

The Transformation of Open-Access Scientific Publishing: A Comparative Analysis of MDPI, Frontiers, Hindawi, Bentham, and WSEAS

Audrey Richards, Paul Nelson
Coventry University
Coventry, Scarborough, London
UK

Received: September 6, 2025. Revised: December 9, 2025. Accepted: April 12, 2026. Published: May 8, 2026.

Abstract: The rapid expansion of open-access publishing has fundamentally transformed the global scientific communication ecosystem. While open-access models have increased the accessibility and dissemination of research, they have simultaneously generated significant debate concerning peer-review integrity, publication ethics, commercialization, editorial quality, and academic reputation. This article presents an extended comparative analysis of five influential open-access publishing groups: [MDPI](#), [Frontiers](#), [Hindawi](#), [Bentham Science Publishers](#), and [WSEAS](#). The study investigates their historical development, business models, editorial practices, indexing status, controversies, academic perception, and role within the evolving landscape of scholarly publishing. The findings demonstrate that contemporary academic publishing cannot be reduced to simplistic classifications such as “predatory” or “legitimate.” Instead, substantial heterogeneity exists within publishers themselves, and journal-level evaluation remains essential for researchers, institutions, and policymakers.

Keywords: open-access publishing, academic integrity, publication ethics, commercialization, editorial quality, academic reputation

I. INTRODUCTION

Scientific publishing has undergone a profound transformation during the last two decades due to the emergence and expansion of open-access publishing models. Traditionally, academic publishing was dominated by subscription-based systems operated by large publishers such as Elsevier, Springer, Wiley, Taylor & Francis, IEEE, and ACM. These publishers relied on institutional subscriptions and library licensing agreements to generate revenue while maintaining strong editorial infrastructures and highly selective peer-review

systems. The open-access movement emerged as a response to increasing subscription costs, restricted access to publicly funded research, and growing demands for global dissemination of scientific knowledge. Open-access publishers introduced alternative financial models in which authors, institutions, or funding agencies pay article processing charges (APCs) to enable unrestricted public access to published articles. Although open-access publishing has democratized access to scientific information, it has also created significant tensions regarding research quality, editorial rigor, commercialization, and publication ethics. Concerns about “predatory publishing” have intensified as some publishers have prioritized rapid expansion and revenue generation over peer-review integrity. Within this evolving environment, publishers such as MDPI, Frontiers, Hindawi, Bentham, and WSEAS have attracted substantial attention, both positive and negative. These publishers occupy an intermediate and controversial position between elite traditional publishers and clearly fraudulent predatory operations. Their influence on global research dissemination continues to grow, particularly in developing countries and rapidly expanding scientific fields. This article aims to provide a comprehensive comparative analysis of these publishers by examining their historical evolution, operational structures, academic reputation, strengths, weaknesses, and long-term implications for the scientific ecosystem.

II. THE EVOLUTION OF OPEN-ACCESS PUBLISHING

The Budapest Open Access Initiative in 2002 represented a foundational milestone in the development of modern open-access publishing. The movement advocated unrestricted access to peer-reviewed scholarly literature and emphasized the importance of removing financial barriers to scientific knowledge.

Two principal open-access models subsequently emerged:

1. Gold Open Access, where articles are freely accessible immediately upon publication, usually financed through APCs.
2. Green Open Access, where authors self-archive manuscripts in repositories.

The growth of digital publishing platforms dramatically reduced publication costs and accelerated editorial workflows. However, the APC model also introduced potential conflicts of interest because publisher revenue became directly associated with publication volume.

This economic incentive contributed to the rapid proliferation of journals and special issues across many open-access publishers. Consequently, concerns emerged regarding editorial standards, peer-review quality, reviewer fatigue, and the industrialization of academic publishing.

