INSTITUTIONAL REPOSITORY USING IN THE DIGITAL LIBRARY

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Abstract

We begin by looking at the concept of institutional repositories in the Indian Universities and **Research and development (R&D)** organisations. Provides an overview of some of the registered institutional repositories that are in top position among the other repositories of the world. The present trend and developments of IR in India is discussed in detail. Analyses the websites of the IRs in India to determine the total deposits to each IR and the use of various open source software for their development. The result reveals that the growth and development of IR in India is encouraging with the significant proliferation of open access and digital library initiatives. The study will help the institutions in India which are in their initial stages or planning stage to develop their own IRs.

Keywords: Digital libraries in a digital world, Repositories and digital libraries, Institutional Repositories, Repositories and research impact,

Introduction

Institutional Repositories help to provide seamless access to information and knowledge in a digital world to the students, faculty members and researchers of an institution and thus serve its users' information needs. It reflects the past and present research interests of the institution as well as its future research goals. In today's environment of knowledge based society every aspect is influenced by Information and Communication Technologies (ICTs). The electronic environment has resulted into an increase in the overall volume of research and communication and publishing of these scholarly outputs in digital format. Moreover, the increases in the cost of the academic journals have been limiting the access to the vast amount of scholarly information. It is increasingly becoming impossible for any institution to provide access to them because of the limited funds. Library and information centres are the means to preserve and communicate the scholarly output of an institution. Therefore, to make the scholarly literature available and accessible globally and to ensure their long-term preservation the concept of open access and institutional repositories has emerged. Today Institutional repository is a global phenomenon that helps in promoting the research output of an institution to all its members in an open access environment.

Digital libraries in a digital world

In the past ten years, the concept of the 'digital library' (or the 'electronic library') has been increasingly used, and now crops up relentlessly in the professional literature. This is not surprising, as the combination of low cost computing and high-speed networking now affects all areas of life in the developed world. 'Digital banking', 'online shopping' and 'digital television' are transforming the ways in which we

transact our daily business and consumer entertainment. We also book holiday's online, gamble on the Internet and conduct hundreds of other activities online. Increasing numbers of people work from home, using telecommunications to recreate their office environments in virtual space. As content goes online, and the means of access to it becomes as available and familiar as clicking on the television set, so it is a natural expectation that libraries too will join the interconnected web world.

Librarians are, however, well aware that there are also dangers surrounding the concept. It is often stated that the World Wide Web, or the Internet itself, is one huge electronic library. This is only true in the most general sense that it requires navigation aids in order to discover particular content. In fact, the Internet is no more a library than is a city or a country. Of course the Web contains masses of documents of all types, and in that sense it is like a library – but all libraries – even 'universal libraries' such as the Library of Congress – are based on selections.

On the basis that it reflects the culture of a nation, universal libraries sometimes collect material which it is hard to imagine being of interest to scholars and researchers. The National Library of Australia, for example, reported in 2002 that it was now harvesting pornography published on the Australian web domain, for the use of researchers (BBC, 2002). It had not at that stage developed a policy on how to allow access to the material, however. It was also careful to confirm that it would be collecting only legal pornography.

