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Edited by
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Digital Institutional Repositories : A Technology for Sharing the Intellectual Capital of Institutions

P. S. Rajput*

Institutional Repository/Digital Repository (IR/DR) is an electronic system that captures, preserves and provides access to the intellectual output of a community. Digital repositories are emerging technologies for information sharing and managing the scholarly communication in institutions. The study attempts to know the concept and advantages of Institutional Repositories, explains the objectives and contents covered by the IRs. This study also analyses the data collected from the Directory of Open Access Repositories (OpenDOAR). The paper finally highlights the suggestions for creating and managing the Institutional Repositories (IRs) in India.

1 Introduction

The current practices of digital preservation have created many challenges and opportunities for library personnel. With the rapidly evolving technology it has become imperative for traditional libraries to transform themselves into digital repositories. Nevertheless the flexibility of digital technology allows it to handle scholarly communication effectively. In the information society, free flow of information is a fundamental principle for bridging the knowledge gaps between privileged and under-privileged communities.[1] The open

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access movement has encouraged the unrestricted sharing of research results.

The higher education institutions have witnessed the emergence of IRs in the past few years. An institutional repository is a digital archive used to amalgamate and disseminate the scholarly publications owned by faculties and institutions. The goals of such systems are to improve scholarly communication and to disseminate the research results to the community.[2]

An institutional repository (IR) brings together the full and wide range of its research on one platform. It acts as an advertisement for institutions for funding sources and ensures long-term preservation of academic output. As faculty finds its research work more findable and usable, the chances of its citation also increase. As IRs have great potential to bring significant benefits to an institution by adding to its status and public value, libraries have been quick to implement them.[3] Digital repositories collect, store, preserve, index and share the intellectual capital of faculty members and research scholars.[4]

2 Meaning and Definitions of IR

In the simplest terms, an Institutional Repository (IR) is an electronic archive of the scientific and scholarly outputs of an institution, which have been stored in a searchable digital format and which can be retrieved for later use internally, nationally and worldwide. A repository supports mechanisms to import, identify, store, preserve, retrieve, and export an institution's digital assets.

The term 'institutional repositories' can be applied to a number of different digital storage initiatives, which are often referred to as, 'digital repository', 'digital archives', or 'digital libraries'. Although in practice each of these have slightly different functionality and underlying philosophies.[5]

Some of the selected definitions are given below that have helped considerably to understand the IR concept.

According to Barton and Margaret (2004)[6], "Institutional Repository is a database with a set of services to capture, store, index, preserve and redistribute a university's scholarly research in digital formats".

"A university-based institutional repository is a set of services that a university offers to the members of its community for the management

and dissemination of digital materials created by the institution and its community members. It is most essentially an organisational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organisation and access or distribution." (Lynch, 2003)[7]

"An institutional repository is a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and accessible to end users both within and outside the institution, with few if any barriers to access". (Crow, 2002)[8]

3 Objectives of the Study

The major objectives of the study are:

- To know the concept, uploaded contents and benefits of Institutional Repositories.
- To identify the current status of Institutional Repositories (IR) available on OpenDOAR (Directory of Open Access Repositories).
- To recognise the geographical location of IR at international level.
- To find out the growth of IRs and analysis of IRs available on OpenDOAR.
- To interpret the importance of IRs to handle the vast amount of scholarly communication and to provide prompt, authentic, efficient and effective services.
- To suggest measures to overcome the problems faced during the creation of IRs and their popularisation among professionals.

4 Contents to be Deposited in IRs

Intellectual output producers in the coordination with IRs managers decide the variety of materials to be deposited in IRs. Institutional Repositories may include:[9,10]

- Preprints and post-prints of research papers
- Conference papers, proceedings and conference presentations
- E-theses, dissertations and institutional publications

- Books and datasets
- Working papers, plans and reports
- Teaching and learning materials (lectures, presentations, syllabi, etc.)
- Multimedia collection (photographs and audio-video recordings) and special collections
- Student assignments, projects and digitised institutional assets
- Exhibition documents, departmental materials/records and maps
- Technical reports, research reports and newspapers.

