

RESEARCH DATA MANAGEMENT AND PRESERVATION ROLE OF ACADEMIC LIBRARIES

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Abstract:

Academic libraries nowadays are recognized as research hubs because of their changing nature and philosophy. Research and student researchers have become indispensable parts of academic libraries. The library collection has been designed and maintained, considering the needs of researchers and academics. The National Education Policy 2020 endorses the inculcation of research aptitude among students and teachers through library services and collection. The policy recommends the establishment of an ecosystem in higher education to support research and development activities in education. Building research communities, creating models for research information management, and preserving research material have become prime responsibilities of academic libraries. The management and preservation of data have always been the practice of academic libraries. However, due to the advent of technology, the process and form of data management and preservation have been modified. The present paper is the outcome of an assessment of the functionality of academic libraries in the area of research data management and preservation. The study is based on a review of secondary data, which covers published scholarly articles, books, and news items. It also discussed St. Andrew's College's research ecosystem. It will help to construct a system for research data management and preservation in academic libraries.

Keywords: Research Data Management, Academic Libraries, Research Data Preservation, Research community, National Education Policy

Introduction:

Academic libraries nowadays are recognized as research hubs because of their changing nature and philosophy. Research and research are become indispensable parts of academic libraries. The library collection has been designed and maintained considering researchers' and academics' needs. The National Education Policy 2020 endorses the inculcation of research aptitude among the students and teachers. The policy recommends establishing an ecosystem in higher education to support research and development activities in education. The vision statement of the NEP 2020 envisages three major aspects...

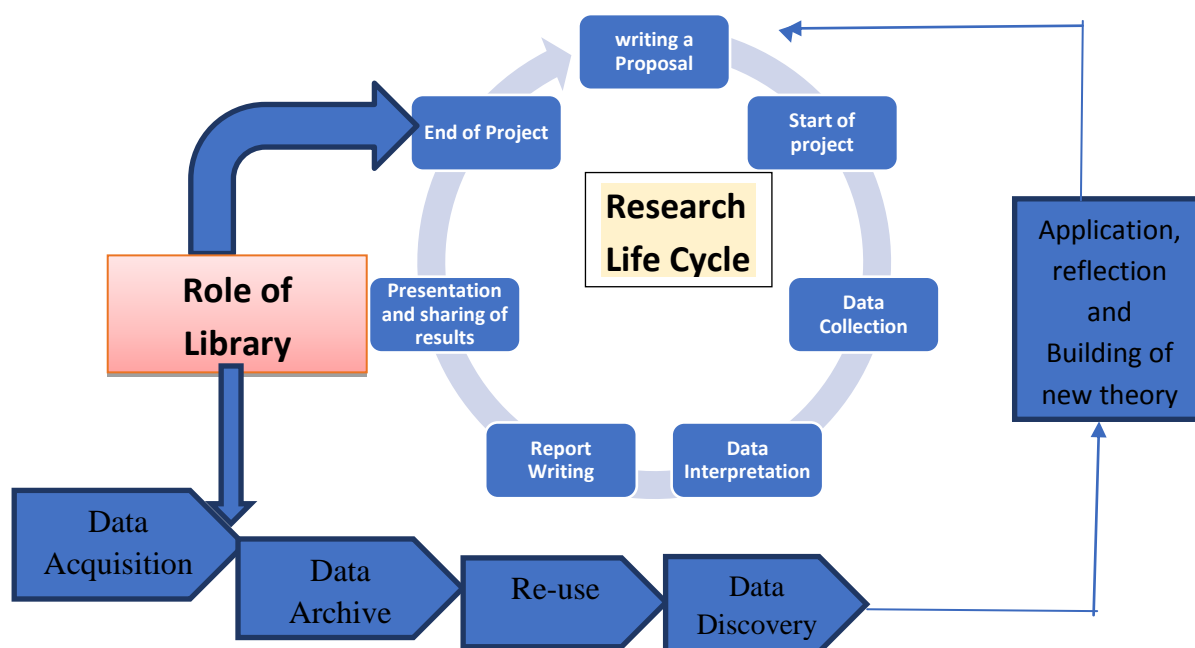
1. Personal accomplishment and enlightenment of the pupil
2. Constructive public engagement,
3. Productive contribution to the society

These can be achieved through quality higher education. The quality of higher education could be attained through effective teaching methods, the introduction of skilled learning programs, the provision of resources (digital or Print), and the management and preservation of research data. Academic libraries strive to achieve this by engaging the research community by providing the right resources and planning effective library services. With the use of ICT nowadays it has become convenient and feasible to provide library resources and services to the users who are not reachable earlier. Building research communities, creating models for research information management, and preserving research material have become prime responsibilities of academic libraries. The management and preservation of data have always been the practice of academic libraries. However, the process and form of data management and preservation have been modified due to the advent of technology.

The following model of the research life cycle illustrates the role of the library in research data management and preservation.

Life Cycle of Research

Figure 1



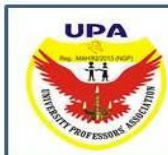
Source: Bryant et al., 2017

Objectives:

1. To analyze existing literature to determine the status of research data management and preservation in academic libraries.
2. To illustrate the research data management system at St. Andrew’s College.

