

Shine bright like a diamond: A bibliometric analysis of diamond Open Access journals and their coverage in Web of Science, Scopus and OpenAlex

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Abstract

The Budapest Open Access Initiative (2002) advocated for a new generation of journals that would rely on alternative sources of funding to support Open Access (OA) dissemination. Author fees or article processing charges (APCs) have now become one of the most common sources of funding for OA journals. These APCs dominate the public discourse surrounding financial models of OA, ultimately contributing to increased inequalities among researchers. Diamond OA, a model in which scientific publications are free for both authors and readers, is an alternative to APCs. Given their lack of indexing in major bibliographic databases such as Web of Science (WoS) and Scopus, it remains a challenge to assess the uptake of diamond OA. This paper aims to provide a global picture of the current adoption of diamond OA journals based on their coverage in various data sources. Results show the low coverage of diamond OA journals by both WoS and Scopus and the higher coverage of diamond OA in OpenAlex, as well as the generally smaller and local scope of those journals. This highlights the importance of having inclusive databases—such as OpenAlex—to increase the visibility of journals using this model.

Introduction

Initially developed in the early 2000s by the Public Library of Science (PLOS) as an alternative funding mechanism for OA publishing (PLOS, 2022), article processing charges (APCs) have now become one of the most widely adopted sources of funding of both Open Access (OA) and hybrid OA journals, especially among for-profit publishers (Butler et al., 2022; Siler & Frenken, 2020). APCs have been criticized for contributing to the exclusion of early career researchers, women, unemployed researchers, retired researchers, private employees, researchers from low-income countries or specific disciplines (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).

Alternative to the gold and hybrid OA models, 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). While diamond OA journals often rely on various sources of funding including in-kind support, voluntary labor, university and government grants, crowdfunding, donations, memberships, and shared infrastructure, many of them still struggle with breaking even (Bosman et al., 2021). Concerns about their quality, their sustainability, and their overall lower scale and outputs compared to gold OA and closed journals are also frequently raised (Alperin, 2022; Bosman et al., 2021). Despite this, 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). However,

the general lack of indexing of diamond OA journals remains a further 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 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/https://doaj.org/docs/public-data-dump/>). 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 fields and disciplines journals.

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.

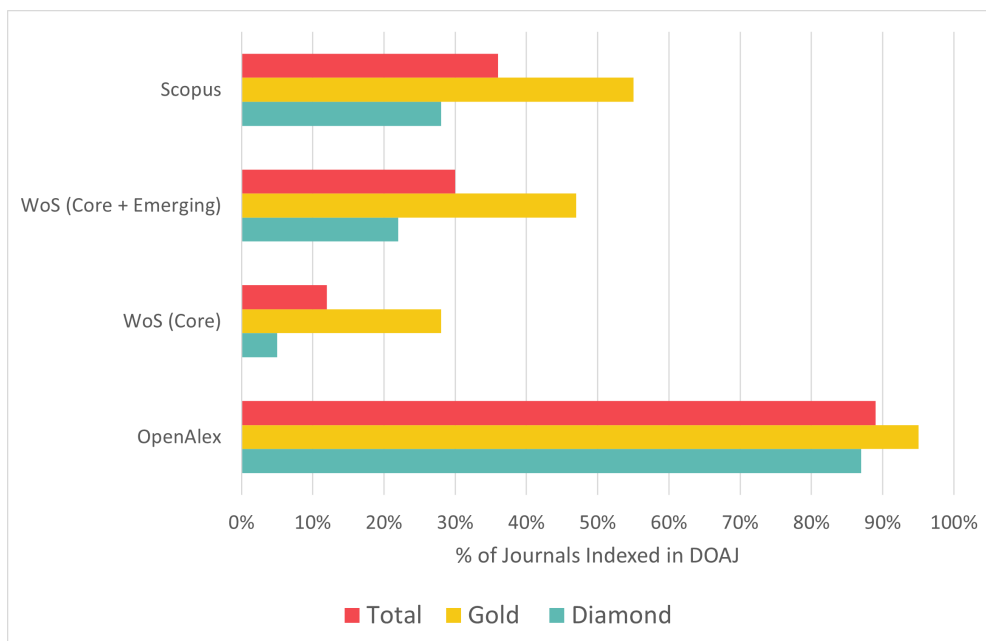


Figure 1 Coverage of DOAJ journals in OpenAlex, WoS and Scopus

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.

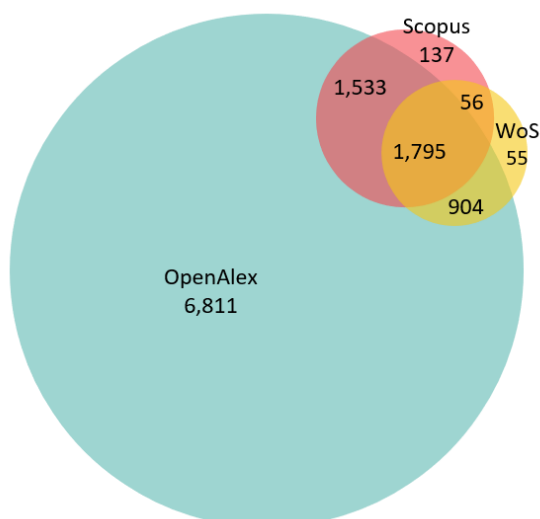


Figure 2 Overlap of DOAJ diamond OA journals in OpenAlex, Scopus and WoS (including the Emerging Sources Citation Index).

