

# Opportunities and Barriers of Indian Open Access Repositories

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## Abstract

*Provides a brief overview of open access (OA) and highlights on growth of open access repository (OAR) movement all over the World including India. Highlights on some of the major initiatives taken by Indian government time to time in order to popularizing OARs movement throughout the country. The main objective of the study is to discuss some of the open access self archiving policies as adopted by repositories registered in OpenDOAR database. The paper also discusses some of the problems of Indian OARs along with suggestions in the line of global recommendations.*

**Keywords:** open access, open access repository, digital library, self archiving policy

## 1. Introduction

Open Access to knowledge movement in 1990 has changed the traditional publishing system which existed over 300 hundred years. The main objective of this open knowledge movement was to spread the public funded research findings to the society because majority of the research all over the world is conducted by the government using public funds. Our traditional system is not a position to share these resources to the majority of the end users. As a result, our existing formal system of scholarly publishing is being shifted by new open access publishing models. Peter Suber defined OA as “*Open Access literature is digital, online, free of charge and free of most copyright and licensing restrictions*” (Suber, 2015). But there is no agreed definition of open access. There are the differences in opinions among professionals regarding the definition of OA.

Due to the advent of WWW and Internet, several open access scholarly communication channels have emerged (Fig. 1) and open access repository (OAR) has emerged as a new publishing model to the academic world. This model is also popularly known as green path to open access. Several open access advocates (Antelman, 2004; Chan & Costa, 2005; Bailey, 2006b; Harnad, 2005) described two schools of thought: *journal reform school* (‘known as *gold path to open access*’), publishing articles in any open access journals and *self-archiving school* (‘*green*’), self archiving articles published in any open access journals or commercial/subscribed journals in any institutional repository or centralized repository in order to make articles freely available over the web (Fig. 1).

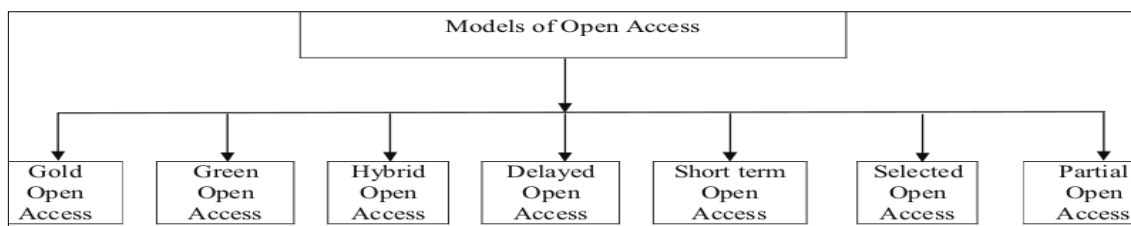


Fig. 1: Open Access Models

The BOAI (2002) declaration also recommended these two popular roads by which we can achieve OA. These two wings of OA model have brought many fundamental changes in scholarly communication processes all over the world. Subbiah Arunachalam supports this view by saying that the green road is faster and cheaper, whereas the gold road is more costly, but better maintained and managed (Arunachalam, 2008).

## 2. History of Open Access Repository

Institutional Repository is basically “a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and made accessible to end users both within and outside of the institution, with few if any barriers to access” (Crow, 2002). The history of repository is not so long but became popular recently after the release of three declarations at the international level on 2002 onwards. These were the first major declarations in support of open access to public funded research and are popularly known as 3Bs (BOAI, 2002; Bethesda Statement; 2003; Berlin Declaration, 2003). But the first repository ‘arXiv’ was established in 1991 by Paul Ginsparg, a physicist at Los Alamos National Laboratories. It was basically a subject repository, the objective of which was to share e-prints in Physics, Mathematics, and Computer Science etc. And, some of the OARS have already been listed in a Spanish website engaged in ranking World repositories (<http://www.repositories.webometrics.info/about.html>). The following are the key events in the history of repository movement – i) *Budapest Open Access Initiative* (2002); ii) *Publication of ‘SPARC Position Paper’* (Crow, 2002); iii) *Bethesda Statement on Open Access Publishing* (2003); iv) *Berlin Declaration on OA to knowledge in the Science and Humanities* (2003); v) *IFLA statement on OA to scholarly literature and research documentation* (2003). The following are the reasons behind the development of this movement – i) *restricted access or access against fees*; ii) *journal pricing cost*; iii) *technological changes*; iv) *increasing demand to access knowledge objects*; and v) *significant increase in the overall volume of research*.

