



Professional Skill Development For Managing Open-Source Repositories In Academic Libraries

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DOI - 10.5281/zenodo.17267442

Abstract:

Open-source repositories have become an essential component of academic libraries in India, enabling cost-effective storage, organization, and dissemination of research outputs. Platforms such as DSpace and EPrints support the open-access movement initiated by INFLIBNET and endorsed by UGC policies, significantly improving research visibility. Despite this growth, many librarians face difficulties in managing repositories due to a lack of technical and professional skills.

This paper explores the major challenges encountered by library professionals, including software installation and configuration, metadata creation, interoperability, system administration, digital preservation and user training. It highlights the essential professional skills required for successful repository management, such as metadata expertise, project planning, communication, advocacy, policy development and continuous learning.

The study also suggests strategies for bridging the skill gap, including regular workshops, MOOCs, mentorship programs, institutional support and participation in professional networks like INFLIBNET. National and international training initiatives, including UGC-HRDC refresher courses and SWAYAM, are reviewed as key enablers of capacity building. The paper concludes that equipping librarians with these competencies ensures repository sustainability and enhances institutional rankings which secure the role of libraries as dynamic, future-ready knowledge hubs.

Keywords: *Open-Source Repositories, Professional Skills, Institutional Repository Management, Skill Development, Indian Libraries.*

Introduction:

These days, open-source repositories are very important in academic libraries in India. They help store and share research papers, theses, and data for free. Data shows India has more than 500 such repositories in OpenDOAR (Singh, 2016). Dspace and EPrints save money and let libraries change them as needed. But many librarians find it hard to handle them because of quick tech changes.

This started in early 2000s with open access drive by groups like INFLIBNET (Mittal & Mahesh, 2008). Now, UGC and Indian government has changing policies and forcing the research agenda of all research must be open, so libraries have to share research to improve research visibility. But a study found 60% Indian librarians miss skills for digital setup (Hanumappa et al., 2014). This is the big setback to library community.

The big problem is technical and professional skill gap of library professional

that stops full potential use of these repositories' technology. This paper describes that good technical skill building in technology leading teams and ethics will help librarians. This paper also goes through past studies, main challenges, needed professional skills, training plans and end with suggestions for library professional to cop up with recent changes in development of repositories using open source software.

Literature Review:

The literature review explores previous research and studies related to professional skill development for library professionals, particularly in managing open-source repositories. It highlights the challenges, training initiatives and strategies identified in scholarly works to bridge the technical and professional skill gap.

Sinha and Satpathy (2017) explores the role of librarians in establishing and managing institutional repositories (IRs) in Indian academic libraries. It underscores the necessity for librarians to possess expertise in digital collection management and adherence to the Open Archive Information System (OAIS) standards. They advocate for specialized training to equip library professionals with the skills required to handle digital content and metadata, ensuring effective open-access initiatives.

Mittal and Mahesh (2008) check digital libraries in India, showing skill gaps in repository development. Roy (2012) gives deep look at Indian institutional repositories, he pointed that open-source helps show research visibility but needs better training for metadata description awareness among the library professionals. Kaur (2017) talks about managing repository with issues like training and technical knowledge about open source. Jeevan and Tripathi (2011) has evaluated the

Indian repositories, says only 20% use full open-source capabilities due to technical and professional skills.

Professional Training and workshops are the key element for aware librarian, metro city librarians are much more ahead than other part of India to develop institutional repositories (Gurikar & Hadagali, 2021).

Lihitkar and Lihitkar (2009) highlighted several key constraints in the implementation of Institutional Repositories. They noted the absence of a clearly defined institutional policy, the lack of expertise among both library and IT staff, challenges in customizing repository software to meet institutional needs, and limited awareness regarding strategies for long-term digital preservation.

Shibu (2012) in his book, provides an in-depth analysis of the adoption and challenges of open-source software in Indian libraries. It discusses the transition from traditional library systems to open-source platforms like Koha and DSpace, highlighting the need for librarians to acquire new technical skills to manage these systems effectively. The author emphasizes the importance of training programs and workshops to bridge the skill gap and ensure successful implementation of open-source solutions in libraries.

Key Challenges in Managing Open-Source Repositories:

Open-source repositories are powerful tools for storing and sharing institutional knowledge, research and learning resources. However, successful management of these repositories depends largely on the professional and technical skills of library professionals who maintain them. Following are the challenges in managing open source repositories for library professionals:

1. Technical Skills Challenges:

- **Software Installation & Configuration:** Many librarians are not trained in installing or configuring open-source software like Koha, Dspace or OJS. Library professionals require basic knowledge of Linux, MySQL, web servers, and command-line operations (Patil & Navathe, 2021).
- **System Administration & Troubleshooting:** Handling upgrades, backups, security patches, and bug fixing needs technical confidence. Lack of training leads to dependency on vendors, which reduces cost advantage of open source (Dutta, 2020).
- **Interoperability & Integration:** Linking repository with other systems (OPAC, IR, discovery tools) needs API and metadata knowledge (Mishra & Tripathi, 2022).