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.

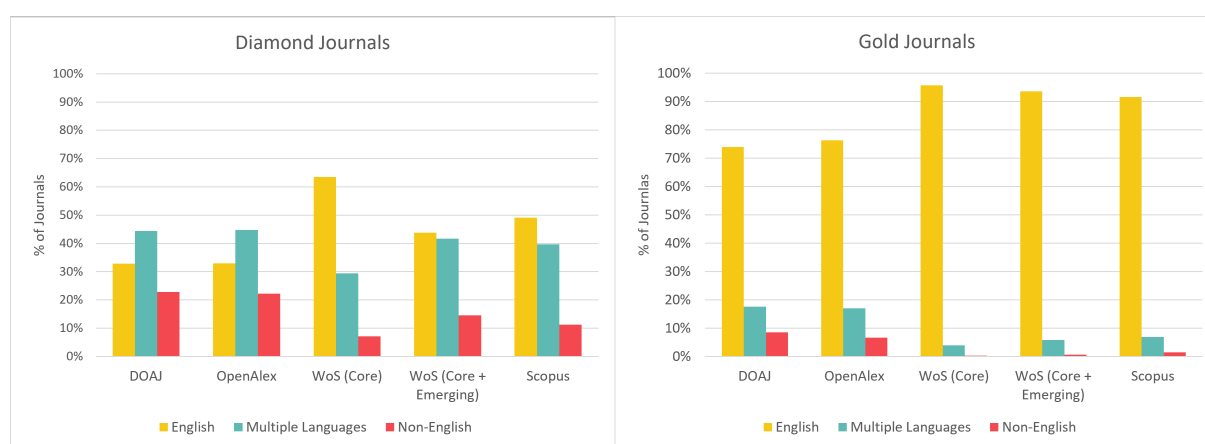


Figure 3 Distribution of diamond and gold OA journals across languages in the DOAJ, OpenAlex, WoS, and Scopus.

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.

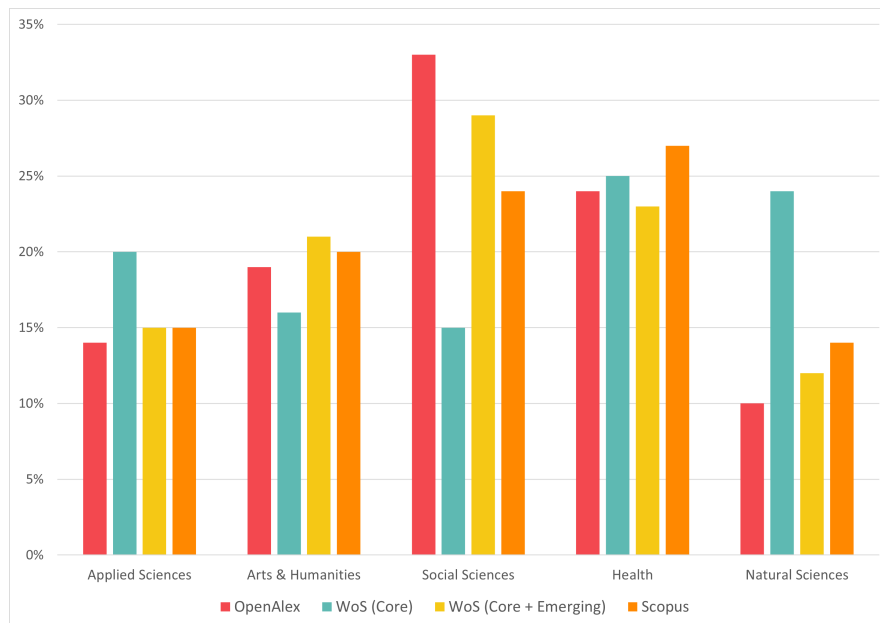


Figure 4 Percentage of diamond OA journals that are indexed in OpenAlex, WoS and Scopus, by field

Conclusion

The use of OpenAlex has allowed us to examine thousands of OA journals that were otherwise not covered by traditional bibliometric databases such as WoS or Scopus. For instance, the vast majority of journals included in the DOAJ are also included in OpenAlex, while traditional databases index less than 40% of them. Our results have also highlighted the significantly poor coverage of diamond OA journals by WoS (5%) compared to Scopus (28%), even when the Emerging Sources Citation Index (22%) is included in the analyses. 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). This again shows the need to use more inclusive databases when investigating OA (Basson et al., 2022). APC-based journals are often seen as the norm in the debate surrounding the sustainability and the affordability of OA publishing, however, this discourse ignores the fact that most OA journals indexed in the DOAJ are funded without them (69%). While problems related to the perceived quality and impact of diamond OA journals persist among researchers, our results show that the APC-based way to OA is not the only option for researchers to publish and disseminate their work in OA journals. Tools such as OpenAlex now allow us to make up for the historical lack of coverage of diamond OA journals, offering researchers the opportunity to choose alternative, community-driven OA models.

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