

Reviewed on 16-10-2024

Paper Accepted on 22-10-2024

DOI: 10.5958/2456-9399.2024.00019.4

ANALYSING THE IMPACT OF AN OPEN-ACCESS INSTITUTIONAL REPOSITORY ON SCHOLARLY COMMUNICATION IN AUSTRALIAN COUNTRIES

Ajit Kumar Pradhan

PhD Research Scholar

Siksha O Anusandhan University, Bhubaneswar

Email: - ajitkumarpradhan64@gmail.com

ORCID ID: <https://orcid.org/0000-0001-9999-7338>

Niranjan Mohapatra

LRC Manager

Learning Resource Centre

World Skill Center, Bhubaneswar

Email: nmohapatralis@gmail.com

ORCID ID: <https://orcid.org/0000-0003-2933-1308>

ABSTRACT

Modern-day institutional repositories serve a crucial role in advancing higher education systems and fostering research and development. Individual organizations utilize the open-access institutional repository platform to present their intellectual achievements. The present study examines the impact of Open Access Institutional Repository (OAIR) on scholarly communication within Australian countries. The study focuses on the present status of Australian Open Access Institutional Repositories. Data were collected from the global Directory of Open Access Institutional Repositories (DOAR) website and collected data have been analysed and represented in graphical and tabular formats to clearly understand the study results. The authors also assessed the Australian contribution to various parameters such as year-wise growth pattern, nature of the Institutional Repository, disciplines, content, top oldest IR, and software used to build the institutional repository. The study's findings revealed that out of 84 repositories, the highest number of registrations of repositories took place in the years 2006 and 2019, i.e., 26 (30.95%) and 14 (16.67%), respectively. It shows that the majority used Dspace software 20(23.81%), followed by other software 15(17.86%). The majority of 73(86.90%) institutional repositories are institutional in nature, followed by disciplinary 7(8.33%).

Keywords: IR, Institutional Repository, Open Repository, Open DOAR, Open Access

1. Introduction

Nowadays, institutional repositories have a critical role in promoting higher education, R&D and Innovation. In academic and research institutions, institutional repositories have become an emerging technology for the purposes of knowledge sharing and management (Doctor, 2008). The term “Institutional Repository (IR)” refers to a collection comprised of digital content that is both produced and managed by teachers, staff, and students within an institution. (Velmurugan, 2010). An Institutional Repository (IR) is a Digital Library specialization (Adewumi & Ikhu-Omoregbe, 2010). Institutional repositories are “digital collections” of intellectual and research production that are captured and preserved in single or multi-university communities (Crow, 2002; Hockx-Yu, 2006). The institution has a crucial responsibility to ensure the long-term preservation, efficient distribution, and accessible retrieval of all digital materials that are produced (Nayak et al., 2021; Lynch, 2003; Joo et al., 2019). The building of open institutional

archives repositories is a new approach to disseminating research findings in many developed countries. (Ezema, 2011).

Open DOAR is maintained by SHERPA Services at the University of Nottingham (Vyas, 2013). It was launched in the year 2005 and is a freely available, free access repositories directory project to promote open-access repositories. Open DOAR facilitates searching, finding, and retrieving country-based lists of repositories. Open access IR has played an essential role in the preservation and dissemination of institutional research outputs (Singh et al., 2020; Nayak and Mohapatra, 2021). An Open Access Repository (OAR) is essentially a digital collection of documents that are made freely available online. This setup allows users to access a vast array of documents without any cost. These repositories are primarily maintained by research and development institutions and contain works from their respective authors. This enables broad dissemination of research findings and intellectual outputs directly to the public, facilitating greater visibility and impact of the research conducted within these institutions (Pinfield, 2005).