### 3. Open Access Repository: Global Scenario

Presently, all the countries are maintaining repositories on different subjects and objects types such as theses, learning objects etc. There are more than 3500 repositories (as of January, 2018) all over the world (Fig. 2) and majority of them are multidisciplinary in nature. Generally, repositories hold all type of documents covering different subjects covered by the organizations. Initially, the repository movement was confined into some developed countries like USA, United Kingdom, Germany, Spain, France and they were the main contributors in this social movement. But European countries such as United Kingdom, Germany, Spain, France etc (Fig. 3) are playing key role in this movement by contributing 1575 (45.5%) OARs. Asia contributes more than 700 (20.2%) OARs and Japan as an Asian country is in the third position covering 6.3% OARs.

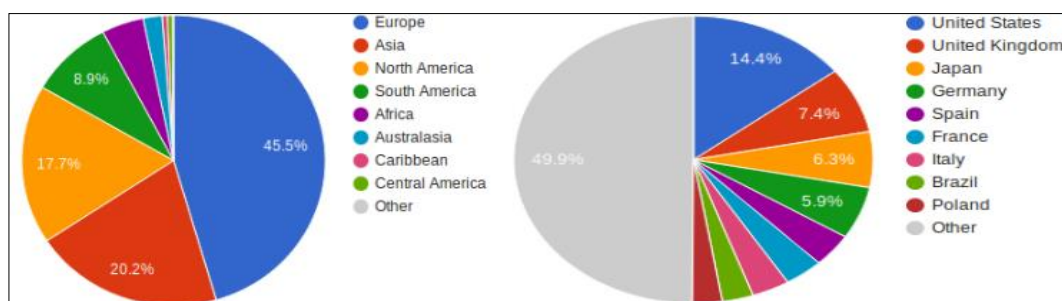


Fig. 2: Repositories – Continent-wise      Fig. 3: Repositories - Country-wise

### 4. Open Access Repository: Asian Scenario

Academic organizations mainly universities and research organizations are the main players in setting up repositories for their own. Since 2002, so many libraries all over the world have developed OARs. Figure 4 shows the growth of OARs particularly in Asia. More than 700 OARs have been reported as per OpenDOAR database (OpenDOAR, 2018). It is clear that Japan having 217 (31%) repositories stands first place in Asia and third position in the world. India as a developing country ranks second position having 80 (11.3%) OARs in Asia. Turkey, Indonesia stands third and fourth position respectively (Fig. 4). Some other countries in Asia such Taiwan contributes 60 (8.6%), China has 40 (5.7%), Korea contributes 34 (4.9%) OARs respectively. The rest of the Asian countries contain more than 100 OARs, which is 15% of the total OARs in Asia. As per ROAR (2018), India possesses more than 100 OARs and most of them have been developed by elite organizations like IITs, IIMs, CSIR institutes etc. For example, IISC, Bangalore was the first to have developed IR in the country. The Indian National Science Academy (INSA) is one of such organization to have a signatory to the Berlin Declaration.

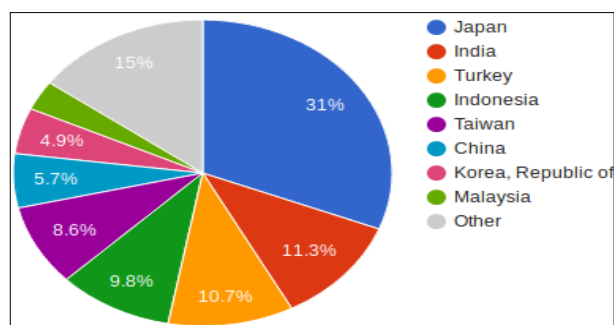


Fig. 4: Repositories in Asia- country-wise

## 5. Importance of Open Access Repository

Due to the advancement of open knowledge movement (OKM), the demand for open knowledge products is growing over the world. Libraries are now acquiring such products to serve their users effectively and efficiently than before. And, our professionals are realizing the benefits of using such open knowledge system in libraries. Several experts have discussed the advantages of OAR from several angles (Olivier, 2007; Kircz, 2005; Gibbons, 2004; Bailey et al., 2006a). In summary, benefits of OARs among different stakeholders are discussed (Table 1).

