
INDIAN RESEARCH GOING GLOBAL : A STUDY ON THE STATUS OF OPEN ACCESS PUBLISHING

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ABSTRACT

Aims to measure quantitatively the scholarly journals which were produced with full immediate OA from 2003 to 2013. Focuses on the amount of India's contribution to scholarly literature through the repositories of their institutions, amount of literature produced in various disciplines and the open source software's (OSS) used for it. Aims to know the current status of open access publishing in India. A survey of the open access journals indexed in the Directory of Open access Journals (DOAJ) and the repositories indexed in the Open DOAR is followed for this study. India started making its journals open access in 2003 with about 13 journals in a year and has reached about 197 journals till September 2013, which shows a growth of 15 fold of the open access journal output within a year. The percentage of the multidisciplinary repositories is highest with 43% and the repositories of the disciplines such as Technology, Chemistry and Chemical Technology and Physics and Astronomy are 18%, 15% and 14% respectively among the 64 repositories listed in OpenDOAR. With about 650 open access journals and about 64 open access directories, India has made important contributions towards the growth of Open access publishing.

KEYWORDS: Open Access Publishing, Open Access, Open Access Journals, Open Access Repositories, Open Access - India

Introduction

Paying for access to content makes sense in the world of print publishing, where providing content to each new reader requires the production of an additional copy, but online it makes much less sense to charge for content when it is possible to provide access to all readers anywhere in the world. Open

access (OA) is free, immediate, permanent, full text, online access for any user to digital, scientific and scholarly material. It specially focuses on research articles published in peer-reviewed journals. An open access article has limited copyright and licensing restrictions. There are only few open archives and Open Access initiatives in India, and there is still a long way to consolidation. Indian academia, however, under the active participation of government authorities and publishers, has taken a first step in this direction. Indian researchers see the value of Open Access journals and archives particularly in the increased visibility of information, the higher citation rate of articles, and the potential for knowledge to become usable more quickly.

In India, there has been a gradual realization of the usefulness of open access among various institutions. Various open access initiatives have been undertaken and are operational. Many are in the developmental stage. Some initiatives have also been taken in the area of metadata harvesting services particularly public funded ones. The future of open access in India is dependent upon a proper policy and development of a proper framework.

Open access to scholarly information is a burning issue in web based education and research today. Open access has become an increasingly important and potentially divisive issue in recent years as journal inflation rates have increased. For many librarians and scholars, journal price inflation is itself the central problem and open access is the solution (Hirwade & Rajyalakshmi, 2006).

Aim of the Study

This study focuses on providing measurement of the quantitative development of gold OA publications for the years 2003 to 2013 in India. This is because of the services like the Directory of Open Access Journals (DOAJ) which provides for immediate OA journals. The article also focuses on Green model of OA, the quantitative study of institutional repositories in India and its discipline wise development which are indexed in the Open DOAR.

Open Access Publishing

The philosophy of open access emerged in the context of scholarly publishing and communication, over the time the onus has come to the authors wherein the emphasis has been given on the firm commitment of individuals to make the open access successful. The development of open source is to fulfill this commitment. Various forms of open access have been evolved. The e-print archives and self archiving institutional repositories are all the initiatives towards open access. E-prints are electronic copies of academic research papers which may be in the form of pre-prints (papers before referring) and post prints (papers after referring) (Pinfield, Gardner & MacColl, 2002).

By "open access" to the literature, we mean its free availability on the internet, permitting any users to

read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be, to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

Open Access can be provided by various means. A researcher can place a copy of each article in an Open Access archive or repository or can publish articles in Open Access journals. These can be grouped into two broad models:

- 1- 'Gold Access'- The Gold model uses a traditional journal publication system, but shifts the economic/financial model. Instead of a subscriber paying to read the final version of a peer-reviewed article, an author or sponsor pays to publish the article, and reading the article is free to anyone wishing to do so; and
- 2- 'Green Access'- The Green model of OA relies on posting the author's manuscript of an article into an institutional or subject based electronic archive, either in the form of a pre-print (as submitted to a journal for peer review) or as a final copy of the peer-reviewed edited full text (a post-print) (Bethesda Statement on Open Access Publishing, 2013).

Open Access Journals

Open access journals provide access to full-text contents of scholarly, peer-reviewed journals. There are two types of open access journals - the one, available in electronic version only and the other, available in both electronic as well as print versions eg., Current Science. In the first type, the journals are published at regular intervals on the Internet that do not have any print-on-paper counterpart. In the second type, the journals are published in print-on-paper format and distributed to the subscribers. The same contents of print-on-paper are available to the scholars free of charge in electronic form.

