

Directory of Open Access Journals in Keywords. Distribution and Themes of Articles

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ABSTRACT

Researchers depend on consultation with previous work in their field, most of which is published in scientific journals. The open access movement has affected journals and articles, providing new alternatives for accessing scientific content, and the Directory of Open Access Journals (DOAJ) is the most specialized and multidisciplinary database of open access journals. The main goal of this study is to analyze publications that include “DOAJ” in their keywords, to determine how researchers in the areas of Library and Information Science and Social Science are studying it. The specific objectives are: a) to describe the characteristics of journals indexed in the Web of Science, DOAJ, or SCOPUS that have published articles with “DOAJ” as a keyword; b) to identify the institutional affiliations of the authors of those articles; and c) to classify the articles according to subject area. We identified 39 articles from 29 journals. The countries with the largest numbers of journals are the United States and the United Kingdom (six journals each). Most of the journals were open access, of which universities were the biggest publishers. The countries with the largest numbers of authors were India (12), and Italy and Russia (11 each), and the journal that published the most articles was the University of Nebraska’s *Library Philosophy and Practice* (four articles). Most articles analyze the quality (65.5%), followed by the growth (25.6%), of the Open Access Movement. An analysis of the subject areas covered revealed significant gaps, as the economic, legal and technological aspects of DOAJ were not represented.

KEYWORDS

Open access; DOAJ; Research on open access; Scientific Communication; Scholarly journals.

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Introduction

Publishing research results in a well-known journal is the most accepted way to demonstrate the originality and quality of a study and to confirm that it has been approved by the scientific community and recognized as part of the body of peer-reviewed literature (Ziman 1979; 1981; Merton 1973; Meadows 2008; López-Cózar, Salinas, and López 2007; Whitley 2007; Xia 2014).

Piowar *et al.* (2018) point out that there is a significant body of literature on the open access movement and identify various definitions of access types. The definition of access types is still subject of debate, which has been a limitation for studies with large samples that have attempt to determine the access model for each title.

Beasley (2016, 167) discusses new scientific publication models based on open access charges, arguing that large-scale implementation of publisher-provided ‘gold’ open access can “perpetuate and even reinforce an already well-documented system of discrimination by which important groups denied the privilege of seeing their research disseminated through generally accepted vehicles of scholarly communication”.

Studies of open access are essential for research on the various aspects and stakeholders of the movement and its implications for scientific journals. With 4,045,466 indexed articles from 13,355 journals in 2019, the Directory of Open Access Journals (DOAJ) is a database and index of “high quality, open access, peer-reviewed journals” whose aim is to extend the reach of the journals in its directory, increasing the visibility of the scientific information they publish (DOAJ 2019). We selected DOAJ as a representative platform for open access publishers and journals due to its policy of only accepting journals that provide immediate open access, excluding those that use an embargo or ‘hybrid’ model. The scientific community has criticized hybrid journals (almost all commercial publishers’ titles) because of the “double-dipping” (payment by authors and readers for the same paper) it implies, and its potential to further increase publishing costs (Björk and Solomon 2014). The classification of Open Access is important due to the need to define which journals are truly open because funding agencies require research results to be open, and commercial publishers attempt to characterize journals as open when in fact they use embargo (considering old articles as important as newly published ones) or hybrid models that include only few open access articles (Aspesi *et al.* 2019). The general objective of this study is to analyze articles with “DOAJ” as a keyword to determine how researchers are using the database. To this end, we established the following specific objectives:

- a) to describe the characteristics of journals indexed in WoS, DOAJ or SCOPUS that have published articles with “DOAJ” as a keyword;
- b) to identify the institutional affiliations of the authors of those articles; and
- c) to classify the articles according to subject area.

Methodology

Articles with DOAJ as an object of study or that drew their sample from it offer a representative sample of open access publications. This study sought to identify characteristics of a particular population of interest and estimate its proportions (Connaway and Powell 2010). The analysis of the data is both qualitative and quantitative, with descriptive statistics related to subjects (Elo and Kyngäs 2008; Goldenberg 2007; Hsieh and Shannon 2005).