Stakeholders	Benefits
Institutions	Increases visibility and prestige; acts as an advertisement to funding sources, potential new faculty, raising the institutional profile, total intellectual output, teaching and learning, supporting institutional record keeping, cost savings, unique place of resources.
Users	Dissemination and impact, IR content, feedback and commentary, added value services, personal and promotional uses, networked information.
Researchers	Provide a central archive of their work, increase the dissemination and impact of their research, more control over their work.
Society	Provide access to the world's research; ensures long-term preservation of institutes' academic output.

Table 1: Benefits of OARs

## 6. Problems in Indian context

In spite of several advantages of OARs, we are not in a position to take the full advantages of this open access publishing model. Our academic and research institutions are still unable to take the advantage of OARs. The problems are various and multifaceted. It derives from the different stakeholders such as organization, funding body, publishers, users, academicians, administrators etc. Some experts (Björk, 2004; Forrester, 2015) have pointed out barriers to open access and open access repositories. Some of the issues that have been identified as barrier to OARs after reviewing existing literatures are mentioned below -

### 6.1. Low Level of awareness

Most of the people in India are not aware about this open access publishing system. Academicians, researchers, administrators are unaware about the benefits of OARs (Roy, 2015). Among the reasons for this is lack of awareness of citations (Arunachalam & Muthu, 2011). In another survey

report (Calhoun & Fudrow, 2014), it was reported that students and faculties are not aware about the OARs (Fig. 5). There is a misconception among scientific community that open access resources are not qualitative and do not have the authority stamp of 'peer reviews' (Creaser et al., 2010). It is also found that academics do not clearly understand the benefits of open access repositories (Kim, 2011; Marsh, 2015) and this issue is the most significant barrier to the success of an institutional repository (Bell, Foster & Gibbons, 2005).

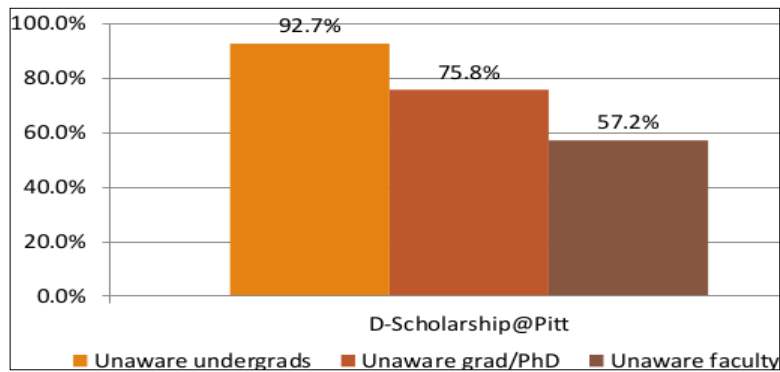


Fig. 5: Level of awareness towards OARs  
(Source: Calhoun & Fudrow, 2014)

### 6.2 Access Policy

Providing free full text access to these knowledge resources has become a challenging task to the library professionals. There are several reasons for which an organization does not provide free full text access to the contents. This policy specifies who are eligible to access content as well as the level of access pattern. Generally, authorized users can only access full-text free of cost but outsiders are not eligible to access the full-text. All the repositories maintain access control mechanism by using ID and password (Roy, Biswas & Mukhopadhyay, 2017).

### 6.3. Copyright and Licensing

This policy deals with copyrights and licensing model followed by the OARs. Generally, authors do not know who should retain copyright (Swan & Brown, 2005) and most of the authors assign copyright to the publishers reluctantly (Gadd, Oppenheim & Proberts, 2003). It is found that majority of OARs have no licensing policy. Generally, organizations/authors are not aware of the conditions of copyright and licensing policies. As a result, publishers always put restriction on the use of the content. Majority of the publishers impose restriction on access in the form of embargo and do not provide immediate access to the content during the period.

### 6.4 Multilingualism

Most of the existing information retrieval system covers documents available only in English and majority of Indian OARs hold only English documents (OpenDOAR, 2018) (Fig. 6). Only a few OARs possess documents written in a language other than English. After English, Hindi as a national language stands 1<sup>st</sup> position, and Gujarati holds 3<sup>rd</sup> position (Fig. 6). But, our systems are not capable of processing and retrieving such non-English knowledge objects. Here lies the importance of devising multilingual information retrieval system (Roy, Biswas & Mukhopadhyay, 2016). Because, India is a multilingual country having 418 languages of which 407 are living and 11 are extinct (Maitra, 2002). Near about 5% people can read and write English (Technology Development for Indian Languages Group, 2003).

