

Open Access Policies and Mandates: A Study of Their Implementation in Academic Institutions in India

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“Open Access is the model of the future and the debate should be how we can get there as quickly as possible” –
(Richard J. Roberts, Nobel Prize Winner)

Abstract:

Higher Education System in India is the third largest in the world next to the United States and China. India's contribution to OA Journal publishing is phenomenal. In the backdrop of these, this paper aims at critically analyzing the Open Access Mandates and Policies of higher education institutions and also the efforts made by other institutions including the research centers and government bodies in India. The paper describes the Open Access Movement and Open Access Publishing, essentially as a tool to achieve the noble ideal of 'Information for All' and democratization of information and knowledge. The paper describes various developmental initiatives and programs of Open Access Publishing in India, such as, Open Access India- an online community of practice, launching of LOAD (Listing of Open Access Databases), the initiatives taken by the CSIR (Council of Scientific and Industrial Research), DST and DBT in making it mandatory to maintain a repository / publish in OA of the government funded research results and also the mandates of other institutions. The paper also describes the efforts of INFLIBNET's ShodhGanga project -- a digital repository of Indian theses and dissertations. The e-prints archives

viz., Eprints@iisc of Indian Institute of Science, NDL (National Digital Library of India) project, TKDL (Traditional Knowledge Digital Library) etc. A detailed study of the OA journals published from India and also chronological growth will be discussed, taking the DOAJ as the source. The available data at ROARMAP (Registry of Open Access Repository Mandates and Policies) on the Indian OA mandates shall be made use of in finding implementation of OA Mandates. The paper concludes that there is a need for a blanket mandate by the UGC and AICTE to publish the research publications of Indian academic community in OA.

Keywords: Open Access Policies-India; Open Access Repositories-India; Open Access Publishing-India; Open Access Mandates-India; Open Access Movement-India.

Introduction

Higher Education System in India is the third largest in the world with 842 universities (UGC, 2018) next to the United States and China. As per the Government of India statistics, as observed from *All India Survey on Higher Education 2015-16*, out of the total enrolment of 3,45,84,781 students, a vast majority of 2,74,20,450 students are enrolled in Under Graduate programs, that is 79.3%. On the other hand, 11.3% students are enrolled in Post Graduation that is, approximately 39.2 lakh students. There are 5,753 students are enrolled in Integrated Ph.D. in addition to 1,26,451 students enrolled at Ph.D. Level. It is further observed that Ph.D., M.Phil. and Integrated levels of admission into PhD program have about 0.5% at each level to the existing strength of research scholars. And the estimated Gross Enrolment Ratio (GER) in Higher education in India is 24.5%.

India is also one of the largest academic publishing countries in the world with a vast strength of teachers (15,18,813) and more than 1,32,000 research scholars in higher education. (*All India Survey on Higher Education 2015-16*). Either out of necessity or by virtue of interest in conducting research, the academics (faculty members, research scholars and the Post Graduate Students) in India contribute conspicuously to the scholarly publishing. According to *Press in India, 2016-17*, there are 97,827 publications of various periodicities other than dailies, bi and tri weeklies that are registered with the RNI (Registrar of Newspapers in India).

Definition and Purpose of OA

The Scholarly publishing is currently moving swiftly towards Open Access (OA) Publishing, making information freely available to everyone in the society without any financial, legal or geographical restrictions. It is a means to build a society where information is available at free of cost, round the clock, and for all the age groups, and at all the places. Budapest Open Access Initiative (2002) defines Open Access (to scholarly literature) is “free availability on the public 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 Open Access Movement and Open Access Publishing which began in early 21st century can largely be attributed to the landmark initiative viz., Budapest Open Access Initiative (2002), the Declarations of Bethesda and Berlin and the establishment of Creative Commons. The essence of OA is free access to information to all, devoid of any restrictions, it essentially emerged as a tool to achieve the noble ideal of ‘Information for All’ (IFAP) and for democratization of information and knowledge, irrespective of the rich or poor.. OA, in fact, is also aimed at bridging the digital divide. Now, OA has become ubiquitous and an integral component of information access throughout the world. It’s a boon in the digital world.

