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LIS Open Access Institutional Digital Repositories in OpenDOAR: an appraisal

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Abstract

Open access has gained a huge popularity in the forms of open access journals and open access repositories due to the advent of Internet. In the arena of open world open access digital repositories are platforms in which everyone may deposit, search and retrieve digital content from anytime anywhere in the world. The paper tries to evaluate the open access digital repositories in the field of Library and information Science available in OpenDOAR (Directory of Open Access Repository). In this paper the researchers found 126 open access repositories in Library and Information Science available in OpenDOAR. The paper also tries to find out the Open Access Repositories in Library and Information Science available in OpenDOAR and evaluate the generic and technical features of them as per items, language, country, repository type, content, software, operational status, etc. For this purpose, 126 websites of open access repositories in Library and Information Science concerned have been taken and after surveying these open access repositories in Library and Information Science, the content analysis has been done in respect of generic and technical features. After analysis it is found that almost all open access digital repositories in the field of Library and Information Science available in OpenDOAR are indexed in English language and some of them are bilingual. It is also observed that open source softwares like Eprints and Dspace have been exploited in a large scale to create open access digital repositories in the field of Library and information Science indexed in OpenDOAR.

Keywords: Open Access Repository, Institutional Digital Repository, OpenDOAR, Open Source Software, OAI-PMH, Directory of Open Access Repository, Library and Information Science (LIS).

Introduction

In the year of 2003, Open Access movement started to provide resources to all free of cost. Actually, open access publishing is divided into two separate types—self archiving in repositories, popularly known as green method and submission of open access papers in on-line journals, popularly known as gold method. In this regard open access repositories in LIS are a collection of digital database of scholar's intellectual resources. The open access repositories in LIS procure and process digital resources in LIS and also preserve those resources for future use and are generally open and inter-operable. Many Open Access Repositories in LIS are available all around the globe but there is not a single platform or website available to register open access repositories in LIS. To develop such type of service the development of OpenDOAR¹ (OpenDOAR, 2017) is noteworthy for the development of the academic and research activities all over the world. OpenDOAR is developed by the University of Nottingham under the SHERPA umbrella and was initiated by the University of Nottingham, UK and Lund University, Sweden, home of the Directory of Open Access Journals (DOAJ). The project is financed by OSI, The UK funding body, Joint Information Systems Committee (JISC), an alliance of European research libraries, library organizations, and research institutions SPARC, Europe and Consortium of Research and the Centre for Research Communications. OpenDOAR is a collection of institutional and subject oriented repositories for creation of an institution or organization's output of scholarly research, and store house of theses, conference papers, unpublished reports, books, journal articles, etc. Researchers, academicians, administrators, and funders, data miners used Open DOAR. The search service is very unique and the information is analyzed and tabulated in OpenDOAR in such a way any one can be satisfied easily.

Objective of the study

The main objective of the study is to find out the Open Access Repositories (OARs) in Library and Information Science indexed in OpenDOAR and evaluates the generic and technical features of them as per items, language, country, repository type, content, software, operational status, etc.

Review of literature

The notable studies have been conducted on open access repositories from the global perspectives but no such study on subject oriented open access repositories have been found especially in Library and Information Science. There are very few studies on subject repositories (Bankier & Perciali²), most of these are presented as case study of a particular institute or organisation (Adamick & Reznik-Zellen³, 2010a). Bjork in 2013 observed different subject repositories in and around the globe and summarized in a tabular form. He actually showed us 56 subject repositories with their generic and technical features. In 2017, Sengar, Lohiya and Rai⁵ presented a paper on CSIR Institutional Digital Repository in a national conference held in Pune

and they commented on CSIR (Sengar, 2017). However, Manjunatha K and K. Thandavamoorthy⁶ in 2011 in their paper present the attitude of researchers of Karnataka University towards the deposition of their intellectual output to OARs. The study also presents that the most of the science and technology scholars know about OARs and they want to deposit their papers to it whereas the humanities and social science researchers are reluctant to do so (Manjunatha & Thandavamoorthy, 2011). Rashmi Rekha Gohain⁷ in 2011 evaluated the institutional digital repositories in the Indian Universities and R&D organizations and presents an overview of the present trend and developments of Indian OARs in OpenDOAR (Gohain, 2011). In the year of 2009 N. Ashok Kumar⁸ opined that Institutional Repository (IR) provides source of digitized materials deposited by scholars. He also observed that the most of the research and development institutes and few academic institutes in India host their IR to provide service to users (Ashok Kumar, 2009).

