: Academic library, automation, software

Introduction

Library automation in academic libraries involves the integration of technology to manage various library tasks such as cataloging, circulation, acquisitions, serials management, and access to digital resources. By automating routine processes, libraries can increase efficiency, reduce human error, and provide faster and more accurate services to users. This technological advancement allows students, researchers, and faculty to access a wide range of resources, both physical and digital, from anywhere at any time. Automation also supports library management in tracking inventory, generating reports, and improving user experiences through online catalogs and self-service tools. Ultimately, it enhances academic research and learning by providing streamlined access to valuable information resources.

Definition of Automation

Automation is the application of technology to perform tasks or processes with minimal human intervention. It involves using machines, software, or systems to complete repetitive or complex tasks efficiently, often improving accuracy and reducing the time and effort required. Automation is widely used in industries, manufacturing, services, and everyday activities to streamline operations and enhance productivity.

According to Encyclopedia of Library and Information Sciences, "Library Automation is the use of automatic and semiautomatic data processing machines to perform such traditional library activities as acquisitions, cataloguing, and circulation. These activities are not necessarily performed in traditional ways, the activities themselves are those traditionally associated with libraries; library automation may thus be distinguished from related fields such as information retrieval fields such as information retrieval, automatic indexing and abstracting and automatic textual analysis".

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Meaning of Library Automation

Library automation refers to the process of using technology, primarily computer systems and specialized software, to manage and streamline various library tasks and services.

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These tasks include cataloging, circulation, acquisitions, serials management, and access to electronic and digital resources. Automation eliminates manual processes, improving the accuracy and efficiency of library operations, allowing for quicker access to resources, and enhancing the overall user experience. It also enables the integration of traditional and digital collections, supports online public access catalogs (OPAC), and provides tools for users to access materials remotely. In academic libraries, automation helps in managing large volumes of resources while improving the workflow for both librarians and users, thereby supporting academic research and learning.

Salient Features of Library Automation

Efficient Cataloging: Automated systems streamline cataloging, allowing for quick and accurate creation and retrieval of bibliographic records.

- 1. Circulation Management:** Automation facilitates efficient tracking of borrowed items, due dates, and user records.
- 2. Online Public Access Catalog (OPAC):** Users can search the library's collection remotely through an online catalog.
- 3. Integration of Digital Resources:** It enables seamless access to digital books, journals, and databases.
- 4. Inventory Control:** Automated systems help manage acquisitions, weeding, and stock checking.
- 5. Reporting and Analytics:** Libraries can generate reports for better decision-making and performance tracking.
- 6. User Convenience:** Self-service options like book renewals and reservations are available.

Objectives of Library Automation

The objectives of library automation are to enhance the efficiency and accuracy of library operations through the use of technology. Key goals include:

- 1. Streamlining Processes:** Automating routine tasks like cataloging, circulation, and acquisitions to reduce manual work and errors.
- 2. Improving Access:** Providing users with quick, remote access to both physical and digital collections via Online Public Access Catalogs (OPAC).
- 3. Resource Management:** Ensuring better inventory control and management of library materials, including tracking, acquisitions, and weeding.
- 4. Enhancing User Experience:** Offering self-service options such as book renewals, reservations, and online searches.
- 5. Supporting Academic Research:** Facilitating easy access to resources and databases, improving overall research efficiency for students and faculty.

Need of Library Automation

Library automation is essential for improving efficiency, accuracy, and accessibility in managing library resources. It reduces manual work, streamlines cataloging, circulation, and acquisitions, and minimizes human error. Automation provides users with quick access to both physical and digital collections through online catalogs and databases, enhancing the research experience. It also supports inventory control, facilitates remote access, and offers self-service options like renewals and reservations. Ultimately, automation improves library management and user

satisfaction, making information more easily accessible to all.

Advantages of Library Automation

Library automation offers numerous advantages, including increased efficiency and accuracy in managing library operations, such as cataloging and circulation. It reduces manual workload, allowing staff to focus on user services. Automation enhances user experience by providing quick and easy access to both physical and digital resources through online catalogs. Additionally, it supports better inventory management and tracking, facilitates remote access to information, and offers self-service options like renewals and reservations. Overall, automation significantly improves service delivery and user satisfaction in libraries.