India's Scenario

The history of open access in India can be traced through major events, some of which helped to raise awareness and implementation and some events had policy implications. The open access movement in India started with a few individuals who were influenced by the work of a few eminent open access champions.

India is in the forefront of developing world as well as in South Asian region both in terms of economic growth and scientific productivity. Research and development (R&D) institutions and

higher learning institutions in India are engaged in advanced studies, leading to development of new applications, new techniques, new products and new technologies.

Various Indian R&D organizations, leading scientific research institutions are now taking part in the open access movement by establishing institutional and digital repositories to provide worldwide access to their research literature. Several Indian publishers have already adopted the open-access philosophy for the electronic versions of their journals. Unlike some open-access journals in other countries, Indian open-access journals use government grants and subscriptions to their print version to cover publishing costs (Arunachalam, 2004).

Indian Open Access via the “Gold Road” (Publishing in Open Access Journals)

Many of researchers worldwide, publishing articles in OA journals is increasingly seen as an alternative to publishing in the traditional journals. Apart from publishing in Indian open access journals, Indian researchers publish their papers in overseas open access journals as well. India has shown the dominance in the developing world as well as in South Asian region in terms of growth of the scientific productivity. Open access journals are one of the potential solutions to the crisis in serial's pricing, particularly for a country like India, where most of the state owned academic libraries do not have adequate funds to purchase steeply priced journals (Ghosh & Das, 2006).

A number of scholarly journals are published from India covering wide spectrum of subjects. Many of these journals are peer reviewed and indexed and abstracted in premier indexing and abstracting periodicals. But availability of these journals outside India and SAARC region is very limited, due to absence of strong distribution channels in other regions. Open access movement makes it possible for the Indian journals to reach the target audience of the world's research communities. Now hundred's of research periodicals in India provide free access to full-text contents. Publishers of these journals publish print-on-paper journal issues, and provide online access to the same contents of the issues (Wikipedia, 2013).

India started making its journals open access in 2003 with about 13 journals in a year and has reached about 197 journals till September 2013, which shows a growth of 15 fold of the open access journal output within a year. The Table-1 provides the number of journals added into the DOAJ from 2002 to 2013 by top 10 journal producing countries with India ranking 3rd with a total of 650 journals.

Table 1: Number of Journals Added into DOAJ from 2002-2013 for Top 10 Countries

Country	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
United States	15	188	80	80	49	75	120	74	136	209	90	145
Brazil	0	7	116	47	48	50	70	42	131	128	141	142
India	0	13	16	13	15	16	22	47	126	89	94	200
United Kingdom	5	105	41	37	34	31	31	55	115	44	65	60
Spain	0	5	16	58	47	26	62	27	74	71	49	72
Egypt	3	0	1	4	8	17	28	66	31	126	66	55
Germany	4	12	20	34	26	32	26	23	36	28	17	87
Romania	0	4	1	0	7	5	11	36	78	70	33	56
Italy	0	3	9	18	14	10	11	27	44	48	37	62
Canada	0	22	10	11	12	15	25	29	45	43	34	31

Source- Directory of Open Access Journals (DOAJ)

The year 2010 and 2013 has seen the optimum growth in the number of journals produced from India. In the year 2010, a growth of 20% was seen in the number of journals and in the year 2013, about 30% growth was witnessed. From the 9th position in 2004 India moved to 3rd position in 2013, the number of journals being open accessed reaching to a total of about 650 journals.

