



Original Article

Innovation in Information Management: A Library and Information Science Perspective

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Libraries and information centers have long been regarded as custodians of knowledge. With rapid advances in information and communication technology (ICT), traditional practices of cataloguing, archiving, and dissemination have been transformed into dynamic, user-centered, and technology-driven services. This paper explores major innovations in information management within the context of Library and Information Science (LIS). It discusses the evolution from traditional library practices to digital repositories, cloud-based services, and artificial intelligence-driven tools. Key innovations such as online public access catalogues (OPACs), institutional repositories, semantic web applications, and blockchain technologies are analyzed. Challenges such as digital divide, ethical concerns, and skill gaps are also considered. The study concludes that innovations in information management are essential for libraries to remain relevant in the knowledge society, supporting lifelong learning, open science, and inclusive access to information.

Keywords: Library and Information Science, digital libraries, information management, artificial intelligence, blockchain, OPAC, repositories

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Introduction:

Innovation in information management has become a driving force in reshaping the role of libraries and information science in the digital era. With the exponential growth of information resources, rapid advancements in technology, and changing user expectations, traditional methods of organizing, storing, and disseminating knowledge are no longer sufficient. Libraries, once seen primarily as repositories of books, are now evolving into dynamic knowledge hubs that integrate digital tools, smart technologies, and user-centric services to enhance accessibility, efficiency, and collaboration. From artificial intelligence and data analytics to cloud computing and digital repositories, innovative practices in information management are empowering libraries to not only preserve knowledge but also to actively support research, education, and societal development. This paradigm shift highlights the need for continuous adaptation, creativity, and strategic integration of new technologies within the field of Library and Information Science (LIS). Libraries have always been central to information management, ensuring the collection, organization, preservation, and dissemination of knowledge (Bawden & Robinson, 2012). Traditionally, libraries relied on manual cataloguing, classification systems, and print-based resources. However, the emergence of ICTs, digital publishing, and the Internet has radically altered the landscape of information management in libraries (Rowley, 2017). In today's knowledge society, libraries are adopting innovations such as artificial intelligence (AI), big data analytics, cloud computing, and blockchain to meet the changing expectations of users.



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These innovations not only improve efficiency but also expand access, enabling libraries to serve as hubs of research, learning, and innovation (Cox & Pinfield, 2014).

1.1 Review of Literature

Recent studies emphasize the transformative role of digital technologies in library management. Islam (2025) highlighted the integration of artificial intelligence for metadata automation and personalized services, while Paul and Chauhan (2024) reviewed AI's contribution to accessibility and inclusion in library services. Rao and Prasad (2025) examined blockchain applications in digital preservation and copyright management, identifying both opportunities and adoption challenges. Similarly, Mallikarjuna (2024) explored the adoption of AI-based services in Indian academic libraries, stressing issues of staff preparedness and ethical considerations.

1.2 Objectives: The researcher focus on some objective for studying a innovation of library management, these are following.

- To examine the role of emerging technologies such as artificial intelligence, blockchain, cloud computing, and semantic web in transforming library information management.
- To assess the perceptions, preparedness, and challenges faced by library professionals in adopting innovative practices within Institutes of National Importance in India.
- To evaluate the impact of these innovations on access, preservation, and user satisfaction in academic and research library environments.

2. Evolution of Information Management in Libraries: The development of information management in libraries can be divided into three major stages: Traditional Libraries were manual catalogues, classification schemes such as Dewey Decimal Classification (DDC), and print collections dominated until the late 20th century. Automated Libraries are Computer-based information systems, machine-readable cataloguing (MARC), and Online Public Access Catalogues (OPACs) emerged in the 1980s and 1990s (Bawden & Robinson, 2012). And Digital and Smart Libraries. utilize digital repositories, integrated library management systems, semantic web tools, and AI-driven services to enhance knowledge discovery.

