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"Open DOAR and the Development of Open Access Repositories in India"

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Abstract

Open DOAR (Directory of Open Access Repositories) has played a pivotal role in promoting and consolidating open access initiatives worldwide. In India, the development of institutional repositories (IRs) has gained momentum over the last two decades, providing scholars, students, and institutions with a robust platform for the dissemination and preservation of scholarly content. This paper examines the contribution of Open DOAR as a global directory and its influence on the proliferation, visibility, and standardization of open access repositories in India. It further analyzes trends, challenges, and prospects for strengthening open access culture through Open DOAR-listed repositories.

Keywords- *Open DOAR, Institutional Repositories, Open Access, Scholarly Communication, India, INFLIBNET, Shodhganga, Digital Libraries*

1. Introduction

The Open Access (OA) movement has transformed the landscape of scholarly communication by removing barriers to knowledge and promoting free and unrestricted access to research outputs. Institutional Repositories (IRs) are an integral part of this movement, functioning as digital archives to collect, preserve, and disseminate the intellectual output of academic institutions.

Globally, the Directory of Open Access Repositories (Open DOAR), developed and maintained by the University of Nottingham, serves as a comprehensive registry of open access repositories, ensuring visibility, discoverability, and quality assurance. Open DOAR provides vital infrastructure support to researchers, librarians, and policy makers by offering curated information about thousands of repositories worldwide.

In India, the development of IRs gained momentum in the early 2000s, driven by policy-level encouragement, technological advancements, and initiatives such as INFLIBNET's *Shodhganga*, which mandates the submission of Ph.D. theses to a centralized repository. Premier institutions like the Indian Institutes of Technology (IITs), Indian Institute of Science (IISc), and central universities have established dedicated repositories to support open scholarly communication.

Despite remarkable growth, India's OA ecosystem faces challenges related to repository adoption, metadata standards, copyright concerns, and low awareness among stakeholders. The inclusion of Indian IRs in Open DOAR has not only amplified their global visibility but has also encouraged institutions to adopt standardized practices and quality benchmarks.

This paper explores the significance of Open DOAR in facilitating the development and growth of IRs in India. It highlights key trends, institutional practices, opportunities, and challenges while recommending measures to strengthen the country's open access infrastructure in alignment with global best practices.

2. Open DOAR: An Overview

Open DOAR (Directory of Open Access Repositories) is one of the most widely recognized and trusted global directories for open access institutional repositories. Developed and maintained by the **SHERPA Services, University of Nottingham**, Open DOAR provides a quality-assured list of open access repositories from around

the world. The service was initially launched in 2005 with support from the Open Society Institute and JISC (Joint Information Systems Committee) in the UK.

The core aim of Open DOAR is to support the global open access movement by offering a curated and authoritative registry of repositories. It enables researchers, students, librarians, and policymakers to identify, locate, and access trustworthy open access repositories across disciplines and regions. By setting minimum quality standards for listing, Open DOAR encourages institutions to follow best practices in repository management, metadata standards, licensing, and interoperability.

Open DOAR supports the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), which facilitates metadata harvesting and improves the discoverability of repository content through aggregation services and search engines. Institutions benefit from increased visibility, citation impact, and collaboration opportunities when they register with Open DOAR.

According to the Open DOAR website, "Open DOAR is an authoritative directory of academic open access repositories. Each repository is visited by project staff to check the information that is recorded." (*Open DOAR, 2024*).

Open DOAR's role extends beyond being a simple list — it contributes to global scholarly communication policy development, promotes open knowledge sharing, and aligns with broader open science initiatives, including Plan S and UNESCO's recommendations for open science.