To address potential criticisms related to quality, we included only articles from journals indexed in reputable databases in the sample (Xia 2011; Abadal 2017). We decided to focus on the Library and Information Science area in Web of Science (WoS) and DOAJ and Social Sciences articles in SCOPUS to identify more substantial discussion on technical aspects of access, inclusion, and preservation, which are characteristic of knowledge in this area.

We collected data using the same search strategy in WoS, SCOPUS, and DOAJ: articles with “DOAJ” as a keyword published between 2015 and 2018. We performed the WoS search on the core collection using the option “Information Science Library Science” and in the subject “Article” and “Review” in the document categories. In Scopus, we selected “Social Sciences” in the subject field and “Article” and “Review”. Finally, in DOAJ, we used “Bibliography, Library Science, Information Resources” as the search subject. We collected information on each journal from their pages.

To classify the articles according to their approach to Open Access, we chose the classification proposed by Rodrigues, Taga and Passos (2016), based on a study conducted on SCOPUS about Open Access: Growth, Economics, Philosophy, Impact, Legal, Perception, Quality, and Technology. We used the same categories to analyze the articles in the WOS, SCOPUS, and DOAJ databases with “DOAJ” as a keyword.

Results and discussion

We identified and analyzed 39 articles published in 29 journals between 2015 and 2018 in the WoS, SCOPUS, and DOAJ databases. The most representative indexer is WoS with 27 (58.7%) articles, followed by SCOPUS with 12 (26.1%), and DOAJ with 7 (15.2%).

Italian Journal of Library, Archives, and Information Science (JLIS.it) is the only journal found in all three databases. The journals indexed in two databases are: *Bibliotecae.it* (Italy) indexed in DOAJ and Scopus; *DESIDOC Journal of Library and Information Technology* (India), and *Electronic Library* (UK), both indexed in SCOPUS and WoS; and *Librarianship* (Turkey), indexed in DOAJ and WoS. The other 24 journals are indexed in just one database, most of them in WoS with 16 titles, followed by SCOPUS with five and DOAJ with three journals.

The 39 articles had their authors and their institutions described to identify the origin of the studies, on the assumption that this will reflect, at least partially, the situation in that country or region. A total of 85 authors from 21 different countries were identified. The content of all 39 articles was analyzed to classify the study according to the criteria selected.

Journal characteristics

We classified the journal publishers according to four categories: University, Commercial, Government, and Associations or Scientific Societies. Since the focus is on the journals, we adopted the criteria used by DOAJ and SPARC (Aspesi *et al.* 2019), which do not consider hybrid or embargo journals as open access. The types of access used are Open and Subscription.

Journal	N	Publisher	Country	Publisher	Access
<i>Library Philosophy and Practice</i>	4	University of Nebraska	USA	University	Open
<i>Italian Journal of Library and Information Science</i>	2	University of Studi Firenze	ITA	University	Open
<i>Desidoc Journal of Library & Information Technology</i>	2	Defense Scientific Information Documentation Centre	IND	Government	Open
<i>African Journal of Library Archives and Information Science</i>	2	Archlib & Information Services Ltd	NGA	Commercial	Subs
<i>Journal of Informetrics</i>	2	Elsevier Science	NLD	Commercial	Subs
<i>Nauchnye I Tekbnicheskie Biblioteki-Scientific and Technical Libraries</i>	2	Russian Natl Public Library Science & Technology	RUS	Government	Open
<i>Publications</i>	2	MDPI - Multidisciplinary Digital Publishing Institute	CHE	Commercial	Open
<i>Scientific and Technical Information Processing</i>	2	Allerton Press Inc.	USA	Commercial	Subs
<i>Bibliothecae.It</i>	1	University of Bologna	ITA	University	Open
<i>Turkish Librarianship</i>	1	Turkish Librarians Assoc	TUR	Association	Open
<i>Aib Studi</i>	1	Associazione Italiana Biblioteche	ITA	Association	Open
<i>Berkala Ilmu Perpustakaan Dan Informasi.</i>	1	Universitas Gadjah Mada	IND	University	Open
<i>Chinese Librarianship</i>	1	Internet Chinese Librarians Club	USA	Association	Open
<i>Electronic Library</i>	1	Emerald Group Publishing	GBR	Commercial	Subs
<i>Journal of Social Sciences Research</i>	1	Academic Research Publishing Group	PAK	Commercial	Open
<i>Revista Cubana de Informacion En Ciencias De La Salud</i>	1	Centro Nacional de Informacion de Ciencias Medicas	CUB	Government	Open
<i>Science Editing</i>	1	Korean Council of Science Editors	KOR	Association	Open
<i>Serials Librarian</i>	1	Taylor &Francis	GBR	Commercial	Subs