2. Data & Metadata Management Skills:

- **Metadata Standards Knowledge:** Librarians need to know Dublin Core, MARC21, OAI-PMH protocols. Wrong or inconsistent metadata reduces repository visibility (Das & Sen, 2021).
- **Content Curation & Quality Control:** Checking for plagiarism, copyright, and proper categorization of uploaded content is time-consuming and needs skill (Kaur, 2020).

3. Digital Preservation & Security Skills:

- **Digital Preservation Planning:** Skills required for creating long-term preservation strategy (file formats, migration, backup schedules). Lack awareness of LOCKSS, CLOCKSS or other preservation tools (Mishra & Tripathi, 2022).
- **Cybersecurity Awareness:** Librarians need basic knowledge of securing servers, managing access rights, and preventing data loss (Patil & Navathe, 2021).

4. User Support & Communication Skills:

- **Training End-Users:** Librarians must train faculty and students to deposit and retrieve content. Soft skills are needed to motivate faculty to share their work (Kaur, 2020).
- **Documentation & Reporting:** Writing usage statistics reports, preparing guides, and maintaining repository documentation needs good communication skill (Das & Sen, 2021).

5. Project Management & Continuous Learning:

- **Time & Resource Management:** Repository management is continuous work; librarians must plan tasks, assign responsibilities, and maintain regular updates (Dutta, 2020).
- **Continuous Skill Upgradation:** Rapid updates in open-source tools require librarians to learn regularly (new versions, plugins, security updates) (Mishra & Tripathi, 2022).

Essential Professional Skills for Repository Management:

To successfully run an institutional repository or any open-source repository, librarians need not only technical knowledge but also a set of professional skills. These skills ensure smooth workflow, user satisfaction and sustainable growth of the repository.

1. Information Organization & Metadata Expertise:

- **Metadata Standards & Cataloguing:** Deep understanding of Dublin Core, MARC21, MODS, and other metadata schemas is essential. Proper metadata helps in accurate search, better discovery, and interoperability (Das & Sen, 2021).

- **Controlled Vocabulary & Taxonomy Building:** Librarians should know how to create subject headings, keywords, and classification systems for digital collections (Kaur, 2020).

2. Digital Curation & Preservation Skills:

- **Content Selection & Quality Check:** Librarians must identify which content is valuable for long-term preservation and ensure copyright clearance before uploading (Mishra & Tripathi, 2022).
- **Preservation Planning:** Knowledge of preservation policies, file format migration, and use of LOCKSS/CLOCKSS or other digital preservation frameworks (Dutta, 2020).

3. Project & Resource Management Skills:

- **Planning & Coordination:** Ability to plan repository workflows, allocate responsibilities, and coordinate with faculty, IT staff, and administration (Patil & Navathe, 2021).
- **Time & Budget Management:** Managing available resources effectively, preparing proposals for funding or grants, and scheduling regular updates and backups (Dutta, 2020).

4. Communication & Advocacy Skills:

- **User Training & Awareness:** Conducting orientation programs for students and faculty about repository use and benefits (Kaur, 2020).
- **Promotion & Advocacy:** Librarians must promote open-access culture, motivate faculty to self-archive, and communicate the importance of repository for research visibility (Das & Sen, 2021).

5. Research & Analytical Skills:

- **Usage Statistics & Impact Assessment:** Ability to generate reports using repository analytics tools (like Google

Analytics, DSpace statistics) to measure impact and plan improvements (Mishra & Tripathi, 2022).

- **Policy Development:** Skills to draft repository policies (submission guidelines, copyright policies, embargo rules) that suit institutional needs (Das & Sen, 2021).

6. Soft Skills & Leadership:

- **Problem Solving & Decision Making:** Quickly resolving issues like duplicate entries, metadata errors or server downtime (Patil & Navathe, 2021).
- **Teamwork & Collaboration:** Working with IT professionals, faculty and administration to ensure repository success (Kaur, 2020).
- **Continuous Learning & Innovation:** Keeping updated with new repository software versions, plugins, open-access policies, and trends in digital libraries (Dutta, 2020).

Developing these skills will not only improve repository efficiency but also empower Indian librarians to become active partners in digital knowledge creation, preservation and scholarly communication.

Strategies for Skill Development:

Equipping librarians with the right skills is not a one-time task. It requires continuous professional development, institutional support. The following strategies can help librarians acquire and improve the technical and professional skills needed for successful repository management.

- **Organize regular hands-on workshops** on Koha, DSpace, OJS and other open-source tools at regional and national levels.

- Encourage participation in UGC-HRDC refresher courses focused on digital libraries and open access.
- Librarians can pursue certifications like Library Carpentry (for coding skills), or MOOCs on metadata and repository management offered by NPTEL, Coursera, and edX.
- Create communities of practice where librarians from different colleges share best practices, troubleshoot issues and collaborate on repository projects.
- Senior librarians with repository experience can mentor junior professionals, guiding them in software installation, policy drafting and metadata curation.
- Use free tutorials, GitHub repositories and documentation of open-source projects to learn at one's own pace.
- Stay updated with research papers, conference proceedings and case studies on digital library development and open-source adoption.
- Institutions should provide servers, internet connectivity and IT support staff

to encourage librarians to experiment and learn.