2. Literature Review

Nayak and Parhi (2021) assessed the Institutional repositories of China available in open DOAR. A total of 57 repositories were found in Open DOAR. The analysis presented in this study is based on selected criteria such as content included, software used, and software license. Das & Singh (2017) conducted a study to discover the Chinese Open Access Institutional Repositories registered in open DOAR. The research assessed the existing state of open-access institutional repositories in China, focusing on four key criteria: the quantity of IRs, their types, subjects, contents, and the software employed. The study sheds light on the current situation of open-access institutional repositories in China and their impact on the global knowledge repository. Singh (2017) examined the open-access IRs in Australia by selecting the database of DOAR. The study found that the majority (76.36%) of the institutional repositories (IRs) belong to universities, while 23.64% are affiliated with research institutions. English was the most prevalent language interface, with 98.18% of Australian IRs using it. DSpace was the most widely utilized software, employed by 27.27% of the repositories. Additionally, 70.91% of repositories represented multidisciplinary subjects, and the most common form of archived scholarly communication in Australian open-access IRs was articles, accounting for 20.85% of the total. Kuri & Singh (2020) analysed Open Access Institutional Repositories of India registered in DOAR. A total of 96 repositories were found on DOAR. This study's analysis is based on selected criteria such as content, software, languages, size, and policy. Singh & Verma (2017) examined the open-access institutional repositories of Asian countries. The study found that out of 613 open-access repositories, 51.71% were from Eastern Asia, with China being the major contributor at 41.31%.

3. Scope and Limitations of the Study

In this study, the focus was on open-access institutional repositories listed in the Directory of Open Access Repositories (DOAR). To specifically examine the research contributions from Australia, the authors restricted the study to institutional repositories registered by Australia. The analysis included institutional repositories available in Open DOAR up to March 3, 2024.

3.1. Objectives

- To find out the year-wise distribution of Australian institutional repositories.
- To assess the repository type, subject and Content wise distribution in DOAR;
- To know the type of repositories and software used for Institutional Repositories.
- Find out the licencing type of software used for Institutional Repositories.
- To know Australia's Institutional Repositories enrolment in DOAR

3.2. Methodology

In this study, the researchers examined the open-access institutional repositories of Australia. Data was retrieved from the Directory of Open Access Institutional Repositories (DOAR) website <https://v2.sherpa.ac.uk/opendoar> on March 3, 2024. The gathered data was categorized into repository types, year-over-year growth, software usage, content categories, and subject-specific repositories, as well as the chronological enrolment of Institutional Repositories in DOAR. Subsequently, the collected data was tabulated using MS Excel, and then analysed and interpreted through the creation of tables and graphs.

4. Result and Discussion

Discussion and data analysis are crucial components of research. This session involves the interpretation and examination of the data collected during the research process and presented in required tables, figures, and graphics as follows.

4.1. Growth Pattern (year-wise)

Analysing year-wise growth patterns is a common practice in research, it helps to identify trends, fluctuations, and patterns over time. Here's a general approach to conducting year-wise growth pattern analysis of Institutional Repositories in Australia.

Table 1: Year-wise Growth pattern of IRs in Australia

Year	No. of IRs	%	Year	No. of IRs	%
2005	5	5.95	2015	2	2.38
2006	26	30.95	2016	2	2.38
2007	1	1.19	2017	2	2.38
2008	7	8.33	2018	1	1.19
2009	5	5.95	2019	14	16.67
2010	1	1.19	2020	1	1.19
2011	3	3.57	2021	1	1.19
2012	3	3.57	2022	3	3.57
2013	1	1.19	2023	1	1.19
2014	5	5.95	Total	84	100%

