# ARTIFICIAL INTELLIGENCE IN REVIEWING ACADEMIC WORK: AN UNORTHODOX PROPOSITION?

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## Abstract

Following the dramatic increase in manuscript submissions to peer-reviewed journals and the scarcity of qualified reviewers, among other challenges, editors are struggling to maintain the academic integrity and viability of their publications. The recent pandemic has exacerbated the problem, necessitating the adoption of a new approach for evaluating academic work within the context of the peer-review system. Recent advances in AI technologies have led to a significant rise in the use of such tools by academia, despite skepticism — especially regarding integrity and robustness — and may provide substantial capabilities for reviewing academic work. Reflecting on the above, the primary purpose of this conceptual study is to explore the potential use of AI technology in reviewing academic papers in the 'Publish or Perish' era. Among other issues, the study examines current AI capabilities, with an emphasis on the advantages and disadvantages in reviewing academic work, the possible challenges associated with this endeavor, and its likely future applications. The findings, of importance to academic scholars, aim to expand our horizons as to the potential of such technologies for academia.

Keywords: 'Publish or Perish", Conceptual paper, Artificial intelligence (AI), Peer review process

## Introduction

Artificial Intelligence (AI), once viewed as a vague science fiction concept, gained considerable attention in the post-pandemic era, with studies expanding on its future potential, as well as its current real-world applications and implications. Unsurprisingly, this rapid evolution captured the attention of tertiary education, which capitalizes on relevant technologies to enrich and enhance the pedagogic experience for both students and faculty members. A plethora of studies reflecting on this technological progress highlight current uses, including classroom management, creation of educational content, student assessment, faculty support, machine learning, academic research, tutoring, curriculum development, personalized learning, and exam preparation (Crompton & Burke, 2023; Mah & Groß, 2024; Xia et al., 2024).

Judged by their level of adoption, faculty members have quickly integrated these new tools into their daily routines for teaching, administration, and research, especially after the introduction of generative AI. Regarding research, a quick foray of the Scopus database revealed 15,441 articles related to '*AI and Education*', with 12,899 (83.5%) published after 2020 (as of June 2025). Driven by the unprecedented COVID-19 pandemic and the urgent need to shift to online education, machine learning, and automation, scholarly discussions focused on AI's academic and industry uses, its impact, reasons for adoption, as well as barriers and challenges, particularly ethical and social concerns. Additionally, numerous surveys, such as the Ellucian AI Survey of Higher Education Professionals (2024), indicate that the number of faculty using these tools will grow faster than any other major technological change in recent decades, including the rise of personal computers in the late 1980s.

Despite the growing utilization of AI in tertiary education, there are still areas considered a barren landscape. Academic publishing, encapsulated by the 'Publish or Perish' culture and contextualized by the peer-review system—which is the focus of this conceptual study—is an under-researched topic, despite its potential relevance to generative AI tools. Mainly relying on quantitative scientometrics, which involves using statistical and mathematical methods to analyze bibliographic data (Pritchard, 1969), the 'Publish or Perish' culture encourages scholars to pursue publisha-

ble work as a key strategy for advancing their careers. Over the past twenty years, this culture, despite facing significant criticism (see Moosa, 2024), has become a crucial factor in academia's election, promotion, and advancement procedures, as well as in securing research funding, receiving bonuses or higher pay, and improving institutional rankings. From a personal perspective, it also serves as a source of prestige and peer recognition.

At the heart of this culture is the peer review system, which, despite numerous challenges, remains the most credible method for guiding academic publishing. This system entails a step-by-step process for publishing documents (such as articles, short papers, etc.) in scholarly journals, from initial submission to final acceptance and publication. It relies on voluntary contributions from editors and reviewers, who act as 'expert' assessors—a notion that many debate (see BaHammam, 2025; Wiechert et al., 2024). The system is characterized by pressing deadlines, frustrating delays, biases, lack of accountability, inefficient editorial processes, issues with reliability and transparency, and most notably, subjective judgments (Belluz et al., 2016; Lee et al., 2013; Smith, 2006). Despite these problems, scholars (see Malcom, 2018) argue that a complete overhaul of the peer review system would be unwise and recommend other improvements (e.g., triple blind review process, increased involvement of editors, higher rates of desk/editorial rejections, limiting the number of revise and resubmit rounds, preprints, and early sharing) that could reduce adverse effects and en-

hance integrity while also expediting the process.