This evolution reflects the library profession's continuous adaptation to user needs and technological progress

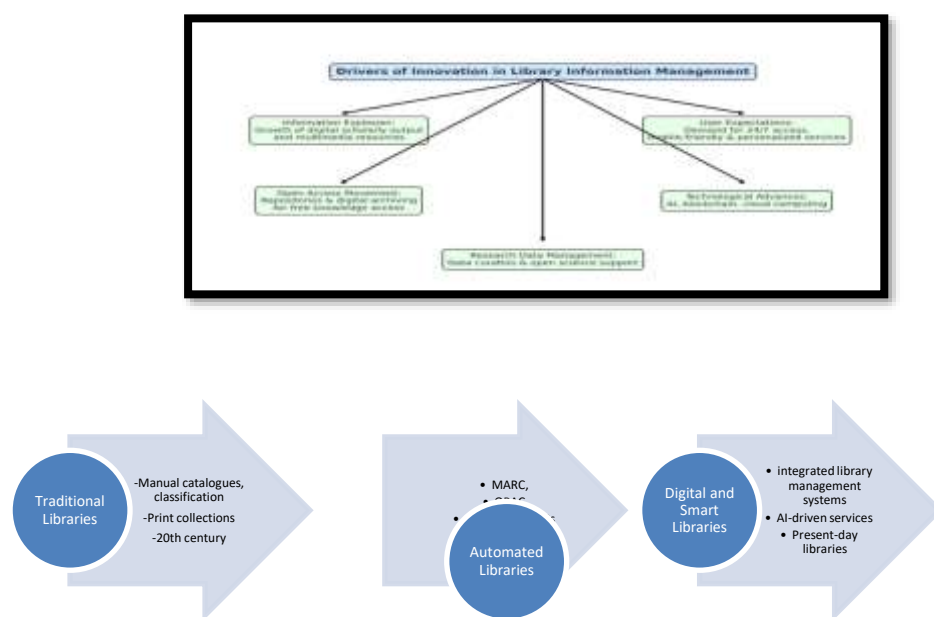


Fig 1: Evolution of Libraries

3. Drivers of Innovation in Library Information Management:

Drivers of innovation in library information management stem from the dynamic changes in information creation, access, and use. The exponential growth of digital resources and multimedia content has intensified the need for efficient organization and retrieval. Simultaneously, rising user expectations for 24/7 remote access, mobile-friendly interfaces, and personalized services are reshaping library practices. The open access movement promotes free Knowledge sharing through institutional repositories, while emerging technologies like AI, blockchain, and cloud computing enhance library services. Three things involve in the process of innovation of library management, lifelong learning, educational innovation and information literacy.



Fig 2 Involve in innovation

Additionally, the increasing demand for research data management and support for open science initiatives compels libraries to adopt innovative strategies, ensuring their continued relevance in the digital era. Some key factors driving innovation in libraries include in time.

Fig. 3 Drivers of Innovation in LIS

The library landscape is undergoing a transformative shift driven by technology. Innovative tools and digital resources are enhancing accessibility allowing libraries to serve their communities more effectively. By embracing these changes, libraries can evolve into dynamic spaces for learning and collaboration ensuring they remain relevant in the digital age.

4. User Need in Library Innovation: The evolution of library science is fundamentally driven by user needs. As communities grow and change, libraries must adapt to serve their patrons effectively. This involves not only providing access to information but also creating inclusive spaces that foster community engagement and lifelong learning. By prioritizing user experience and leveraging technology, libraries can transform into vibrant community hubs, supporting cultural and educational initiatives. Libraries are no longer just repositories of books; they are essential partners in the development of informed and connected societies.

5. Innovations in Library Information Management:

The rapid advancement of information and communication technologies has reshaped the landscape of library and information management. Modern libraries no longer serve merely as repositories of books but have become dynamic information hubs that support research, learning, and innovation. Emerging tools such as digital libraries, artificial intelligence (AI), cloud computing, blockchain, and semantic web technologies are transforming the way information is created, organized, preserved, and accessed. This section discusses key innovations in library information management and their implications for global knowledge systems.

Digital Libraries and Institutional Repositories: Digital libraries and institutional repositories are central to enhancing access to scholarly resources and preserving academic output. Initiatives such as the National Digital Library of India (NDLI) provide centralized access to millions of digitized resources across disciplines. Institutional repositories, often powered by platforms such as DSpace and EPrints, facilitate open access dissemination of research publications, theses, and datasets, thereby increasing visibility and long-term preservation of scholarly work (UNESCO, 2022). These repositories align with open science principles, ensuring global accessibility and sustainability of knowledge.