Scope and coverage

After browsing the URL of the Directory of Open Access Repository (OpenDOAR), total 126 open access repositories in Library and information Science have been retrieved and as per the objective of this study, total 126 repositories in Library and information Science have been selected to evaluate them.

Methodology

All the data related to Library and Information Science (LIS) Open Access Repositories have been consulted from the OpenDOAR website. After that they have been summarized, tabulated and analyzed for minute evaluation. For evaluation of open access repositories in LIS, case study method and content analysis of the URL concerned have been consulted keeping in the mind of the aforementioned objective.

Analysis and interpretation of results

For minute analysis and interpretation of the retrieved data from the URL of OpenDOAR, the following tables and figures have been presented below for evaluation of OARs in LIS. Moreover the tables and figures have been drawn following the objectives as mentioned above and generic and technical features of open access repositories indexed in OpenDOAR--

Table—01
Item wise Distribution

Number of Items	Number of Open Access Repositories	Percentage
1-5000	72	57.14
5001-10000	15	11.90
10001-20000	16	12.70
20001-30000	11	08.73
30001-40000	01	00.79

40001-50000	02	01.58
50001-60000	01	00.79
60001-70000	02	01.58
70001-80000	01	00.79
80001-90000	00	00.00
90001-100000	00	00.00
100001-200000	02	01.58
200001-300000	01	00.79
300001-400000	00	00.00
400001-500000	01	00.79
Above 500000	01	00.79
Total	126	100

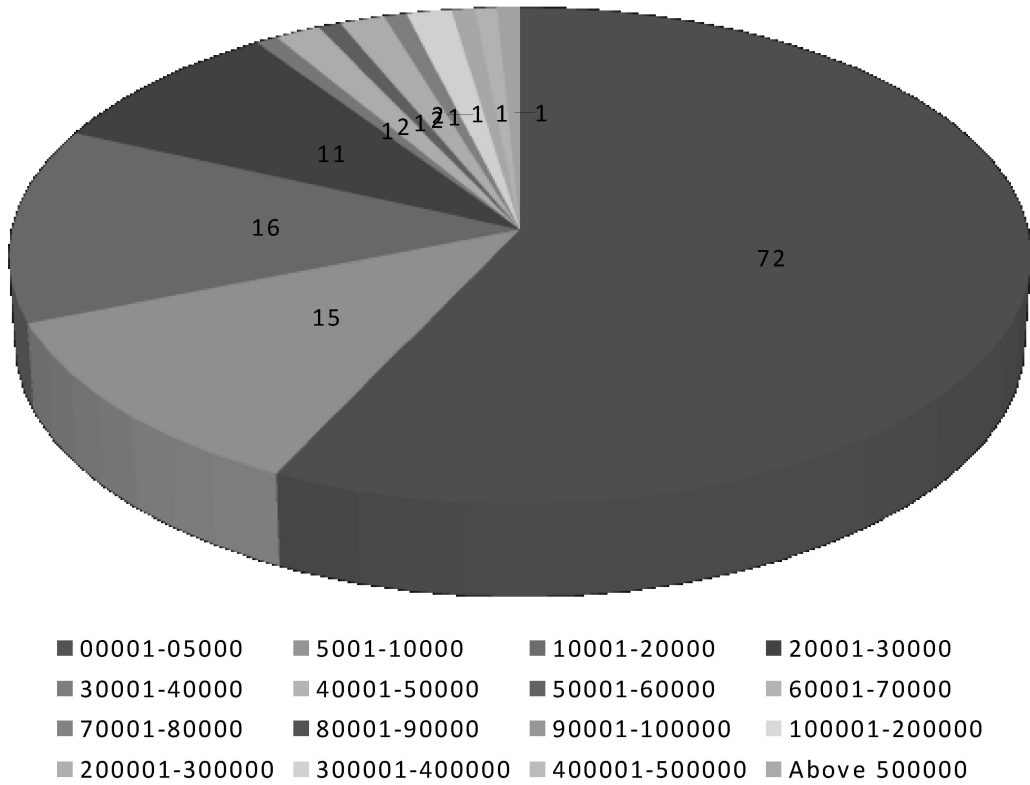


Figure 1: **Item wise Distribution**

It is observed from the table 01 and figure 01 that 57% OARs in OpenDOAR have less than 5001 items but more than 15% OARs in OpenDOAR have items from 5001 to less than

10000. It is also clear that 11 OARs in OpenDOAR have more than 20000 items and one OAR in OpenDOAR have more than 20000 and 40000 items respectively.

