



Analyzing The Adoption and Challenges of Information Retrieval Systems in Indian Libraries: A Secondary Data Approach

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Abstract

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Despite significant global advances in digital information retrieval systems, there is limited research examining the distinct patterns of IRS adoption within India—especially across different institution types, regions, and user demographics. Much of the available literature focuses on specific tools or individual case studies, leaving a gap in understanding how these systems operate on a national scale. This study addresses this gap by utilizing secondary data sources, including government documents, academic repositories, institutional websites, and reports from digital consortia such as INFLIBNET and NDLI. Adopting a descriptive and qualitative methodology, the research explores the current state of Indian library retrieval systems, key digital initiatives, metadata practices, and the role of LIS training and digital policy. The study identifies substantial improvements in access and efficiency due to standardized metadata usage and digital tools, while also highlighting ongoing challenges related to infrastructure, training, and funding, particularly in rural and under-resourced institutions. It concludes by recommending strategic policy actions, capacity building, and enhanced LIS curricula to create an inclusive, standardized, and future-ready IRS framework for Indian libraries.

Keywords: Information Retrieval Systems, Digital Libraries, Metadata Standards, LIS Education, INFLIBNET, NDLI, DELNET, AI in Libraries, Indian Library Systems, Digital Policy

Objective of the Study

To examine the development, adoption, and challenges of information retrieval systems (IRS) in Indian libraries through an in-depth analysis of secondary data, focusing on institutional differences, regional disparities, and technological gaps. The study aims to identify how national platforms (such as INFLIBNET, NDLI, and DELNET) have influenced retrieval practices, and what role metadata standards, LIS education, AI, and policy frameworks play in shaping these systems.

Data Sources

This study primarily relies on secondary data to understand the development and implementation of Information Retrieval Systems (IRS) in Indian libraries. Sources were selected for their credibility, relevance, and accessibility, especially in the academic and policy contexts of India.

Government Reports and Policy Documents

- Key documents from the Ministry of Education, UGC, and reports like NEP 2020, Digital India, and INFLIBNET annual reports provided insights on IRS trends, standards (e.g., SOUL, Shodhganga), funding, and digital initiatives.

Research Databases and Academic Repositories

- Shodhganga: Offered thesis data on OPACs, metadata use, and library software adoption.
- Google Scholar: Helped track peer-reviewed work on Koha, DSpace, AI in IRS, and global comparisons.
- NDLI: Analyzed as a working model of a national IRS with multilingual and subject-diverse resources.

Institutional Websites and Library Portals

- Reviewed portals of IITs, IIMs, Central and State Universities to gather data on library software (SOUL, Koha, LibSys), OPAC usage, repository access, and regional practices in digital library adoption.

INFLIBNET Platforms

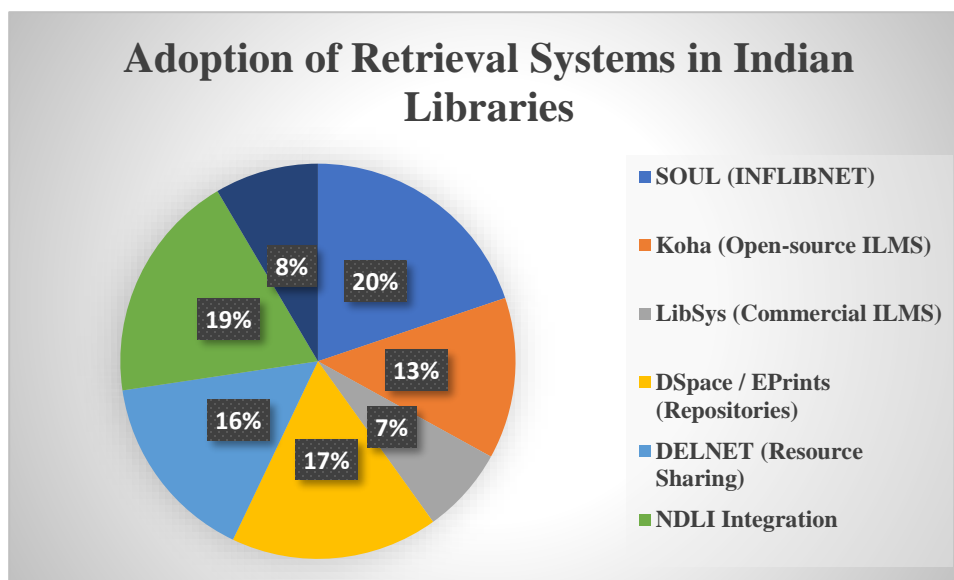
- SOUL: Widely used library management software with MARC21 and OPAC support.
- Shodhganga: Repository for Indian theses with full-text and metadata access.
- ShodhShuddhi: Anti-plagiarism tool integrated with URKUND.
- ShodhSindhu: Journal access consortium with federated search and remote access features.
- NDLI (National Digital Library of India)

Built by IIT Kharagpur, NDLI offers over 73 million resources with AI-powered search, multilingual support, and metadata standardization (Dublin Core).