Repository locus: institution vs. discipline

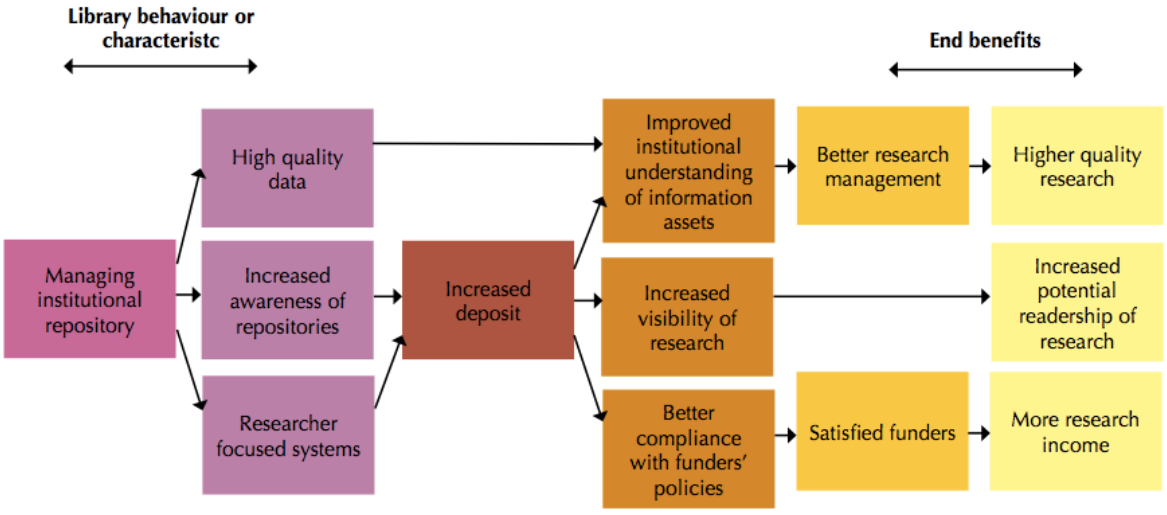
There are significant differences in the ways in which academic and researchers work in different domains. For the purposes of managers of institutional repositories, the most significant relate to the place of peer review – the process of 'refereeing' by which research is validated by peer experts, or referees, and thereby permitted to enter the discourse and body of knowledge of a particular knowledge domain. What all domains hold in common is their need for peer review, if only to allow the researchers to point to citations in reputable journals in order to prove their credibility in the field, and to enhance their career prospects. Physicists, however, tend to be happy to have their research papers circulated widely while the research described in them is still invalidated, and, therefore, tentative. This form of paper, known in predigital times as the pre-print, is normally eventually replaced with a refereed version. Prior to the Web, scientists would send copies of preprints to fellow researchers working in institutions across the world, or distribute them at conferences, and thereby seek early feedback. Physicists, particularly in high-energy and particle physics, work at rapid speed, and are not content to wait for official peer review by journals to validate their ideas.

In other disciplines, pre-prints are scarcely used (perhaps only to a small and very select group of peers), and research is carefully guarded until after refereeing, when the researcher, satisfied to have their work validated, will release it to the world in the form of journal publication. Not surprisingly, the fields of medicine and life sciences research behave in this way. The consequences of unverified medical hypotheses leaking into the public domain and creating hysterical stories in the press can obviously be very serious for a researcher. In these post-print oriented domains, repositories are still very useful, if only because the paper, once refereed, can then be placed immediately into a repository and made findable on the Web. Journal

publication, even in electronic form, has an associated time-lag between acceptance and publication which can be many months, and researchers want their work to appear as early as possible.

Repositories and digital libraries

Academic libraries today are increasingly involved with the digital library agenda represented at conferences such as JCDL because they see that there is a need to develop institutional digital libraries alongside subject-based digital libraries. The institutional library needs a presence on the Web – a place to describe its print and web-based services, and to bring together the content it makes available to its users. It needs to present its catalogue but also its other finding aids – to its collections of e-journals, its collections of digitised materials from its treasures, and other lists which are most usefully presented separately, such as electronic reserve texts or past exam papers. Institutional libraries also are growing the range of services they can offer via their website. Examples of these include interlibrary loan request – sometimes by electronic full-text delivery; requests to retrieve store items; book loan renewals and electronic reference support. In addition, library services need to be distributed out to other useful environments, such as student virtual learning environments and university portal sites. They need to be 'skinned' in various ways, and to be capable of being searched in an aggregated and in a user-defined sub-aggregated fashion. Some of the technology involved in providing these apparently obvious functional enhancements is astonishingly complex and difficult (such as federated searching across a heterogeneous commercially published database environment).



Digital libraries, then, belong both to knowledge domains and to institutions, in the same way as do repositories, which are constituent elements of each. Table 1.1 breaks down both digital libraries and repositories by institution and discipline. The libraries, on the left, depend more and more on the repositories, on the right, to provide them with the selections of collections they present as libraries, whether institutional or disciplinary.

