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CURRENT STATUS OF OPEN ACCESS (OA) PUBLISHING IN INDIA: ANALYSIS OF SCOPUS DATA

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Abstract
The present study aims to determine the current status of open-access publishing in India in terms of the number of publications (articles), annual growth, organizations, major subject areas, countries, and major journals. This study used Scopus data as the source database and retrieved the records of open-access (OA) and non-open-access (NOA) articles published from 2014 to 2023. According to Scopus database records, only 0.73% of India's open-access literature contributed to the global open-access literature in the past ten years (2014-2023). The annual growth of open-access literature rapidly increased from 36.26% to 51.27% across the globe. India was found to have increased by 9.58%. Based on Scopus data, India ranks 12th globally in open-access publishing. The United States of America (the USA, China, the United Kingdom (UK), and Germany) are at the top in terms of open-access publishing, with India placing twelfth. The Indian Institute of Science (IISc.), 2.31%; the All India Institute of Medical Sciences (AIIMS) 2.01%, and Tata Institute of Fundamental Research (TIFR), 1.83% of open-access literature produced in India. Overall, most open-access articles are published on medicine, biology, chemistry, and engineering topics across the world. Plose One, Scientific Reports, and IEEE Access journals are involved in publishing open-access literature.

Introduction:
Open access (OA) is making academic research results, like research data, journal article publications, and other kinds of research output, available to the public without any cost, legal, or technical restrictions (Bailey, 2006). In general, open-access (OA) means, anyone can access, read, download, copy, distribute, print, search, or link to the full text of research results using the internet and other technological tools. Open access removes

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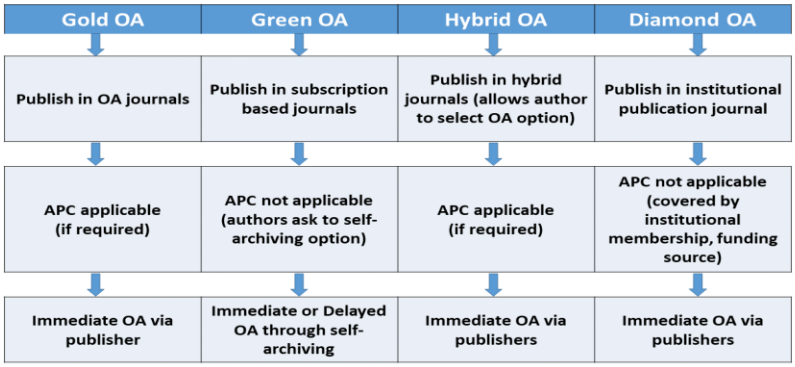
traditional barriers to accessing knowledge, such as subscription fees or paywalls, democratizing access to information and promoting the dissemination of research findings to a global audience. According to (Budapest Open Access Initiative, 2002) open access means "scholarly literature free availability 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 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."

OA Publishing Models:

OA publishing models allow scholarly research results to be freely available to readers without difficulties or paywalls. These models are models within the open-access framework (Wong, 2024)

Chart 1: OA Publishing Models



- Gold open access: This model involves publishing in open access journals that make articles freely available to anyone with internet access. The cost of publishing is usually covered by an article processing charge (APC) paid by the author, institution, or funding agency.
- Green OA: This OA model allows authors to deposit their articles into an institutional or subject-based repository with a copy of the author accepted version of a published. This indicates the pre-print, post-print, and after embargo periods accepted. The embargo period can vary by publisher and can range from 6 months to several years.
- Hybrid OA: This model offers both traditional subscription-based publishing and open access publishing options in the same journal. Authors can choose to pay APC to make their article immediately available as OA or publish through the traditional subscription model.
- Diamond OA: This model involves publishing in open access journals that do not charge APC for authors and readers. These journals are community-driven and academic-based. These journals are funded by academic institutions, societies, funding agencies, and government agencies.

Open Access in India:

The Open Access movement in India has been acknowledged worldwide. Some studies have shown the current status of India in terms of involving and adopting open access across the globe. (Barik & Jena, 2022) analyzed various open-access datasets and found India ranked 16th (DOAJ) in open-access publishing. They also suggested that the quality and quantity of open-access journals published in India will surely attract authors, researchers, and academicians to rethink open-access journals, and their extensive use will boost the impact of research in India. (Nazima & Devib, 2008) showed that India ranks 12th in article archives in the Registry of Open Access Repositories (ROAR). The Indian Institute of Science was the first institution in India to establish

an interoperable institutional repository (ePrints@IISc) under the leadership of the late Dr. T. B. Rajashekar. Currently, 137 institutes are registered in ROAR (ROAR, 2024), and 351 journals are indexed in the Directory of Open Access Journals (DOAJ, 2024).

