OpenAlex and the Future of Libraries: Enhancing Research Discoverability, Access, and Innovation

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Abstract

OpenAlex is a groundbreaking open-access catalog that charts the scholarly research universe, and as such, it is a core library tool in supporting research, improving resource discovery, and advancing open knowledge. The article explains how OpenAlex enhances library services, improves research accessibility, and advances knowledge sharing. It outlines its shape, strengths, and weaknesses of employing OpenAlex, offering a detailed examination of its functions in contemporary libraries. It delves into real-world applications, emerging trends and library integration strategies.

Keywords
OpenAlex, Library services, Open source tool, Resource discoverability

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1. Introduction

Libraries have long been the focal point of knowledge storage and sharing. With the advent of digital repositories and open-access platforms, libraries now need to contend with the challenge of accommodating new technologies for improving user services. OpenAlex is a sound solution to these challenges, delivering a deep bibliographic record, author network, institutional information, and research topic maps. This article talks about the importance of OpenAlex and how it is going to revolutionise the functioning of libraries, keeping libraries vibrant and adaptable to increasingly digital times.

1.2 About OpenAlex

OpenAlex is an open, freely available index of the global research system, inspired by the mythical Alexandria library — the knowledge center of the ancient world. It indexes a huge dataset of scholarly articles, authors, institutions, journals, and subjects of research. As it is meant to be useful to both human researchers and machine learning models, OpenAlex provides a big API for viewing and analysing academic content. Its data is tapped from several databases, providing complete coverage and up-to-date records.
OpenAlex's five key entities:

- Research articles, books, datasets, and more.
- Researchers linked to their works and co-author networks.
- Journals, repositories, and other publishing platforms.
- Universities, research centres, and organisations affiliated with authors and works.
- Subject tags and topic categories representing the core themes of each work.

1.3 Why We Need OpenAlex

Libraries are evolving into hubs of digital information, necessitating sophisticated tools to handle information efficiently. OpenAlex fulfils some of the most critical requirements of its type: It consolidates millions of research articles, offering one-stop-shop access to scholarly content of every type. Researchers can discover related publications, explore citations, monitor academic trends, and detect new developments in a field with ease and convenience. With deep metadata, such as author

affiliation, publication date, research topics, funding agencies, and citation links, OpenAlex provides. Being an open-source platform, it is open to the growing trend towards open access research so that knowledge can be kept accessible for free. With cross-mapping of concepts across disciplines, OpenAlex facilitates cross-disciplinary research and innovation. Libraries can utilise OpenAlex data for analysing institutional research impact, collaboration networks, and world ranking.

1.4 How OpenAlex Helps Libraries

OpenAlex empowers libraries in several ways:
•Libraries can integrate OpenAlex data to enhance their existing catalogs with richer metadata, improving search functionality and user experience.
•Librarians can assist researchers in finding the latest publications, tracking citations, and exploring interdisciplinary connections.
•Libraries can use OpenAlex to analyze their institution's research output, collaboration networks, and subject strengths, supporting strategic planning.
•OpenAlex's API allows libraries to automate data retrieval, customize services, and develop tailored discovery platforms.
•Libraries can support advanced research impact studies, citation analysis, and author influence tracking using OpenAlex data.
•Libraries promoting open learning initiatives can use OpenAlex to curate and link to freely accessible academic content.

2. Literature Review

Cumulatively, libraries acquire massive amounts of information. Kelly and O'Gara (2018) recognised that the union of collection data, use data, and citation data constitutes a colossus of information and advocated the use of appropriate data points to answer certain questions or achieve certain evaluation aims. Though individual purposes of consulted research diverged across institutions, most prevailing purposes known through citation studies were building core lists of journals (Kayongo & Helm, 2009; Martindale, 2020; Vaaler, 2018), ascertaining a collection's worth (Fernández-Ramos et al., 2023; Matos, 2016; Peñaflor & Aliwalas, 2022; Smith, 2003), and informing collections about decisions related to collection building (Feyereisen & Spoiden, 2009; Gao, 2016; Wilson & Tenopir, 2008; Zhang, 2007). Tucker (2013) employed citation analysis and also a wide-ranging methodology to determine faculty publishing and research behavior.

