

Peer Review

Review of: "The Role of Artificial Intelligence in the Lifecycle of Scientific Manuscripts: Authoring, Reviewing, and Editorial Selection"

Pavankumar Vangavolu¹

1. Northeastern University, United States

1. Executive Summary

The manuscript presents a timely and critical analysis of the integration of Large Language Models (LLMs) into the scientific publishing ecosystem. Unlike standard technical reviews, this paper explicitly connects the adoption of AI to the "systemic crises" of peer review, specifically targeting the economic model of unpaid reviewer labor and high Article Processing Charges (APCs).

The author evaluates AI's role across three stages: manuscript preparation (focusing on citation hallucination), peer review (contrasting technical verification vs. novelty assessment), and editorial decision-making (warning of algorithmic bias). The paper concludes by proposing a "Fair Hybrid Model" where AI handles technical auditing while human experts - compensated for their work - retain authority over scientific judgment.

2. General Assessment

Strengths:

- **Holistic Approach:** The manuscript successfully moves beyond a simple technical assessment of AI tools to address the *political economy* of publishing. It argues convincingly that technological fixes cannot resolve crises rooted in labor exploitation.
- **Evidence-Based:** The inclusion of recent empirical data (2023–2025) regarding AI hallucination rates and fabrication offers a solid grounding for the author's skepticism.

- **Clear Framework:** The proposed "Lifecycle of a Manuscript in the AI Era" (Figure 1) and the scenario planning in Table 3 provide concrete, actionable frameworks for discussion.

Weaknesses:

- **Tone:** The language is occasionally polemical (e.g., "Greedy Publisher," "hallucination epidemic"), which fits a Commentary or Opinion piece better than a standard Review Article.
- **Implementation Details:** While the proposal for a "Fair Hybrid Model" is ethically strong, the economic feasibility of shifting publisher profits to reviewer honoraria is asserted rather than analyzed in depth.

3. Detailed Comments

A. Novelty and Significance

The paper is highly significant given the "massive increase in new journals" and "reviewer fatigue" currently plaguing the field. The specific contribution of linking AI adoption to the "broken social contract" of the gift economy is a fresh and necessary perspective. The author correctly identifies that AI is often being sold as a solution to a labor shortage that is actually an economic failure.

B. Scientific Validity and Data

- **Hallucination Data (Section 3.2):** The author provides a robust summary of the risks of "citation hallucination," citing specific studies where fabrication rates ranged from 18% to 55% depending on the model. Table 1 is particularly useful for visualizing the persistent unreliability of these tools across different disciplines and regions.
- **AI Capabilities (Section 4.1):** The distinction between AI as a "technical auditor" (checking statistics, plagiarism, formatting) and a "judge of novelty" is scientifically sound. The claim that AI systems are "biased toward incremental science" because they are trained on existing literature is a crucial insight for editorial policy.

C. Structure and Argumentation

- **Article Categorization:** The manuscript self-identifies as a "Review Article" but later states it is presented as a "critical commentary and policy analysis".
 - *Critique:* The author should clarify the article type. The strong normative arguments (e.g., "The only ethically and scientifically defensible path is... Scenario 3") are characteristic of an Opinion/Commentary.

- **The Economic Argument (Section 5):** The critique of the "Gold Open Access Paradox" is powerful. However, the solution – Scenario 3: Fair Hybrid Model – relies on the assumption that publishers will voluntarily absorb reviewer payments from their profits.
 - *Critique:* This section would benefit from acknowledging the difficulty of enforcing this without collective action or regulation, though the mention of "Community Reclamation" (Scenario 4) touches on this.

D. Figures and Tables

- **Figure 1:** This figure clearly delineates the proposed division of labor. It effectively visualizes the "human accountability" aspect, which is a key recommendation of the paper.
- **Table 2:** The comparison between Human and AI reviewers is comprehensive. The point that AI "operates at near-zero marginal cost" versus the "variable standards" of human fatigue is a key economic driver that needs highlighting.
- **Table 3:** The scenario analysis is excellent. It helps the reader visualize the potential dystopian outcome ("Full AI Automation") versus the utopian ("Community Reclamation").

4. Specific Recommendations for Revision

1. **Soften "Activist" Language:** While the critique of publishers is valid, phrases like "Greedy Publisher" and "catastrophic trade-off" might be perceived as biased in a scientific review. Consider using more neutral terms like "Profit-Maximizing Models" or "Significant Risks."
2. **Clarify "Hallucination" nuances:** The text notes that RAG (Retrieval-Augmented Generation) offers a "partial shield". It would be beneficial to expand slightly on *why* RAG fails (e.g., data poisoning mentioned in cite: 84) to strengthen the technical argument against fully automated writing.
3. **Reviewer Compensation Mechanics:** In Section 5.1, the author suggests payments of €200–€500 per review. Please clarify if this is a suggested standard based on the cited "Journal of Clinical Medicine" pilot or an arbitrary estimate. Providing a citation for a cost-benefit analysis of this model would strengthen the proposal.
4. **Formatting:** Ensure all references to "AI" and "AI" are consistent. There appear to be minor OCR-like artifacts or inconsistencies in the text (e.g., "AI" vs "AI") that should be standardized.

5. Conclusion

This is a persuasive and necessary manuscript that reframes the AI debate from a technical issue to a socio-economic one. It argues effectively that "technological fixes cannot resolve a crisis rooted in labor exploitation". The proposed "Fair Hybrid Model" offers a constructive path forward, balancing efficiency with human integrity.

Recommendation: Accept with Minor Revisions (primarily regarding tone and clarification of article type).

Declarations

Potential competing interests: No potential competing interests to declare.