Disadvantages of Library Automation

The initial costs for implementing automation systems, including software, hardware, and staff training, can be significant, especially for smaller libraries. Dependence on technology may lead to disruptions if systems fail or experience downtime, hindering access to resources. Furthermore, automation can reduce personal interactions between staff and users, potentially affecting user engagement and support. Staff may also need continuous training to adapt to new technologies. Lastly, concerns about data privacy and security arise from digitizing user information, necessitating stringent measures to protect sensitive data.

What to be Automated

In library automation, several critical functions can be automated to improve efficiency and enhance user experience:

- 1. Cataloging:** Automate the creation and maintenance of bibliographic records for easier access and organization of materials.
- 2. Circulation Management:** Streamline check-out and return processes, including tracking due dates and overdue fines.
- 3. Acquisitions:** Automate the ordering and receiving of materials, simplifying procurement and budget management.
- 4. Serials Management:** Manage subscriptions and track issues of periodicals and journals efficiently.
- 5. Online Public Access Catalog (OPAC):** Allow users to search the library's collection and access digital resources remotely.
- 6. Inventory Management:** Automate stock checks and weeding of outdated materials.
- 7. User Services:** Provide self-service options for renewals, reservations, and access to digital resources, improving overall satisfaction.

Automated Library Services

Automated library services enhance user experience and streamline operations by leveraging technology. Key automated services include:

- 1. Online Public Access Catalog (OPAC):** Users can search the library's collection, view availability, and access digital resources remotely.
- 2. Self-Checkout Stations:** Patrons can check out books independently, reducing wait times and enhancing convenience.

- 3. **Automated Circulation Systems:** These systems manage check-outs, returns, and overdue notifications automatically, improving efficiency.
- 4. **E-Resource Access:** Libraries provide access to digital materials, including e-books, journals, and databases, available 24/7.
- 5. **Interlibrary Loan Automation:** Streamlining requests and tracking for resources not available in the local

library.

- 6. **User Account Management:** Patrons can manage their accounts, renew items, and place holds online, improving engagement and satisfaction.

These services foster greater accessibility and efficiency in library operations.

