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The value of a diamond: Understanding global coverage of diamond Open Access journals in Web of Science, Scopus, and OpenAlex to support an open future (Paper)

Abstract

Diamond OA journals present a publishing model that is free for both authors and readers, but their lack of indexing in major bibliographic databases such as Web of Science (WoS) and Scopus presents challenges in assessing the usage of these journals. This paper provides a global picture of the coverage of diamond OA journals from the Directory of Open Access Journals (DOAJ) in three data sources. Results show their low coverage in WoS and Scopus and higher coverage in OpenAlex, as well as the generally smaller and local scope of diamond OA journals. Understanding the current landscape of diamond OA indexing can assist LIS professionals with advising researchers on avenues they can pursue to find diamond OA published work or choosing journals to publish in to ensure the visibility and accessibility of their research.

Introduction

Initially developed in the early 2000s by the Public Library of Science (PLOS) as an alternative way to fund scientific publishing and guarantee access to the scientific literature (PLOS, 2022), article processing charges (APCs) are one of the most common sources of funding for fully Open Access (OA) and hybrid OA journals, particularly among for-profit publishers (Butler et al., 2022; Siler & Frenken, 2020). APCs have been criticized for contributing to the exclusion and heightening inequalities amongst early career researchers, researchers from low-income countries or specific disciplines, and other groups that lack representation in the scientific research system (Burchardt, 2014; Cabrerizo, 2022; Klebel & Ross-Hellauer, 2022; Kwon, 2022; Momeni et al., 2022; Olejniczak & Wilson, 2020; Ross-Hellauer et al., 2022; Smith et al., 2021).

Community-driven models of scientific publishing that are free for both readers and authors have existed for decades across the globe (Érudit, OpenEditions, SciELO, etc.). These models were recently rebranded as "diamond OA" to promote "non-commercial publishing models for Open Access" (cOAlition S, 2020). Diamond OA journals represent an alternative to expensive gold OA journals, in a context where fees asked by prestigious OA journals from for-profit publishers have been steadily increasing over time (Butler et al., 2022; Siler & Frenken, 2020). The general lack of indexing of diamond OA journals presents a challenge in making them findable for readers, attractive for authors, and contributes to their negative perception.

This paper aims to provide a global picture of the current state of the adoption of diamond OA from the Directory of Open Access Journals (DOAJ), an extensive index of open access journals from around the world, based on their coverage in various data sources. More specifically, this paper aims to answer the following research questions:

1. What is the share of diamond OA journals from the DOAJ that are indexed in by OpenAlex, Web of Science (WoS), and Scopus?
2. How are DOAJ's diamond and gold OA journals distributed across language?
3. How are DOAJ's diamond and gold OA journals distributed across fields in OpenAlex, WoS and Scopus?

Methods

We extracted journal metadata (countries of publication, APC information, languages, papers published and dates added) from the DOAJ Public Data Dump (https://doaj.org/docs/public-data-dump/), which is a mass file download of journal information in JSON format. We distinguished diamond OA journals from other OA journals by labeling journals and articles that charge APCs (gold, n = 5,703) and those that do not (diamond, n = 12,700). Using the ISSN and journal names, journals indexed in the DOAJ were matched with journals in the OpenAlex (Priem et al., 2022) data dump from May 2022, Scopus and WoS (Core Collection and the Emerging Sources Citation Index) journals. We also extracted authorship information, affiliations, and year of publication for all the papers associated with the OA journals. The Science-Metrix classification was used to assign disciplines to journals. A total of 117 journals remained after these operations.

Results

Share of Diamond OA Journals Included in OpenAlex, WoS and Scopus

Figure 1 shows the coverage of DOAJ diamond and gold OA journals in OpenAlex, WoS and Scopus. Our results indicate that the vast majority of journals in the DOAJ are indexed in OpenAlex (89%), including 87% of diamond OA journals and 95% of gold OA journals. Additionally, only 12% of DOAJ journals are indexed in the WoS Core Collection (5% diamond; 28% gold), but this number increases to 30% when the Emerging Sources Citation Index (22% diamond; 47% gold) is included. Scopus' coverage is slightly higher than WoS', with a total of 36% of OA journals indexed in the DOAJ, including 28% of diamond and 55% of gold OA journals.