White (2019), Kumpulainen and Seppänen (2022), and Pastva et al. (2018) were all concerned with applying automated or semi-automated methods with either R scripting or Python and citation databases such as Scopus or Web of Science in order to devise a more efficient method of data harvesting. These researchers were able to create more citation data than in most other citation analysis studies but also tapped into familiarity with basic coding and API use with the objective of creating the required results. Data from both Web of Science and Scopus were merged in Kumpulainen and Seppänen (2022) in a bid to create a more comprehensive dataset. These researchers highlighted the intricacy and extra work of combining two or more data sets.
Figure 1 is the OpenAlex homepage, where it presents users with the ability to sign up for a new account or log in using email and password. As OpenAlex does not normally need user login for access to its fundamental features, Figure 1 conceptually illustrates an individualized entry point. It also illustrates a search box, where a user puts in the keyword "Makerspace" to search for adjacent scholarly content



Figure 1 Search string

Figure 2 shows the search results page for the keyword "Generative AI". The results are organized and can be filtered year-wise, by access type (e.g., Open Access or Subscription), by topic or subject area, and by institution. This structured presentation enables users to narrow down their search effectively to find the most relevant articles.

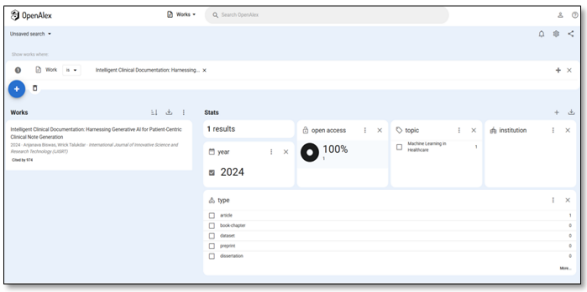


Figure 2 Search Results

Figure 3 shows the detailed view of a selected scholarly article related to the term "Generative AI." This view includes comprehensive metadata such as, Publication Year, Type of article, Abstract or summary, Source or journal name, Fields and domains of study, Author affiliations, including cities and institutions. as identifying, evaluating, and managing information.

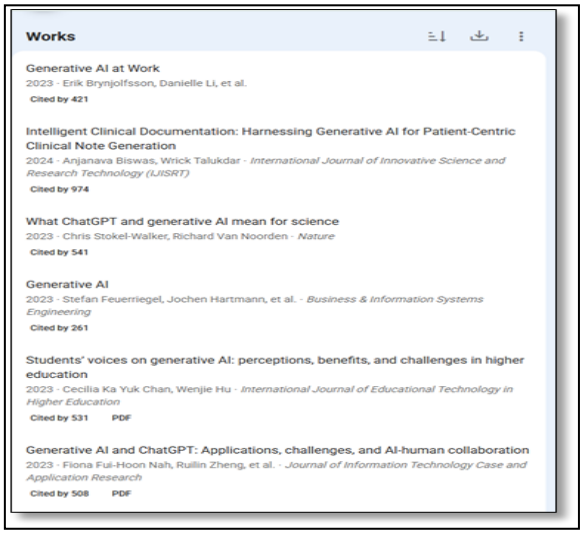


Figure 3: Article Description

Figure 4 represents a list of research articles on generative AI, an artificial intelligence that is able to create new content, such as text, images, and code. The list shows the title of each article, year of publication, authors, journal in which it was published, and number of citations. The articles span across generative AI topics such as its application in the workplace, healthcare, science, and education. The image also has a PDF, so the articles mentioned here are in PDF format.

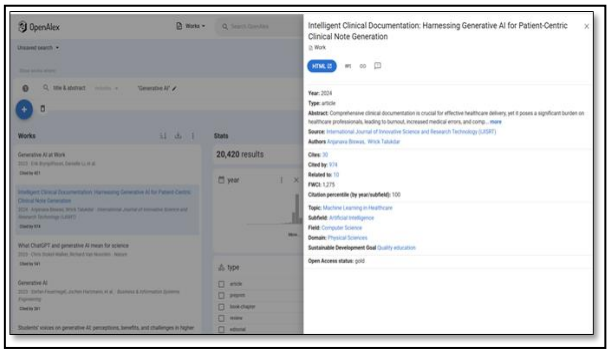


Figure 2 Browse by Works

The number of search results to a query is depicted in Figure 5. The results are grouped under many filters as year, open access, topic, institution, and type. The results are displayed as listed items where each item indicates the title of the filter category, the particular filter option, and the number of results for the corresponding option. The page also provides a "More." button at the end of each category of filter so that the users can view additional options for a specific category. The page has been developed to assist the users in shortlisting the search results as well as retrieving information which the user requires.