Advantages of O A Publishing

Open Access publishing is a win-win game for all the stakeholders associated with scholarly publishing viz., authors, publishers, institutions, governments, including the users of information and librarians. All the stakeholders of publishing have been now focusing their attention on OA publishing in view of its advantages to all of them. The **European Commission** (2012) vividly expresses that “Open Access policies are expected to improve conditions for conducting research by reducing duplication of efforts and by minimizing the time spent searching for information and accessing it. This will speed up scientific progress and make it easier to cooperate across and beyond the EU. Such policies will also respond to calls within the scientific community for greater access to scientific information. Open access policies aim to provide readers with access to peer-reviewed scientific publications and research data free of charge as early as possible in the dissemination process, and enable the use and re-use of scientific research results... Enabling societal actors to interact in the research cycle, improves the quality, relevance, acceptability and sustainability of innovation outcomes by integrating society’s expectations, needs, interests and values... Businesses will also benefit from wider access to scientific research results. Small and medium-sized enterprises in particular will improve their capacity to innovate... Open access to scientific research data enhances data quality, reduces the need for duplication of research, speeds up scientific progress and helps to combat scientific fraud”.

Open Access Policies and Mandates

The OA policies and mandates gives direction and makes imperative on scholars and researchers to publish their works in open access, treating it as a social obligation as they got the research funding from the public money. The European Commission’s OA mandate document *Recommendation on access to and preservation of scientific information* (2012) states that there should be open access to publications resulting from publicly funded research as soon as possible, preferably immediately and in any case no later than six months after the date of publication, and twelve months for social sciences and humanities.

Objectives and Methodology of the study

The objectives of this paper are:

1. To assess the extent of Open Access Journal publishing from India and to examine their chronological growth rate.
2. To find out the extent of open access repositories / institutional repositories in India.
3. To find out the extent of possessing Open Access Mandates and Policies for the Institutions / Organizations in India.
4. To discuss the efforts made by different organizations and institutions in India towards Open Access publishing.

The methodology of the study makes use of analytical and descriptive methods to find out the OA Journal publishing, OA Repositories / Institutional Repositories and the OA Mandates and Policies in India, making use of the secondary data and sources like, web sites and web resources.