3. IR Platforms widely used by institutions in India

Some of the important Institutional Repository Platforms registered with Open DOAR and widely used by institutions in India are as follows:

Common IR Software Used in Open DOAR-listed Repositories

Sr. No.	IR Software	Developer / Origin	Database Backend	Key Features	Common Usage in India
1	DSpace	MIT & Hewlett-Packard	PostgreSQL (default), Oracle	Widely used, OAI-PMH compliant, flexible metadata, multilingual	IITs, NITs, Central Universities, Shodhganga
2	EPrints	University of Southampton	MySQL / MariaDB	Simple setup, self-archiving support, customizable workflows	Research Institutes, State Universities
3	Greenstone	UNESCO & University of Waikato	GDBM (file-based), SQL optional	Multilingual, suitable for small/medium IRs, offline digital libraries	Rural Universities, Local Knowledge Centres
4	Fedora Commons	DuraSpace	MySQL, PostgreSQL, Triple Store (RDF)	Supports complex digital objects, API-based, scalable framework	National digital library projects, consortium IRs
5	Invenio	CERN	MySQL / PostgreSQL	Powerful metadata management, large datasets, search integration	Research institutions with large data collections
6	DSpace-CRIS	4Science	PostgreSQL	Extension of DSpace for Current Research Information Systems (CRIS)	Some IITs and Research Councils

7	Samvera (formerly Hydra)	Community-driven	PostgreSQL	Customizable framework, Fedora backend integration	Special collections, Digital Archives
8	Islandora	University of Prince Edward Island	Fedora + Drupal	Combines Fedora with Drupal CMS, rich media support	Digital heritage collections, Libraries

DSpace and E-Prints are the most widely used IR platforms in India. Open DOAR registration checks Repository Software, Metadata Standards, and OAI-PMH Compliance. DSpace is widely mandated in INFLIBNET's Shodhganga project. Some institutions use advanced frameworks like Fedora or Invenio, especially for large digital collections.

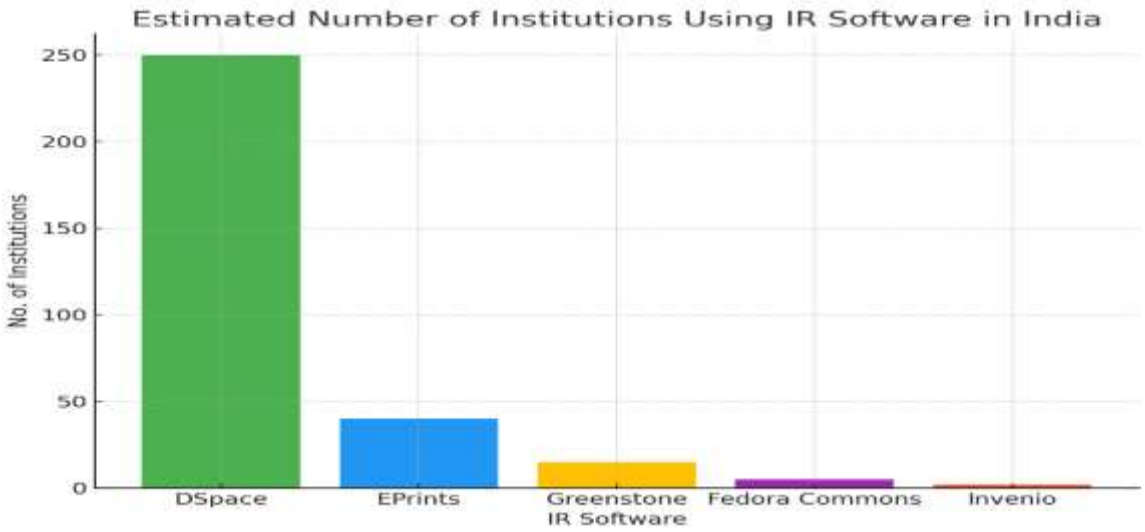
The following table shows the current estimated size of Institutional Repositories in India:

Table 1: 2024 details by institution

IR Software	Estimated No. of Institutions (India)	Example Institutions
DSpace	250	IITs, IISc, Central Universities, Shodhganga (INFLIBNET)
EPrints	40	Some State Universities, Private Institutes
Greenstone	15	Small Colleges, Digital Library Projects
Fedora Commons	5	Special Research Networks, Consortia
Invenio	2	Few Research Data Archives (rare in India)

(These figures are based on public data from Open DOAR, ROAR and Shodhganga — these are estimates up to the end of 2024. Details may vary by institution.)