INDIAN RESEARCH GOING GLOBAL: A STUDY ON THE
STATUS OF OPEN ACCESS PUBLISHING

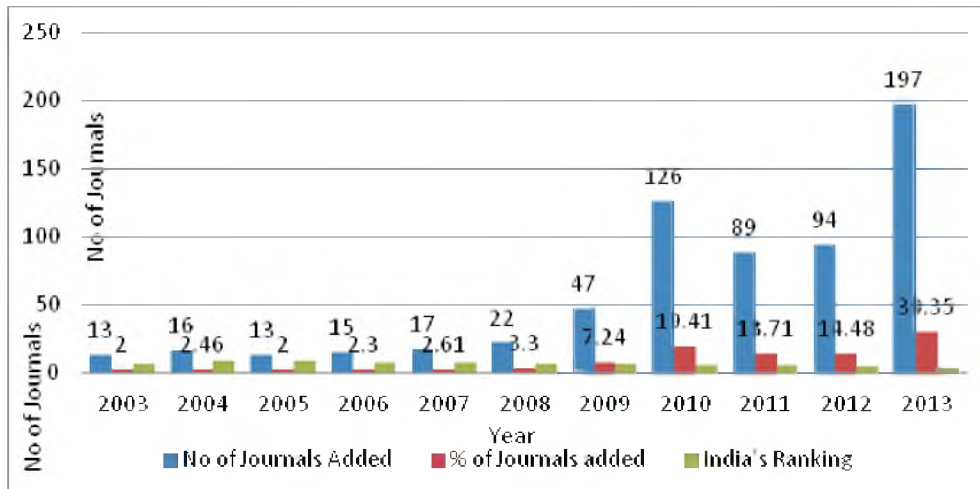


Figure 1: Journals Added into DOAJ During 2003-2013, its Percentage and India's Ranking

In Table 2, the subject wise number of journals which were made open accessible from the year 2003 to 2013 is represented. The Health Sciences subject has made the maximum contribution in open access via the gold road by producing a total of about 264 journals, followed by Technology and Engineering with 122 journals and Biology and Life Sciences with 62 Journals respectively. The subjects like Arts and Architecture, History and Archaeology and Philosophy and Religion are yet to make contributions to the Open Access Journals.

Table 2: Subject wise Number of Journals Being Open Accessed in Each year from 2003-2013

Subjects	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Biology & Life Science	2	2	2	1	1	3	2	15	11	8	15
Agriculture and Food Sciences	-	-	-	-	2	3	2	2	2	6	3
Arts and Architecture	-	-	-	-	-	-	-	-	-	-	-
Business and Economics	-	-	-	-	-	-	-	4	3	4	3
Chemistry	-	-	-	-	-	4	3	6	3	5	8
Earth and Environmental Sciences	-	1	1	-	-	-	-	4	1	1	3

General Works	-	-	-	1	-	-	1	1	1	3	49
Health Sciences	9	10	7	8	11	9	22	60	37	29	62
History and Archaeology	-	-	-	-	-	-	-	-	-	-	-
Languages and Literature	-	-	-	-	-	-	1	2	2	3	1
Law and Political Science	-	-	1	1	-	-	1	1	1	1	1
Mathematics and Statistics	-	1	-	-	-	-	1		1	3	3
Philosophy and Religion	-	-	-	-	-	-	-	-	-	-	-
Physics and Astronomy	1	1	-	-	-	1	1	-	-	1	-
Science General	-	-	-	-	-	-	2	3	2	3	5
Social Sciences	-	-	2	4	1	1	2	1	5	5	6
Technology and Engineering	1	1	-	-	1	1	9	27	20	22	41
Total	13	16	13	15	16	22	47	126	89	94	200

Indian Open Access via the “green road” (Self Archiving or in Institutional Repositories)

An institutional repository is an on-line mechanism for collecting and preserving in digital form, the intellectual output of an institution, particularly a research institution. Open Access Archives (OAAs) are electronic repositories that may include already-published articles (post-prints), pre-published articles (pre-prints), theses, manuals, teaching materials or other documents that the authors or their institutions wish to make publicly available without financial or other access barriers (Lynch, 2003). Authors can self-archive their work and so make it freely available in: Personal Web pages; Subject repositories or archives; and Institutional archives. The benefits of OAAs to researchers and scientific organizations in developing countries are numerous. Among the advantages are the following:

INDIAN RESEARCH GOING GLOBAL: A STUDY ON THE
STATUS OF OPEN ACCESS PUBLISHING

- i. Access to international research output
- ii. International access to research generated in developing countries
- iii. Promotion of institutional research output
- iv. Improved citation and research impact
- v. OAA allows improved access to subsidiary data
- vi. Facilitating peer review (Chan, Kirsop & Arunachalam, 2005)

Since setting up OAAs is inexpensive, quick and universally beneficial, it is essential that awareness is extended and international participation encouraged. The Indian National Science Academy (INSA) is a signatory to the Berlin Declaration and held a one-day seminar on open access at its annual meeting at the National Chemical Laboratory, Pune, in late December 2003. In May 2004, INSA held another workshop at its headquarters in New Delhi on institutional repositories to raise awareness about the institutional and policy issues relating to providing open access. Now in 2013, there are about 64 open access repositories which are listed in the Directory of Open Access Repositories (DOAR). Open DOAR is an authoritative directory of academic open access repositories which lists about 2200 repositories across the world. Figure 2 represents the year wise growth of the repositories in India which are listed in the Open DOAR as of 26 September 2013.