Fueled by the pressures of the 'Publish or Perish' culture and the emergence of new, more specialized scientific fields, academia is experiencing a remarkable increase in publication outlets that receive thousands of manuscripts each year for review (BaHammam, 2025; Chauhan & Currie, 2024). This impressive growth, whether sustainable or not, has created additional challenges for journal editors and academic publishers. These challenges include extensive bottlenecks in the peer review process, long turnaround times, a scarcity of qualified reviewers, reviewer fatigue, lack of resources and accountability, poor error detection, and delays in disseminating new knowledge, which hinders diffusion (Candal-Pedreira et al., 2023; Mann et al., 2025; Smith, 2006). Notably, in the absence of a universal standard for maximum peer review deadlines, studies (see Sangwa & Mutabazi, 2025) report delays of up to 18 months in various scientific fields, with the situation often being worse in high-impact journals. In response to these significant challenges, many scholars (see Checco et al., 2021; Doskaliuk et al., 2025; Farber, 2025; Kousha & Thelwall, 2024) suggest that AI technology could provide the necessary tools to transform the peer review process while preserving its academic integrity.

Reflecting on the above, this conceptual paper aims to stimulate discussion, generate new ideas, and advance collective thinking on the use of AI technology in the academic peer review process. The study reviews the limited secondary data sources that explore this specific topic, seeking to synthesize theory through the conceptual integration of multiple perspectives that deepen our understanding of the factors shaping the phenomenon (Jaakkola, 2020; Miller & Salkind, 2002). Findings relevant to academic scholars broaden our understanding of the current capabilities and future potential of AI tools in academic publishing. It is essential to note that a conscious decision has been made to avoid using technological AI jargon (e.g., Large Language Models – LLMs' operational aspects) that may compromise clarity, particularly for non-expert readers.

### The Status Quo (AI's Current Capabilities)

Academic publishing companies, responding to the urgency of the situation, are partly integrating AI tools into their peer review processes. Table 1 shows current AI capabilities for each peer review stage and lists the tools currently used by publication outlets. However, it is vital to acknowledge the logistical challenges, including cost, involved with using various such tools.

Unequivocally, today, AI does not possess the capacity to replace human expert judgment; an endeavor that should be approached with caution by the academic community. Currently, AI tools can be utilized to alleviate unnecessary drudgery for humans by

Table 1: AI and the Peer Review Process

| Peer Review Stages | Current AI Capabilities | Available tools* |
|---|---|---|
| **Initial Manuscript Submission** | • Language, formatting, and reference checks<br><br>• Automated communication platforms<br><br>• Manage communication / reminders / notifications<br><br>• Adapting to journal standards and submission guidelines<br><br>• Feedback on readability<br><br>• Identify formatting inconsistencies<br><br>• Reference and plagiarism check<br><br>• Check relevance of the manuscript to the journal's scope<br><br>• Verify author(s) identifies and their affiliations | • *ChatGPT*<br><br>• *Consensus AI*<br><br>• *EVISE ®—Elsevier / Wiley's Author Services AI tools*<br><br>• *Penelope.ai*<br><br>• *Paperpal Preflight (by Springer Nature / CACTUS)*<br><br>• *iThenticate* |
| **Editorial Screening** | • Plagiarism detection<br><br>• Streamline workload<br><br>• Robot author detection / detect AI-generated content<br><br>• Identify content originality<br><br>• Verification of ethical aspects<br><br>• Bias detection<br><br>• Create summaries for submitted work<br><br>• Identify data or image manipulations<br><br>• Predict the likelihood of acceptance/rejection and recommend editorial actions. | • *Turnitin*<br><br>• *iThenticate*<br><br>• *EVISE ®—Elsevier / Wiley's Author Services AI tools*<br><br>• *ZeroGPT*<br><br>• *Penelope AI*<br><br>• *Perplexity AI*<br><br>• *Scholarcy*<br><br>• *Editorial Manager AI*<br><br>• *Clarivate's AI in ScholarOne*<br><br>• *SciScore* |
| **Assignment of Reviewers** | • Match topics with reviewers<br><br>• Detection of conflicts of interest | • *Clarivate's Web of Science Reviewer Locator* |