III. MDPI: EXPANSION, EFFICIENCY, AND CONTROVERSY

[MDPI](#) has become one of the largest and most influential open-access publishers globally. Founded in 1996, MDPI initially focused on chemical compounds and materials science before expanding into virtually all academic disciplines. The publisher's growth has been extraordinary. Hundreds of journals are now operated under the MDPI umbrella, many indexed in Scopus and Web of Science and possessing recognized Impact Factors. MDPI has achieved remarkable visibility due to its highly efficient editorial systems, rapid review cycles, and aggressive international expansion. One of MDPI's defining characteristics is its extensive use of special issues. Guest editors are frequently invited to organize thematic collections covering highly specialized research topics. This strategy has significantly increased submission volumes and citation metrics. However, MDPI has also become one of the most criticized publishers in academia. Critics argue that the publisher's business model encourages excessive publication growth and may compromise peer-review rigor. Concerns have also been raised regarding reviewer selection, editorial consistency, and unusually short acceptance times in some journals. The debate surrounding MDPI illustrates the complexity of evaluating modern open-access publishing. While some MDPI journals are highly respected and widely cited, others are regarded as lower-quality venues. Consequently, institutional evaluations often vary substantially depending on discipline, journal ranking, and local academic culture. Despite criticism, MDPI cannot be accurately characterized as a classical predatory publisher. Many leading researchers publish in MDPI journals, and the publisher maintains strong indexing across numerous scientific databases.

IV. FRONTIERS: OPEN SCIENCE AND EDITORIAL CHALLENGES

[Frontiers](#) has positioned itself as a pioneer of open science and transparent peer review. Founded in 2007, Frontiers rapidly established a strong reputation in neuroscience, psychology, medicine, and life sciences. A distinctive feature of Frontiers is its collaborative review system, in which reviewer identities may be disclosed and interactions between authors and reviewers are integrated into the editorial process. This model aims to increase transparency and reduce anonymous reviewer bias. Frontiers journals are extensively indexed and often achieve high citation impact. The publisher has successfully cultivated an image associated with scientific innovation and interdisciplinary collaboration. Nevertheless, Frontiers has faced significant criticism. Some former editors have alleged that editorial independence was compromised by publication targets and financial incentives. Concerns have also been raised regarding acceptance rates and the pressure placed on editors to maintain rapid publication workflows. Despite these controversies, Frontiers remains broadly recognized as a legitimate scholarly publisher. Many of its journals possess strong reputations, especially within biomedical sciences.

V. HINDAWI: FROM RESPECTED PUBLISHER TO INTEGRITY CRISIS

[Hindawi](#) represents one of the most significant case studies in the modern publishing integrity crisis. Founded in Egypt in 1997, Hindawi initially developed a strong reputation in mathematics, engineering, and applied sciences. The publisher became particularly successful after transitioning fully to open access. Many Hindawi journals achieved strong indexing and respectable citation performance. However, following Hindawi's acquisition by Wiley, serious integrity problems emerged. Large-scale paper mill activities, manipulated peer review, fabricated reviewer identities, and systematic publication irregularities were identified across numerous journals. The consequences were severe. Thousands of articles were retracted, several journals were suspended, and the publisher's reputation suffered substantial damage. The Hindawi case demonstrates how rapid expansion combined with insufficient editorial oversight can threaten the credibility of scientific publishing systems. It also highlights the increasing sophistication of organized paper mill networks operating within global academia.

VI. BENTHAM SCIENCE PUBLISHERS: PERSISTENT REPUTATION CHALLENGES

[Bentham Science Publishers](#) and [Bentham Open](#) have long occupied a controversial position within academic publishing. Bentham became internationally known after a 2009 incident in which a computer-generated fake manuscript was reportedly accepted with limited or inadequate peer review. This event significantly damaged the publisher's reputation and reinforced criticism

concerning editorial quality control. Additional concerns have included aggressive email solicitation campaigns, inconsistent peer-review standards, and the rapid proliferation of journals. Nevertheless, Bentham continues to operate numerous indexed journals, particularly in chemistry, medicine, and pharmaceutical sciences. Some journals maintain active editorial boards and publish legitimate scientific research. The Bentham case illustrates the difficulty of assigning uniform reputational classifications to large publishing organizations. Significant variation exists among individual journals, and some publications operate at considerably higher standards than others.