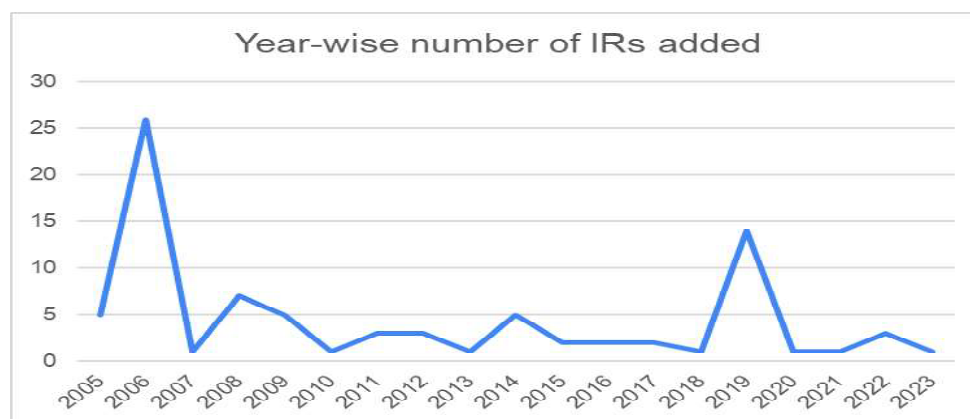


Figure 1: Year-wise Growth pattern of IRs in Australia

The year-wise registration of institutional repositories (IRs) in the DOAR with its cumulative percentage has been mentioned in table 1 which graphical presentation shown in figure 1. It has been observed that out of 84 institutional repositories highest 26 (30.95%) IRs were registered in the years of 2006, followed by 14 (16.67%) repositories in 2019, 7 (8.33%) in 2008 & 5 (5.95%) in the year 2005, 2009 & 2014 each. The analysis found that no constant growth is found in registration of IRs with DOAR.

4.2. Nature of Institutional Repository

Table 2: Types of Institutional Repository

Types of IR	Number	%
Disciplinary	7	8.33
Governmental	4	4.76
Institutional	73	86.90
Total	84	100.00

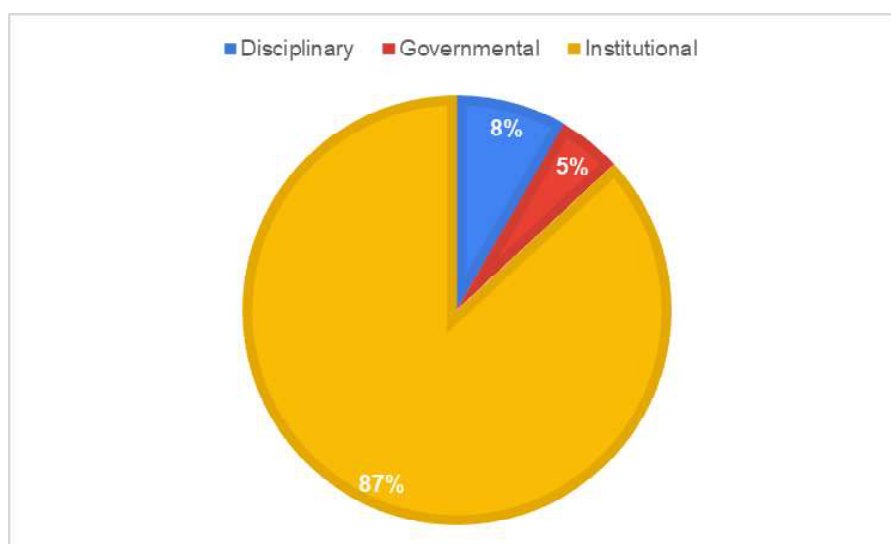


Figure 2: Types of Institutional Repository

IRs are classifications under three critical heads: Disciplinary, Governmental and Institutional. As shown in Table 2, the greatest number of IRs are Institutional 73(86.9%), followed by disciplinary 7(8.33%) and governmental 4(4.76%). It is seen from the data analysis that more IRs are used in academic institutions than other kinds of organisation.

4.3. Discipline wise Distribution of IR

Table 3: Subject-wise distributions

Subjects	Number	%
Arts	69	13.27
Engineering	59	11.35
Health and Medicine	67	12.88

Humanities	71	13.65
Mathematics	59	11.35
Science	66	12.69
Social Sciences	67	12.88
Special item types include Biographical information	1	0.19
Technology	61	11.73
Total	520	100.00