5 Advantages of IRs

The main advantages of IRs are as follows:[11]

- Users can search material through a search engine without paying any charge or subscription fees.
- Easy access to grey literature and other material like working papers, pre-prints, white papers and conference presentations that are not easily found at one place.
- Facilitate research community by providing flexible ways and opportunities for new forms of scholarly communication.
- Provide faster communication and minimises unwanted duplication.
- Allow faculties to self-publish their preprints immediately and receive immediate feedback at the same time.
- Ensure continued access, i.e. the file can be opened in the latest version of Microsoft Word irrespective of the one it was submitted in, even after years from now.
- Serves as a marketing tool as the entire scholarly material is available at one place, it reflects the intellectual achievement and increases the visibility of the library and the institution as well.

- Availability of all types of materials whether scholarly or non-scholarly, traditionally published or unpublished.
- Individuals are personally benefited as they get maintenance free, wider publication in no time, persistent URLs, safekeeping and showcasing of their material with lower technology barriers and more citations as well.
- Ultimately they promote teaching and learning activities.

6 International Scenario of IRs

To know the current status of IRs in the world the present study has been confined to the analysis of IRs available on Directory of Open Access Repositories (OpenDOAR). The total number of 4237 institutional repositories are listed on DOAR from all over the world on different subjects.[12]

6.1 Geographical Location of IRs in the World

Many organisations, institutions and universities have developed IRs in their premises to satisfy the various information needs of users. Therefore they are providing better services to their users. Table 1 reveals the number of IRs available in various geographical areas of the world.

Table 1: Geographical Location of IRs in the World

Location of IRs	No. of IRs	Percentage
Africa	212	5.00%
America	1161	27.40%
Asia	837	19.75%
Europe	1926	45.45%
Oceana	101	2.38%
Total	**4237**	**100%**

