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Managing the preservation and retrieval of research projects data in specialized research centers in Egypt: a field study

Research – English Summary

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Abstract

The objective of this paper is to reveal the current situation of how to manage research projects data and methods of preserving and accessing them in the Egyptian specialized research centers of the Ministry of Scientific Research, monitoring the practices and activities that take place in the research data management units / or departments, and identifying the challenges they face and the support services they provide to researchers. The study followed the field survey approach based on a checklist as a methodological tool to collect data from the research centers and institutes of the study community. The study concluded with the following most important results: the absence of institutional policies for the management of research data in most of the centers of the study community and the nature of the services that were available in the research libraries of the centers of the study community are still provided in their traditional form and are in the process of planning. It ended with a set of recommendations, the most important of which are: The need for the initiative of officials of research centers and institutes the study community to develop institutional policy, procedures, and guidelines that must be adhered to throughout the life cycle of the research project, to improve the quality of research project data and manage it efficiently, as well as the need to activate research data management services, and develop the capabilities of research library specialists.

Keywords
Research data, research projects, data management, research centers, research data management

I. Study Overview and Methodology

The source document presents a comprehensive field study analyzing the management, preservation, and retrieval of research project data at specialized research centers in the Arab Republic of Egypt.

• Objective: The primary goal was to assess the current state of Research Data Management (RDM), identify the procedures and stages followed for data preservation and retrieval, understand the key challenges faced by the institutions, and evaluate the role of their affiliated libraries in supporting RDM activities.

• Methodology: A descriptive-analytical field survey was employed. Data was collected using a checklist and semi-structured interviews with officials at the research centers.

• Scope: The study's practical phase began in July 2022. The research community comprised eight specialized research centers and institutes affiliated with the Ministry of Scientific Research in Egypt.

Participating Research Institutions

The study focused on the following eight major research institutions:

#	Institution Name	Established
1	National Research Centre (NRC)	1956
2	Theodor Bilharz Research Institute	1964
3	Research Institute of Ophthalmology	1989
4	Egyptian Petroleum Research Institute (EPRI)	1974
5	Central Metallurgical Research and Development Institute (CMRDI)	1983
6	City of Scientific Research and Technological Applications	1993
7	National Authority for Remote Sensing & Space Sciences (NARSS)	1991
8	National Institute for Standards (NIS)	1963

2. Key Findings on the State of Research Data Management (RDM)

The field study identified significant deficiencies in the formal application of RDM principles across the participating centers. Practices are largely informal, inconsistent, and lack strategic oversight.

A. Institutional Policies and Governance

A foundational weakness is the absence of structured institutional governance for RDM.

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• Lack of Formal Policies: A significant majority of institutions (62.5%) have no institutional policy for managing research data. While 37.5% of centers claimed to have policies, the study found no evidence of formal, written, and comprehensive RDM policies being implemented.

• Fragmented Responsibility: Responsibility for RDM is scattered across various administrative units rather than being centralized. The "Research Projects Unit" was the most frequently cited responsible body (62.5%), followed by the "Technical Office and Project Management" (50%) and the "IT Unit" (37.5%). Notably, affiliated libraries and research ethics committees were not assigned any responsibility (0%).

• Absence of Dedicated Departments: While 62.5% of centers reported having a specialized department involved in data management, the lack of formal policies means their roles are ill-defined and often limited to financial or administrative support rather than comprehensive data lifecycle management.

B. Data Preservation and Retention Practices

While data is being saved, the methods are inadequate for long-term security, accessibility, and reuse.

• Prevalence of Preservation: All participating centers (100%) engage in preserving data from research projects.

• Unsustainable Methods: The preservation is overwhelmingly done using traditional methods (e.g., paper records, local servers), not in sustainable, long-term digital repositories. This exposes valuable data to the risk of loss.

• Inconsistent Retention Periods: There is no standard for how long data is kept. 50% of centers retain data for "more than 6 years," while 25% reported having "no defined period."

• Primary Motivation for Preservation: The main driver for preserving data is for potential reuse, cited by 87.5% of the institutions.

C. Data Sharing and Accessibility

The culture of data sharing is almost non-existent, severely limiting the potential for collaboration and verification.

• Minimal Data Sharing: An overwhelming majority (75%) of the research centers do not share their research data. Only 25% (two centers) permit sharing, and this is subject to internal permissions.

• Barriers to Sharing: The primary reasons cited for not sharing data are the "confidentiality of project data" and the "absence of an institutional policy" that would govern such activities.

• Restricted Access: Even within institutions, access is not guaranteed. 62.5% of centers described their data as "open within the institution only," while 25% stated it was "open within the institution but restricted from outside."

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3. Major Challenges Impeding Effective RDM

The study identified a range of critical challenges that prevent the development of robust RDM systems. The most significant issues are related to governance, human resources, and infrastructure.

Rank	Challenge	Percentage of Centers Citing
1	Absence of institutional policies for RDM	50%
1	Lack of specialists in digital preservation	50%
2	Lack of training skills for data management	37.5%
2	Absence of data management plan creation	37.5%
2	Lack of data curation applications & embedding data in repositories	37.5%
3	Inadequate technological infrastructure	25%
4	Lack of human resources	12.5%
4	Lack of information on metadata languages and standards	12.5%
4	Lack of guiding principles for efficient data management	12.5%

4. The Role of Affiliated Libraries in RDM

The study reveals a significant disconnect between the potential role of research libraries and their current contribution to RDM. Libraries are largely unengaged and unequipped to provide necessary support.

• Minimal Service Provision: 75% of the affiliated libraries at the surveyed research centers provide no RDM services. Only 25% (two centers) offer any form of support.

• Barriers to Library Involvement: The primary reasons for this lack of engagement are systemic:

◦ Lack of Awareness (62.5%): The most significant barrier is a general lack of awareness among library staff and institutional leadership about the role libraries can play in RDM.

◦ Skills Gap (50%): A critical shortage of skills among library specialists in the field of data management prevents them from offering services.

◦ Lack of Guidance (50%): There is no instructional guide or framework defining what RDM services should be offered.

◦ Resource Constraints (12.5%): A lack of financial and technological resources was cited as the least common, yet still present, barrier.

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5. Strategic Recommendations

Based on the comprehensive findings, the study proposes a set of strategic recommendations directed at both institutional leadership and information professionals to address the identified gaps in RDM.

For Research Institutions and Decision-Makers

1. Establish Formal Policies: Immediately begin the process of creating and implementing official, institution-wide RDM policies. These policies should formalize procedures and assign clear responsibilities for every stage of the research data lifecycle.

2. Invest in Infrastructure: Allocate dedicated financial resources to develop the necessary technological infrastructure for robust data management, preservation, and retrieval, ensuring long-term data security and accessibility.

3. Create a Shared Data Repository: Initiate a collaborative project to establish a shared data repository for all affiliated research centers. This repository should be built on FAIR principles (Findable, Accessible, Interoperable, and Reusable) to maximize the value and impact of research data.

4. Activate RDM Services: Assess institutional capabilities and develop a plan to formally launch RDM support services for researchers and research projects.

For Libraries and Information Professionals

1. Develop Professional Capabilities: Library associations and institutions must prioritize training and professional development to build the capacity of information specialists in all aspects of RDM.

2. Provide Training and Guidance: Librarians should lead efforts to provide training courses for researchers and staff on best practices for data management, documentation, and preservation.

3. Define New Roles: Create official job descriptions and roles for "data specialists" or "data librarians" within the library structure to institutionalize RDM support.

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