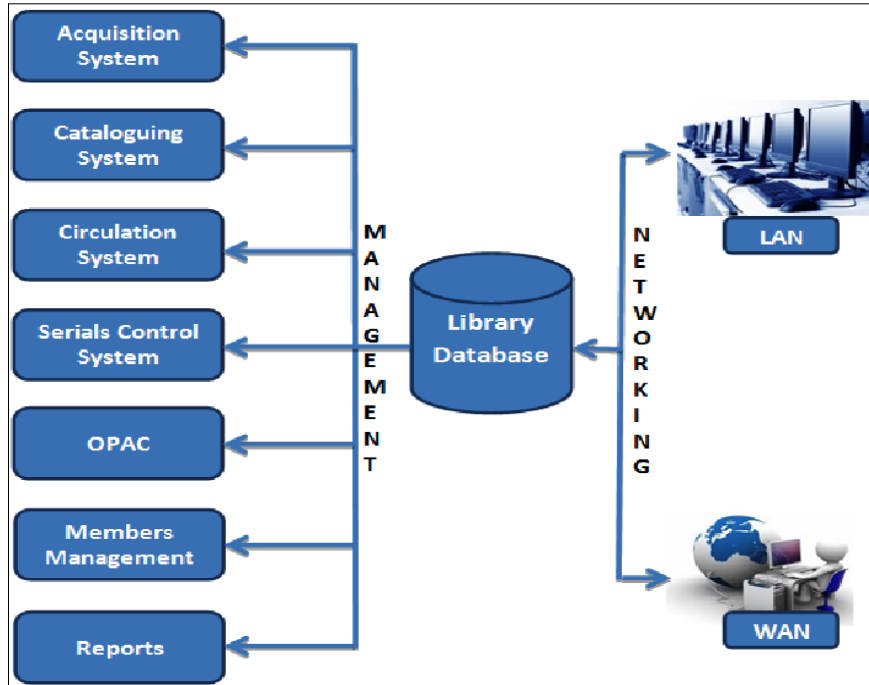


Fig 1: System of Automated Library

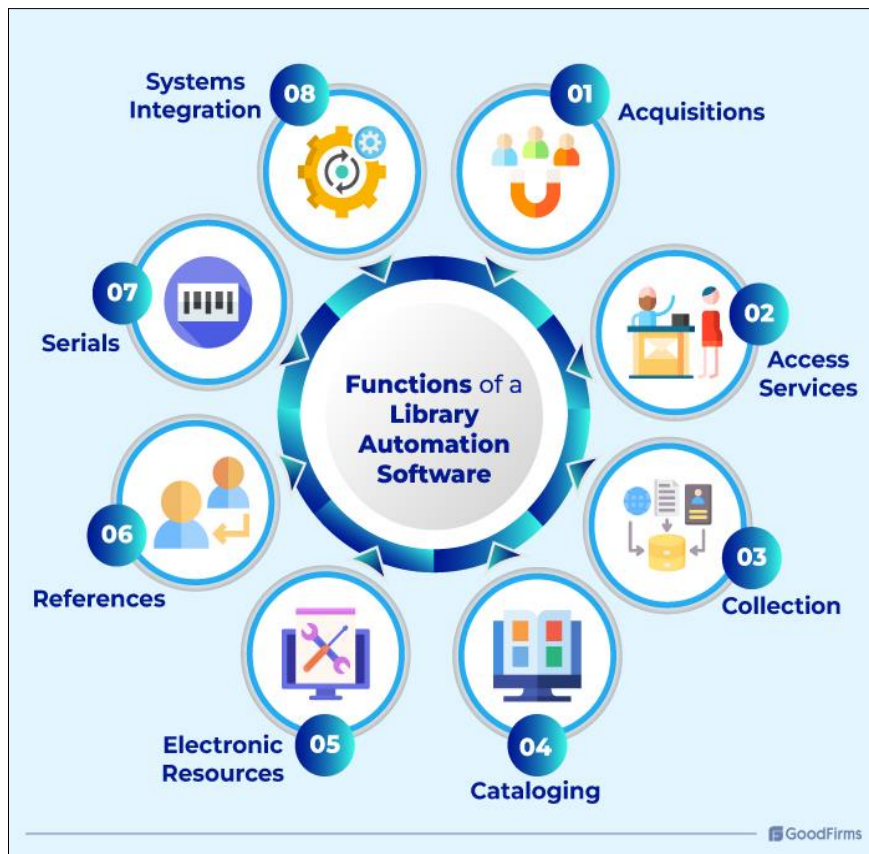


Fig 2: Library Modules

Software

Software refers to a set of instructions or programs used by computers to perform specific tasks. It is categorized into system software (like operating systems) that manage hardware, and application software that performs tasks for users, such as word processing or web browsing. Software development involves programming languages and methodologies to design, write, and test code. Examples include Microsoft Office, Adobe Photoshop, and Google Chrome. Continuous updates and enhancements ensure software stays secure and meets evolving user needs in areas like productivity, entertainment, and communication.

Hardware

Hardware refers to the physical components of a computer system or any electronic device. It includes elements such as the central processing unit (CPU), memory (RAM), storage devices (hard drives, SSDs), motherboards, and peripheral devices like keyboards, monitors, and printers. Hardware forms the foundation that enables software to run and perform various tasks. Unlike software, which can be updated or reinstalled, hardware involves tangible parts that may need physical upgrades or replacements. Examples include smartphones, laptops, servers, and gaming consoles, all dependent on integrated hardware systems.

Manpower

Manpower refers to the human resources available to complete tasks, projects, or operations within an organization or industry. It encompasses the workforce's physical and intellectual abilities, skills, and labor. Efficient manpower management ensures optimal productivity by aligning the right people with the right jobs, balancing workload, and fostering a motivated workforce. It includes recruitment, training, and retention strategies to meet organizational goals. In industries like construction, manufacturing, and services, manpower is critical in driving day-to-day activities and ensuring smooth operations, growth, and success.