DSpace: More than 85% of India's IRs run on DSpace. INFLIBNET's Shodhganga Repository is also based on DSpace. EPrints: Some state universities and private institutions use EPrints — especially because it is cheap and Linux-friendly. Greenstone: Small libraries, colleges in rural areas use Greenstone for digital collections. Fedora/Invenio: Less common in India, because it requires a complex RDF/Linked Data Structure.



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4. Growth of Open Access Repositories in India

India's open access journey gained momentum with the launch of INFLIBNET's Shodhganga, which mandates the deposit of Ph.D. theses. Several premier institutions, including IITs, IISc, and central universities, have established IRs, most of which are registered with Open DOAR. According to Open DOAR data (latest figures can be inserted here), India has over *X* registered repositories, positioning it among leading Asian contributors.

In India, the open access movement gained momentum in the early 2000s with initiatives like the Indian National Science Academy's open access policy and the development of institutional repositories in universities and research institutions. Notable repositories include Shodhganga (ETDs), Shodhgangotri (synopses), and institutional repositories hosted by IITs, IISc, and CSIR labs.

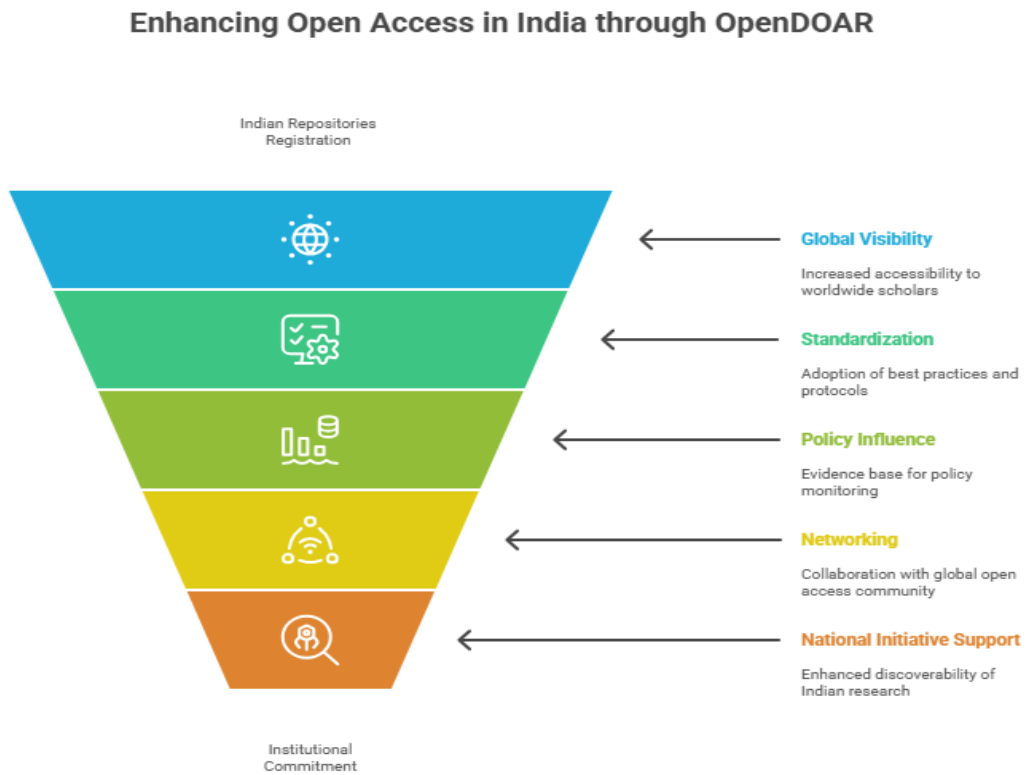
Table 2: Number of Indian Institutional Repositories Registered in Open DOAR (2010-2025)

Year	Number of Repositories
2010	25
2015	52
2020	89
2025	112

This upward trend demonstrates increased awareness and institutional commitment towards open access in India.

5. Role of Open DOAR in the Indian Context

Open DOAR has significantly contributed to strengthening the open access movement in India by providing an internationally recognized platform to register, standardize, and showcase institutional and subject-specific repositories. Its role in the Indian context can be understood through the following aspects:



5.1 Visibility and Discoverability:

When Indian repositories are listed in Open DOAR, they gain global visibility, making Indian research output accessible to scholars worldwide. This boosts citation impact and academic collaborations.