Table—02
Language wise Distribution

Language Used in Open Access Repositories (OAR) in OpenDOAR	Number of OARs in OpenDOAR
English	95
German	09
Spanish	08
French	06
Chinese	06
Potugese	06
Ukranian	04
Japanese	03
Arabic	03
Croatian	03
Italian	03
Malay	02
Dutch	02
Russian	02

The total number of OARs exceeds the actual number of OARs due to multilingual OARs in OpenDOAR. The table two illustrates that 95 OARs in OpenDOAR are available in English followed by German (09) and Spanish (08). The notable attribute of the study is that the official language of the particular country dominates the OARs to use that country's official language and sometimes English also.

Table—03
Repository Type wise Distribution

Type of OARs in OpenDOAR	Number of OARs in OpenDOAR	Percentage
Aggregating	03	02.40
Disciplinary	15	11.90
Governmental	04	03.20
Institutional	104	82.50
Total	126	100

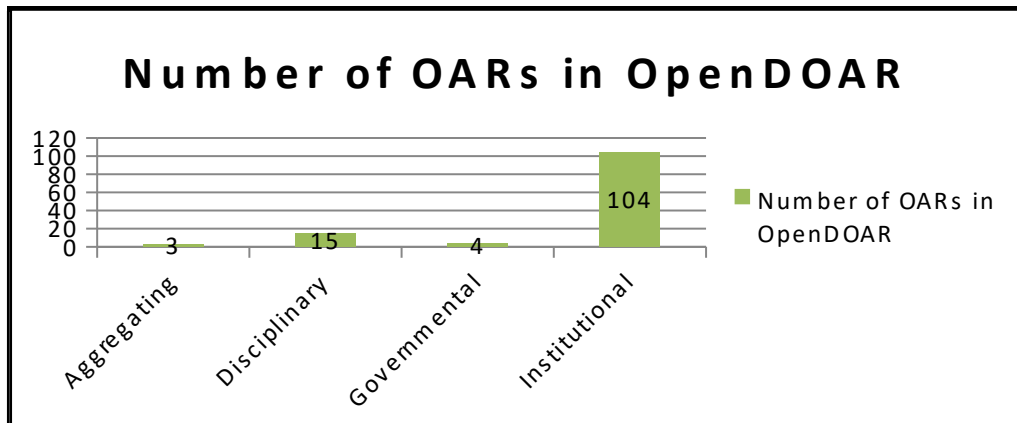


Figure 2: Repository Type wise Distribution

The table three and figure two show that 82.5% OARs in OpenDOAR are institutional i.e. repositories hosted by an institution or department. On the other hand 11% OARs in OpenDOAR are disciplinary i.e. cross institutional subject repository. There are only four OARs in OpenDOAR is governmental i.e. repository for Indian Government data and three are aggregating OARs i.e. aggregate data from many subsidiary repositories.

Table—04
Content wise Distribution

Type of Contents	Number of OARs in OpenDOAR
Articles of the journals	90
Books, book chapters and sections of the book	46
Conferences and workshop papers	64
Datasets	04
Learning Objects	20
Multimedia and audio visual material	27
Patents	03
Bibliographical References	21
Software	01
Other Special item types	13
Theses and dissertations	75
Unpublished reports and working papers	49

The actual number of OARs exceeds because of multi-content OARs in OpenDOAR .From website of OpenDOAR the researchers found that there are several types of contents available in the most of the OARs. The table four states that articles of the journals (90) are

mostly available in OARs in OpenDOAR followed by theses (75) and conference papers (64). 49 unpublished works are found in OARs in OpenDOAR. It is noted that only one dataset is found as content in OARs.