Financial Support

Financial support refers to the provision of monetary assistance to individuals, organizations, or businesses to help them meet specific needs or goals. It can come from various sources, including government grants, loans, scholarships, investments, or donations. Financial support may be used for education, healthcare, business expansion, or personal expenses during hardships. It plays a crucial role in fostering growth, stability, and development, especially for those facing economic challenges. Effective financial support helps beneficiaries overcome obstacles and achieve financial independence or organizational success.

SI.	Name of the Software	Developer & Agency
1.	LibSys	LibSys Corporation, India
2.	Slim	Algorithms Consultants Pvt. Ltd., India
3.	NewGenLib	Verus Software Pvt. Limited, Secundrabad, India
4.	VTLS Virtua	VTLS Inc, USA
5.	SOUL	INFILBNET Centre, Ahmedabad, India
6.	Nirmals	Nirmal Institute of Computer, India
7.	TLMS	TRANCE, Germany
8.	Librarian	CR2, India Group
9.	Defence Library Management System	DESIDOC, New Delhi
10.	Libra	Ivy System Ltd., New Delhi
11.	Catman	INSDOC, New Delhi
12.	SUCHIKA	DESIDOC
13.	Troodon	Comtek Services Pvt. Ltd., New Delhi, India
14.	Goldan Libra	Golden Age Software Technologies, Mumbai
15.	Libman	Datapro Consultancy Services, Pune
16.	Tulib	Tata Unisys Ltd., Mumbai
17.	Sanjay	DESIDOC, Delhi (Under a NISSAT Project)
18.	Wilisys	Wipro India, Bangalore
19.	Ulysis	WIPRO Information Technology Ltd., Secunderaba
20.	MECSYS	MECON, Ranchi
21.	Lib Soft	ET & T Corpn., New Delhi
22.	Library Manager	System Data Control Pvt Ltd., Mumbai
23.	Salim	Expertise, Tiruchirapalli, Uptron India Ltd., New Delhi
24.	Libris	Frontier Information Technologies Pvt. Ltd
25.	Library Management	Raychan Sysmatics, Bangalore
26.	Maitraye	CMC, Calcutta (for the CALIBNET Project)
27.	NILIS	Asmita Consultants, Bombay
28.	Basisplus & Techlibplus	Information Dimention Inc (IDI), USA (Marketed in India by NIC)
29.	TRISHNA	NISTADS, New Delhi, India
30.	Alice for Windows	Softlink International, Australia
31.	Archives(1,2,3)	Microfax Electronic; Systems, Mumbai
32.	Basisplus & Techlibplus	Information Dimention Inc (IDI), USA (Marketed in India by NIC)
33.	Golden Libra	Golden Age Software Technologies, Mumbai
34.	Tech Lib Plus	Information Dimensions Inc., USA
35.	Koha	Koha Development Team
36.	Granthalaya	INSDOC, New Delhi
37.	INSDOC, New Delhi	Computer Systems, Bangalore

Problem for Automation

Automation refers to the use of technology to perform tasks with minimal human intervention. While it boosts efficiency, it can also lead to challenges like job displacement, increased complexity in managing automated systems, and dependency on technology. One significant problem arises when businesses lack the proper framework to implement automation effectively, leading to wasted resources and inefficient workflows. Without well-designed processes, automation can amplify errors and create security vulnerabilities, requiring constant human oversight and defeating the purpose of adopting automated solutions in the first place.

Conclusion

The conclusion of library automation in academic libraries highlights its transformative role in enhancing efficiency, accessibility, and service quality. By automating routine tasks like cataloging, circulation, and information retrieval, libraries can better serve the academic community, providing faster and more accurate access to resources. Automation allows librarians to focus on more specialized services such as research support and user engagement. However, successful implementation requires ongoing investment in technology, staff training, and system maintenance. While it offers significant benefits, libraries must balance automation with human expertise to ensure a seamless, user-centered experience that supports academic learning and research.

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