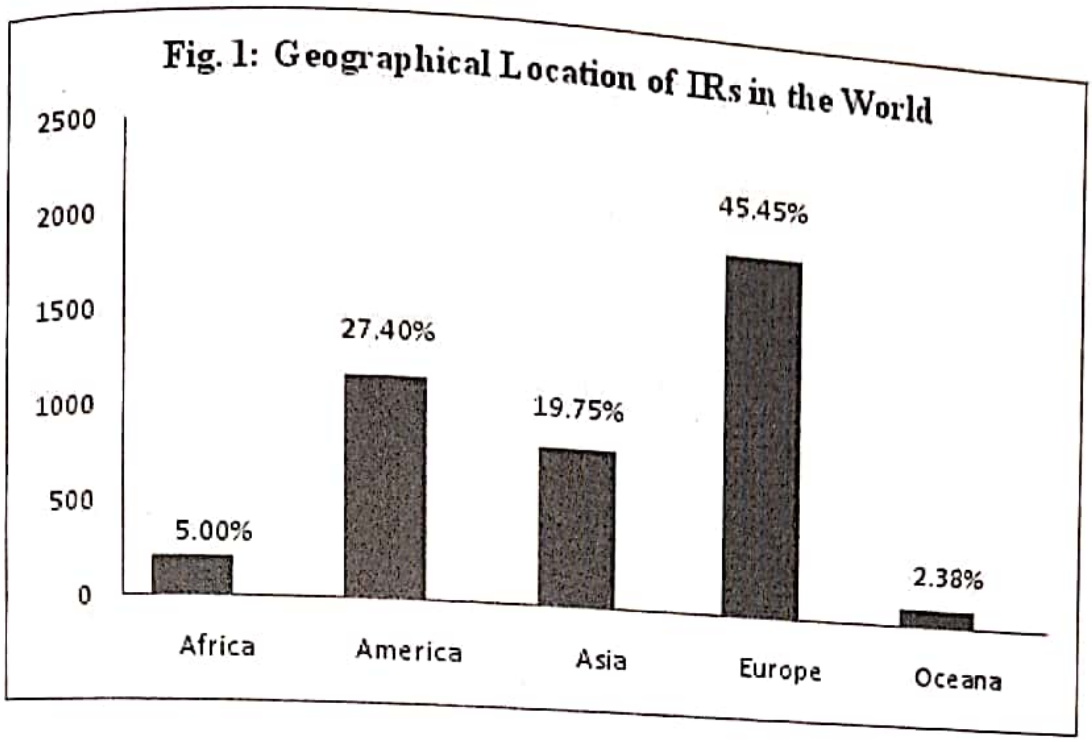

Table 1and Fig. 1 show that the majority of Institutional Repositories, i.e. 1926 (45.45%) are located in Europe followed by 1161 (27.40%) in America. Similarly, 837 (19.75%) are in Asia and 212 (5.00%) are located in Africa. As found the minimum IRs are located in Oceana, i.e. 101 (2.38%).

6.2 IRs: Top Fifteen Countries in the World

Various IRs are available for searching intellectual output. Table 2 analyses the country-wise Institutional Repositories registered over Open DOAR in the world.

Table 2 IRs: Top Fifteen Countries in the World

Country	No. of IRs	Percentage
USA	580	13.68%
UK	283	6.67%
Japan	237	5.59%
Germany	236	5.56%
Spain	150	3.54%
France	142	3.35%

Italy	140	3.30%
Brazil	127	2.99%
Croatia	118	2.78%
Turkey	111	2.61%
Poland	107	2.52%
Indonesia	104	2.45%
Ukraine	96	2.26%
Canada	87	2.05%
India	86	2.00%
Other Countries	1633	38.54%
Total	**4237**	**100%**

Table 2 depicts that the maximum number of IRs, i.e. 580 in the world are in the USA. The UK is the second highest country with 283 IRs in the world. Japan with 237 IRs is the third highest. Next in the sequence is Germany with 236, Spain with 150, France with 142 and so on as can be clearly seen in Table 2. It can also be seen that India has the lowest number of IRs, i.e. only 86 out of overall 4237 IRs in the world.

6.3 Year-wise Growth of Open IRs

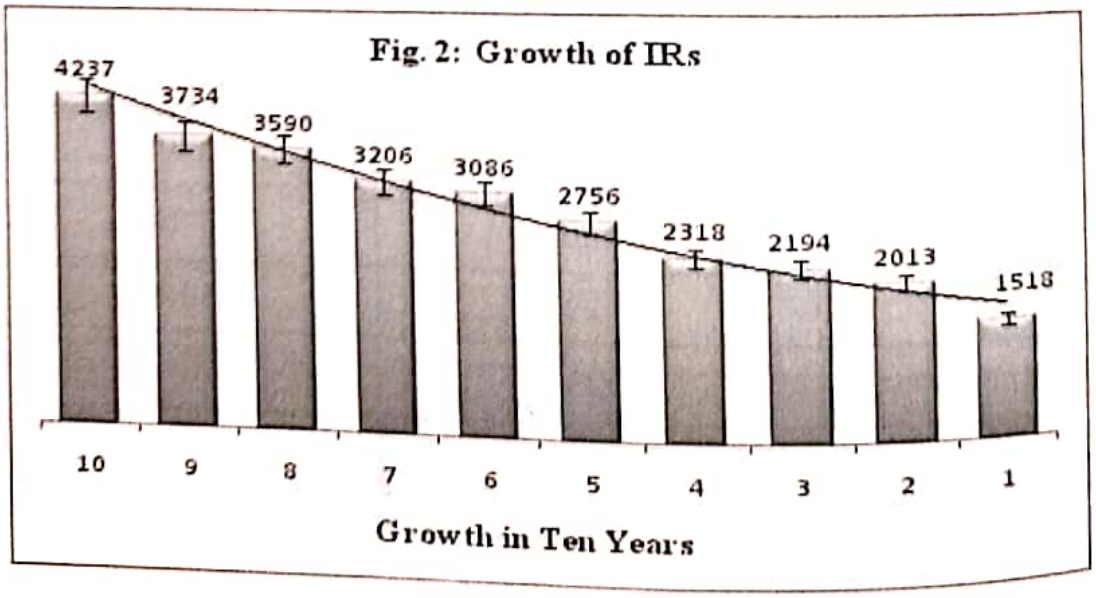

Fig. 2: Growth of IRs

The libraries and information centres in the world are digitising their intellectual resources in the form of institutional repositories and are making them accessible globally. Fig. 2 states the year-wise growth of IRs in the world.