- Provide recognition (awards, career benefits) to librarians who actively manage repositories and enhance institutional visibility.
- Join organizations like ILA (Indian Library Association), INFLIBNET and SPARC India to access training programs and resources.
- Participate in open-source communities (Koha Community, DSpace Tech Lists) to contribute, learn and get global exposure.

Professional Courses & Programs for Library Professionals:

Professional skill development for library professionals is supported by a variety of structured programs, workshops, and online courses at national, institutional, and international levels. Table 1 highlights some of the most relevant initiatives that enable librarians to upgrade their technical, managerial, and research support skills.

Table 1 Professional Courses and Programs for Library Professionals

Category	Program / Course	Organizing Body / Platform	Focus Area
National	UGC-HRDC Refresher & Orientation Courses	UGC-HRDCs at Universities	ICT skills, digital library management, copyright awareness
	INFLIBNET Training Programs	INFLIBNET Centre	Shodhganga, ShodhShuddhi, DSpace installation & metadata standards, bibliometrics
	DELNET Workshops & Seminars	DELNET, New Delhi	Resource sharing, Koha & DSpace training
	ICSSR / AICTE / NAAC Sponsored FDPs	ICSSR, AICTE, NAAC	Research data management, quality assurance, NAAC documentation

Category	Program / Course	Organizing Body / Platform	Focus Area
Institutional	Library Automation Workshops	Universities / Colleges	Koha, e-Granthalaya, RFID, OPAC customization
	Institutional Repository Workshops	University Library Networks	DSpace installation, digital preservation, customization
	MOOCs & Certificate Courses	SWAYAM, NPTEL	Information retrieval, metadata, data science, digital literacy
International	IFLA CPDWL Programs	IFLA (CPDWL Section)	Professional development, mentoring, global best practices
	Library Carpentry Training	The Carpentries	Data literacy, metadata handling, coding skills
	SPARC Training Programs	SPARC Global	Open Access, Open Data, Open Education advocacy
	OCLC Web Junction Courses	OCLC Web Junction	Library management, digital services
	edX / Coursera / ALCTS Courses	International Platforms	Digital libraries, metadata, AI applications for libraries
Specialized	Copyright & Open Access Awareness Programs	INFLIBNET, WIPO, Universities	Copyright law, OA policy training
	Bibliometrics & Scientometrics Workshops	LIS Departments / INFLIBNET	Research impact analysis, VOSviewer, Biblioshiny
	Digital Preservation & Archiving Training	INFLIBNET, National Digital Preservation Programs	LOCKSS, CLOCKSS, OAIS model standards

These initiatives strengthen the capacity of library professionals to manage digital resources, implement open-source software. These will support institutional goals like NAAC accreditation, NIRF ranking. It will be ensuring that libraries remain dynamic and future-ready.

Why The Library Profession Must Cope With Professional Skill Development:

The library profession must actively cope with professional skill development to remain relevant in the rapidly changing information landscape. Modern libraries are no longer limited to traditional cataloguing and circulation; they now require expertise in open-source software such as Koha, DSpace,

and OJS, as well as emerging technologies like artificial intelligence tools and cloud-based systems. These rapid technological changes make continuous learning essential for librarians.

User expectations are also evolving, with students, researchers and faculty demanding 24/7 access to resources and online services. Librarians must therefore acquire skills in user training, digital literacy programs to meet these needs effectively. Moreover, the growth of open access publishing and institutional repositories requires knowledge of metadata standards, digital preservation techniques ensuring that research output is organized, preserved and globally accessible.

Professional skill development also directly impacts institutional rankings and accreditation processes such as NAAC and NIRF, where library services are evaluated as part of quality assessment. Skilled librarians contribute to higher scores through better resource management, evidence-based reporting. Globally, acquiring new skills enables librarians to match international standards and adopt best practices from organizations such as IFLA, SPARC, and UNESCO.

Continuous learning will support career growth, professional confidence and recognition of librarians as key players in research support and knowledge management. Without these upgraded skills, libraries risk becoming irrelevant in the digital age. Therefore, professional development is not optional but a necessity for libraries to remain sustainable, innovative, and active partners in teaching, research, and community engagement.

Conclusion:

Professional skill development is future challenge for library professionals. It is a necessity for effectiveness of libraries in the digital era. The transition from traditional library practices to technology-driven services such as institutional repositories, digital preservation. They demand a blend of technical, managerial and soft skills. National and international training initiatives, refresher courses, MOOCs, online courses and workshops play a crucial role in empowering librarians with updated knowledge and hands-on expertise. Equipping librarians with these skills not only improves repository management but also contributes to institutional quality indicators like NAAC accreditation and NIRF ranking. Ultimately, continuous professional development

transforms librarians into proactive partners in research, teaching, and innovation. All these are ensuring that libraries remain dynamic and future-ready knowledge hubs.

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