India's Contribution to OA Movement and OA Publishing

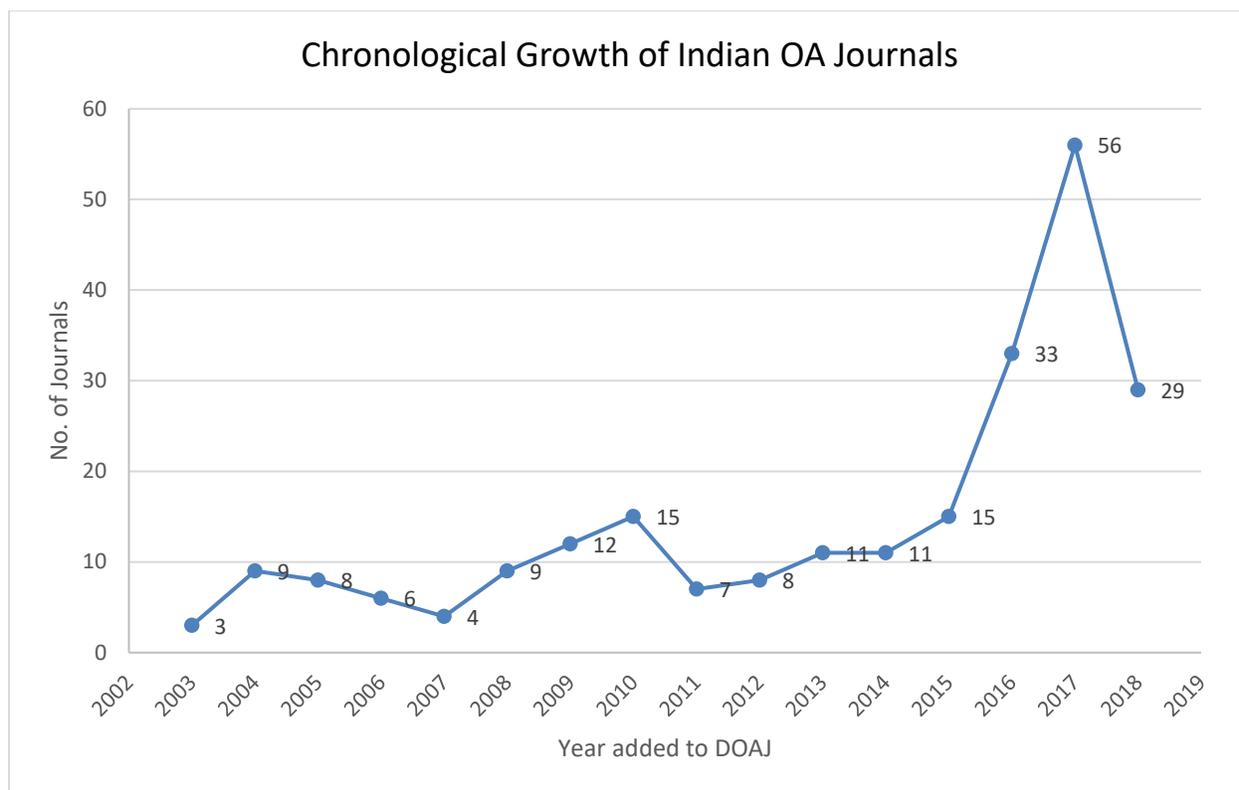
India's contribution to Open Access publishing is phenomenal. **DOAJ (Directory of Open Access Journals)** is an online directory of open access journals covering all parts of the world. It indexes and provides access to high quality peer reviewed journals. It was launched in 2003 at Lund University, Sweden, and by now, it indexes 11,514 OA journals from 126 countries. The year wise growth of open access journals from India is shown in the following table and graph.

Table-1: Chronological Growth of Indian Open Access Journals

| Chronological Growth of Indian OA Journals | |
|---|------------------------|
| Year | No. of Journals |
| 2003 | 3 |
| 2004 | 9 |
| 2005 | 8 |
| 2006 | 6 |
| 2007 | 4 |
| 2008 | 9 |
| 2009 | 12 |
| 2010 | 15 |
| 2011 | 7 |
| 2012 | 8 |
| 2013 | 11 |
| 2014 | 11 |
| 2015 | 15 |
| 2016 | 33 |
| 2017 | 56 |
| 2018 | 29 |
| Total | 236 |