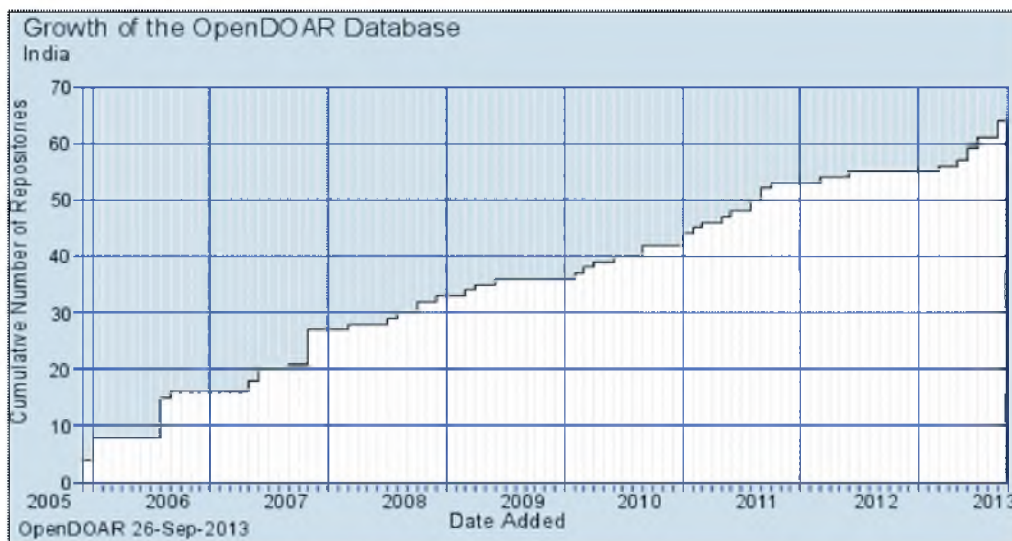


Figure 2: Year wise Growth of the Repositories in India

India has made a remarkable growth in the arena of Open access repositories with the National Knowledge Commission of India (NKC) formulating the policy to improve access to research results and achieving their worldwide dissemination. The Figure 3 represents, discipline wise, the percentage of the repositories listed in the OpenDOAR from India as on 18 September 2013. The percentage of the multidisciplinary repositories is highest with 43% and the repositories of the disciplines such as Technology, Chemistry and Chemical Technology and Physics and Astronomy are 18%, 15% and 14% respectively among the 64 repositories listed in OpenDOAR.

