Research Data Management: A practical approach to overcome challenges to boost research

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Abstract

With the advent of new technologies integrated with research data management tools has led to a great revolution in the automation and digitization in libraries to provide innovative services that cater to the modern “smart” users’ needs. At the same time, adoption of various policy frameworks for managing the data and workflow systems along with other Knowledge Organisation Systems (KOS) such as Metadata, taxonomies, ontologies that enable the interoperability of research data that enable information retrieval pose challenges to the information professionals.

The expectations of the library patrons are increasing day-by-day, as the required information need to be made available on their fingertips within the short span of time. Within this framework, Research Data Management (RDM) plays a crucial role in the information management and dissemination of research data.

The paper will first present a brief overview of RDM, detailed literature review regarding the RDM aspects adopted in libraries of the world. It will also describe several tendencies concerning management of repository tools for managing research data and also the showcase the associated challenges in implementing the RDM. This will also depict the proper planned training and skill development for all stakeholders by mentors to train both staff and users are some of the issues that need to be considered to enhance the RDM process. An attempt will be tried to depict and present the suitable policies with a policy framework and workflows with adoption of best practices in RDM will boost the research process in an organisation.

This study also aims to showcase the implementation and use of research data management and the process adopted in the Technical Institute of India referring particularly to the Central Library @ NIT Rourkela, Odisha, India.

Finally, the paper will conclude with some remarkable results, regarding the literature review study as well as the case study presented.
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Outline

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- RDM in India
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- Conclusions
Introduction

- The advent of new technologies along with the development of several research data management (RDM) tools has led to a great revolution in the automation and digitization in libraries, which aim to provide innovative value added services to their patrons.

- The adoption of various policy frameworks for managing the data and workflow systems along with other Knowledge Organisation Systems (KOS), such as taxonomies, ontologies etc. that enable the interoperability of research data and enhance information retrieval, pose challenges to the information professionals within the library context.
The importance of RDM is increasingly recognized from several organizations and institutions around the world, as it plays a crucial role in the documentation, curation and preservation of research data.

- It is natural that libraries can be considered as a critical stakeholder in the RDM landscape.

Globally, there are several cases for libraries participating in research projects, in order to enhance research data retrieval and dissemination.

- Their main aim is to present practices and issues regarding the management of the research data as a part of the research work.
- Also, an important target for the libraries has been to gather information and learn about research data and processes related to it.
Research Data Management (RDM) concerns the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. It aims to ensure reliable verification of results and permits new and innovative research built on existing information*.

The RDM process as follows**:

- Create data and plan for its use,
- Organise, structure and name data,
- Keep it – make it secure, provide access, store and back it up,
- Find information resources and share with collaborators and more broadly, publish and get cited.


**University of Leicester. What is Research Data Management. Available at: [http://www2.le.ac.uk/services/research-data/rdm/what-is-rdm](http://www2.le.ac.uk/services/research-data/rdm/what-is-rdm)
Krishi (Knowledge based Resource Information Systems Hub for Innovations in Agriculture)

Indian Council of Agricultural Research (ICAR), New Delhi
http://krishi.icar.gov.in

Six Sub-Repositories
- Technology Repository
- ICAR Geo-Portal
- Experimental Data Repository
- Survey Data Repository
- Observational Studies Data Repository
- Publication Repository

ICAR Guidelines:
The “ICSSR Data Service” is culmination of signing of Memorandum of Understanding (MoU) between Indian Council of Social Science Research (ICSSR) and Ministry of Statistics and Programme Implementation (MoSPI).

- Host NSS and ASI datasets generated by MoSPI
- Comprehensive set of statistical datasets in social sciences
- ICSSR Data Service: Policy Guidelines [Link to Policy Guidelines]
The Biju Patnaik Central Library (BPCL) is the central library of the National Institute of Technology Rourkela, Odisha, India.
Institutional Repositories @ NITR

DSpace@NITR for the Scholarly publications that includes mainly Book Chapters, Journal Articles and Conference Proceedings.
http://dspace.nitrkl.ac.in/dspace/

E-Theses@NITR is an institutional repository, which includes the Electronic Theses & Dissertations from the academic fraternity
http://ethesis.nitrkl.ac.in/
Halbert suggested the following factors that may hinder the progress of the RDM process:

- Lack of Funding
- Lack of Organizational Structures
- Lack of Professional Preparation
- Lack of Priority among Researchers
- Lack of Institutional Mandates

There are several challenges to be taken care of by libraries in order to adopt RDM:

- Adoption of policies, such as archival policies, embargo, access rights, etc.
- User training of library staff
- Training for stakeholders
- Support from stakeholders, such as technical expertise and academic fraternity
- Voluntary submission of publications to the repositories
- Data curation
- Database creation
- Compliance of policies with funding agencies
- Upgradation of features and software
- Culture change
- Change management
Some of the opportunistic elements that can make difference and boost research in HEIs are the following:

- Policy framework
- Adoption of Knowledge Organisation Systems (KOS) Aspects
- Mapping of experts and data/content
- Awareness and re-use of data/content
- Discovery and analysis tools
- Research Support Service by the library
Conclusions

- Research data management is a complex issue involving multiple activities carried out by various actors addressing a range of drivers and influenced by a large set of factors.

- There is a tendency that libraries are moving towards developing new institutional RDM policies and services considering it as an important part of their future role.

- Institutional policy development is required as a basis for coordinated action on data management.
Thank you!