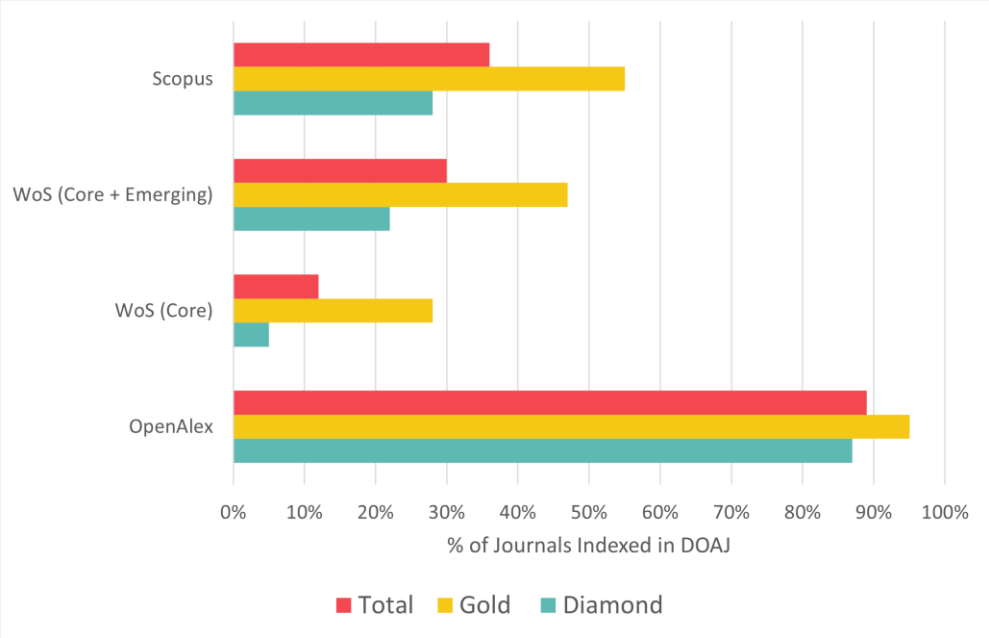

Figure 1. Coverage of DOAJ journals in OpenAlex, WoS and Scopus

Looking at the DOAJ diamond OA journals overlap between the three databases, we see that OpenAlex indexes 6,811 diamond OA journals that are not found in either WoS or Scopus, while Scopus and WoS respectively index 137 and 55 DOAJ diamond OA journals that are not found in the other two databases. Over half of the DOAJ diamond OA journals indexed in WoS (64%) and Scopus (51%) can also be found in the other two databases. Over 1,500 DOAJ diamond OA journals indexed in Scopus are also indexed in OpenAlex, but not in WoS, while 904 DOAJ diamond OA journals indexed in WoS are indexed in OpenAlex, but not in Scopus. Only 56 DOAJ diamond OA journals are indexed in both WoS and Scopus, but not in OpenAlex.

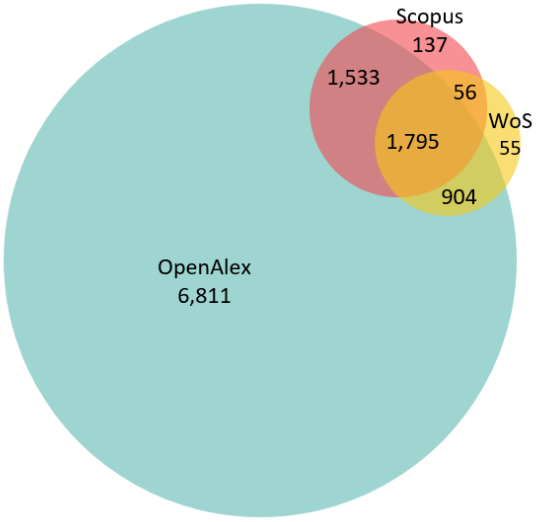

Figure 2. Overlap of DOAJ diamond OA journals in OpenAlex, Scopus and WoS (including the Emerging Sources Citation Index).

Diamond OA Journals by language and discipline

Figure 3 illustrates the distribution of diamond OA journals by languages across the DOAJ, OpenAlex, WoS and Scopus. Less than half of DOAJ diamond OA journals indexed in OpenAlex, Scopus, and WoS (Core Collection with Emerging Sources) are in English only. However, nearly two thirds of DOAJ diamond OA journals indexed in the WoS Core Collection are English only journals, while it indexes fewer than 7% non-English journals. This proportion ranges from 11% to 22% in the other databases. Surveying multiple languages journals, the proportion of DOAJ diamond OA journals indexed in the databases range from 28% (WoS Core Collection) to 45% (OpenAlex). In contrast, the vast majority of DOAJ gold OA journals indexed in OpenAlex, WoS and Scopus (between 76% and 96%) only publish articles in English. Additionally, less than 2% of all DOAJ gold OA journals indexed in the WoS and Scopus publish articles in a non-English language, while multiple languages journals vary from 4% (WoS Core Collection) to 17% (OpenAlex) among the various databases.