Source: DOAJ

Fig-1: Chronological Growth of Indian Open Access Journals

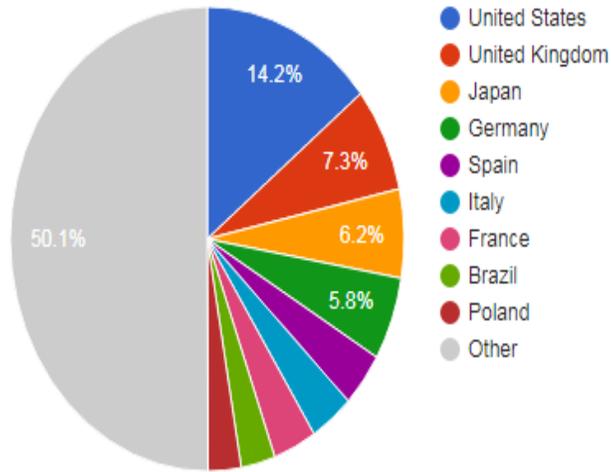


Source: DOAJ

As of 30th May 2018, there are **236 active open access journals** published from India and which have been listed in DOAJ. A large number of OA journals published from India were added to DOAJ during years 2017 and 2016. According to Sahoo, Mohanty & Sahoo (2017), there were 318 OA journals published from India in 2016 which were indexed in DOAJ, Further, as of July 2015, DOAJ indexed 576 Indian OA journals, as stated by GOAP (Global open Access Portal) of UNESCO. Compared to the preceding years (2015; 2016; and 2017), now in the year 2018, there are only 236 journals listed in DOAJ. That is, less than half of the journals which were earlier listed in DOAJ during 2015-2017 are indexed in 2018 in DOAJ. Many of them have now been deleted from DOAJ as they could not stand for the test of quality and ethical publishing norms.

OpenDOAR (Directory of Open Access Repositories) is a UK based website and an authoritative directory of academic open access repositories. There are 3,519 OA Repositories from different countries of the world. United States and UK are the largest OA repositories containing countries. According to OpenDOAR, India has 79 open access repositories comprising of research institutions and academic institutions, while some of them are both research and academic institutions.

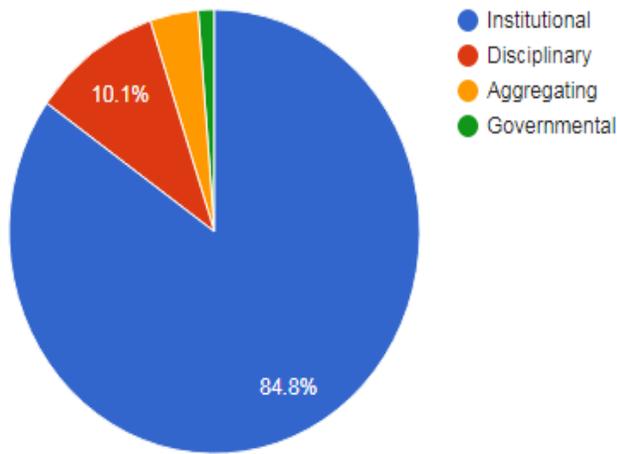
Fig-2: Proportion of Repositories by Country- Worldwide