Significance of the study:

The huge production of research information in academics has required data management and preservation for future reference. Academic libraries are one of the areas in higher education



that deal with research information. The new education policy also insists on research and development activities in academics. In this situation the role of academic libraries to maintain and preserve research data becomes crucial. The present paper is an effort to understand the status of research data management and preservation in academic libraries in the light of existing literature. This study will be useful for planning research data management and preservation systems in academic libraries. As mentioned by Aydinoglu, Dogan, & Taskin 2017 research data should be not only cost-effective but it should be reliable, accessible reusable sharable.

Conceptual Framework:

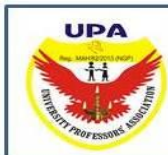
Chen, X., & Wu, M. (2017) studied the research data management system of the chemistry research process. They also analyzed the need for chemistry research data management from the perspective of data generation and collection, data processing and recording, and data preservation and sharing. The study provided a detailed account of chemistry researchers' research information needs. Aydinoglu, A. U., Dogan, G., & Taskin, Z. (2017) investigated the perception and practices of researchers towards research data management in higher education. The findings indicated that researchers were willing to share their research data with other researchers and they were aware of the preservation of research data but they were lacking technical skill regarding this. They also mentioned a lack of institutional support for research data management.

Burgi, P.-Y., Blumer, E., & Makhoulf-Shabou, B. (2017) reported on a data life cycle management project in Switzerland, with a special focus on preservation strategy. The study recommended the provision of a data management plan, solution for data management, preservation policy, and single-point support to access data management.

Fan, Z. (2019) analyzed the role of data curators and their competencies to support the research data life cycle. The study suggested that data curators have a different position in the research data cycle, however, their role was fairly important in the research data management. The study recommended strategies for the improvement of data curators' roles, competencies, and responsibilities.

Piracha, H. A., & Ameen, K. (2019) examined the policy framework of research data management in the University libraries. The results indicate that there is unawareness among library professionals about research data management. It was found that they were not motivated and willing to co-ordinate with researchers of the institution. Also, poor infrastructure, lack of professional skills to handle research data, and lack of networking were the factors affecting the research data management system in the university libraries.

Nwabugwu, M. J., & Godwin, L. S. (2020) discussed RDM in the academic libraries in Nigeria. The study suggested research data infrastructure that included data storage, data access, data reuse, and data preservation for academic libraries. The study further identified RDM tools and applications that were required to be acquired by the academic library. Chawinga, W. D., & Zinn, S. (2020) investigated the status of research data management in medical schools, with a special focus on data generation and preservation. The results indicated that the researchers of medical schools were aware of research data management. The study recommended a change in the traditional role of academic librarians to research data managers.



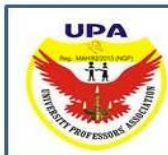
Soojung Kim, & Sue Yeon Syn. (2021) investigated research data management (RDM) services at the National Institute of Health and provided a framework for (RDM) for libraries. The authors used OCLC's three categories and six stages of the data cycle to analyze research data management services. The findings indicated that the model crosstab framework provides an overview of institutions' current RDM services. The library provides support for data creation and analysis, education and expertise services for RDM, and data curation services provided by the information technology department. The study recommended to identify potential areas for RDM expansion, preservation policies, and collaboration with other institutions.

Zibani, P., Rajkoomar, M., & Naicker, N. (2022) reviewed and evaluated research repositories used in higher education institutions. The researchers analyzed the motive behind building research repositories, the benefit to faculty members, and the utilization of research repositories for research. The study offered the sharing and preservation of scholarly research products through research data management. Mthembu, M., & Ocholla, D. (2022) discussed a strategy for the provision of research data management (RDM) in higher education institutions. The study used the community capability maturity model framework and the digital curation center lifecycle model as a theoretical base for the research. The findings indicated that RDM policy was absent in the university, however, research activities were carried out by the faculty members. Also, the study identified a lack of infrastructure and finance in the provision of RDM services.

Perry, A., & Netscher, S. (2022) investigated time spent on data curation by the library staff, especially cleaning and documenting data for data sharing. The major focus of the study was on the cost involvement in research data management. The study identified that the size of the data and personal information contained in the data have a great impact on the time spent for curation. Machimbidza, T., Mutula, S., & Ndiweni, M. (2022) explored research data management services in Zimbabwean academic libraries. The result revealed a lack of technological support in data collection. Creation, preservation, and archiving, besides this librarians were lacking basic IT and computer skills to handle research data management. There were no proper policies to handle copyright and intellectual property rights issues, research ethics, and data licensing. Maurya, A., & A., S. (2022) discussed the research data preservation practices of LIS professionals and established that research data curation in the process of research data management and preservation was a crucial task for information professionals. The findings indicated that the professionals store their research data on personal computers, laptops, and external hard disks. The study found that library professionals had adequate knowledge about data curation and preservation as compared to other academic institutions.