| | | |
|---|---|---|
| | • Send personalized invitations<br><br>• Manage communication / reminders / notifications | • *Elsevier Reviewer Recommender (EVISE / Editorial Manager AI)*<br><br>• *Springer Nature's Reviewer Finder (SNAPP AI Integration)* |
| **Reviewers Evaluations** | • Produce a 'pre-review' report on specific aspects of the manuscript under consideration.<br><br>• Data analysis and visualization tools<br><br>• Statistical/ Data Valuation / Integrity of results<br><br>• Methods checking<br><br>• Drafting responses and improving the readability of the reports<br><br>• Compare results with existing literature<br><br>• Produce a small summary<br><br>• Provide a synopsis of claims and/or methodological choices<br><br>• Bias detection<br><br>• Develop concept maps<br><br>• Check consistency between data and findings | • *ChatGPT*<br><br>• *RobotReviewer*<br><br>• *StatReviewer*<br><br>• *Journal Article Peer Review Assistant (JAPRA)*<br><br>• *Perplexity AI*<br><br>• *Iris.ai*<br><br>• *Proofig / ImageTwin*<br><br>• *Elicit*<br><br>• *Scholarcy*<br><br>• *Scite.ai* |
| **Editorial Decision** | • Performance monitor for editors with valuable info such as turnaround times, reviewers' metrics, etc.<br><br>• Customizing AI use for various revision stages<br><br>• Organize feedback into structured templates<br><br>• Identify duplicate submission<br><br>• Compliance check<br><br>• Integrated decision workflows | • *EVISE®—Elsevier / Wiley's Author Services AI tools*<br><br>• *ChatGPT*<br><br>• *iThenticate*<br><br>• *Penelope.ai*<br><br>• *Publisher-Integrated AI Dashboards (e.g. Springer Nature Integrity Check)* |
| **Authors Revisions** | • Tracking progress<br><br>• Proofreading tools (language and grammar | • *EVISE®—Elsevier / Wiley's Author Ser-* |

| | support) | *vices AI tools* |
|---|---|---|
| | • Plagiarism detection and/or AI-generated content | • *Grammarly / QuillBot* |
| | | • *ProWritingAid* |
| | • Suggest consistent terminology | • *TurnItIn* |
| | • Feedback on readability | • *Enago Read* |
| | • Reference organization | • *Elicit* |
| | | • *ZoteroGPT* |
| | | • *StatReviewer* |
| **Final Decision** | • Examine author(s) revision note reflecting the reviewers' comments and suggestions | • *EVISE®—Elsevier / Wiley's Author Services AI tools* |
| | • Drafting responses | • *ChatGPT* |
| | • Facilitate further communication with the publishing company | • *Publisher-Integrated AI Dashboards* |
| | • Manage communication / reminders / notifications | |
| | • Send the revised version to assigned reviewers for a new cycle of evaluations (if needed) | |
| **Final Checks, Proofreading, and Publication** | • Proofreading tools (language and grammar support) | • *Grammarly / QuillBot* |
| | • Copyediting | • *ProWritingAid* |
| | • Reference and data management | • *EVISE®—Elsevier / Wiley's Author Services AI tools* |
| | • Support the logistical/ administrative aspects of the peer-review publication process | • *Recite* |
| | • Facilitate the publication process with academic publishers | |

*Sources*: Biswas, 2024; Chauhan & Currie, 2024; Checco et al., 2021; Doskaliuk et al., 2025; Ebadi et al., 2025; Kadri et al., 2004; Kousha & Thelwall, 2024; Seghier, 2025
*\* Presented for indicative purposes*

performing basic and/or supplementary tasks, thereby enhancing the efficiency and objectivity of the review process and expediting the publication cycle (Saad et

al., 2025). Recent research supports this notion by reporting positive efficiency metrics when such tools are employed. Notably, a recent study by Farber (2024) indicates that AI tools cut reviewer selection time by 73%, while also identifying 37% of suitable reviewers who were initially overlooked by editors. From another perspective, Liang et al. (2024) reported that GPT-4-generated feedback was considered helpful by 57.4% of the study's participants, and an impressive 82.4% found it more useful than comments from human reviewers. Overall, studies (Kousha & Thelwall, 2024; Mrowinski et al., 2017) suggest that the publication cycle turnaround time can be shortened by as much as 30-40% through the responsible and combined use of such tools.