DELNET (Developing Library Network)

A cooperative network offering access to millions of bibliographic records, interlibrary loan services, and search tools suited for libraries with limited IT infrastructure.

Table: Adoption of Retrieval Systems in Indian Libraries			
Retrieval System / Platform	Estimated Adoption (%)	Institution Types Commonly Using	Metadata Standards Supported
SOUL (INFLIBNET)	0.42	Central & State Universities, Colleges	MARC21, AACR2
Koha (Open-source ILMS)	0.28	Autonomous Colleges, Engineering Institutes	MARC21, Dublin Core
LibSys (Commercial ILMS)	0.15	Private Universities, Specialized Institutions	MARC21, ISO 2709
DSpace / EPrints (Repositories)	0.36	Universities, Research Institutes	Dublin Core, Qualified DC
DELNET (Resource Sharing)	0.33	University & College Libraries Nationwide	MARC21, ISO 2709
NDLI Integration	0.4	All major institutions across disciplines	Dublin Core
Manual Cataloguing Systems	0.18	Rural Colleges, Government-aided Libraries	None / Paper-based Indexing



Interpretation : The table on the adoption of retrieval systems in Indian libraries reveals significant insights into the current landscape of information retrieval practices. SOUL, developed by INFLIBNET, emerges as the most widely adopted system, with an estimated usage of 42%. This is largely due to its strong government backing and its widespread implementation in central and state universities. Its support for standard metadata formats such as MARC21 and AACR2 further enhances its appeal. Close behind is the National Digital Library of India (NDLI) with 40% adoption across a broad range of institutions. NDLI's use of Dublin Core metadata and its AI-enhanced search features make it an effective national-level retrieval system, particularly valuable for its multilingual and multidisciplinary resources.

DSpace and EPrints, with a combined adoption rate of 36%, are primarily used by universities and research institutes to manage institutional repositories. These platforms, favoring Dublin Core standards, are essential for promoting open-access digital archiving. DELNET, with 33% adoption, facilitates resource sharing across libraries, especially useful for institutions with limited holdings. Its reliance on MARC21 and ISO 2709 ensures interoperability with other library systems.

Koha, the open-source ILMS, accounts for 28% adoption, particularly in autonomous colleges and technical institutions. Its flexibility, support for MARC21 and Dublin Core, and cost-effectiveness make it a popular alternative to proprietary systems. LibSys, though commercially advanced, has only 15% adoption, mostly

in private and specialized institutions, likely due to its licensing costs and limited accessibility for public institutions.

Interestingly, manual cataloguing systems still persist in 18% of institutions, mainly in rural colleges and government-aided libraries. These systems lack standardized metadata and rely on paper-based indexing, highlighting the digital divide and the infrastructural challenges faced by less-resourced institutions. Overall, the data underscores a growing trend toward digital and interoperable systems, though disparities remain in adoption due to institutional type, funding, and technological readiness.

Discussion and Conclusion

a comprehensive understanding of how Indian libraries are evolving with regard to information retrieval systems (IRS), while also highlighting both their achievements and ongoing challenges.

The discussion emphasizes that India's progress in IRS is significantly influenced by national policies such as the National Education Policy (NEP) 2020 and Digital India. These policies advocate for digitization, metadata-based tools, and platforms like NDLI, Shodhganga, and INFLIBNET, which have accelerated the adoption of retrieval systems, especially in government-supported institutions. However, the paragraph also compares Indian libraries with global leaders, noting that India still lags behind major libraries like the Library of Congress or Europeana, which use more advanced tools such as linked data, semantic search, and multilingual retrieval. Additionally, the discussion highlights the critical role of librarians and LIS educators in the success of IRS, calling for updated curriculums, practical training, and ethical data practices, especially in the face of increasing AI integration that raises concerns about user privacy and data misuse.

The **conclusion** reaffirms that Indian libraries are undergoing a shift from manual cataloguing to digitally driven, metadata-based systems. Platforms like INFLIBNET, NDLI, and DELNET have improved accessibility, user satisfaction, and platform interoperability through standards such as MARC21 and Dublin Core. Nonetheless, it underscores disparities—particularly in rural and underfunded institutions—due to infrastructural, training, and awareness limitations. It also stresses the importance of retrieval systems in fulfilling libraries' core goals of equitable knowledge distribution, academic support, and digital inclusion. Finally, the conclusion calls for stronger policy attention, sustained funding, and workforce

training to ensure full and equitable implementation, while encouraging collaboration among policymakers, LIS professionals, and researchers to future.

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