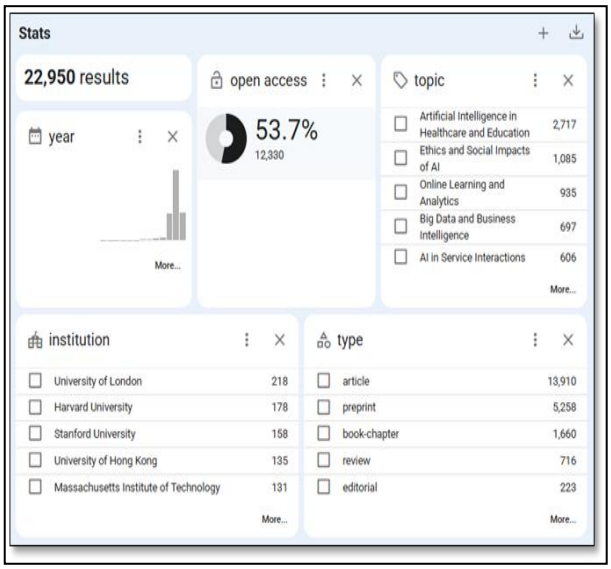


Figure 3 Statistics of Search Results

Figure 6 of a search results page on OpenAlex, a research discovery platform. The search query is "institution: PSG Institute of Medical Sciences & Research". The results show 1,660 publications from this institution, with 66.7% of them being open access. The results are categorized by year, type, topic, and institution. The publications cover a range of topics, including innovations in medical education, autoimmune bullous skin diseases, antifungal resistance and susceptibility, and urological disorders and treatment. The top institutions associated with the search query are PSG Institute of Medical Sciences & Research, PSG Institute of Technology and Applied Research, Institute of Medical Sciences, Banaras Hindu University, and Manipal Academy of Higher Education

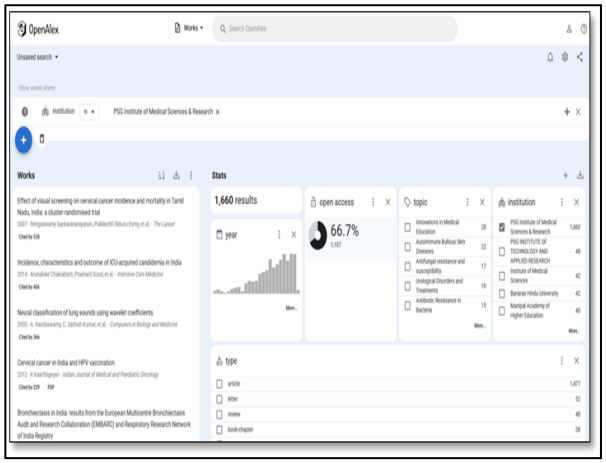


Figure 4 Browse by Institution wise

Figure 7 explains that, provides data on scholarly publications about "Wolters Kluwer eBooks," an ebook platform. The platform has 435 works and 3,323 citations. The page includes information about the source type, access, citation index, and top works. There is also a section with key stats showing a histogram of publications over time, a pie chart indicating that 0% of the works are open access, and a list of the top three topics covered by the platform: Dutch Social and Cultural Studies, Globalization of Law and Legal Methodology, and Comparative International Legal Studies. The page is designed to provide a quick overview of the platform's content and its impact on the academic community.

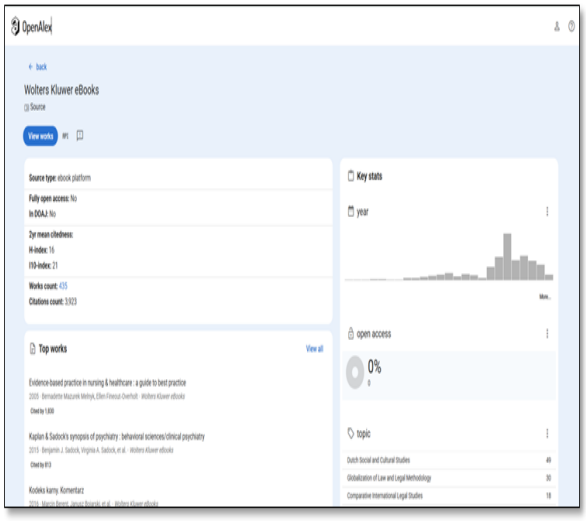


Figure 5 Browse by access type wise

3. Export results from the OpenAlex service

- Spreadsheet (.csv) – CSV file that can be used by spreadsheet programs such as MS Excel.
- Endnote(.ris) – RIS format that can be utilized by reference managers such as Endnote or Zotero
- Text Format (.txt) – a text output format. It is usually compatible with export format supported by Web of Science and Dimensions.