From Fig. 2 it is noticed that 12 (24.4%) IRs were established in 2009, 11 (22.4%) in 2006 and 9 (18.3%) in 2008. Similarly, 8 (16.3%) in 2005 and 5 (10.2%) in 2007. Only 4 (8.1%) IRs were established in 2004. It is further observed that most of the IRs have been established in 2009.

6.4 Software Used for Creating the IRs

Anyone can create and manage his intellectual output through various types of open source software. Fig. 3 depicts the number and percentage of softwares used by IRs at international level.

Fig. 3: Software Used in IRs

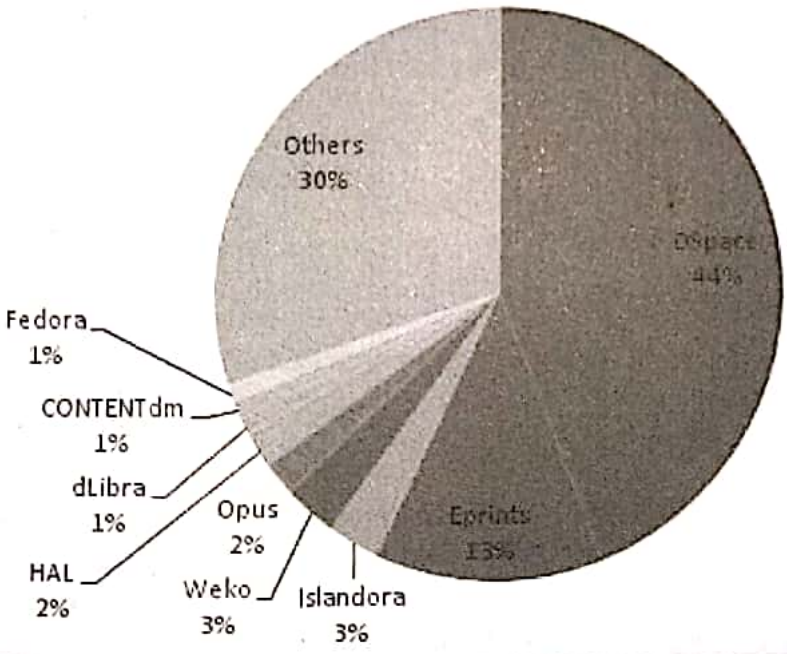

Fig. 3 shows that the majority of 44% IRs use DSpace software, whereas 13% IRs use Eprints software. 3% of IRs use Weko and Islandora respectively. Similarly, Opus and HAL are used by 2% of each IR. Only 1% of each IR uses Fedora, CONTENTdm, and dLibra software. The remaining 30% of IRs use other softwares.

7 Suggestions

Below are some valuable suggestions for setting an IR and to enhance the awareness of IRs among LIS professionals and faculty as well :

- The leading LIS professional bodies like INFLIBNET, NISCAIR, DRTC and DELNET must take initiatives for creating awareness and promoting the concept of IRs.
- The government and the government agencies including universities and important research establishments like CSIR, ISRO, DRDO, ICAR and ICMR, must take a policy decision for setting up of IRs in their respective organisations.
- Awareness programmes should be organised for librarians and users highlighting the services and advantages of IRs.
- All the teaching departments of Library and Information Science in India must include IRs as an essential topic to be discussed at length in their curriculum.
- The workshops, seminars and short training programmes should be conducted for creating expertise in setting up IRs.
- Establishment of IRs should be the top priority of Indian institutions.
- Scholarly contributions to IRs can be conditioned to incentives and can be made mandatory at certain levels.
- It is recommended to set up a registry of Indian repositories in line with Registry of Open Access Repositories (ROAR) and Directory of Open Access Repositories (OpenDOAR).
- Leading universities can ask commercial and societal publishers to allow individual scientists to deposit their research publications from the concerned individual institutional IRs without infringement of publishers' IPRs.
- Institutions should have the scope for basic infrastructure required for running of IRs.

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