Total = 3519 repositories
OpenDOAR - 31-May-2018

Source: OpenDOAR

Fig-3: Extent and Types of Open Access Repositories in India



Total = 79 repositories

Source: OpenDOAR

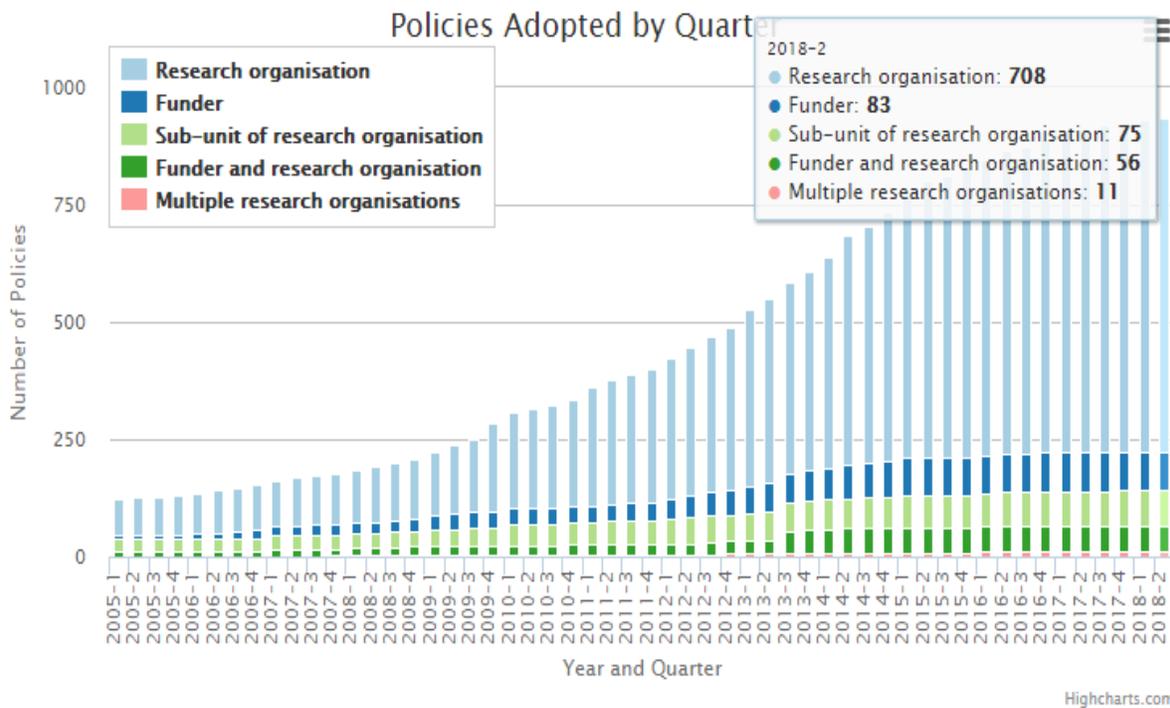
Large majority 67 (84.8%) of the Indian repositories are Institutional Repositories. Whereas, small number, i.e., 8 (10.1%) are Disciplinary Repositories, and much smaller 3 (3.8%) and 1 (1.3%) are the Aggregating and Governmental Repositories, respectively.

Following are some of the academic institutions from India that have been maintaining OA repositories of variant kinds of documents: Aligarh Muslim University, Bangalore University, Cochin University of Science & Technology (CUSAT), Goa University, Guru Gobind Singh Indraprastha University, Indian Institute of Technology, Bombay (IITB), IIT Kanpur (Indian Institute of Technology Kanpur), Indian Institute of Management Kozhikode (IIMK), Indian Institute of Management, Ahmedabad, Indian Institute of Science (IISc), Bengaluru, Indian Institute of Technology, Roorkee, Indian Institute of Technology, Hyderabad, Indira Gandhi National Open University (IGNOU), Information and Library Network Center (INFLIBNET), Maharaja Sayajirao University of Baroda, National Institute of Technology, Rourkela (NITR), Osmania University, Hyderabad.

Open Access Policies and Mandates in India

The Registry of Open Access Repository Mandates and Policies (ROARMAP) is an international registry charting the growth of open access mandates and policies adopted by universities and research institutions. As per the ROARMAP second quarter data of the year 2018, there are 708 research organizations which have mandate to publish their research output in Institutional Repositories.

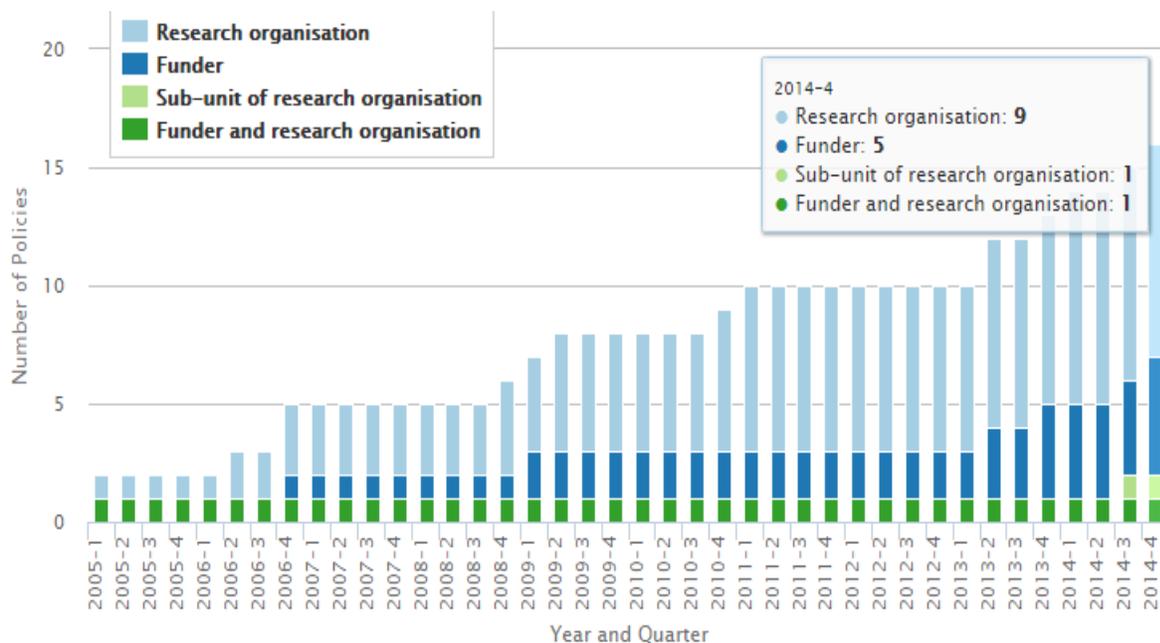
Fig-4: Global Open Access Mandates and Policies