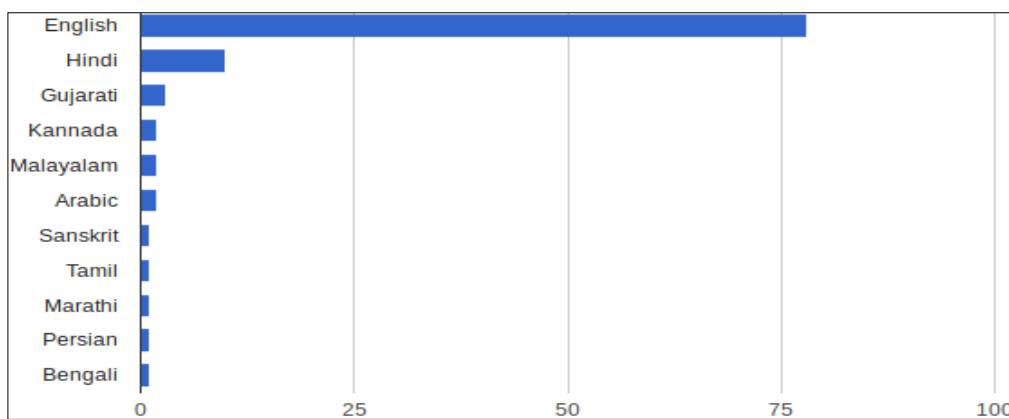


Fig. 6: Distribution of languages  
(Source: OpenDOAR, 2018)

### 6.5. Lack of Institutional Mandate

There is no such mandate that can force organizations to submit public funded research outputs in any open access repositories. Even, there is no legislative provision in the country to make archiving mandatory. Though UGC (2005), Bangalore declaration (2006), NKC (2007), DBT & DST (2014) have made recommendations in support of OA, but no formal move has been made towards OA mandates.

### 6.6 Open Access Policy

Devising OA self archiving policies are essential for smooth growth of OARs (Ware, 2004; Barton & Waters, 2004–2005). But majority of OARs do not have OA self archiving policies (OpenDOAR, 2018). Peter Millington after analyzing OARs registered in OpenDOAR database and reported that about two thirds of OARs did not have publicly stated policies (Millington, 2006). Generally, repositories managed by elite organizations are a good position when the policy matters are

concerned. Most of the repositories do not have policy regarding content, collection, multilingualism etc. Only a few organizations (basically CSIR organizations, IITs, IIMs) have OA self archiving mandates. There are more than 800 organizations have registered their policy in ROARMAP (<http://roarmap.eprints.org/>) database. In India, only 16 organizations have registered their policy proposals (Fig. 7). There are mandates at national level but we are still in the pipeline.

## 7. Role of Librarians

A number of studies (Armstrong, 2014; Burns, 2003; Emmett et al., 2011; Marsh, 2015; Rodriguez, 2015; Xia, 2011) have focussed on the librarian's role in this new scholarly landscape in promoting OARs among academic community. They can make people aware about the advantages of OARs and helps in increasing its uptake. They can educate faculties on copyright and licensing issues and can play an important role in negotiating with publishers on behalf of faculty (Buehler & Boateng, 2005). In addition, advocacy, promotion and marketing (Jenkins & Breakstone, 2005) regarding OARs have become an established role of librarians (Allard, Mack & Feltner-Reichert, 2005). Even, they can play an important role in devising OA self archiving policies, standard related to developing OARs, strategies for the development of an OARs (Palmer, Terreau & Newton, 2008). Bailey (2005) focuses on how reference librarians should serve as change agents in the introduction of an IR. Chan, Kwok, Yip (2005) introduced IR as a new scholarly communication model and reference librarians are the agents for change.

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Fig. 7: Open Access Self Open Archiving Mandates (Source: ROARMAP, 2018)

## 8. Conclusion

India as a developing country has made a remarkable growth in the arena of open access to knowledge movement. But repository movement as a green path to OA is still in the process in spite of mandates at national level. A lot of works are required to be done in policy level and all the stakeholders have a role to perform making the movement successful. After successful journey over 15 years, our OARs are not up to the standard when the policy matters are concerned. It is the responsibility of the library professionals to help the administrators and policy makers in devising guiding principles and best practices in the line of global recommendations. It is the responsibility of the government to make laws and regulations time to time in order to make the contents available over the Web.

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