Need for the study:

In the past ten years, we have seen a remarkable increase in the acceptance and growth of open-access publications. The researchers have started publishing and sharing their scholarly literature through open access platforms. Many studies revealed that open-access journals and the establishment of IRs have increased in the past decades. However, no studies have been conducted on the overall analysis of open-access publishing. From this perspective, this study helps to better understand the Indian research community's involvement in publishing scientific literature as well as the growth of open access (OA) literature in an institution-wise.

Objectives of the study:

1. To assess the trends in literature growth in India and the world.
2. To explore the current status of open-access publishing in India.
3. To analyze institutional participation in open access (OA) publishing in India.

Scope of the study:

The present study is limited to articles published as open access in Scopus from 2014 to 2023 published by the Indian and Global research community.

Methodology:

For this study, we used the Scopus database as a data retrieval source. We used an advanced search strategy (PUBYEAR > 2014 AND PUBYEAR < 2024) and extracted the data into Microsoft Excel format. Furthermore, the filtered option method was used for better analysis and understanding of the desired objectives for this study. We used online graphical tools to present data in graphical visualization. Mendeley reference management software was used to cite sources and generate references.

Data analysis and discussions:

Table 1: Growth of Open-Access Literature: World and India

Year	World			India		
	Total Articles	Non-OA Articles	OA Articles	Total Articles	Non-OA Articles	OA Articles
2023	28,76,617	1401693 (48.73%)	1474924 (51.27%)	1,81,553	116174 (63.99%)	65379 (36.01%)
2022	28,69,654	1310892 (45.68%)	1558762 (54.32%)	1,67,123	101198 (60.55%)	65925 (39.45%)
2021	27,52,129	1269951 (46.14%)	1482178 (53.86%)	1,48,520	91041 (61.30%)	57479 (38.70%)
2020	25,49,523	1264818 (49.61%)	1284705 (50.39%)	1,38,187	89934 (65.08%)	48253 (34.92%)
2019	23,49,162	1229553 (52.34%)	1119609 (47.66%)	1,38,139	89083 (64.46%)	49101 (35.54%)
2018	21,33,427	1169199 (54.80%)	964228 (45.20%)	1,13,457	77810 (68.58%)	35647 (31.42%)

2017	20,21,237	1148756 (56.83%)	872481 (43.17%)	1,03,893	72314 (69.60%)	31579 (30.40%)
2016	19,83,530	1174493 (59.21%)	809037 (40.79%)	1,05,206	73736 (70.09%)	31470 (29.91%)
2015	19,40,332	1186927 (61.17%)	753405 (38.83%)	1,01,142	72414 (71.62%)	28728 (28.38%)
2014	18,70,266	1192162 (63.74%)	678104 (36.26%)	94,707	69588 (73.48%)	25119 (26.52%)

In recent years, the number of open-access articles published by researchers worldwide has increased rapidly. Based on 2014 to 2023 data from the Scopus database (Table-1 and Chart-1), we can summarize that the global researchers published 18,70,266 in 2014 in that 11,92,162 (63.74%) Non-OA articles, whereas 6,78,104 (36.26%) articles were published as open access. The proportion of global open access articles has been increasing from 36.26% (2014) to 51.27% (2023). The results show that open access significantly increased in the past ten years. At the same time, we can observe that in 2014 (26.52%) of open-access articles, and in 2024 (36.01%) of articles were mentioned as open-access. This shows that a slowly increasing number of open-access articles have been published by the Indian research community.