Online Public Access Catalogues (OPACs) and Integrated Library Management Systems (ILMS): The replacement of traditional card catalogues by Online Public Access Catalogues (OPACs) marked a significant milestone in information retrieval. OPACs allow users to search holdings by author, subject, or keyword through intuitive interfaces. With further advancement, OPACs became integrated into comprehensive Library Management Systems (ILMS), which streamline cataloguing, acquisitions, serials management, and circulation processes. These systems enhance operational efficiency and improve user experience by providing seamless access to library resources (Bawden & Robinson, 2012).

Artificial Intelligence in Libraries: AI-driven tools are increasingly integrated into library services. Applications include automated metadata generation, recommendation systems, virtual reference chatbots, and predictive analytics for collection development (Islam, 2025). AI also enhances accessibility through features such as text-to-speech conversion, language translation, and image recognition (Paul & Chauhan, 2024). However, challenges such as ethical



concerns, algorithmic bias, and the need for staff training remain critical to sustainable implementation (Das & Islam, 2021; Mallikarjuna, 2024).

Blockchain for Preservation and Security: Blockchain technology is emerging as a tool for ensuring authenticity, provenance, and copyright protection in digital environments. Libraries explore blockchain for certifying digital documents, safeguarding intellectual property, and enabling secure information exchange. Its decentralized nature enhances trust and transparency in digital preservation (Oname & Alex-Nmecha, 2021; Rao & Prasad, 2025). Despite its potential, high costs, energy consumption, and governance issues limit widespread adoption (Ahmad, 2024).

Cloud-Based Library Services: Cloud computing allows libraries to adopt scalable, cost-effective, and collaborative platforms. Services such as Koha Cloud and OCLC WorldShare support shared cataloguing, resource sharing, and centralized management while reducing infrastructure costs (Marston et al., 2011). Cloud-based models also ensure disaster recovery, automatic updates, and anytime-anywhere access, making them especially valuable for academic and research libraries.

Semantic Web and Linked Data: Semantic web technologies and linked data initiatives strengthen interoperability and global knowledge discovery. Using Resource Description Framework (RDF) and linked data principles, libraries can publish metadata as interconnected data on the web, thereby enabling cross-institutional integration and visibility (Berners-Lee et al., 2001). Projects such as BIBFRAME and linked authority files extend the reach of bibliographic records beyond local catalogs, advancing open knowledge ecosystems ("Library linked data," 2025). Innovations in library information management underscore the transformation of libraries from static repositories to dynamic, technology-driven knowledge systems. Digital libraries and repositories foster open access, ILMS and OPACs streamline workflows, AI enhances personalization and efficiency, blockchain strengthens trust, cloud services provide scalability, and semantic web technologies improve interoperability. Together, these innovations not only expand the role of libraries but also position them as critical enablers of global research, learning, and knowledge sharing in the digital era.

6. Challenges in Library Information Management: Despite innovations, several challenges remain that are, Digital Divide is Unequal access to ICT infrastructure, particularly in developing regions. Ethical Concerns are related to data privacy, copyright management, and ethical use of AI tools. Interoperability Issues related to lack of standardized metadata and protocols across library systems. Financial and Environmental Costs to maintenance of digital repositories and cloud services requires significant investment. And skill gaps of Librarians need continuous training in digital technologies and research data management.

These are some challenges to managing the innovation in LIS.

7. Future Directions: The future of library information management will emphasize, integration of Generative AI for automated indexing and content summarization. Adoption of Augmented and Virtual Reality (AR/VR) for immersive learning experiences in digital libraries. To development of Green Libraries with sustainable ICT infrastructures for users. Greater focus on open science and research data management. And last not least global collaboration to create standardized frameworks for digital knowledge sharing.

Conclusion: Innovation in information management has transformed libraries from static knowledge repositories to dynamic centers of learning and research. By adopting digital technologies, cloud services, AI, and semantic web tools, libraries enhance access, efficiency, and user engagement. However, the success of these innovations depends on addressing challenges such as digital inequality, ethical concerns, and skill development. Future-ready libraries must balance technological innovation with inclusivity and sustainability, ensuring that they remain central to knowledge societies.

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