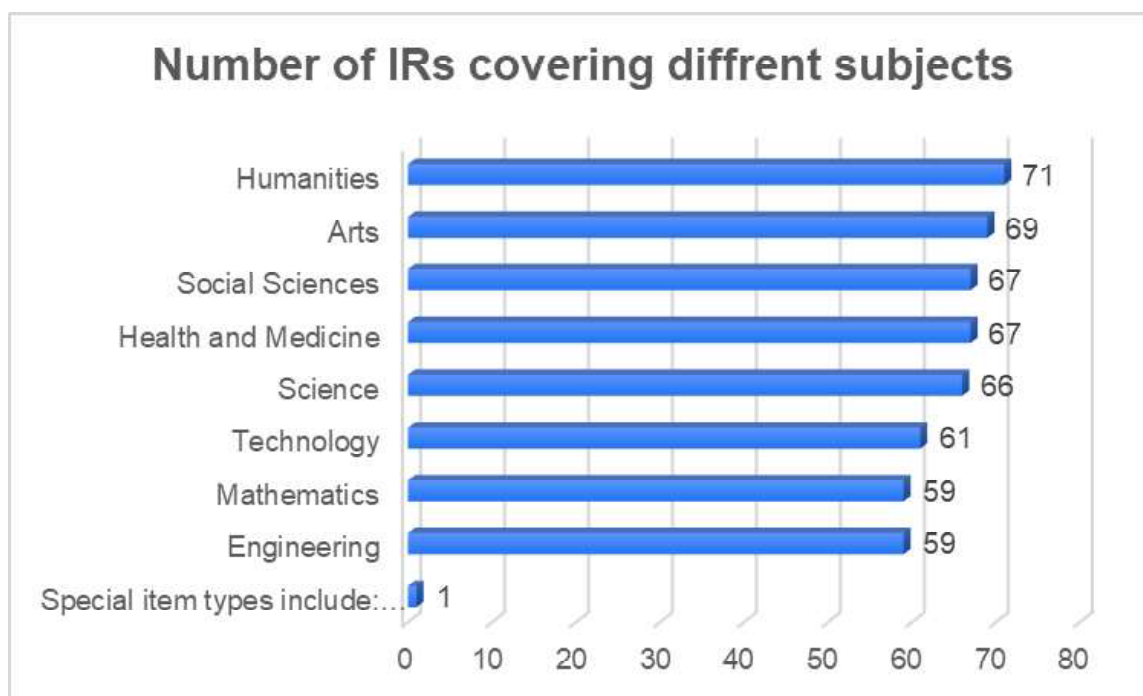


Figure 3: Subject-wise distributions

The Table 3 and Fig. 3 described subject-wise distribution of institutional repositories of Australia available in DOAR. The majority IRs consist of Humanities i.e. 71 (13.65%), followed by Arts 69 (13.27%), Social Sciences 67 (12.88%), Health and Medicine also 67 (12.88%), science 66 (12.69%), Technology 61 (11.73%), Engineering and Mathematics each 59 (11.35%) and a few IR's consist of Special item types includes biographical information.

4.4. Core Content Distribution

Table 4: Content wise distributions

Content Types	No. of Content	%
Bibliographic References	14	4.73
Books, Chapters and Sections	39	13.18
Conference and Workshop Papers	40	13.51

Datasets	16	5.41
Journal Articles	61	20.61
Learning Objects	7	2.36
Other Special Item Types	27	9.12
Patents	5	1.69
Reports and Working Papers	36	12.16
Software	4	1.35
Theses and Dissertations	47	15.88
	296	100.00