Institutional Repositories: Global Scenario

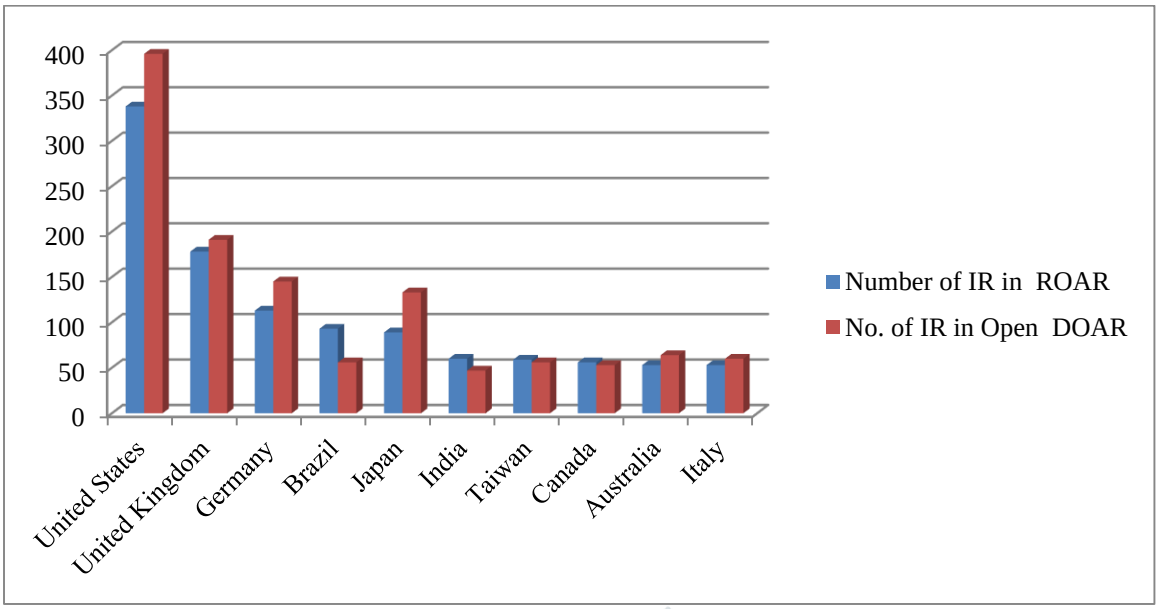
Realization of the importance of IRs for the dissemination and preservation of scholarly communication is spreading rapidly across the academic community. The effort to enhance access to the scholarly publications has brought the concept of IR in India. United States had been the pioneer in the development of IRs in the early 1990s among the other countries of the world. Since then, the number of IRs has been increasing not only in the United States and Europe but also elsewhere in the world. After visiting the **Registry of Open Access Repositories (ROAR)** and the Directory of **Open Access Repositories (Open DOAR)** and some other institutional websites of IR applications advanced rapidly parallel a number of significant developments including:

- Open source software for operating systems (Linux)
- Open archive initiatives to preserve digital content (Greenstone, DSpace and e-Prints)
- Hardware maintenance is affordable
- Standards like open archives metadata harvesting protocol have been adopted

Open DOAR maintained by the Securing Hybrid Environment for Research Preservation and Access (SHERPA) project of University of Nottingham, lists the open access repositories around the world. Open DOAR takes initiatives to harvest and assign metadata to the contents of the registered repositories and to allow categorization and analysis to assist the wider use and exploitation of repositories. Gradually the numbers of IRs have been increasing worldwide. Currently, ROAR lists out 1,793 and Open DOAR lists about 1,966 IRs all over the world.

The highest number Countries of Institutional Repositories

S.No	Name of the Country	Number of IR in ROAR	No. of IR in Open DOAR
1	United States	338	396
2	United Kingdom	178	191
3	Germany	113	145
4	Brazil	93	56
5	Japan	89	133
6	India	60	47
7	Taiwan	59	56
8	Canada	56	53
9	Australia	53	64
10	Italy	53	60



According to ROAR (as on 29 May 2018), there are 60 registered repositories in India whereas Open DOAR lists only 47 registered repositories in India (out of total registration as on 29 May 2018). According to ROAR and Open DOAR in the list of registered open access repositories India ranks sixth and eight respectively. The oaIster search engine (http://www.oaister.org) which is a union catalogue of millions of records representing open access digital resources includes results from about 1,100 IRs, amounting to more than 23 million digital objects like Digitized (scanned) books, journal articles, newspapers, manuscripts and more Digital text, Audio files (wav, mp3), Video files, (mp4, QuickTime), Photographic images (jpeg, tiff, gif), Data sets (downloadable statistical information) and Theses and research papers; most of which are accessible full-text. Both, ROAR and Open DOAR do not completely represent open access initiatives in India as they depend on voluntary registration. There are more than 80 Institutional Repositories (IRs) available in India with open access facility. Contents in IRs in India mostly cover articles, books, and book chapters, Conference papers, learning objects, patents, references, theses and various other unpublished documents having primary information.