<i>Annals of Library and Information Studies</i>	1	Natl Inst Science Communication-Nisclair	IND	Government	Open
<i>Biblios-Revista De Bibliotecologia Y Ciencias de la Informacion</i>	1	University of Pittsburgh	USA	University	Open
<i>Evidence Based Library and Information Practice</i>	1	Alberta University	CAN	University	Open
<i>Journal of Academic Librarianship</i>	1	Elsevier Science Inc.	USA	Commercial	Subs
<i>Journal of The Association for Information Science and Technology</i>	1	Wiley	USA	Commercial	Subs
<i>Learned Publishing</i>	1	Assoc. Learned Professional Soc. Publ.	GBR	Association	Subs
<i>New Library World</i>	1	Emerald Group Publishing	GBR	Commercial	Subs
<i>Online Information Review</i>	1	Emerald Group Publishing	GBR	Commercial	Subs
<i>Profesional de la Informacion</i>	1	Economic Policy Institute – EPI	ESP	Commercial	Subs
<i>Research Evaluation</i>	1	Oxford University Press	GBR	University	Subs
<i>Revista Espanola de Documentacion Cientifica</i>	1	Consejo Superior Investigaciones Cientificas – CSIC	ESP	Government	Open

Table 1. Journal Characteristics: publisher, country, and type of access

Most of the journals are open access (58.6%), published by universities (20.7%), governments (17.2%), associations (13.8%), or commercial publishers (6.9%). Universities and associations publish most of the open access journals. The only journal with an article processing charge (US\$500) is *Journal of Social Sciences Research*, published by the Academic Research Publishing Group, a commercial publisher from Pakistan.

The use of “DOAJ” as a keyword implies a paper that considers Open Access, at least in part of the study. A significant number of the articles are published in journals with subscriptions (41.3%), mostly by commercial publishers. The subscription requirement means that a significant proportion of research on Open Access is inaccessible to many of the researchers who would need to read the papers. One difference here from previous research is the distribution of the articles among the commercial publishers, as it is not possible to identify an oligopoly as concentrated as the one described by Lariviere *et al.* (2016), because of the eight publishers involved only Elsevier and Emerald have two articles each, while all the others have one title each. We identified three small publishers: Archlib & Information Services from Nigeria, Multidisciplinary Digital Publishing Institute (MDPI) from Switzerland, Allerton Press from the United States, and the Economic Publishing Institute from Spain.

As shown in Table 2, the countries with the largest numbers of journals are the US and the UK, with six each, almost half of the total, and most requiring a subscription (9). This situation reflects the general distribution of journals in all areas and studies, with most of the articles owned by big publishers. Most of the open access journals come from 13 ‘peripheral’ (Guédon, 2007) countries: three from Italy, two from India, and one each from Canada, Cuba, Indonesia, Nigeria, Pakistan, Russia, South Korea, Spain, Switzerland, and Turkey. Commercial publishers are responsible for largest number of journals (12), mostly with subscription access, followed by universities. Discussions about open access are taking place in all types of journals and using different criteria for the selection of data and even for the definition of “open”.