Ismail, M. I. (et...al) 2022 analyzed researchers' behavior in building research data management systems. The major focus of the study was on the role of academic librarians and the researcher's involvement in the process of data creation, data storage and preservation, and data sharing for research data management. The study found that researchers generated data according to their understanding and preferences, they did not follow any standard for doing so. The study recommends that librarians should take the initiative to help and educate researchers for research data management.

Martin-Melon, R., Hernández-Pérez, T., & Martínez-Cardama, S. (2023) explored the research data services (RDS) provided in Spanish academic libraries. The authors conducted



website content analysis of academic libraries to ascertain how they were promoting and providing RDS services. The findings indicated that there was no institutional policy existed to provide RDS from the library. However, data management and preservation in the repository were done effectively. The major services provided through RDS were guidance for research writing and collaboration among academic libraries. The study suggested training for the library staff for research data processing.

It is evident from the review of literature that the topic has been researched across the world however very less studies found in the context of India. Also, researchers did not come across studies specifically on data management and preservation in Indian Universities. Therefore to understand the status of data management and preservation methods researcher intended to conduct this review on research data management and preservation in academic libraries.

Research Methodology:

For the present study data is collected from the published secondary sources, which includes research articles published during the period 2017 to 2023. All the collected data were analyzed qualitatively and findings were incorporated with the suggestion. This study also illustrates the research ecosystem for data management and preservation of St. Andrew's College.

St Andrew's College Initiative for Research Data Management and Preservation:

Ecosystem for Research:

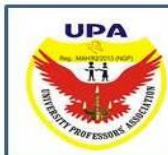
We at St. Andrew's College have developed an ecosystem for research that helps to inculcate and encourage research aptitude among students and staff. Following are the sub-systems of the research ecosystem.

Annual Staff Seminar and publication:

Annual Staff seminar is a multidisciplinary research activity in which staff members from different departments present their research work. The presented papers after peer review get published in the college's in-house research e-journal. This seminar allows staffing members to disseminate their research work in front of a multidisciplinary crowd and to have different perspectives for their research work.

Student research Seminar:

The students at St. Andrew's have the opportunity to write research papers with the help of a mentor teacher and present them in the students' research seminar. The objective behind this activity is to prepare students to participate in the University of Mumbai research convention Aavishkar. This activity provides a platform for young researchers to use their imagination and creativity in research work. Mentor teachers help students in the finalization of topics, data collection, and writing research reports. Students at the end present the papers in the student seminar and two outside judges are called to evaluate the students' research work. The papers selected after peer review get published in the book. Eventually, students are encouraged to present their work at the University of Mumbai research convention Aavishkar.



Dspace Institution Repository:

The research data management and preservation in St. Andrew's College was done with the institutional repository. This repository consists of college, staff, and student publications. Access to the repository is provided on an intranet basis. The prime objective of the repository is sharing resources among the staff members and students. This repository aims to provide guidelines to the students for different types of research writing. The repository includes all college publications that provide all historical details about college progress. It has teacher's writing in various areas, which guides the students in conducting research activities.

Links for E-resources and Introduction:

Web Links to various free e-resources are provided on the library web page. Beginning of every academic year students are introduced to these e-resources and they are oriented to use these resources for their academic and research work. In these sessions, students learn how to retrieve relevant data precisely.

E-guide for conducting quality Research:

The research tab is provided on the college website and includes detailed guidelines given by UGC to conduct research ethically. It has various guidelines of UGC, like academic integrity and research quality, UGC documents about plagiarism and self-plagiarism, etc. It gives detailed information about anti-plagiarism software that the college has.

Analysis and Findings:

It was found that although research data management and preservation are significant to maintain still there was lack of awareness among the researchers and library professionals. The term is familiar to them but they were not aware of the implementation process. In some cases, it was found that there were no adequate support provided by the institution for RDM and preservation. Several institutions do not have proper policy documents to maintain research data. Besides this library staff was not skilled or professionally sound enough to perform this task. Research data curators are highly in demand however in some libraries these professionals were not available. However, some universities used the RDS system to guide research writing and collaboration among academic libraries.

Suggestions:

Following suggestions incurred from the findings of the study...

- Training should be provided to library professionals to handle research data management and preservation techniques.
- Institutional policy should be in place for RDS.
- The researcher should be made aware of RDS.
- Training programs should be conducted for researchers.
- There should be professionals appointed for research data curation

Conclusion:

Building a research community and developing a research ecosystem within the institution is the utmost requirement of higher education. According to Bunkar, A. R., & Bhatt, D. D. (2020), interventions of ICT generate huge amount of research data, it also allows for sharing of data that facilitate authenticity and integrity in research. Hence, the responsibilities of traditional academic librarians are taking place with the new tech-savvy information managers. Librarians play a key role in the process of knowledge sharing and research data management and preservation, as well as data curators. They are recognized as facilitators for information retrieval and provision. Therefore it is required that librarians should be updated with new technological developments. They should be vigilant about users' information needs and provide them with information about research funding agencies, research ethics and guidance, publication policies and the areas that require more attention need to be assessed regularly. It will add value to the existence and role of academic libraries in the institutions.

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