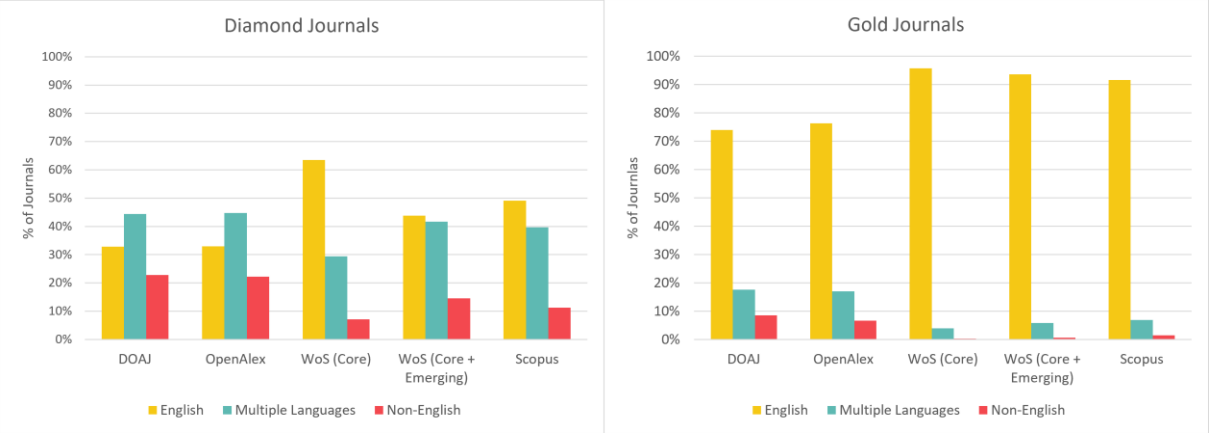

Figure 3. Distribution of diamond and gold OA journals across languages in the DOAJ, OpenAlex, WoS, and Scopus.

Figure 4 presents the field percentage of DOAJ diamond OA journals that are indexed in OpenAlex, WoS and Scopus. It shows that the WoS Core Collection has a higher share of both applied and natural sciences compared to the other data sources. OpenAlex and WoS (Core Collection with Emerging Sources) have a higher share of social sciences journals than the other data sources, while Scopus has a more balanced portfolio of journals.

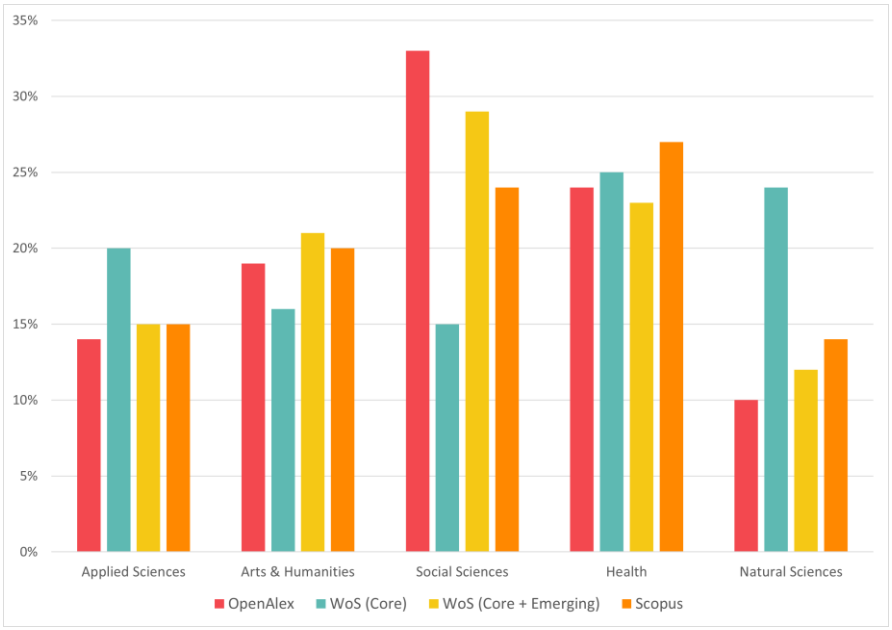

Figure 4 Percentage of diamond OA journals that are indexed in OpenAlex, WoS and Scopus, by field

Conclusion

While previous studies have estimated the total number of diamond OA journals to possibly as high as 29,000, the majority of these journals have not been carefully examined for quality in the same way that the DOAJ journals have through the rigorous application process: some of those journals may require APCs that are not explicitly mentioned on their website, many of them do not self-identify as being a diamond OA or a no-APC journal (Bosman et al., 2021). The majority of journals included in the DOAJ are included in OpenAlex, while WoS and Scopus index less than 40% of them. WoS coverage of diamond OA journals is particularly low with 5% of DOAJ Diamond OA journals covered in the WoS core collection. This percentage increases to 22% when including the Emerging Sources Citation Index, while 28% are indexed in Scopus. This, along with the lower share of English-based diamond OA journals indexed in WoS corroborate the argument that diamond OA journals are smaller in scope and tend to serve diverse geographic or disciplinary communities which are not included in selective databases such as Scopus and, especially, WoS (Bosman et al., 2021; Khanna et al., 2022), reinforcing the need to use more inclusive databases when investigating OA that do not perpetuate the exclusion of already underrepresented research communities (Basson et al., 2022).

APC-based OA models are not the only option for researchers to publish and disseminate their work in OA journals; in fact, most OA journals indexed in the DOAJ (69%) are funded without them. Tools such as OpenAlex allow LIS professionals to bypass the lack of coverage of diamond OA journals and offer the researchers they support the opportunity to choose alternative, community-driven OA models independent from for-profit publishers. LIS professionals are well placed to support the transition of the scholarly communication publication system from APC-based OA to diamond OA. Librarians are situated as negotiators between author and publisher, and as arbiters of consortial arrangements with publishers (Benz et al. 2022); advocating to institutions for open access economic strategies that shift away from low coverage data sources like WoS to more inclusive ones can help turn the tide to a fully open access scientific global research system.

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