

E-resources in institutional repositories: An Indian scenario

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Abstract: *Institutional Repository (IR) is an asset of an organization to showcase their intellectual work which is made accessible and preserved for institutional posterity. IR empowers and strengthens open access movement and serves the information needs of the users communities like researchers, students and teaching faculty. An institutional repository is source of many electronic information resources like pre-prints, journal articles, conference papers, project reports, teaching materials etc. In this paper an attempt has been made to list out some of the important institutional repositories in India and the types of e-resources they are holding. The paper also discusses the challenges in setting up of an Institutional Repository specifically in the Indian context.*

Key Words: *Institutional repository, DSpace, Eprint, Open access, Digital Archives, e-resources.*

Introduction

An institutional repository is the set of services offered by an institution in order to manage, disseminate and facilitate access to the electronic documents created by that institution. (Bonilla-Calero, 2013). Institutional repository is becoming one of the vital tools for self archival and dissemination of an organization's intellectual or scholarly output. Higher education institutions meant for developing new products, new ideas, research and developments in all the fields. The technological advances today make it possible to think in terms of storing all the knowledge of the human race in digital form and several organizations worldwide are experimenting with less-expensive ways to archive and disseminate scholarly information and in-house knowledge as institutional repositories (Ahmed and AlReyaae, 2014). Institutional repositories are the digital platforms to showcase these kinds of intellectual and research productivity from an institution or university community. Technological changes, increasing volume of research, increasing need of archival, access, preservation, trend towards open access, promotion of research and development are some of the reasons that have led to the creation of institutional repositories. In India, there are number of reputed Research and development institutes which produce scholarly rich research documents every year but due to the lack of platform like an institutional repository the intellectual works are not visible. India publishes about 35,000 research papers annually and these appear in about 2,500 journals. Since not all of these journals are available in most institutional

libraries in India, many Indian researchers may not know what other Indians are doing in their own fields. (Venkedesan, 2009). With the mandate to bring together and preserve the intellectual properties of individual departments many institutes showing their interest and coming forward to set up this new service keeping in view of its advantages. Resting on the mantra of ‘shared and open access’, institutional repository systems have brought revolutionary changes to the way the scholarly communication is taking place. As an emerging publishing model, the institutional repository is here to stay, as long as the degree of user participation is high and there are sound policies and stakeholder engagement. (Babu, P. B. et al. 2012).

Review of Literature

Laxminarsaiah, A. & Rajgoli, I. U. (2007) describe how the ISRO HQ Institutional Repository (IR) idea emerged and what are the steps taken to implement and build the IR. The scope of the repository, which started with newspaper clippings, has been enhanced to accommodate research papers, speeches/lectures, office orders/memorandums, videos, annual reports and the in-house publications. Jayakanth, F. et al. (2008) share NCSI’s experiences in using GNU EPrints.org software to create and maintain the open-access institutional repository of IISc, ePrints@IISc. The GNU EPrints.org is the first generic software for creating Open Access Initiative (OAI)-compliant repositories, which enables the researchers to self-archive their research publications thus facilitating open access to their publications. Preedip Balaji Babu et al (2012) find out the rationale for institutional repository (IR) categories, and the challenges in sustainable development of open scholarship to facilitate scholarly communication. Sarika Sawant (2012). aims to investigate the experience, contribution and opinions of users of respective institutional repositories (IRs) developed in India. Sawant, S. (2012) aims to investigate various issues concerning the management of institutional repositories (IRs) developed in India. The researcher observed that 79 per cent of the institutions had used the DSpace IR software package. The respondents considered end-user interface to be the top-ranking IR-system feature. The study has identified the existence of 16 functional IRs, some of which were not registered in any of the directories such as ROAR or Open DOAR. Bonilla-Calero, A. (2013) show examples of good practice which can improve the functioning of an institutional repository (IR), arranged from the point of view of a user, author and reviewer. To collect examples of good practice which can improve the functioning of an IR, the author has based on several studies where the institutional databases are used as source to analyze the research output. Rahman, M. M. & Mezbah-ul-Islam, M. (2014) identify various institutional repository (IR) initiatives taken by Bangladeshi institutions, including identifying prospects, exploring strategies, and framing guideline for building IRs in Bangladesh. The study explored the existing status of practicing IRs in Bangladesh and identified the trends at national and global level of IRs. Veeranjaneyulu, K. (2014) The “KrishiKosh” is a