5.2 Standardization and Best Practices:

Open DOAR encourages Indian institutions to adopt standard repository software like DSpace, EPrints, or Greenstone and follow globally accepted metadata and interoperability protocols like OAI-PMH. This improves the quality and interoperability of Indian repositories.

5.3 Policy Framing and Monitoring:

Open DOAR acts as an evidence base for policymakers like UGC, INFLIBNET, and DST to monitor the growth and compliance of institutional open access policies in India. For example, repositories registered in Open DOAR often become benchmarks in national-level audits and rankings.

5.4 Networking and Collaboration:

By being part of Open DOAR, Indian repository managers and librarians can network with the global open access community. This facilitates sharing of experiences, training opportunities, and collaborative projects.

5.5 Support for National Initiatives:

Major Indian initiatives like Shodhganga and Shodhgangotri are registered with Open DOAR, ensuring that Indian theses and dissertations are discoverable at a global scale. This complements India's mission to prevent duplication of research and promote knowledge sharing.

5.6 Encouraging Institutional Commitment:

Open DOAR listing is seen as a mark of credibility and commitment to open access. Many NAAC and NIRF accreditation frameworks now appreciate the existence of institutional repositories, indirectly motivating institutions to maintain high-quality repositories registered in Open DOAR.

Open DOAR not only helps Indian repositories gain global reach but also drives the adoption of best practices and policy development, thus playing a pivotal role in shaping India's open access ecosystem.

6. Challenges in Repository Development

Despite the significant benefits of Institutional Repositories (IRs) in enhancing scholarly communication, knowledge sharing, and long-term preservation, their development and sustainability face numerous challenges. These challenges can be broadly categorized as technical, organizational, financial, cultural, and legal.

Despite steady growth, Indian repositories face challenges such as:

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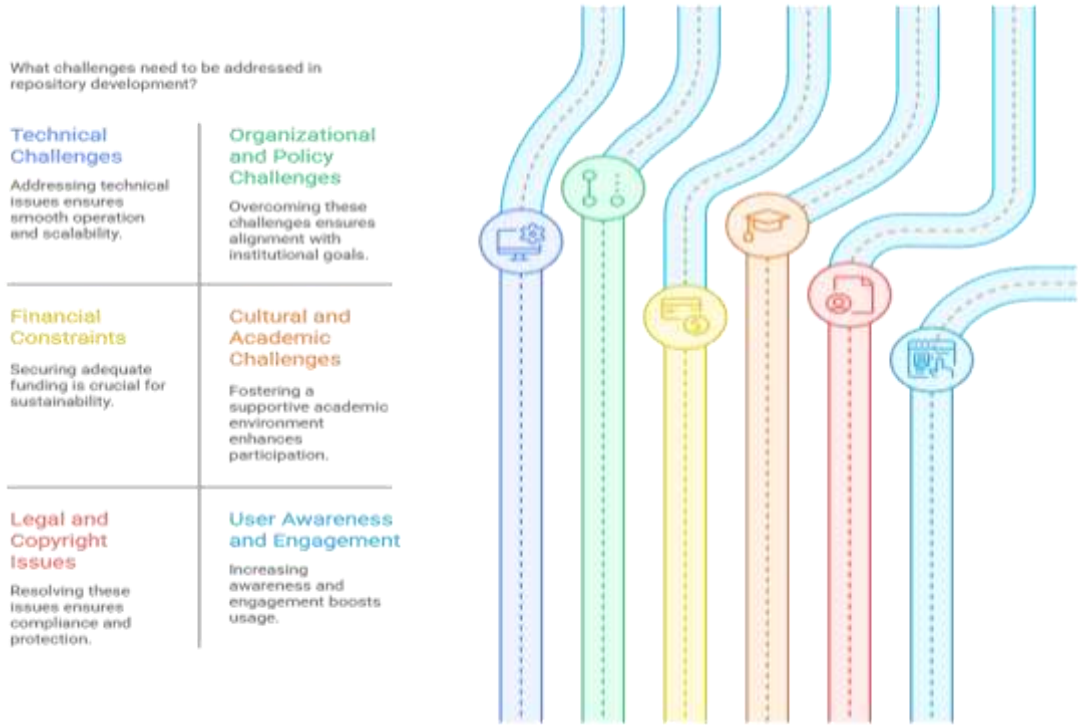