Table—05
Software wise Distribution

Name of the Softwares	Number of Open Access Repositories	Percentage
ARNO	01	00.79
CONTENTdm	01	00.79
DARE	01	00.79
Digital Commons	07	05.55
Drupal	02	01.58
DSpace	55	43.65
Eprints	23	18.25
Fedora	02	01.58
Greenstone	02	01.58
Grunt Metaparser	01	00.79
HAL	03	02.40
HTML	02	01.58
IR+	01	00.79
Islandora	01	00.79
MARZ Content Management System	01	00.79
MyCoRe	01	00.79
Not Mentioned	08	06.35
OAIcat	01	00.79
Open Journal Systems	01	00.79
Open Repository	02	01.58
OPUS	05	04.00
ExLibrisPrimo	01	00.79
WEKO	03	02.40
XoNIps	01	00.79
Total	126	100

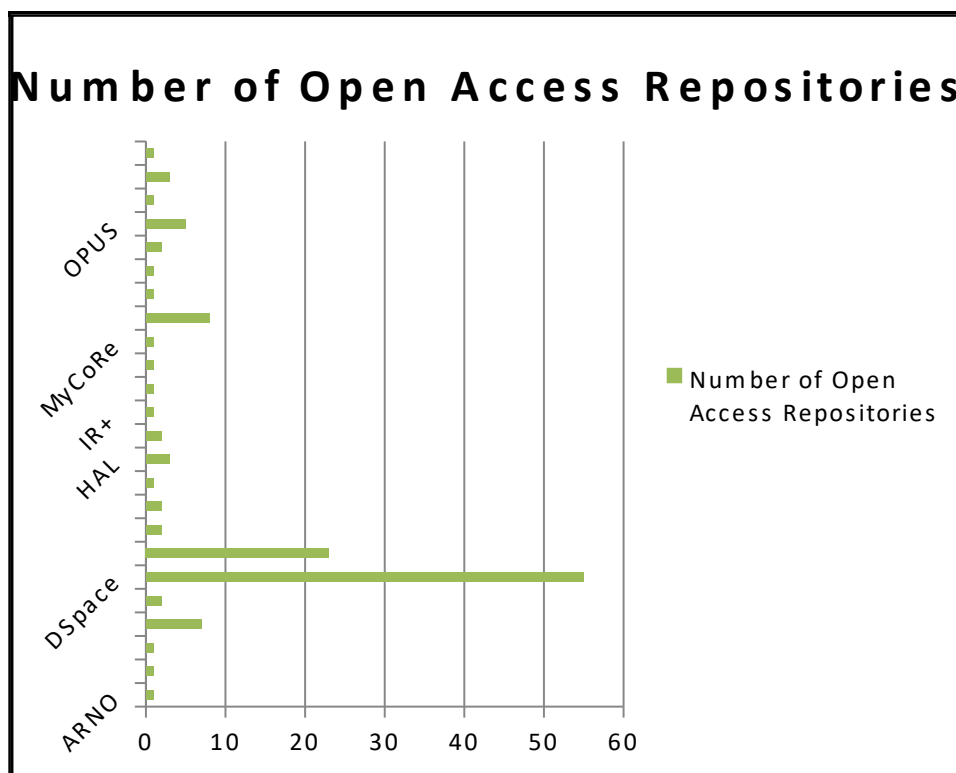


Figure 3: **Software wise Distribution**

It is clear from the table-05 and figure-03 that the OARs in OpenDOAR have been using the most popular open source software like DSpace (55) and EPrints (23) followed by Digital Commons Software (07). It is also found that 41 OARs in OpenDOAR prefer to develop their repository by using other softwares.

Table—06
Operational Status wise Distribution

Operational Status	Number of Indian OARs	Percentage
Operational	113	89.70
Broken	05	04.00
Trial	08	06.30
Total	126	100

The above table 06 indicates 89.70% open access repositories are operational i.e. fully functional according to OpenDOAR. On the other hand 4% open access repositories are broken i.e. related with technical problem. The trial Repositories are 6.3% only. So it is a matter of great achievement that operational repositories are found in a large number.