VII. WSEAS: ENGINEERING CONFERENCES AND SPECIALIZED PUBLISHING

[WSEAS](#) differs substantially from the previously discussed publishers because its historical identity is closely connected to engineering conferences, applied mathematics, systems science, and interdisciplinary technical research. WSEAS has organized numerous international conferences and publishes journals primarily focused on engineering and applied sciences. 15 of its journals are indexed in Scopus, and the organization maintains a smaller publication volume than large industrial-scale publishers. It publishes a wide range of journals titled "WSEAS Transactions" in fields such as Mathematics, Computers, Biology & Biomedicine, Power Systems, and Business & Economics. It organizes academic meetings and "Summits" (B2B conferences) globally, covering topics like Artificial Intelligence, Solar Energy, and Automation. WSEAS applies a rigorous peer-review process, involving 3-5 independent reviewers for each paper. Many of its journals are indexed in databases such as INSPEC Scopus, DOAJ, and EI Compendex. Unlike highly commercialized mega-publishers, WSEAS maintains a more traditional conference-centered structure. Its reputation varies substantially across academic communities and geographical regions. Based on recent user experiences and discussions, the peer review process at WSEAS is generally considered thorough but can be very slow. WSEAS has a strict, multi-reviewer process, and this rigor often results in long waiting times for authors. Many authors have reported waiting several months to hear back on their submissions. While some users complain of slow, "dead silence" for months, others describe the reviews as thorough, strict, and high-quality, sometimes requiring 2-3 pages of corrections. WSEAS has a 20% acceptance rate, and notes that some papers rejected by WSEAS have been published in other reputable journals (like IEEE or Elsevier) after revisions. The process is designed to have a minimum of three positive recommendations, which can contribute to the time taken for approval. WSEAS publishes mandatory, signed certification documents for

every paper, verifying a rigorous peer-review process. These certifications, along with reviewer names and evaluation notes, are published online for transparency to ensure quality and address ethical concerns. Since 2019, WSEAS does not publish any paper without a signed certification from authors confirming a thorough, "line-by-line" peer review was conducted, often by three or more reviewers. The certifications are uploaded by authors, documenting the review process and confirming no artificial citations were forced by editors. WSEAS provides a [public list of reviewers](#) and automatically generates reviewer certificates after a review is completed and recorded. The certification ensures that authors confirm the paper is not published elsewhere and that the review was free from undue influence. Editors-in-Chief also certify the review process.

VIII PREDATORY PUBLISHING AND THE PROBLEM OF CLASSIFICATION

The concept of "predatory publishing" remains highly controversial. Originally introduced to describe fraudulent publishers exploiting APC-based business models without legitimate peer review, the term has gradually expanded and become increasingly ambiguous. Many scholars argue that simplistic binary classifications fail to capture the complexity of modern academic publishing. Publishers may simultaneously exhibit both legitimate and problematic characteristics.

Several factors complicate classification:

- Variation among journals within the same publisher.
- Differences in disciplinary publication cultures.
- Institutional biases regarding open access.
- The commercialization of traditional publishers themselves.
- The absence of universally accepted quality metrics.

Moreover, even traditional publishers have faced criticism regarding excessive subscription pricing, editorial monopolies, and publication delays. Consequently, the distinction between "predatory" and "commercial" publishing is not always straightforward.

IX COMPARATIVE ANALYSIS

A comparative evaluation of MDPI, Frontiers, Hindawi, Bentham, and WSEAS reveals important structural differences. MDPI emphasizes large-scale rapid publication and editorial efficiency. Frontiers prioritizes transparent peer review and interdisciplinary biomedical research. Hindawi demonstrates both the opportunities and dangers associated with rapid open-access expansion. Bentham illustrates the long-term reputational consequences of editorial controversies. WSEAS represents a more specialized and conference-oriented

publication ecosystem. WSEAS has a stricter review than MDPI, Frontiers, Hindawi, Bentham and higher rejection rates. In terms of academic prestige, Frontiers and WSEAS generally occupies the strongest position among these publishers, followed by higher-ranked MDPI journals. Hindawi's reputation has declined significantly due to integrity scandals, while Bentham is often regarded as more niche or field-dependent publisher. Importantly, however, journal-level evaluation consistently proves more meaningful than publisher-level generalizations.