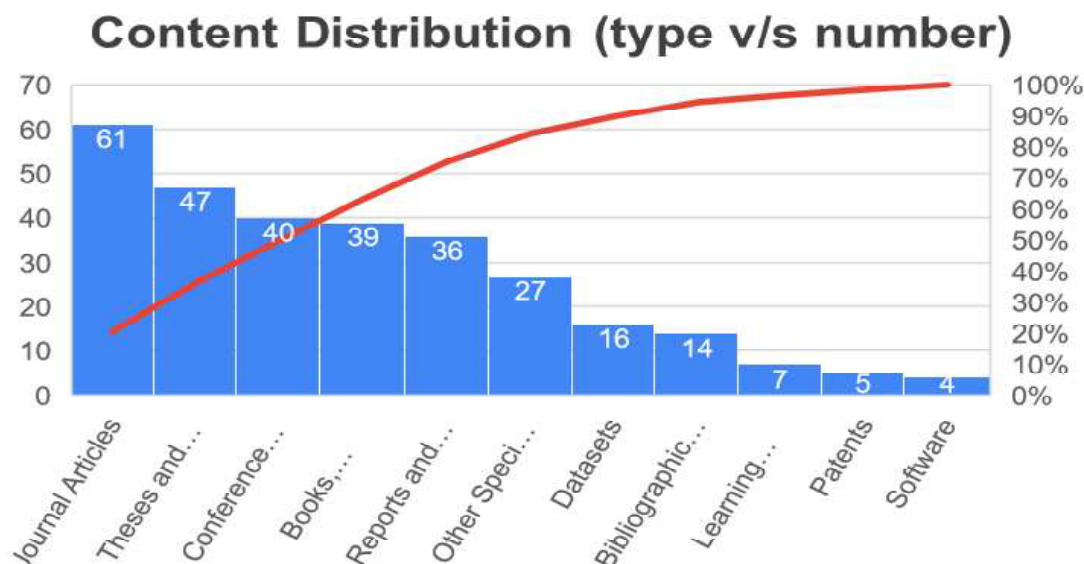
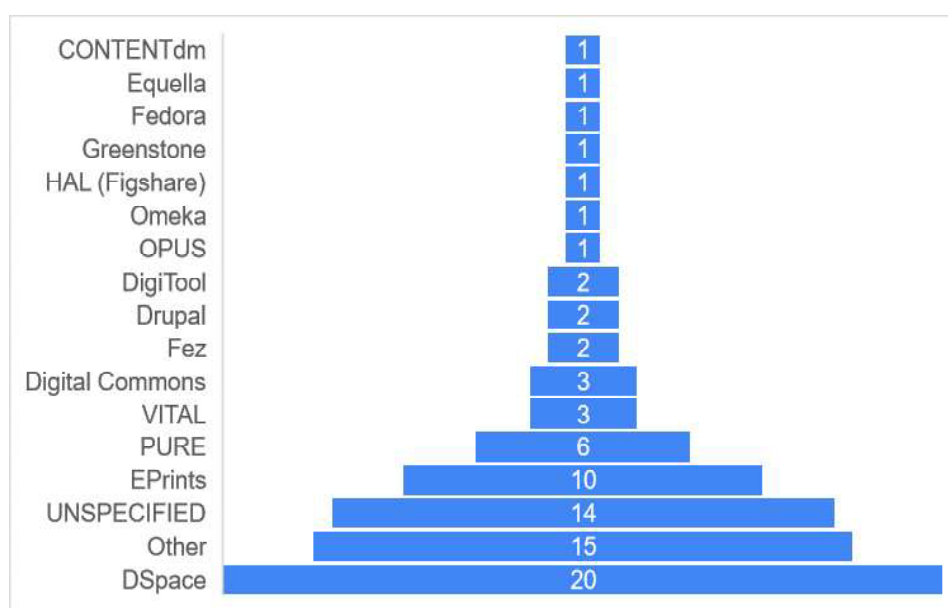


Figure 4: Content Types

The above table 4 and figure4 shows the range of source content types of IRs registered by Australia with DOAR. The nature of contents being added to the repository distributions is recorded under its numbers with a cumulative percentage. The leading types of contents found in the repositories of open DOAR journal articles 61 (20.61%) followed by theses & dissertations 47 (15.88%), Conference & workshop papers 40 (13.51%), Other Special Item Types 27 (9.12%), Patents 5 (1.69%), Books Chapters and Sections 39 (13.18%), Reports and Working Paper 36 (12.16%), Bibliographic References 14 (4.73%), Datasets 16 (5.41%), Learning Objects 7 (2.36%), Software constitute a minimal amount of content with 4 (1.35%). From the analysis, most of the authors were involved in contributing journal articles than any other content.