Table—07
OAI-PMH Complaint wise Distribution

OAI/PMH Complaint or	Number of Open	Percentage
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Not	Access Repositories	
OAI-PMH Complaint	84	66.67
OAI-PMH Non-Complaint	42	33.33
Total	126	100

OAI-PMH, an international standard, is generally used for searching of open access materials. The table seven explicates that 66.67% OARs in OpenDOAR share a common open standard called OAI i.e. standard for collection and share one's materials from one platform to another platform whereas 42% OARs in OpenDOAR are lagging behind it.

Table—08
Policies of OARs in LIS

Metadata Re-use Policies	Number of OARs	Percentage
Metadata policies not stated	30	23.81
Metadata policies unknown	08	06.35
Metadata re-use is permitted for non-profit purposes	12	09.52
Metadata re-use policy explicitly undefined	73	57.94
Commercial	03	02.38
Total	126	100
Full Text data Re-use Policies	Number of OARs	Percentage
Full data item policies not stated	31	24.60
Full data item policies unknown	08	06.35
Full data item re-use policy explicitly undefined	71	56.35
no robots	05	03.97
Re- use of Full data item(non profit)	07	05.55
Right vary	04	03.20
Total	126	100
Content Policies	Number of OARs	Percentage
Content policies unknown	06	04.76
Content policies defined	16	12.70
Content policies explicitly undefined	73	57.94
content policies not stated	31	24.60
Total	126	100
Submission Policies	Number of OARs	Percentage
Submission policies unknown	07	05.55
Submission policies defined	19	15.08
Submission policies explicitly undefined	68	53.97
Submission policies not stated	32	25.40
Total	126	100
Preservation Policies	Number of OARs	Percentage
Not Yet Analyzed	31	24.60
Preservation policies unknown	07	05.55
Preservation policies defined	09	07.14
Preservation policies explicitly undefined	65	51.59
Preservation policies not stated	14	11.11
Total	126	100

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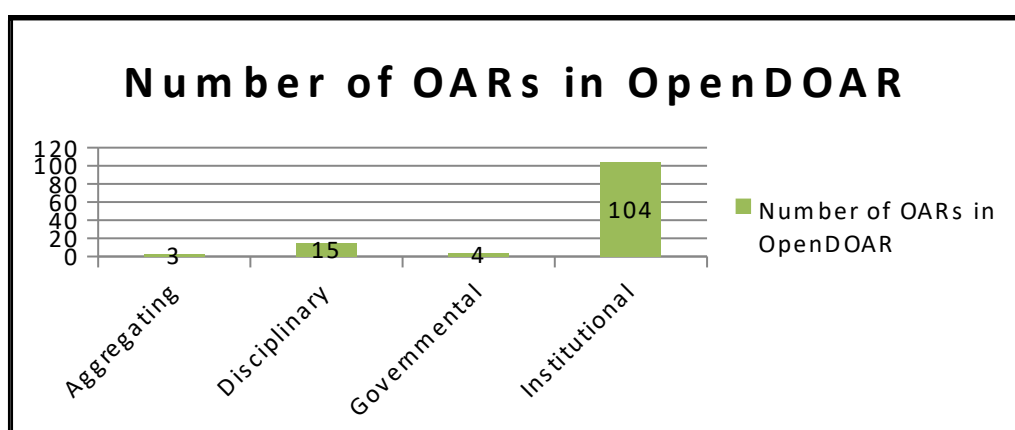