6.1 Technical Challenges

- **Infrastructure Limitations:** Many institutions lack robust IT infrastructure, reliable internet connectivity, or adequate server capacity to host and maintain repositories.
- **Software and Interoperability Issues:** Selecting and maintaining suitable repository software (e.g., DSpace, EPrints, Greenstone) that complies with international metadata standards and supports interoperability can be difficult, especially with limited technical expertise.
- **Digital Preservation:** Ensuring long-term preservation, regular backups, and format migration for digital content is often neglected due to lack of planning or resources.

6.2 Organizational and Policy Challenges

- **Absence of Institutional Policies:** Many institutions do not have clear open access or repository policies, resulting in confusion about content submission, copyright, and quality control.
- **Lack of Skilled Manpower:** There is often a shortage of trained library professionals or IT staff dedicated to managing repositories.
- **Integration Issues:** Integrating the IR with other institutional systems (like Learning Management Systems, Research Management Systems) requires planning and collaboration across departments.

6.3 Financial Constraints

- **Funding Shortages:** Developing and maintaining an IR requires initial investment and recurring costs for hardware, software updates, staff salaries, and capacity building. Many institutions, especially in developing countries, face budget constraints.
- **Sustainability Planning:** Few repositories have a long-term financial sustainability plan, making them vulnerable when funding sources change.

6.4 Cultural and Academic Challenges

- **Low Faculty Participation:** Faculty members may hesitate to self-archive their research due to lack of awareness, misconceptions about copyright, or concerns about plagiarism and misuse.

- **Resistance to Change:** Shifting from traditional publishing models to open access often faces resistance from senior researchers and administrators.
- **Quality Assurance:** Ensuring the quality and authenticity of uploaded content requires careful editorial oversight, which is often lacking.

6.5 Legal and Copyright Issues

- **Copyright Conflicts:** Authors may be unsure about publisher agreements and their rights to deposit preprints or postprints in repositories.
- **Plagiarism Risks:** Open access exposes works to misuse if proper licensing and digital rights management are not in place.
- **Lack of Legal Awareness:** Librarians and faculty may lack clarity on licensing tools like Creative Commons, leading to cautious or incorrect usage.

6.6 User Awareness and Engagement

- **Limited Awareness:** Students, faculty, and researchers often lack knowledge about the existence and benefits of institutional repositories.
- **Promotion and Advocacy:** Insufficient promotional efforts mean repositories may remain underused, limiting their impact.

7. Initiatives and the Way Forward

To strengthen OA through Open DOAR, the following steps are recommended:

- Strengthening national policies to mandate repository deposits.
- Integrating repository development into NAAC and other accreditation frameworks.
- Promoting capacity building for librarians and administrators.
- Encouraging collaborations and knowledge sharing among institutions.
- Regular updates and compliance with Open DOAR's quality standards.

8. Conclusion

Open access repositories play a pivotal role in democratizing knowledge, preserving institutional research output, and enhancing the visibility and impact of scholarly communication. In the Indian context, initiatives like Open DOAR, Shodhganga, and the National Digital Library of India have provided strong impetus for the growth and standardization of institutional repositories.

However, the development and sustainability of repositories continue to face challenges, including technical limitations, lack of institutional policies, funding constraints, low faculty participation, and legal complexities. Overcoming these barriers requires a holistic approach combining clear institutional mandates, robust infrastructure, skilled human resources, and sustained financial support.

Collaborative efforts, capacity-building initiatives, and global partnerships can strengthen India's open access ecosystem. Encouraging active participation by faculty and researchers, raising awareness about copyright and licensing, and integrating repositories with global directories such as Open DOAR will further ensure wider visibility and accessibility of Indian research.

Ultimately, a well-developed repository culture aligns with the broader goals of open science and knowledge equity. As India moves towards becoming a knowledge-based economy, institutional repositories, supported by strong national frameworks and international cooperation, will play an indispensable role in achieving inclusive, barrier-free access to scholarly content.

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