4.5. Software Usage of Repositories**Table 5: Software-wise distribution of IRs**

Software Name	Type	No.	%	Software Name	Type	No.	%
CONTENTdm	Free Software	1	1.19	Greenstone	Open Source	1	1.19
Digital Commons	Commercial	3	3.57	HAL (Figshare)	Commercial	1	1.19
DigiTool	Free Software	2	2.38	Omeka	Commercial	1	1.19
Drupal	Open Source	2	2.38	OPUS	Open Source	1	1.19
DSpace	Open Source	20	23.81	Other	Not Specified	15	17.86
EPrints	Open Source	10	11.90	PURE	Commercial	6	7.14
Equella	Open Source	1	1.19	UNSPECIFIED	Not Specified	14	16.67
Fedora	Open Source	1	1.19	VITAL	Open Source	3	3.57
Fez	Not Specified	2	2.38	Total		84	100.00

**Figure 5: Software-wise distribution of IRs**

The above table 5 and figure 5 shows different software used for established Institutional repositories in Australia. The most widely used software is the open-source software DSpace 20 (23.81%), followed by Eprint with 10 (11.90%), PURE with 6 (7.14%), Digital Commons with 3 (3.57%), DigiTool, Drupal, Fez with 2 (2.38%) each and the least number of repositories use CONTENTdm, Equella, Fedora, Greenstone, HAL (Figshare), OPUS with 1 (1.19). As mentioned in the figure 6, it also observed that most institutional repositories i.e. 39 (46%) are established using an open-source software followed by 11 (13%) are using commercial softwares and 3 (4%) free softwares. However, 31 (37%) IRs marked as unspecified for the software license type.

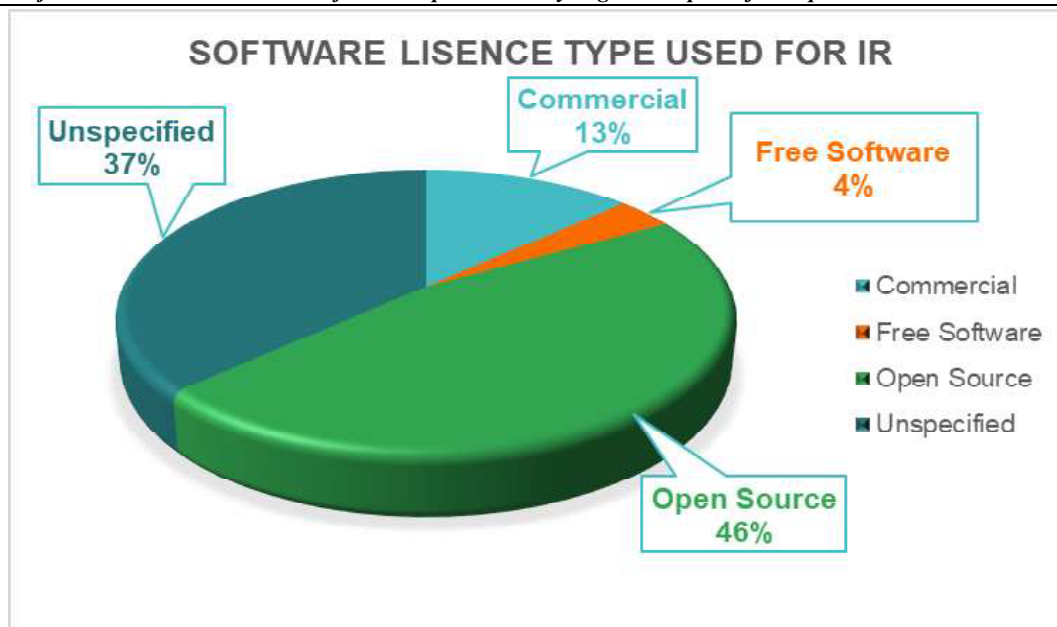


Figure 6: Distribution of Software license type for IRs

4.6. Oldest Repositories of Australia

The following table 5 presents the oldest Institutional repositories of Australia as per their creation area, date and time. Three Universities i.e. University of Southern Queensland, University of Tasmania and Victoria University had created their IRs in one day in December 2005. However, the University of Southern Queensland uses Cayuse software for IR, and other two universities introduce E-prints for their IRs. The University of Technology, Sydney have created its repository using OPUS open-source software. In January 2006, Curtin University had introduced the Dspace Institutional Repository first in Australia, which is mostly used these days. In April 2006, University of Wollongong had introduced Digital Commons for creating their IR. Among 10 oldest IRs, 8 (80%) were created using open-source software i.e. EPrint, Dspace and OPUS, however only 2 (20%) were used a commercial software i.e. Cayuse and Digital Commons.