4. Benefit of using OpenAlex for Libraries

- Bibliometric and Scientometric Analysis
- Institutional Repository Enhancement
- Research Information Management
- Collection Development and Evaluation
- Knowledge Graph Integration
- Support for Open Science
- Development of Discovery Tools

5. Advantages and Limitations of OpenAlex Use in Libraries

No costs of subscription to conventional bibliographic databases.
Aggregates data from several sources, giving a thorough picture of global scholarly output.
Supports tailored queries, making it adaptable to library-specific applications, be it straightforward retrieval or complex data analysis.
Makes it easy to employ freely available research materials, lowering obstacles to knowledge acquisition.
Updated constantly, datasets ensure that libraries are able to locate recent research.
OpenAlex is developed by contributions from the library and academic communities so that it remains current.

6. Disadvantages and Limitations of OpenAlex Use in Libraries

- Coverage Limitations
- Metadata Quality and Consistency
- Dependence on Open infrastructure
- Technical Barriers
- Limited advanced features
- Sustainability and Support concerns

7. Conclusion

OpenAlex is a revolutionary library resource that fills the gap between the past library resources and the changing digital research landscape. With its expansive data range, open-access availability, and API flexibility, it is a treasure trove. But the libraries have to fight the battle of data management, technological know-how, and user education in order to realize its full potential. Through adopting OpenAlex, libraries will enable scholars, broaden access to materials, and drive forward the culture of open science. While knowledge doubles up rapidly, OpenAlex maintains libraries centrally focused on curating, placing, and delivering scholarship their role as the beacon for intellectual progress.

References

1) Chatterjee, A. (2023). Harnessing OpenAlex for citation analysis: A case study in Library and Information Science. *Journal of Scientometric Research*, 12(1), 34–41.
2) Gusenbauer, M. (2023). A comparative evaluation of OpenAlex and Scopus for bibliometric analysis. *Journal of Informetrics*, 17(2), 101265.
3) Hook, D., & Portenoy, J. (2023). Using OpenAlex to democratize access to scholarly knowledge. *Information Services & Use*, 43(1), 23–36.
4) Jacobs, N. (2022). OpenAlex and the evolution of scholarly metadata infrastructures. *Insights*, 35(1), 1–5.
5) Kemp, A. (2023). OpenAlex: Opportunities and challenges for open science. *Data Science Journal*, 22, 1–10.
6) Open Knowledge Foundation. (2022). OpenAlex and the future of open research metadata. Retrieved from https://okfn.org/blog
7) OpenAlex Team. (2023). OpenAlex API documentation. Retrieved from https://docs.openalex.org
8) Patel, R., & Sharma, M. (2023). A practical guide to bibliometric analysis using OpenAlex and Bibliometrix. *Library Philosophy and Practice*, 6872.
9) Piwowar, H., & Priem, J. (2022). OpenAlex metadata and linking across the research ecosystem. *Open Research Europe*, 2, 91.
10) Portenoy, J., & Priem, J. (2023). OpenAlex: An open catalog for the global research system. Quantitative Science Studies, 4(1), 45–56.
11) Priem, J., & Piwowar, H. (2022). OpenAlex: A fully-open index of scholarly works, authors, venues, institutions, and concepts. https://blog.ourresearch.org/openalex-launch
12) Shu, F., & Larivière, V. (2022). OpenAlex vs Dimensions: A comparative study of open data platforms. *Aslib Journal of Information Management*, 74(5), 723–738.
13) Singh, K., & Gunasekaran, S. (2023). Exploring research trends with OpenAlex: An Indian LIS perspective. *Annals of Library and Information Studies (ALIS)*, 70(3), 189–198
14) Van Eck, N. J., & Waltman, L. (2023). OpenAlex as a data source for science mapping. *Scientometrics*, 128, 2135–2150.
15) Wesley-Smith, I., & Fenner, M. (2022). From Microsoft Academic Graph to OpenAlex: Transitioning scholarly infrastructure. *Research Ideas and Outcomes (RIO*), 8, e88800.