Chart 2: Growth of open-access literature: India and the Global South

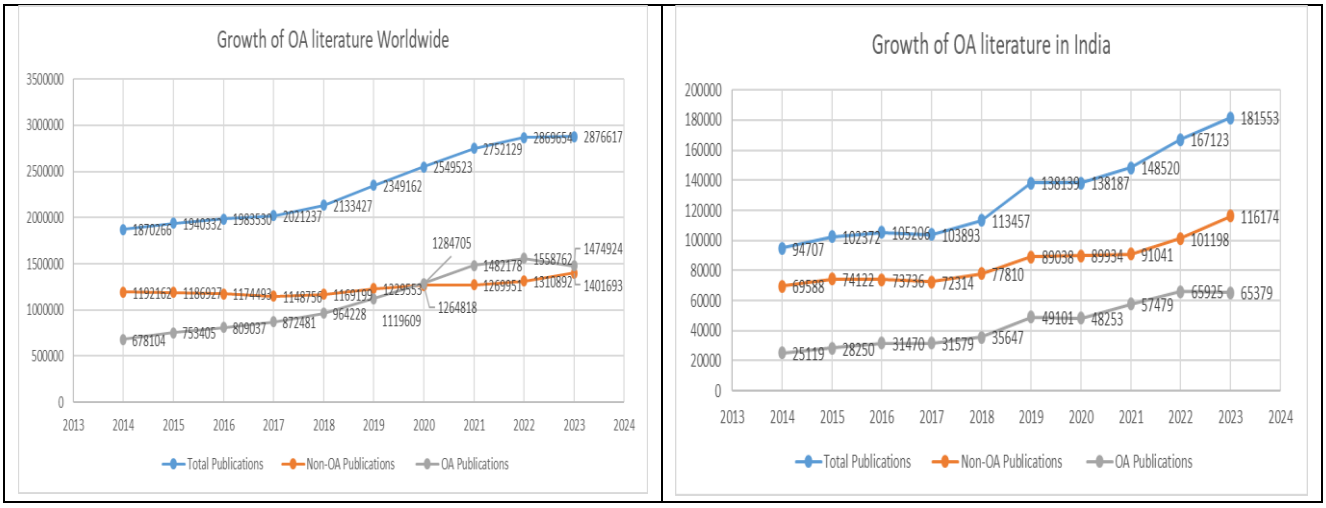


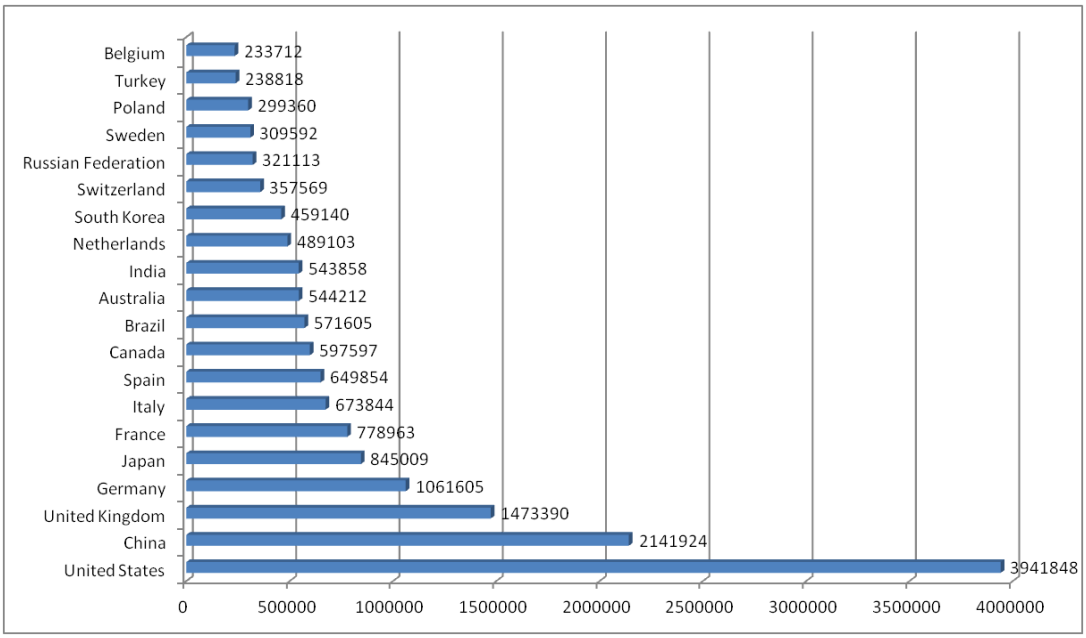
Table 2: OA Literature Contribution of India to Global OA Literature

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
OA articles (Global)	6,78,104	7,53,405	8,09,037	8,72,481	9,64,228	11,19,609	12,84,705	14,82,178	15,58,762	14,74,924
OA articles (India)	25,119	28,250	31,470	31,579	35,647	49,101	48,253	57,479	65,925	65,379
% of OA (India)	3.70%	3.75%	3.89%	3.62%	3.70%	4.39%	3.76%	3.88%	4.23%	4.43%

Data in table 2 summarizes the number of Open Access (OA) articles published by the global and Indian research communities, along with the percentage of OA articles from Indian researchers compared to the global OA scholarly literature from 2014 to 2023. This shows that the proportion of Indian research output in terms of open access articles was 3.70% in 2014 and increased to 4.43% in 2023. This indicates that compared with the global output, there is a relatively limited number of OA articles published by the Indian research community.