collaborative project which envisages launching an Indian agricultural knowledge portal over the internet and share its research information including Electronic Theses and Dissertations (ETD) with the rest of the world using latest information and communication technologies. Ahmed, A. et al. (2014) traces the growth and development of online e-theses repositories in Asia within the broader framework of open access. To achieve the stated objectives, the ETD repositories developed by Asian countries were identified by selecting the database of OpenDOAR (Directory of Open Access Repositories) and the retrieved data were thoroughly analyzed for the necessary information. Bhat, M. H. (2014) explores various types of research materials in Indian institutional repositories. The study reveals that barring a few repositories the collections of most of the repositories are very low. The percentage of archived materials is high for journal papers, and moderate for conference papers/thesis. However it is very low for preprints/working papers, teaching resources and patents. Lagzian F. et al. (2015) aim to explore the critical factors that contribute to the success of institutional repositories worldwide. Previous research indicates that there is little agreement surrounding what constitutes a successful institutional repository. The results of the factor analysis indicate the possibility of 46 variables under six factors being important for the success of institutional repository implementation. These six factors are “Management”, “Services”, “Technology”, “Self-archive Practices”, “People” and “Resources”. This study has empirically tested and consolidated the factors which are important in institutional repository implementation worldwide and documented them as critical success factors. Riddle, K. (2015) aims to explore questions and concepts encountered when developing policies for an institutional repository with a library publishing component. The author describes how publishing needs and library vision shape institutional repository policies, and demonstrates that the repository’s guiding policies are determined by the repository’s purpose and scope. Marsh, R. M. (2015) aims to uncover the central purposes of institutional repositories, how developments are being affected by policies and researcher behavior. The research identified a number of reasons as to why the population of repositories was likely to accelerate in the future and have a more significant impact on scholarly communication.

Objectives of the study: The aim of the present study is to explore various types of electronic resources available in Indian institutional repositories irrespective of the type of institution.

The specific objectives are ;

1. To explore the various types of e-resources available in Indian institutional repositories.
2. To list out the challenges of setting up of an institutional repository in India.

Methodology: The required data for this study has been collected from the Registry of Open Access Repositories (ROAR available on <http://roar.eprints.org>) and Directory of Open Access Repositories (DOAR available on www.openoar.org). Together they have listed 91 Indian institutional repositories as on 16.02.2017. Among all institutional repositories that had minimum of 1000 documents were selected for the study.

Contents of an Institutional Repository:

The content of an Institutional Repository could be any of the following considering the policy of the institution:

- ✓ Pre-prints of articles or research reports submitted for Publication
- ✓ The text of journal articles accepted for publication
- ✓ Revised texts of published work with comments from academic readers
- ✓ Conference papers and book chapters
- ✓ Peer-reviewed journal articles
- ✓ Working papers
- ✓ Patents
- ✓ Research reports and statistical reports
- ✓ Bibliographic references
- ✓ Monographs
- ✓ Technical reports
- ✓ Newsletters and news-clippings
- ✓ Bulletins and memorandums
- ✓ Teaching materials
- ✓ Student projects
- ✓ Doctoral theses and dissertations
- ✓ Datasets resulting from research projects
- ✓ Committee papers
- ✓ Computer software and multimedia documents
- ✓ Works of art
- ✓ Photographs and video recordings

E-resources in Institutional Repositories: An Indian Scenario

The growth of institutional repositories in India is still at initial stage. India is having 777 universities and many research institutes, but only few institutes own institutional repositories. Most of

the IR's are of recent origin and universities are lagging behind in developing institutional repositories. Most of the IR's are holding high proportion of journal articles which the share of pre-prints is quite low. Though other type of e-resources like conference papers, theses, technical reports, unpublished sources are archived, the share of book chapters, teaching resources and patents is found to be either less or not found at all. Measures need to be taken by the UGC and other respective bodies, and state higher education councils to develop an institutional repository for each and every institute and motivate authors to submit their pre-post prints in their respective institutional repositories. Further most of the institutional repositories are found to be either having less number of e-resources or no resources at all. Though it is found from the study that 91 institutions are having institutional repository, only few institutional repositories are functional and active. It has to be made mandatory to all the institutes to deposit research papers published. Very few institutes like Indian Institute of Science, Bangalore appears to be the developed repositories with varied collection.