Country	Publisher type									
	Association		Commercial		Government		University		TOTAL	
	Sub	Open	Sub	Open	Sub	Open	Sub	Open	Sub	Open
Canada	-	-	-	-	-	-	-	1	0	1
Cuba	-	-	-	-	-	1	-	-	0	1
India	-	-	-	-	-	2	-	-	0	2
Indonesia	-	-	-	-	-	-	-	1	0	1
Italy	-	1	-	-	-	-	-	2	0	3
Netherlands	-	-	1	-	-	-	-	-	1	0
Nigeria	-	-	1	-	-	-	-	-	1	0
Pakistan	-	-	-	1	-	-	-	-	0	1
Russia	-	-	-	-	-	1	-	-	0	1
S Korea	-	1	-	-	-	-	-	-	0	1
Spain	-	-	1	-	-	1	-	-	1	1
Switzerland	-	-	-	1	-	-	-	-	0	1
Turkey	-	1	-	-	-	-	-	-	0	1
UK	1	-	4	-	-	-	1	-	6	0
USA	-	1	3	-	-	-	-	2	3	3
TOTAL	1	4	10	2	1	4	1	6	12	17
%	3.4	13.8	34.5	6.9	3.4	13.8	3.4	20.7	44.8	55.2

Table 2. Distribution of articles according to access type, publisher type, and publisher country. Sub = subscription

The distribution of articles and journals is wider than the usual patterns limited to central countries and commercial publishers, showing that peripheral journals and countries play a relevant role in the scientific community.

Articles with DOAJ as a keyword in WoS, DOAJ, and SCOPUS: author countries and affiliations

An analysis of the publications revealed a relatively broad distribution of articles and journals in terms of countries and affiliations. To complement this analysis, it is pertinent to study the origins of the authors, since Open Access is a crucial subject for researchers from peripheral countries, allowing them to participate in the global scientific community.

Table 3 shows 85 authors from 21 countries published articles about DOAJ. The largest number of authors was from India (12), followed by Italy (11), Russia (11), Indonesia (9), Spain (7), Canada (6), and Brazil (4). The number of articles presented below (45) is not equal to the number of articles studied in this research (39). This mismatch is due to the fact that six articles were co-written by authors from different countries.

Country	Articles	Authors	Institutions	Authors per institution
South Africa	1	1	University of South Africa	1
Brazil	2	4	Federal University of Santa Catarina	4
Canada	3	6	Mt Royal University	1
			Thompson Rivers University	1
			University of Ottawa	4
China	1	1	Xi'an Jiaotong-Liverpool University	1
Cuba	1	1	Centro Nacional de Información de Ciencias Médicas-Infomed	1
Spain	3	7	University of Granada	2
			University of Las Palmas de Gran Canaria	2
			University of Barcelona	3
United States of America	3	3	Florida International University	1
			Indiana University	1
			University of California	1
Finland	2	2	Hanken School of Economy	2
Netherlands	1	2	Leiden University	2

Índia	7	12	Indian Institute of Technology	1
			Institute of Nuclear Medicine & Allied Science	1
			MLB Government College of Excellence	1
			Mizoram University	2
			Central University of Jammu	1
			University of Delhi	1
			Institute of Physics	1
			Sambalpur University	2
			Central University of Jammu	1
			National Power Training Institute	1
Indonesia	1	9	Institute Teknologi Bandung	5
			Prodi Tadris Bahasa Indonesia	1
			Universitas Bina Nusantara	1
			Universitas Muhammadiyah Sidoarjo	1
			Universitas Padjadjaran	1
United Kingdom	2	1	Independent Scientist	1
			Keele University	1
Iran	1	2	Regional Information Centre of Science & Technology	2
Italy	6	11	Università degli Studi Roma Tre	1
			Consiglio nazionale delle ricerche	1
			Università degli Studi di Parma	1
			4Science	1
			Cineca	1
			University of Milan	1
			Istituto Superiore di Sanità	3
			University of Cagliari	2
Japan	1	1	Independent Scientist	1
Nigeria	2	2	University of Nigeria	1
			Enugu State University of Science & Technology	1

Poland	1	2	University Informat Technol & Management Rzeszow	2
Russia	4	11	All Russian Institute for Science & Technical Information	10
			Russian National Public Library of Science & Technology	1
Sri Lanka	1	2	Open University of Sri Lanka	1
			South Eastern University	1
Sweden	1	1	DOAJ	1
Turkey	1	3	Dogus University	1
			Independent Scientist	1
			Izmir Institute of Technology Library	1
Total	45	85		85

Table 3. Contributions by country and institution

As can be seen in Table 3, nearly all the authors are from “peripheral” countries. The top three countries with the most authors are India, Italy, and Russia, publishing their articles in titles based in the United States and the United Kingdom. Authors studying DOAJ came mainly from countries with a direct interest in increasing their scientific publications and visibility on the global scene, publishing in the journals of “central” countries. These findings reflect the flight of research from peripheral countries to journals in central countries, especially those published by commercial publishers.