However, note that there has been a gradual increase in the percentage of OA articles contributed by Indian researchers over the years.

Chart 3: Country-wise distribution of OA literature



Data in the above Chart 2 illustrate country-wise open access (OA) over the past decade. In this graph, we can see that USA researchers have published the highest number of 39,41,848 articles in Scopus-indexed journals as open access (OA), followed by China with 21,41,924 articles. India is in 12th place, ranked with 5,43,858 articles. This clearly shows that Indian researchers are lagged in publishing scholarly literature and open access (OA) literature. This analysis underscores the need for increased efforts and initiatives to promote open-access publishing within the Indian research community to bridge this gap and enhance the global visibility and accessibility of Indian research outputs.

Table 3 Top Indian institutes and researchers in OA publishing

#	Affiliation	No. of articles	Percentage
1	Indian Institute of Science	12,559	2.31
2	All India Institute of Medical Sciences, New Delhi	10,949	2.01
3	Tata Institute of Fundamental Research, Mumbai	9,968	1.83
4	University of Delhi	8,732	1.61
5	Manipal Academy of Higher Education	8,393	1.54
6	Postgraduate Institute of Medical Education &Research, Chandigarh	7,434	1.37
7	Indian Institute of Technology Bombay	7,047	1.3
8	Indian Institute of Technology Madras	6,678	1.23
9	Vellore Institute of Technology	6,590	1.21
10	Banaras Hindu University	5,976	1.1
11	Indian Institute of Technology Kharagpur	5,465	1
12	Panjab University	5,452	1
13	Indian Institute of Technology Delhi	5,326	0.98
14	Aligarh Muslim University	5,299	0.97
15	Bhabha Atomic Research Centre	5,091	0.94
16	Indian Institute of Technology Kanpur	4,816	0.89
17	SRM Institute of Science and Technology	4,756	0.87
18	Council of Scientific and Industrial Research India	4,693	0.86
19	Indian Council of Agricultural Research	4,534	0.83
20	Homi Bhabha National Institute	4,043	0.74

There are many higher education institutions that offer research and development programs in India. Figure 3 shows that the Indian research community is involved in open access (OA) publishing with different affiliations. The Indian Institute of Science got first place in terms of publishing 12,559 (2.31%) open-access articles from

the research community, followed by the All-India Institute of Medical Sciences, with 10,949 (2.01%). The above table indicates that many public universities have failed to publish scholarly literature in highly reputed indexed journals. There is a huge gap between technological research institutes and public university research communities in terms of their involvement in research activities. Therefore, it is essential for universities to invest in research infrastructure, provide support for faculty research, and promote a culture of publishing in high-impact journals, including open access journals. Additionally, collaborations between institutions, university researchers, and initiatives to improve research dissemination and publishing practices can enhance the overall contribution of the Indian research community to scholarship.

Table 4: Top 10 journal-wise distributions of OA literature

Journal-wise distribution of OA literature in the World and India			
World		India	
Name of the journal	No. of articles	Name of the journal	No. of articles
Plos One	2,74,949	Journal Of Clinical And Diagnostic Research	7,133
Scientific Reports	1,88,537	Scientific Reports	6,980
IEEE Access	73,496	Plos One	6,419
Proceedings Of The National Academy Of Sciences Of The United States Of America	69,181	International Journal Of Innovative Technology And Exploring Engineering	4,124
Sustainability Switzerland	67,623	BMJ Case Reports	4,065
Journal Of Biological Chemistry	57,794	International Journal Of Recent Technology And Engineering	3,486
International Journal Of Molecular Sciences	55,820	Indian Journal Of Ophthalmology	3,393
Astrophysical Journal	55,458	Acta Crystallographica Section E Structure Reports Online	3,324
Nature Communications	55,374	IEEE Access	2,985
International Journal Of Environmental Research And Public Health	54,977	Asian Journal Of Chemistry	2,964

Table 4 shows the journal-wise distribution of open-access articles by both research communities. Here, we can see that Scientific Reports, Plos One, and IEEE Access on both lists signify the alignment of some of Indian academia's interests with global research trends. Comparing subject specialization globally, it seems to be a slightly higher representation of specialized journals, whereas, in India, there is a notable presence of journals that might cater to broader academic interests alongside specific ones. The (Guo et al., 2014) showed that 13.73% of journals in the CSSCI are OA.