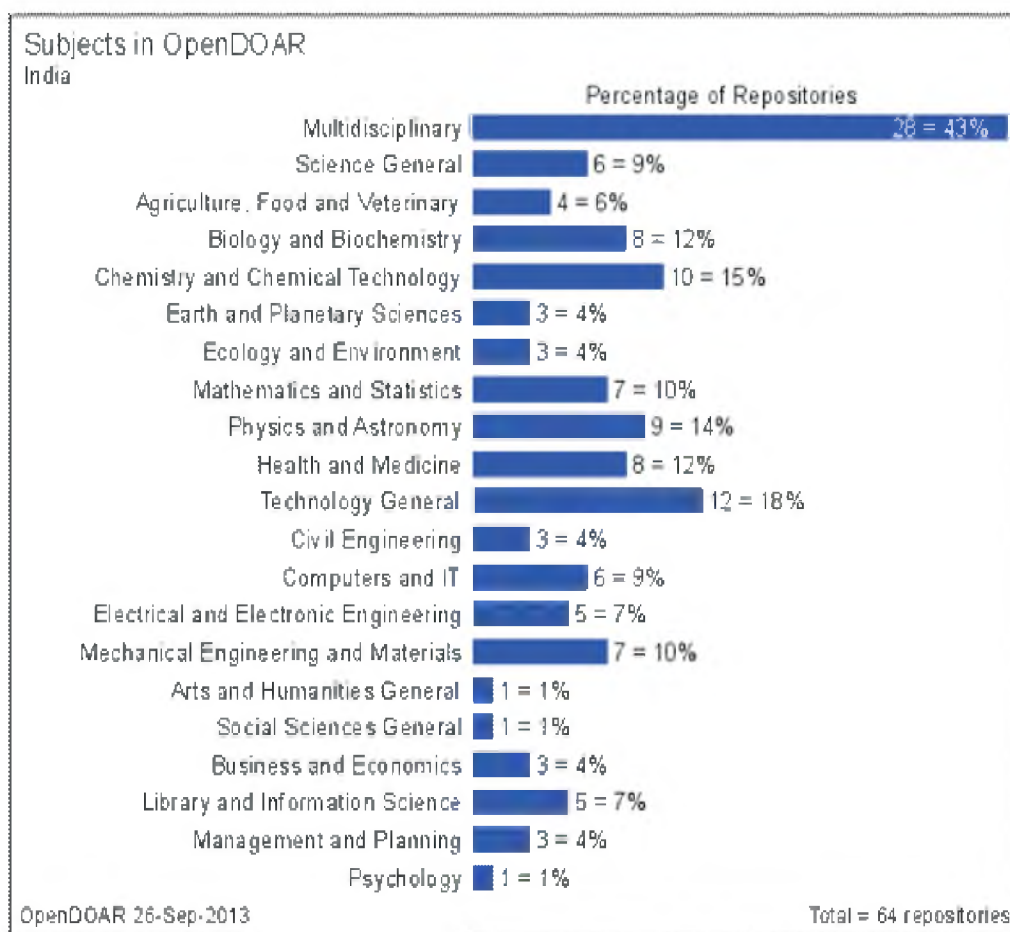
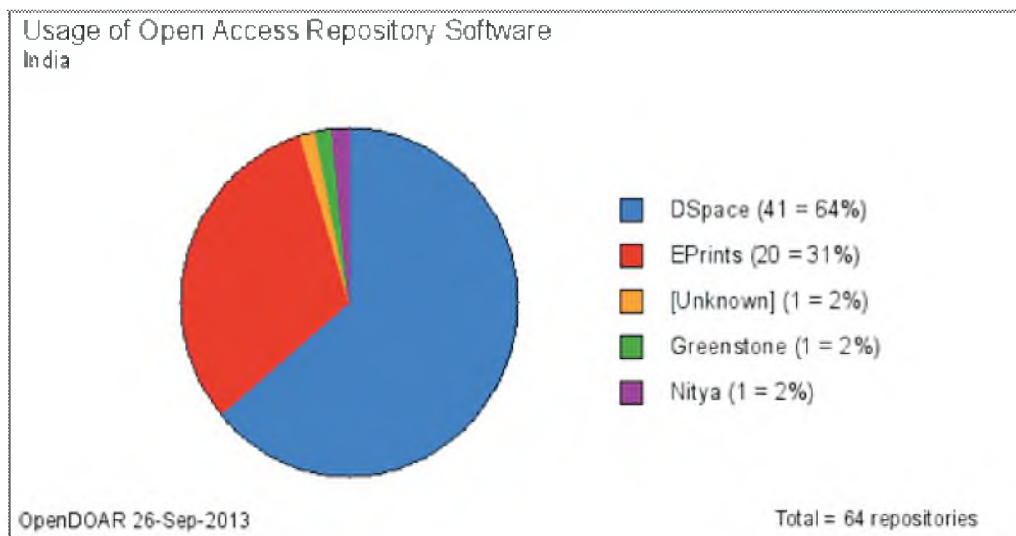


Figure 3: Discipline wise Percentage of the Repositories Listed in the Open DOAR from India

The Figure 4 represents the percentage of the Open Source Software's (OSS) used for building the Institutional Repositories in India as on 26-Sep-2013. D-Space is the major OSS used for building the repositories in India with 41 institutions using it amounting to about 64%; followed by the E-Prints with about 20 institutions using it reaching to about 31%.



**Figure 4: Use of Open Source Software's for Building the
Institutional Repositories in India**

The Open Access (OA) movement has given a new opportunity to the libraries/ information seekers by establishing a bridge between information and information seekers without paying anything. The open access movement seeks to change the traditional subscription based model of scholarly publishing, to one, where readers have unrestricted electronic access to the scholarly literature. In India, there is a large opportunity for open-access publishing. There are many non commercial research and development institutions, both academic and research laboratories. These institutions, which produce research work, could potentially convert their data into online accessible material.

Conclusion

A mechanism is essential to promote and coordinate open-access publishing systems and to improve awareness for open access in India. Many librarians have been vocal and active advocates of open access and believe that open access promises to remove both the price barriers and the permission barriers. Some open access advocates believe that institutional repositories will play a very important role in responding to open access mandates from funders.

With about 650 open access journals and about 64 open access directories, India has made important contributions towards the growth of Open access publishing. India is in a prominent position with other developed nations in the production of the scholarly literature which is open accessed. Not only governmental funding agencies but also learned societies, associations and publishers have taken a step towards open access movement in a right direction.

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