Source: ROARMAP

Whereas, ROARMAP lists 16 institutions / organizations from India which have mandated to publish their research output in OA.

Fig-5: Open Access Mandates and Policies in India



Source: ROARMAP

There are 16 institutions--academic and research--have been registered with the ROARMAP. Some of them are Government of India Departments and Research Centers, such as, Department of Biotechnology and Department of Science & Technology, CSIR, Indian Council of Agricultural Research, Indian Institute of Horticultural Research Bengaluru, National Institute of Oceanography NKC and some of them are higher educational institutions, both technical and general universities, like Indian Institute of Technology, Hyderabad, National Institute of Technology, Rourkela, Bharathidasan University, M S University, etc.

Indian Efforts towards OA Mandates and Policies

Considerable efforts have been made by the government agencies, Research Councils, CoPs, Autonomies bodies including libraries and archives to make the information contents preserved in the open repositories for free access. Some such prominent efforts are described in the following paragraphs.

1. Department of Biotechnology (DBT), and the Department of Science and Technology (DST), GoI

The first Open Access Policy in India was announced in December, 2014 by the Department of Biotechnology (DBT), and the Department of Science and Technology (DST), Ministry of Science and Technology, GoI. Under this Policy, researchers who receive or have received funding from these two departments, since the financial year 2012-13, or who use resources of these Departments are mandated to deposit within two weeks after acceptance of the final version of manuscript (after refereeing, revision, etc.) by a journal, and including its supporting data in the respective institutional repositories, that is, in the grantee's respective IR, from where the information can be accessed by the public. This has been a big development from India in promoting OA and also to become the model to simulate by other institutions and government bodies.

2. National Knowledge Commission

The National Knowledge Commission (NKC) (2007) in its *Report of the Working Group on Open Access and Open Educational Resources*, identified that 'the country's success in the knowledge economy hinges to a large extent on upgrading the quality of, and enhancing the access to, education. One of the most effective ways of achieving this would be to stimulate the development and dissemination of quality Open Access (OA) materials and Open Educational Resources (OER) to improve the quality of education and access to information. It has also recommended for an open archive for the research output of the public funded institutions in the country.

3. Open Access India- an Online Community Of Practice

The Open Access India is a community of practice (CoP). It was initially an online Facebook group formed on 8th July 2011. It advocates Open Access, Open data, Open education in India. The community members are taking strides to forward the Open Access movement in India with the following objectives:

1. Advocacy – sensitizing the students, researchers, policy makers and general public on Open Access, Open Data and Open Education.
2. Development of community e-infrastructure, capacity building and framework for policies related to Open Access, Open Data and Open Education.