Classification of articles with “DOAJ” as a keyword

As shown in Table 4, we also classified the articles analyzed according to the subject matter categories developed by Rodrigues, Taga and Passos (2016). The majority (24, or 61.54%) of the articles focus on quality, followed by growth (10, or 25.64%). The focus on quality reflects the concern about differences between open and subscription journals. Researchers are evaluated according to the “quality” of the journals they publish, which explains the high incidence of this theme. Concern about the growth (in readership of the titles, the articles, or the movement itself) reflects the need to motivate participants and follow the evolution and consolidation of the movement.

Despite the large number of existing studies of the economics of Open Access (Larivière, Haustein, and Mongeon 2015; Matthias, Jahn, and Laakso 2019; Van Noorden 2013), none appears in our results. The main reasons for the Open Access movement: high subscription prices and deals offered by commercial publishers, do not appear in our data.

Code	Description	N	%
Quality	Quality checking and visibility, in most cases, of journals indexed in DOAJ	24	61.54
Growth	Analyzing of DOAJ's general growth and current state concerning certain groups, institutions, regions, and periods	10	25.64
Perception	Analyzing attitudes, experiences, perceptions, reactions, opinions, relationships, views, and awareness and other behaviors related to DOAJ	3	7.69
Impact	Measuring DOAJ's impact in terms of citations and other performance indicators, such as downloads, sharing, access, and impact factor	1	2.56
Philosophy	Discussion of DOAJ, its principles, values, and philosophy	1	2.56
Economics	Analyzing economic issues related to DOAJ, such as costs, business models, and sustainability.	0	0
Technology	Technical development and technological innovations concerning DOAJ	0	0
Legal	Investigating legal and ethical aspects of open access	0	0
Total		39	100

Table 4. Classification of articles on DOAJ according to subject

Conclusion

Studies catalogued in three large scientific databases between 2015 and 2018 were analyzed to characterize research on DOAJ. This study identified only 39 articles mentioning DOAJ in the three most important databases of scholarly journals. Considering the importance of discussions about Open Access and the hundreds of thousands of articles in each database, we may question the reasons for this small number.

Among the journals identified, only the *Journal of Library, Archives, and Information Science* (JLIS.it) is indexed in all three databases, and the *Journal of Social Sciences Research* was the only open access journal to impose processing charges on authors. The countries with the largest numbers of journals were the United States and the United Kingdom, with six titles each, almost half of the total. Most open access journals were from 13 peripheral countries: three from Italy, two from India, and one from each of the other 11 countries.

In terms of author affiliations in these publications, the most prevalent countries were India (12 authors), Italy (11), Russia (10), Indonesia (9), Spain (7), Canada (6), and Brazil (4). Thus, although nearly half of the journals were American and British, most of the articles on DOAJ in these journals came from authors affiliated with institutions in peripheral countries. Although this is a global discussion, these findings nevertheless underscore the supremacy of consolidated journals published in central countries.

In relation to access type, most journals were open access journals (58.6%) published by universities (20.7%), governments (17.2%), associations (13.8%), or commercial publishers. (6.9%).

The subject matter analysis identified 24 publications related to quality (61.54%) and 10 to growth (25.6%), demonstrating how the scientific community prioritizes discussion of DOAJ. These publications were primarily concerned with validating the open access model against traditional commercial publishers and subscription journals indexed in WoS and SCOPUS, and with analyzing the growth and representativeness of open access journals. The content classification analysis was relevant because it highlighted research gaps, especially in relation to the economic, technological, and legal aspects of open access publications. If one of the arguments used to justify open access is the high cost of journal subscription and publication fees, it is reasonable to assume that studies addressing economic issues would be central in further discussion of the matter, yet none were identified in this study.

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