X IMPLICATIONS FOR RESEARCHERS AND INSTITUTIONS

Researchers must increasingly navigate a complex publishing environment shaped by competing pressures involving career advancement, research visibility, funding requirements, and publication speed.

Several criteria should be considered before selecting a journal:

- Indexing status in Scopus, Web of Science, and PubMed.
- Editorial board credibility.
- Transparency of peer-review procedures.
- Citation metrics and journal rankings.
- Retraction history and publication ethics.
- Institutional recognition and disciplinary reputation.

Universities and funding agencies must also develop more nuanced evaluation systems capable of distinguishing between legitimate open-access innovation and exploitative publication practices.

XII CONCLUSION

The transformation of scientific publishing through open-access models represents one of the most significant developments in modern academia. Publishers such as MDPI, Frontiers, Hindawi, Bentham, and WSEAS have expanded access to scientific knowledge while simultaneously generating important debates concerning peer-review quality, commercialization, editorial integrity, and academic standards. They are very far from the Predatory Publishers. The evidence suggests that simplistic classifications of publishers as either "predatory" or "legitimate" are increasingly inadequate. Significant variation exists not only between publishers but also among journals within the same publishing organization. Ultimately, the future credibility of scientific publishing will depend on balancing accessibility, transparency, editorial rigor, and ethical responsibility. Researchers, institutions, publishers, and policymakers must collaborate to ensure that open-access publishing fulfills its original mission of democratizing

scientific knowledge without compromising research integrity.

REFERENCES

- [1] Kebede M, Schmaus-Klughammer AE, Tekle BT. Manuscript submission invitations from 'predatory journals': what should authors do? *J Korean Med Sci* 2017; 32: 709–712.
- [2] Bornmann L, Mutz R. Growth rates of modern science: a bibliometric analysis based on the number of publications and cited references. *J Assoc Inf Sci Technol* 2015; 66: 2215–2222.
- [3] Cartwright VA. Authors beware! The rise of the predatory publisher. *Clin Exp Ophthalmol* 2016; 44: 666–668. 3 Ring J. Predatory journals abuse the flood of publishable material. *J Eur Acad Dermatol Venereol* 2018; 32: 511–512.
- [4] Bjork BC. A study of innovative features in scholarly open access journals. *J Med Internet Res* 2011; 13: e115.
- [5] Clark AM, Thompson DR. Five (bad) reasons to publish your research in predatory journals. *J Adv Nurs* 2017; 73: 2499–2501.
- [6] Giglio VJ, Luiz OJ. Predatory journals: fortify the defences. *Nature* 2017; 544: 416.
- [7] Christopher MM, Young KM. Awareness of 'Predatory' open-access journals among prospective veterinary and medical authors attending scientific writing workshops. *Front Vet Sci* 2015. <https://doi.org/10.3389/fvets.2015.00022>.
- [8] Hansoti B, Langdorf M, Murphy L. Discriminating between legitimate and predatory open access journals: report from the international federation for emergency medicine research committee. *West J Emerg Med* 2016; 17: 497–507.
- [9] Pierson CA. Predatory and deceptive publishing practices now target nurses. *J Am Assoc Nurse Pract* 2014; 26: 583.
- [10] Xia J, Harmon JL, Connolly KG et al. Who publishes in 'predatory' journals? *J Assoc Inf Sci Technol* 2015; 66: 1406–1417. 25 Clark J, Smith R. Firm action needed on predatory journals. *BMJ* 2015; 350: h210.
- [11] Sorokowski P, Kulczycki E, Sorokowska A, Pisanski K. Predatory journals recruit fake editor. *Nature* 2017; 543: 481–483.
- [12] Powell K. Does it take too long to publish research? *Nature* 2016; 530: 148–151.

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

The authors equally contributed in the present research, at all stages from the formulation of the problem to the final findings and solution.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself

No funding was received for conducting this study.

Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)

This article is published under the terms of the Creative Commons Attribution License 4.0

https://creativecommons.org/licenses/by/4.0/deed.en_US