4. ShodhGanga: Reservoir of Indian Theses

It is one of the major breakthroughs in India to make available the theses produced by Indian universities in open domain for all the scholarly community to access. It is the digital repository of Indian electronic theses and dissertations set-up by the INFLIBNET Centre at Ahmedabad (Shodhganga@INFLIBNET). As on date, it has a deposit collection of 1,93,258 Ph D theses from 325 universities. 14 CFTIs (Centrally Funded Technical Institutions) like IITs, IIMs, NITs etc. have also joined Shodhganga (<http://shodhganga.inflibnet.ac.in/>)

5. LOADB (Listing of Open Access Databases)

Listing of Open Access Databases (LOADB) is a project taken up by the CSIR (Council of Scientific and Industrial Research) Unit for Research and Development of Information Products (URDIP) located at Pune (India), and is being developed for the Open Science and Open Innovation Infrastructure Project. It is a pilot listing to build a quality controlled collection of Open Access Databases emanating from government agencies, research institutions and academic institutions in different disciplines. It has by now 1300 open databases from 40 countries and in about 30 science and technology categories, ranging from agriculture, astronomy to archaeology. Large number of Open databases contained in LOADB are from Computational Biology, Biotechnology, Agriculture and Life Sciences (<http://www.loadb.org/>).

6. *Eprints@iisc*

The Indian Institute of Science (IISc) is a premier institution of education and research in sciences and engineering comprising of about 500 faculty members actively involved in research from 42 departments. And it has a student population of about 4,200 of which 2,750 doctoral students who actively contribute to research and publications in the form of journal articles, reports, thesis and dissertations, patents, standards, etc. The Institutional Repository of IISc, viz., *eprints@IISc* was started in 2004 to collect, preserve and disseminate all the intellectual output of the Indian Institute of Science in digital form and by now it contains 46,430 publications. It enables the Institute community to deposit their preprints, post-prints and other scholarly publications using web interface. While *eprints@IISc* can be accessed by anybody, submission of documents to this repository is limited to the IISc research community only. The archive is searchable by subject, author, year, e-Print type, including the latest additions. (<http://eprints.iisc.ernet.in/information.html>).

7. **in.arXiv (Institute of Mathematical Sciences, Chennai)** (<http://in.arxiv.org/>)

It is an Indian mirror site of the **arXiv**—an e-print service owned and operated by Cornell University, commenced on 14 August, 1991. It has 1,377,332 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance, Statistics, Electrical Engineering, Systems Science, and Economics. The standard access route is through the arXiv.org website or one of several mirror sites. The Indian mirror site is hosted / maintained by the Institute of Mathematical Sciences, Chennai.

8. **NDL (National Digital Library of India)**

Ministry of Human Resource Development (MHRD) under its National Mission on Education through Information and Communication Technology (NMEICT) has initiated the National Digital Library of India (NDL India) - a pilot project to develop a framework of virtual repository of learning resources with a single-window search facility. The objective of NDL is to integrate several national and international digital libraries in one single web-portal. The NDL India provides free access to many books in English and Indian languages. It is aimed at supporting all academic levels of learners from primary to PG levels, including researchers and life-long learners of all disciplines, and differently-abled learners. It is developed at Indian Institute of Technology, Kharagpur. It provides access to 10 million items authored by 3lakh

authors. More than 60 types of learning materials such as books, journal articles, technical reports, manuals, theses, audio lectures, video lectures, datasets, solutions, web courses, reports, question papers, Annual reports, law judgments, manuscripts, etc in 70 languages. This Repository integrates contents from various Indian institutional repositories such as, NPTEL, KrishiKosh, Librivox, NCERT Books, etc. The resources can also be accessed through mobile apps. (<https://ndl.iitkgp.ac.in/>).