Table 1: Institutional Repositories in Indian Universities

S. No.	Institute	URL	Type of e-resources	No. of ERs
1	AMU		Articles; Theses; Books	14782
2	Bangalore University	http://eprints-bangaloreuniversity.in/	Articles; Conferences; Books	5764
3	CUSAT	http://dspace.cusat.ac.in/jspui/	Articles; Conference proceedings; seminar reports, syllabi, question papers, Theses; & Books;	9504
4	IGNOU	http://www.egyankosh.ac.in/	Learning Objects	26996
5	IUCCA, Maharashtra	http://repository.iucaa.in:8080/jspui/	Articles; Conference proceedings	3681
6	MGU, Kerala	http://www.mgutheses.org/	Theses	2262
7	OU, Hyderabad	http://oudl.osmania.ac.in/	Articles	24506
8	Saurashtra University	http://etheses.saurashtrauniversity.edu/	Articles; Reference sources; Theses	1064
9	Thapar University	http://dspace.thapar.edu:8080/dspace/	Articles; Conference proceedings; Theses	3645
10	University of Kashmir	http://dspace.uok.edu.in:8080/jspui/	Articles; Conference proceedings; Theses	1066
11	University of Mysore	http://dspace.vidyanidhi.org.in:8080/dspace/	Theses	5482
12	University of Mysore	http://eprints.uni-mysore.ac.in/	Articles	10711

Table-1 clearly shows that there are 12 Universities found to be holding collection of more than 1000. E-gyankosha institutional repository hosted by IGNOU is the largest IR among universities which holds only learning materials followed by Osmania University, Hyderabad with 24506 Articles and AMU with 14782 with varied collections like Articles, Theses and Books. In institutional repositories of Indian universities, e-resources like articles, theses, conference proceedings contribute major share while others like reports, learning materials, book chapters are found to be less.

Table 2: Institutional Repositories in Premier Higher Education Institutions

S. No.	Institute	URL	Type of e-resources	No. of ERS
1	IISc., Bangalore	http://etd.ncsi.iisc.ernet.in/	Theses	2523
2	IIT, Bombay	http://dspace.library.iitb.ac.in/jspui/	Articles; Conference proceedings	18108
3	IIT, Delhi	http://eprint.iitd.ac.in/dspace/	Articles; Theses	6277
4	IIT, Hyderabad	http://raiiith.iith.ac.in/	Articles; Conference proceedings; Theses; Books	2523
5	IIT, Roorkee	http://bhagirathi.iitr.ac.in/dspace/	Articles; Conference proceedings; Multimedia	1102
6	Indian Institute of Management, Ahmedabad	http://vsir.iimahd.ernet.in:8080/xmlui	Articles; Conference proceedings; Theses; Unpublished; Multimedia	16917
7	NIT, Rourkela	http://dspace.nitrkl.ac.in/dspace/	Articles; Conference proceedings; Theses; Books	2395
8	IISc, Bangalore	http://eprints.iisc.ernet.in/	Articles; References; Conference proceedings; Unpublished; Books; Learning Objects; Patents; Special	42205
9	NIT, Rourkela	http://ethesis.nitrkl.ac.in/	Theses	5349

Table-2 depicts the institutional repositories of premier higher education institutes like IIT's, IIM's and NIT's. The data shows that premier higher education institutes are having less number of e-resources except IR of IIT, Bombay holds around 18,108 documents which contains articles and

conference proceedings followed by IIM, Ahemdabad (16917), which contains variety of collections like articles, conferences, theses, unpublished sources and multimedia documents and IIT, Delhi (6277), which includes only articles and theses. The table shows that even premier institutes like IIT's, IIM's are not rich in their collection of e-resources as they hold articles, conference proceedings and theses only.

Table:3 Other National and Research institutes

S. No.	Institute	URL	Type of E-Resources	No. of ERs
1	Bibliographic Informatics Division – NIC	http://openmed.nic.in/	Articles	2904
2	CDRI, Lucknow	http://dkr.cdri.res.in:8080/dspace/index.jsp	Articles; Unpublished sources	1140
3	CMFRI, India	http://eprints.cmfri.org.in/	Articles; Conference proceedings; Theses; Unpublished proceedings; Books; Patents	11025
4	CSIR-CECRI, TamilNadu	http://cecri.csircentral.net/	Articles	2547
5	CSIR-National Physical Laboratory	http://npl.csircentral.net/	Articles; Conference proceedings; Unpublished sources; Books; Multimedia	1636
6	IMT	http://crdd.osdd.net/open/	Articles; Reference sources; Theses	1603
7	IIA, Bangalore	http://prints.iiap.res.in/	Articles; Theses; Multimedia; Special	6768
8	INCOIS, Hyderabad	http://moeseprints.incois.gov.in/	Articles; Conference proceedings; Books	2934
9	Indian Council for Agricultural Research	http://krishikosh.egranth.ac.in/	Articles; Conference proceedings; Theses; Unpublished sources; Books; Learning Objects; Multimedia	64319
10	International Crops Research Institute for the Semi Arid Tropics, Hyderabad	http://oar.icrisat.org/	Articles; Conference proceedings; Learning Objects; Multimedia	8820
11	National Metallurgical Laboratory	http://eprints.nmlindia.org/	Articles; Conference proceedings; Theses; Books; Learning Objects; Patents	6254
12	Raman Research Institute	http://dspace.rri.res.in/	Articles; Unpublished sources; Learning Objects	5,938
13	ABA- NET India	http://www.architexturez.net/	Articles; Unpublished sources; Books; Learning Objects; Multimedia sources	2167
14	Atmiya Digital Repository	http://library.atmiya.net:8080/dspace/	Articles; Theses	2341
15	INFLIBNET	http://ir.inflibnet.ac.in/	Conference sources; Learning Objects	1578
16	GIPE	http://dspace.gipe.ac.in/	Unpublished sources; Books; Multimedia sources	21930
17	IAS	http://repository.ias.ac.in/	Articles	92959
18	INFLIBNET-Shodhganga	http://shodhganga.inflibnet.ac.in/	Theses	50014
19	INFLIBNET	http://ir.inflibnet.ac.in/	Conference proceedings	1533