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Greenstone	02	01.58
Grunt Metaparser	01	00.79
HAL	03	02.40
HTML	02	01.58
IR+	01	00.79
Islandora	01	00.79
MARZ Content Management System	01	00.79
MyCoRe	01	00.79
Not Mentioned	08	06.35
OAICat	01	00.79
Open Journal Systems	01	00.79
Open Repository	02	01.58
OPUS	05	04.00
ExLibrisPrimo	01	00.79
WEKO	03	02.40
XooNIps	01	00.79
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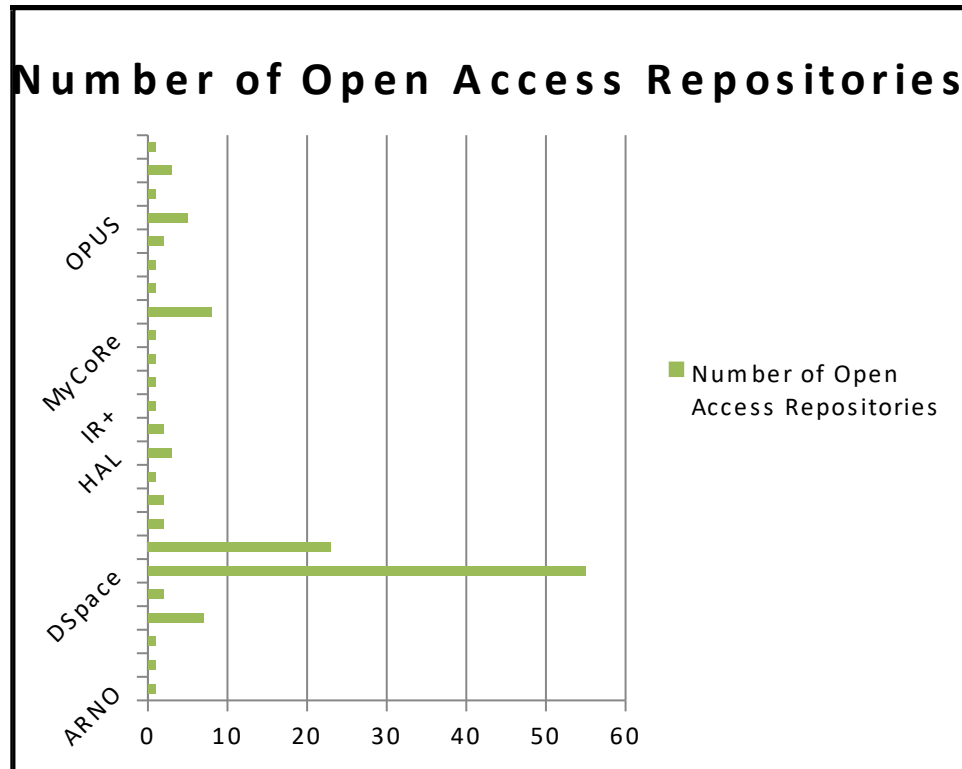


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Preservation policies explicitly undefined	65	51.59
Preservation policies not stated	14	11.11
Total	126	100

After browsing the OARs in OpenDOAR websites, it is found that only 31 OARs in OpenDOAR have not yet analyzed their policies in various aspects from the table 08. Unstated refers to those OARs which has information regarding policies, but the actual policy is uncovered. If the researchers are not able to find any policy information at all, they are regarded as 'Unknown'. However, a relevant policy is there, but all it says is 'not yet defined', in such case researchers regarded such policies of OARs as 'Undefined'. The status 'No rights' means all metadata re use are restricted. 'No robots' signifies that the collecting of full data items by robots is prohibited. Right vary implies that 'rights vary for the re-use of full data items'. Royster9 in 2012 stated in his paper about the different aspects of OARs and the licensing policies attributed on OARs in this regard. (Royster, 2012)

Table—09
Country wise Distribution

Name of the Countries	Number of Open Access Repositories	Percentage
Australia	03	02.38
Austria	01	00.79
Bangladesh	02	01.58
Belarus	01	00.79
Botswana	01	00.79
Brazil	04	03.20
Canada	03	02.38
China	02	01.58
Croatia	04	03.20
Cyprus	01	00.79
Czech Republic	02	01.58
Dominican Republic	01	00.79
Ecuador	01	00.79
Egypt	01	00.79
Finland	01	00.79
France	05	03.97
Germany	09	07.14
Hungary	01	00.79
India	05	03.97
Indonesia	01	00.79
Ireland	02	01.58
Italy	02	01.58
Japan	04	03.20

Kenya	01	00.79
Malaysia	03	02.38
Malta	01	00.79
Mexico	02	01.58
Moldova	01	00.79
Namibia	01	00.79
Netherlands	03	02.38
Newzealand	01	00.79
Nigeria	02	01.58
Norway	01	00.79
Peru	01	00.79
Poland	01	00.79
Portugal	02	01.58
Republic of Korea	01	00.79
Saudi Arabaia	01	00.79
Serbia	01	00.79
Singapore	02	01.58
Spain	02	01.58
Sudan	01	00.79
Sweden	01	00.79
Switzerland	01	00.79
Taiwan	04	03.20
Tanzania	02	01.58
Turkey	01	00.79
UK	12	09.52
Ukraine	04	03.20
US	15	11.90
Zimbabwe	01	00.79
Total	126	100

As usual US (15) is the highest host country of OARs followed by UK (12), then followed by Germany (09) and France (05). It is also clear to all that the progress of OARs in LIS in the Asian continent is not so satisfactory compared to other continents in the globe.