Table 5: Top 10 subject-wise distributions of OA literature

#	Top ten subject-wise distribution of OA literature in the World and India			
	World		India	
	Subject	No. of OA articles	Subject	No. of OA articles
1	Medicine	46,57,778	Medicine	1,55,741
2	Biochemistry, Genetics and Molecular Biology	25,31,189	Engineering	81,928
3	Physics and Astronomy	17,69,723	Physics and Astronomy	74,717
4	Engineering	16,25,976	Biochemistry, Genetics and Molecular Biology	73,535
5	Agricultural and Biological Sciences	15,19,389	Computer Science	55,949
6	Social Sciences	12,63,301	Agricultural and Biological Sciences	49,681
7	Chemistry	10,98,415	Chemistry	49,293
8	Materials Science	10,96,208	Materials Science	48,274
9	Computer Science	10,77,968	Mathematics	42,477
10	Mathematics	10,70,237	Environmental Science	38,790

Open-access literature has been published by various research communities across the World and India. Table 5 shows that the Medicine subject ranked top with the publishing of more research papers by both research communities. Followed by Biochemistry, Genetics, and Molecular Biology, positioned second in the world and a poisoned engineering subject in India. It indicates that the World and Indian research communities publish

research papers on the same subjects similarly, except for social sciences. Significantly, we found a smaller number of research papers published by the social sciences research community in India.

Discussion and Conclusion:

Over the last decade, open access publishing has increased dramatically from 36.26% to 51.27%, demonstrating researchers' involvement worldwide. India, a developing nation, ranked 12th in OA publications and saw a minor increase over the previous 10 years, going from 3.70% to 4.43%. Among all Indian institutes, the Indian Institute of Science is one of the best for releasing open access literature. The leading open access journals in the fields of medicine, engineering, physics, and astronomy are Plos One, Scientific Reports, and IEEE Access.

The concepts of open access and open access publishing refer to emerging alternative publishing models rather than subscription models. Open-access publishing models offer many benefits to researchers, institutions, and the public. Making scholarly literature freely available online enhances the accessibility and visibility of research, innovation, collaboration, and knowledge dissemination. India's contribution to open access (OA) publishing has grown significantly over the past decade. From 2004, India took several steps toward open access awareness, open access publishing, and making scholarly literature open-access through establishing IRs, funding mandate policies, and many more.

References:

Bailey, C. W. (2006). What is open access? In Open Access (pp. 13–26). Elsevier. https://doi.org/10.1016/B978-1-84334-203-8.50002-9

Barik, N., and Jena, P. (2022). Current Status of Open Access Journals in India: A Bird's Eye View. The Serials librarian, 83(3–4), 205–214. https://doi.org/10.1080/0361526X.2023.2183926

Budapest Open Access Initiative. (2002). Budapest Open Access Initiative. https://www.budapestopenaccessinitiative.org/read/

DOAJ. (2024). Journals–DOAJ. https://doaj.org/search/journals?source=%7B%22query%22%3A%20%7B%22query_string%22%3A%20%7B%22query%22%3A%20%22India%22%2C%20%22default_operator%22%3A%20%22AND%22%2C%20%22default_field%22%3A%20%22index.country%22%7D%7D%7D&ref=homepage-box

Guo, F., Xue, J.-Y., & Li, R.-X. (2014). Open Access in China: A Study of Social Science Journals. Journal of Scholarly Publishing, 45(4), 336–352. https://doi.org/10.3138/jsp.45.4.02

Nazima, M., and Devib, M. (2008). Open access journals and institutional repositories: Practical need and present trends in India. ALIS Vol. 55(1) [March 2008]. http://nopr.niscpr.res.in/handle/123456789/825

ROAR. (2024). Welcome to the Registry of Open Access Repositories—Registry of Open Access Repositories. https://roar.eprints.org/

Wong, J. (2024). Subject Guides: Open Access: Pathways to Open Access. https://libguides.singaporetech.edu.sg/openaccess/pathways.