Echoing the above, numerous studies using experimental designs have compared the performance of humans and AI tools in the peer review process. Farber's study (2025) showed that AI has advantages in efficiency and consistency, while humans performed better in areas such as contextual understanding and ethical judgment. Similarly, Saad et al. (2025) report a low level of agreement between human reviewers and two versions of ChatGPT, concluding that full automation of peer reviews is neither feasible nor recommended at this time. Both studies agree that future AI development might address some limitations; however, an effective approach is likely to be one that promotes human-AI collaboration.

Challenges and Concerns

It is essential to recognize the ethical challenges and other concerns related to using AI in the peer review process. These concerns include, among others, confidentiality (BaHammam, 2025), which goes beyond data privacy and intellectual property issues, as well as transparency and fairness (Schintler et al., 2023). There are also worries about technical robustness and biases in algorithms that could affect the outcome (Giray, 2024), gaps in reasoning (Maturo et al., 2025), issues with academic integrity (Doskaliuk et al., 2025), legitimacy concerns (Schintler et al., 2023), risks of misinterpretation (Biswas, 2024), misguided evidence leading to bias and nonsensical responses (Checco et al., 2021), the lack of solid quality assurance mechanisms, subjective decision-making, and the potential for inaccurate information (Seghier, 2025). Building on this, Wiechert et al. (2024) focus on the issues of novelty and scientific value. In their lucid critique, they highlight the paradox of using AI tools—trained on existing knowledge—to evaluate the relevance, robustness, value, and scientific impact of new knowledge, which forms the foundation of scientific research. They conclude (Wiechert et al., 2024, p. 1463) by stating that "...the tremendously important recommendations to reject, revise or accept a paper cannot be based on what's out there already…but must be based on what should be published."

Reflections and Conclusion

AI, especially generative AI, is a highly powerful technology, although many currently view and use it more as a

toy or search engine, and it is gradually infiltrating all aspects of our social and professional lives. Undoubtedly, such technologies have the potential to revolutionize the peer review process and challenge long-standing paradigms and practices in academic publishing. Despite the challenges mentioned earlier, major academic publishers are taking the opportunity to use AI to address some of the vagaries associated with the process, with initial results indicating increased efficiency and shorter publication cycles. The current reasoning, whether constrained or not, suggests that AI can only be used for supportive tasks to assist stakeholders. This view reflects the current state of the technology, which has limitations in assessing content's novelty and significance, applying ethical and cultural sensitivity, and employing scientific reasoning (e.g., for evaluating methodology, research designs, and complex scientific topics). Therefore, it is prudent to conclude that AI cannot yet perform peer reviews independently; a view supported by others (see Checco et al., 2021; Kousha & Thelwall, 2023). Similarly, Saad et al. (2025) confirm that the situation will likely stay the same in the near future, as a fully automated AI review process is neither advisable for various reasons nor technologically feasible.

Reflecting on the above, it is logical to assume that a hybrid model combining human and AI collaboration will become the norm, at least for the foreseeable future. Perhaps the biggest challenge is establishing legitimacy for using AI in peer review. Therefore, publishers and editors are likely to continue redefining how they justify and utilize AI in the peer review process, implementing rules to ensure that reviews are robust, fair, and unbiased. Similarly, Doskaliuk et al. (2025) support the responsible use of AI in research and peer review by advocating measures that follow the principles of the Committee on Publication Ethics (COPE), which promote accountability and human oversight. The future will reveal whether this hybrid approach prevails or if advances in AI, like Chain of Thought (CoT), will reshape the landscape of academic publishing. In any case, as BaHammam (2025, p. 162) notes, "…as AI integration in scholarly publishing becomes increasingly inevitable, the academic community must proactively shape its implementation rather than merely react to its emergence."

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