9. TKDL (Traditional Knowledge Digital Library)

Traditional Knowledge Digital Library (TKDL) is a pioneer initiative of India to prevent misappropriation of country's traditional medicinal knowledge at International Patent Offices on which healthcare needs of more than 70% population and livelihood of millions of people in India is dependent. It is a representative database of 1200 Ayurvedic, Unani and Siddha Formulations. Access is available to 2.90 Lakh (0.290 million) Medicinal Formulations to Patent Offices only under TKDL Access Agreement.

Traditional Knowledge Digital Library has overcome the language and format barrier by scientifically converting and structuring the available contents of the ancient texts on Indian Systems of Medicines i.e. Ayurveda, Siddha, Unani and Yoga, into five international languages, namely, English, Japanese, French, German and Spanish, with the help of information technology tools and an innovative classification system - Traditional Knowledge Resource Classification (TKRC). TKRC has structured and classified the Indian Traditional Medicine System in approximately 25,000 subgroups for Ayurveda, Unani, Siddha and Yoga. TKDL technology integrates diverse disciplines and languages such as Ayurveda, Unani, Siddha, Yoga, Sanskrit, Arabic, Urdu, Persian, Tamil, English, Japanese, Spanish, French, German, modern science & modern medicine. (<http://www.tkdل.res.in/tkdل/langdefault/common/Home.asp?GL=Eng>)

Conclusion

India has made considerable strides, and shifts towards open access publishing in order to make open access as the appropriate means of information access to all, without restrictions. Quite a considerable Indian academic and research institutions (79) have been preserving their publications, theses & dissertations, conference papers, journal articles etc in their Institutional Repositories. Further, a considerable number of scholarly journals (236) are now being published in Open Access by the government Departments, institutions, Academies, professional bodies, including commercial publishers. The other development is that there are 16 institutions in India have been found place in ROARMAP for having Open Access Mandates which include national research centers (CSIR, NISCAIR, ICRISAT, etc), higher learning institutions (IITs, IIMs, IISc, universities, etc).

However, the Indian government is yet to declare the Open Access Mandate and Policy. The Department of Biotechnology (DBT) and the Department of Science and Technology (DST), brought out Open Access Policy in 2014. Further, NKC (National Knowledge Commission) has

realized the need to make use of the world's best OERs and Open Access resources through broadband internet connectivity for improving the quality of education and access to information. It has also recommended for an open archive of the research output of the country. GOAP (Global open Access Portal) of UNESCO has rightly identified that the real gap in India is 'undoubtedly the absence of a National mandate on OA publishing'

India has only a small number of the institutions (16) having OA mandates for publishing their works in their institutional repositories. However, it is also observed that 79 institutions are preserving some kind of documents in their Institutional Repositories. It is now needed that all the Indian Councils, like CSIR, ICAR, MCI, etc, and AICTE, UGC have to come out with OA mandates / policies for the country, so that all the academics, researchers of research centers and universities, including technical universities, publish their research output in Open Access. The national LIS professional associations, viz., ILA, IASLIC, IATLIS, etc have to make sincere and concerted efforts with the government to announce the OA Mandates / Policies for India.

FOLIO (Future of Libraries is Open) and the UNESCO's IFAP (Information for All Program) to create equitable societies through better access to information with an objective of 'Free Flow of Information' across the globe have already emerged and gaining wider attention and acceptance, world over. Taking forward the IFLA's program on Free Access to Information and Freedom of Expression (FAIFE) and also making these idealistic and cultural manifestations synthesized, we propose that the slogan for the present day libraries in this learning society needs reformulated as '**Future of Libraries and Information is Open**' (FOLIO), by making '**Information is Open and Accessible for All**' (IOAA). This is achievable only when the nations declare their open access mandates and policies making imperative for the academic and research community publish their research output in OA domain.

Acknowledgements:

The first author acknowledges with thanks the support of UGC (India) for sponsoring research on 'Open Access Resources in University Libraries in India' by granting the Emeritus Fellowship. The authors acknowledge the support received by Mr. Vamshi Krishna, Indla of Cap Gemini in analyzing the data.

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