year of created

Table: 4 Ten oldest IRs with the date, time and

Sl.	Repository Name	Software	Year	Date & time
1.	University of Southern Queensland Repository	Other (Cayuse)	2005	9 December 2005 11:44:56 UTC
2.	University of Tasmania Eprints Repository (UTas ePrints)	EPrints	2005	9 December 2005 11:44:56 UTC
3.	Victoria University Eprints Repository	EPrints	2005	9 December 2005 11:44:56 UTC

4.	UTS Institutional Repository (OPUS)	OPUS	2005	16 December 2005 11:37:50 UTC
5.	Queensland University of Technology ePrints Archive (QUT ePrints Archive)	EPrints	2005	29 December 2005 13:29:56 UTC
6.	espace - Curtin's institutional repository	DSpace	2006	4 January 2006 09:08:29 UTC
7.	University of Melbourne Institutional Repository (Minerva Access)	DSpace	2006	13 January 2006 16:19:24 UTC
8.	Sydney eScholarship Repository	DSpace	2006	24 January 2006 12:14:29 UTC
9.	UNSWorks	DSpace	2006	5 April 2006 11:13:32 UTC
10.	University of Wollongong Research Online (Research Online @ UOW)	Digital Commons	2006	7 April 2006 10:15:55 UTC

5. Major Findings

The revolution of Institutional repositories in Australia was started in late 2005, which was trending in the year 2006 and 2014 till yet. Among all 84 IRs of the country, 26 (30.95%) were created in 2006 and 14(16.67%) in 2014. Almost 39 (46%) repositories of the total IRs were created using open-source software. Although the IRs startup of the country was done by Cayuse and EPrint software, latter Dspace achieved the place of most used software 20 (23.81%) for creating Institutional Repositories in Australia. However, most repositories 73 (86.90%) are Institutional by its nature, but there are 4 government repositories and 7 disciplinary repositories which are 4.76% and 8.33 % of the total repository of the country respectively. The repositories of the country are based on subjects i.e. Humanities, Arts, Social Science, Health and Medicine, Science, Technology, Mathematics and Engineering. Most IRs are covering humanity subject 71(13.65%) and most contents are journal Articles 61 (20.61%).

6. Conclusion

Open DOAR is a trusted director of Open Access Repositories which provides information about all repositories around the globe. Australia has 84 open repositories which are registered under Open DOAR. The repositories not registered in Open DOAR are the limitation of this study. This paper discussed the open repository movement in the country during different time periods. However, the first repository was created in the year 2005, within one year 26(30.95%) repositories were created in the country. This year created history in Australia for initiating the highest number of open repositories till yet. It shows the awareness of Open Repository among institutions. From 2007 to 2018 the creation of new repositories was normal, but in the arrival of 2019 the number of new repositories increased suddenly. 14 (16.67%) open repositories were added in 2019 which is considered as the second highest number of new repositories. Most institutions in this country like to adopt open-source software for their open repository. Dspace marked are cord as the highest used software for creating an open repository in the country. Only 15 (17.86%) institutions IR software are not well-known software which are categorized under others and 14 (16.67%) are categorized as unspecified for insufficient information. But rest repositories are created using standard softwares i.e. Dspace, EPrint, PURE, VITAL, Digital Commons Drupal, Digitool, Fez, GreenStone, OPUS, OMeka, HAL(Figshare), Fedora, Equella, CONTENTdm etc.