Repositories and research impact

Researchers are rewarded for their work not financially but through its impact. They want their research to be read, consumed and understood. They want their peers to comment on it, credit it and add to or extend it. Naturally, they want to receive credit for adding to human knowledge of the world; equally naturally, they want to help make the world a better place. The conventional method of research dissemination via publication in journals is much more limited in its possible impact (through market forces) than is the new method of publication of the same research in open access repositories. Studies have already shown that open access research papers are read more widely, and, therefore, cited more frequently, than papers which are not housed in repositories. The consequence of this is that they have greater impact.

The Institute of Scientific Information (ISI) has produced impact rankings for scholarly journals for many years, based upon its series of citation indexes, now web-based and known as Web of Knowledge (wok.mimas.ac.uk/). Impact factors are based upon the average number of times that papers in a given journal title are cited by other papers – a fair measure of their research impact, though not without some

distortions, as ISI itself points out in its regular publication which presents impact rankings, the Journal of Citation Reports, where its online help text states:

Trend and Development of IRs in India

A few of India's premier institutions, particularly in the science and technology area, are providing open access to their research publications. In these repositories access to retrospective material appears to be substantial; both in terms of research articles and theses with less access to preprints and current publications. Much of the content is designed to showcase the intellectual product of the institution giving wide coverage to publications in international journals and less of the "hidden science" targeted by open access advocates. In India, the efforts towards adopting open access initiative have already been started. But there are some hurdles and misunderstandings about open access among the Indian research community. These are: Lack of expertise in every organisation to promote creation of institutional archives and encourage scientists to place their papers in them; lack of infrastructural facilities like hardware and connectivity of high bandwidth; Scientists are under the impression that the editors of renowned journals may not accept the archived papers. Scientists are not aware of the fact that the attitudes of the journals are now changing and renowned journals also now permit the authors to archive both preprints and post prints.

UGC through Information and Library Network (INFLIBNET) has been serving towards modernization of libraries through a National Network of libraries in around 264 Universities, Colleges and R & D Institutions across the country. The OAI repository of INFLIBNET, which is named as "Shodhganga" is developed with DSpace open source software which collects, preserves and disseminates the post prints, preprints, news clippings, CALIBER and PLANNER full text proceedings, training material and other scholarly publications of it. UGC has developed a policy document on building university level Institutional Digital Repository, which aims to improve the local access to global research and global access to local research. UGC through its national policy framework proposed and made it mandatory for all the researchers of Indian universities to submit their Doctoral theses, dissertations in electronic form for the creation of Indian National Theses Database to ensure free access to research theses. Through INFLIBNET, UGC is also taking initiatives to develop the ICT infrastructure and support in all the universities run under its purview.

Conclusion

Institutional repositories enhance teaching, learning, research and are considered as a boon to the scholarly community. Institutional repositories have great potential for improving visibility and impact of institutional research. The establishment of IRs in a developing country like India will help to get access to global research results and in turn global presence to the local research results. The awareness programs, training and workshops funded by the leading organisations like UGC, CSIR etc., to educate and instruct the faculty members, researchers and scientists and all other working bodies to adopt the "open access" approach must be more widespread. They must be encouraged to self-archiving their research outputs in institutional repositories. Though most the universities in India are lacking in infrastructure for establishing institutional repositories but today with the availability of several free, open source repository software

packages it has become relatively easy to establish IRs. So, all the universities, R & D institutions in India which are being run by public or private fund should also establish their own repositories to make their research widely accessible by scholarly community throughout the world and to ensure its long term preservation for future use.

A growing proportion of the research community has discovered the utility of the Web for the dissemination of their research outputs, and has now been using it – for many years in the case of some disciplines. The approach has been somewhat haphazard, however, as scholars are neither publishers nor librarians. The library community, increasingly focused on a digital library agenda, has understood the need to intervene in order to ensure that the material being disseminated is managed successfully through proper description, indexing and storage for long term preservation. The approach which has now proved its value and begun to gain ground for research outputs is also now being used for other types of material which are generated within institutions.

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