Table—10
Growth of Open Access Repositories in LIS (2006-2016)

Year	Growth in number	Number of OARs registered in OpenDOAR
2006	00	25
2007	+32	57
2008	-01	56
2009	+04	60
2010	+03	63
2011	+13	76

2012	+15	91
2013	+12	103
2014	+24	127
2015	-08	119
2016	00	119
2017	+07	126

After following the ten years record from OpenDOAR URL, the above table-10 reflects the growth of registered OARs in OpenDOAR. In 2007 the highest growth of OARs is seen but in 2015 the growth of OARs is the lowest. It is surprising that the growth of OARs increases steadily from 2009 to 2014. From the above table it is clear that the awareness regarding OARs in LIS is not up to the mark.

Findings

OARs in LIS have been retrieved below after analyzing the data presented in tables and figures keeping in the mind of above mentioned objectives---

The smallest open access repository (5 items) in respect of item is Sali Library of English Literature Collection in Sweden and the biggest open access repository (1388680 items) in terms of item is Hyper Article en Ligne of France (Table-01).

OARs, which are available in vernacular languages, are useful for developing research in regional languages. It is praiseworthy that all the OARs have the facility for Boolean Searching. But no proper search facility is found in multilingual documents (Table-02).

It is very surprising to note that institutional repositories are indexed in OpenDOAR to a large extent but the Government initiative is not far behind (Table-03).

Though articles in the repositories are available in a large number but the notable attribute of the study is that these are also available to a large extent as content in the open access repositories in LIS indexed in OpenDOAR (Table-04).

DSpace and Eprints are both open source popular software so they have been utilized by the most of the institute or organisation and it is also economically beneficial for the institute or organization concerned (Table-05).

The functional repositories are available in a large number in OpenDOAR. Some OARs in LIS cannot be accessed without registration. It is a contradictory to open access initiative. Almost all the repositories provide access and search facility after registration. Most of them allow outside user to browse their repositories. Some of OARs cannot be browsed at the time of data mining (Table-06).

OAI-PMH compatible open access repositories are indexed in a large number in OpenDOAR (Table-07).

31 repositories out of 126 are not yet analyzed their preservation, content, metadata re use policies. It is controversial regarding copyright laws and licensing policy. There is a problem of privacy and data security in OARs. There is no established process or policy for checking plagiarism. There is also a great problem of skilled personnel regarding the maintenance of repositories (Table-08).

Most of the universities all around the globe have hosted OARs in LIS and the museums are not far behind this. Government initiative in this regard is not so much noteworthy (Table-09).

Lack of awareness of OARs, support from management, sufficient fund and inadequate ICT infrastructure regarding the hosting of OARs is found. The chronological growth of OARs is unsatisfactory (Table-10).

However, OARs are easy to use and they are the platforms for sharing digital resources easily. OARs in LIS enhance the image of library profession and it is regarded as a sophisticated service.

Suggestions and conclusions

Library and information Science is a multi-disciplinary developing subject in the universe of knowledge. So OARs play a vital role to academic community for easy searching at any time anywhere as there are a large number of digital resources available in OpenDOAR. From the above study, it may be said that more and more OARs in LIS should be developed to enrich the field of LIS. The present study explicates that initiatives taken by various authorities regarding hosting of OARs in the globe are not satisfactory and more initiatives must be taken to develop the OARs. It is a matter of regret that the academicians, researchers are not at all equipped with the OARs in LIS and the maintenance of OARs has not also properly been done as some OARs are not properly opened at the time of data mining. The awareness programmes, training and workshops should be organized to spread awareness among the faculty members, researchers and scientists to access OARs. So, all the universities, R & D institutions in and around the globe should set up OARs to make their intellectual output available throughout the world. Proper policy should be framed to sustain OARs for future use. To conclude it may be suggested that a centrally located single window search based repository should be built by using open source software to harvest metadata from various OARs to make the intellectual output of all researchers in and around the globe available to all academicians and researchers.

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Introduction to Authors



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