References

- Adewumi, A. O. & Ikhu-Omoregbe, N. A. (2010). Institutional Repositories: Features, Architecture, Design and Implementation Technologies. *Journal of Computing*, 2(8).
- Crow, R. (2002). The Case for Institutional Repositories: A SPARC Position Paper. *Scholarly Publishing and Academic Resources Coalition*, Washington, DC.
- Das, K. C. & Singh, K. (2017). Current status of Chinese open access institutional repositories: A Case Study. *International Research: Journal of Library & Information Science*, 7(1), 1-9
- Doctor, G. (2008). Capturing intellectual capital with an institutional repository at a business school in India. *Library Hi Tech*, 26(1), 110-125. <https://doi.org/10.1108/07378830810857843>
- Ezema, I.J. (2011). Building open access institutional repositories for global visibility of Nigerian scholarly publication. *Library Review*, 60(6), 473-485. <https://doi.org/10.1108/00242531111147198>
- Hockx Yu, H. (2006). Digital preservation in the context of institutional repositories. *Program: electronic library and information systems*, 40(3), 232-243. <https://doi.org/10.1108/00330330610681312>
- Joo, S., Hofman, D. and Kim, Y. (2019). Investigation of challenges in academic institutional repositories: A survey of academic librarians. *Library Hi Tech*, 37(3), 525-548. <https://doi.org/10.1108/LHT-12-2017-0266>
- Kuri, Ramesh and Singh, Madan (2020). Indian Institutional Repositories (IRs) reflected in the Directory of Open Access Repository (DOAR): A Case Study. *Library Philosophy and Practice (e-journal)*. 4640
- Lynch, C.A. (2003). Institutional repositories: Essential infrastructure for scholarship in the digital age. *Portal: Libraries and the Academy*, 3(2), 327-336
- Nayak, S., Patel, A. K., Patel, A. K., and Pradhan, B. (2021). Promoting the Educational Research through an Open Access Institutional Repository of Shanghai Cooperation Organisation (SCO) Countries: An Analytical Study. *Library Philosophy and Practice (e-journal)*. 5064. <https://digitalcommons.unl.edu/libphilprac/5064>
- Nayak, Satyajit and Mohapatra, Mitali (2021) Enhancing Scholarly Communication through an Open Access Institutional Repository of BIMSTEC Countries: An Analytical Study. *Library Philosophy and Practice (e-journal)*. 6218. <https://digitalcommons.unl.edu/libphilprac/6218>
- Nayak, Satyajit and Parhi, Binay Kumar. (2021). Assessment of Open-Access Institutional Repositories of China on the Directory of Open Access Repositories (OpenDOAR). *Library Philosophy and Practice (e-journal)*. 5315. <https://digitalcommons.unl.edu/libphilprac/5315>
- Pinfield, S. (2005). A mandate to self-archive? The role of open access institutional repositories. *Serials: The Journal for the Serials Community*, 18(1), 30–34. <https://doi.org/10.1629/1830>
- Singh, K. & Verma, N. (2017). Global Visibility of Asian countries' open access institutional repositories. *Indian journal of information library & society*, 30(3-4), 256-259.
- Singh, K. (2017). Assessment of Open-Access Institutional Repositories: A Case Study of Australia. *Pearl: A Journal of Library and Information Science*, 11(4), 400- 404.

- Singh, M., Kuri, R., T. K., Gireesh Kumar, and Singh, K., (2020). Global Visibility of Open Access Institutional Repositories of SAARC Countries: An Explorative Study. *Library Philosophy and Practice (e-journal)*. 4451.
- Singh, M., Kuri, R., TK, G. K. D., & Singh, K. D. (2020). Global Visibility of Open Access Institutional Repositories of SAARC Countries: An Explorative Study. 2020). *Library Philosophy and Practice (e-journal)*. 4451. <https://digitalcommons.unl.edu/libphilprac/4451>
- Singh, Niranjana (2017). Institutional Digital Repositories in India. In Towards Knowledge Management in e- Libraries: Festschrift volume in honour of Dr Hansraj. Edited by H.K. Tripathi. DPS Publishing House, New Delhi,. P 309-331. ISBN: 978-93-83046-35-5.
- Velmurugan, C. (2010, August 19-21). Institutional Repositories: A powerful tool for accessing information for educationalists [Conference presentation]. *Next-Generation Digital Libraries and web technologies: challenges and opportunities*, Sri Krishna College of Engineering & Technology, Coimbatore, 6.92- 6.97.
- Vyas, Jagdish R. (2013) Study of Indian Repositories on DOAR. *International Research: Journal of Library & Information Science*, 3(2), 324-339.