20	ICASAT Bangalore	http://nal-ir.nal.res.in/	Articles; Conference proceedings; Theses; Unpublished sources; Learning Objects; Multimedia; Patents	6075
21	NIO, Goa	http://drs.nio.org/	Articles; Conferences; Theses	4684
22	NISCAIR	http://nopr.niscair.res.in/	Articles; Reference sources	33597
23	V.V. Giri NLI	http://www.indialabourarchives.org/	Unpublished sources; Books; Multimedia	42845
24	Vidya Prasarak Mandal	http://dspace.vpmthane.org:8080/jspui/index.jsp	Articles; Conference proceedings; Learning Objects; Multimedia sources	2707

Table-3 shows that the institutional repositories of national research institutes and their holdings. Repository of Indian Academy of Sciences is having 92959 e-resources which consists of only articles followed by repository of Indian Council for Agricultural Research is holding 64319 e-resources which includes varied collection like Articles; Conference sources; Theses; Unpublished sources; Books; Learning Objects; Multimedia sources and INFLIBNET repository which holds only theses is having 50014 documents. It can be observed from the above table that most of the institutional repositories are having articles, conference proceedings, theses and multimedia documents but they lack in diversity of collection.

Issues and challenges in India

There are many issues which are confronting the implementation of an Institutional repository in Indian universities and research institutes. Institutional Repositories have emerged as a publishing model and major player in support of promoting scholarly communication in the world scenario. But in India due to the lack of expertise and skilled manpower, the institutional repository initiatives are at an infancy stage. Though there are many free and open source repository software's made inroads, Indian universities are lagging behind to take the advantages of open sources due to the lack of IR expertise. In the constantly proliferating information technologies (IT) and web applications, developing human resources is crucial for institutional repositories sustainability. To ensure the access and usage of institutional repositories IR's need to sustain and withstand the technological and transitional changes of digital media.

Most of the Indian institutions or universities are not having their own institutional repository policy, due to the absence of well defined institutional repository policy it is not possible to bring together all the stakeholders of an institutional repository. The major challenge Indian universities or institutions are confronting is the state of the art infrastructure and financial constraints. The IT infrastructure which is mandatory for institutional repository development differs across all the universities. Financial woes are confronting the development pace of Indian libraries as to provide institutional repository services, the libraries should be provided with all the financial assistance indiscriminately. Financial imbalance rate is

high in state run institutions, various national funding bodies and state councils of higher education need to examine these shortcomings so that efforts can bring forth the desired results.

Multilingualism, diversity of content and complexity of India have an impact on the development of Institutional repositories across India as it will become difficult to achieve standardization, and effective information retrieval. This issue needs to be addressed by developing localization tools and linguistic tools in Indian languages. Some of the other major issues are apathy of authors or contributors towards deposition procedure, Copyright policy of publishers, and other intellectual property rights of author, Digital preservation, fear of loss of autonomy, marketing and publicity of IRs.

Conclusion

Although, it is found from the study that number of institutional repositories in India is growing slowly, the growth is not encouraging as IR initiatives and developments in India are still at the infancy stage. For a country which is growing by leaps and bounds in terms of higher education institutes and research institutes, the picture on IR front is not satisfactory. The study reveals that except few repositories, the collection of e-resources in IR's is not diverse and very small or inadequate. It may be due to the lack of expertise, lack of financial support from the authorities, most of the established institutional repositories are found to be nonfunctional and their growth is static. Establishing institutional repositories is not a big task but its sustainability and maintenance is. To make institutional repositories successful and vibrant in developing country like India, efforts need to be doubled by universities/institutes, by the higher education bodies at central and state level. Necessary steps need to be taken to make it mandatory to establish and archive all the research outputs of universities and research institutes, thus the research being carried out in universities and research institutes can be explored to the world by bringing much needed visibility and recognition.

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