

Ethical Considerations and Challenges Posed by the Use of Artificial Intelligence in Scholarly Publishing

Emeka Ugoala

Department Of Biology and Forensic Science, Faculty of Science,
Admiralty University of Nigeria, P.M.B. 1020, Ogwashi-Uku, Delta State, Nigeria

Corresponding Author: Emeka Ugoala (nnaemekaugoala@gmail.com)

ABSTRACT

Artificial intelligence integration in scholarly publications has gained significant attention due to its potential impact on authorship and ethical considerations. The present study aims to address the ethical considerations and challenges posed by the use of artificial intelligence in academic publishing. The study involved a review of published literature from PubMed, Google Scholar, and Google. Findings reveal an increasing adoption of AI tools in scholarly publishing, offering efficiency, productivity, and accuracy benefits in areas such as grammar checks, reference management, writing assistance, and plagiarism detection. However, there are concerns regarding authorship preservation, maintaining the unique character of academic work, and ethical considerations surrounding academic integrity.

KEYWORDS

Scholarly publishing, artificial intelligence, ChatGPT, ethical consideration, academic integrity

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INTRODUCTION

Academic publishing produces and distributes academic research and scholarship through academic journal articles, books, theses, technical reports, research proposals, monographs, and non-scholarly sources (blogs, podcasts, and social media). These scholarly publications disseminate research and innovation about a particular concept through primary, secondary, or tertiary literature after rigorous peer-review processes. Primary literature, like research publications, theses/dissertations, and case reports, documents original research activity or interaction of an event or occurrence. Review articles and books are summaries, discussions, or comments on information from primary sources that comprise the secondary and tertiary literature. Digital media are popularizing blogs, online journals, and social media platforms. Globally, it is estimated that there are over 600 million blogs and over 16,000 active scholarly journals^{1,2}.

The academic publishing industry is dominated by Elsevier, Springer Nature, Wiley, Taylor and Francis, and MDPI, which publish over 50% of all publications. Elsevier leads the market, publishing over 18% of the world's academic papers across more than 2,600 journals. Others include Wiley, Oxford University Press, Cambridge University Press, SAGE Publishing, Macmillan Education, Pearson, Bloomsbury Academic,



Emerald, and Brill. The American Chemical Society, American Geophysical Union, Institute of Electrical and Electronics Engineers (IEEE), American Association for the Advancement of Science (AAAS) (publisher of science), and the British Royal Society are self-publishing societies. Most society journals outsource publishing to companies. The social sciences account for 70% of publications from top publishers, while the humanities are about 20%³.

The Portable Document file (PDF) is a common publication format by publishers (94% in 2022 and 98% in 2020), followed by the Hypertext Markup Language (HTML). The PDF ranked so highly because it's the canonical print article format readers have come to like due to its printability. However, HTML articles are growing in journal publications. Full-Text Extensible Markup Language (XML) article production remained flat since 2020 (38% in 2020 and 2022). The introduction of Plan S for publishing articles in machine-readable formats may encourage an increase in the publication of HTML and full-text XML articles³. Most publishers are producing machine-readable article-level metadata with basic information (e.g., abstract, author affiliations/institutions). The most common metadata elements used are Digital Object Identifier (DOI) and Open Researcher and Contributor ID (ORCID).

The academic publishing industry generates over \$25 billion annually⁴. The high profits of academic publishing have influenced shifts towards publishable results rather than necessarily meaningful ones, positive findings rather than valuable negative results.

The attainment of sustainable development goals, such as zero hunger, reduced inequalities, and industry, innovation, and infrastructure, is crucial. However, expensive subscription fees hinder academic institutions access to research. Research access inequalities disproportionately affect researchers in low- and middle-income countries who cannot afford costly journal subscriptions. This creates disparities in research access that undermine international capacity-building and economic growth opportunities. The digitization of research publishing offers significant potential for enhancing scholarly publishing systems but may face challenges due to funding issues, inadequate infrastructure, low research output, language barriers, difficulties in ensuring quality assurance, copyright concerns, data management issues, and a lack of policies and regulations⁵.

Artificial intelligence, automation, and a global digital communications network are transforming platforms, enabling less tedious work and fostering unprecedented innovation. Artificial intelligence may automate 25% of labor tasks in advanced economies by 2027, with an estimated robot market valued at \$21 billion in 2025 and \$100 billion by 2033⁶. Consequently, artificial intelligence could replace over 41% of jobs in the next five years, impacting the global economy by around \$20 trillion and driving global GDP up by 3.5% by 2030.

Artificial intelligence and machine learning improve editorial functions (e.g., copyediting and proof review), DOI registration, citation handling, and depositing metadata and/or full articles into indexes and archives. It can also enhance technical production steps (typesetting/layout, XML creation, and printing) that are often outsourced. These activities can be automated using machine learning by adopting tools/services in single-source production processes⁷. Thus, the emerging trends in academic publishing involve artificial intelligence and machine learning integration for streamlining initial manuscript screening, automated plagiarism detection and reference validation, review processes, open access, and the use of blockchain for immutable record-keeping for peer review processes and verifiable research data authenticity. Other AI-enhanced activities are AI-content generation, enhanced interactivity and multimedia experience, collaborative research platforms, data integration and accessibility, AI-powered content recommendation systems, and alternative metrics for measuring research influence. Open access and sustainable funding models, the ethical use of artificial intelligence, globalization, and regional disparities, data privacy

concerns amid digital growth, peer review systems, predatory journals, and research integrity, balancing digital-first and traditional publishing models, copyright and intellectual property complexities, and technological advancements are the multifaceted and interconnected challenges of scholarly publishing. The present study is aimed at the ethical considerations and challenges posed by using artificial intelligence in academic publishing.

METHODOLOGY

The paper reports on the review findings from selected publications retrieved from PubMed, Google Scholar, Web of Science, and PROQUEST databases, followed by an additional manual search of the references of retrieved articles. The study aimed to review the ethical considerations and challenges posed by using artificial intelligence in scholarly publishing. Studies were included based on relevance to AI's application in academic writing and research, focusing on writing assistance, grammar improvement, structure optimization, and other related aspects.

Multiple keywords were identified in the literature reviews and bibliometric studies that focused on artificial intelligence in scholarly publishing. The keywords include "artificial intelligence", "ethical challenges", "ethical challenges and consideration", and "AI and academic publishing". The databases were searched by looking for combinations of the said keywords. The operator AND was used to confine the results to scholarly publishing. This yielded 97 documents. In line with some systematic literature reviews^{8,9}, the search was narrowed by considering only articles and review papers in the English language in the subject area¹⁰. This generated 55 documents. All duplicates from our dataset were excluded, which led to a total of 28 documents as our final sample. Finally, the metadata for these 28 articles which included author names, titles, country of corresponding author/s, the total number of publications, and citation counts (i.e., total citations, average article citations, and several citing articles with and without self-citations), journal sources, keywords, and countries as well as institutional affiliations were retrieved.

The search identified 28 studies that highlighted six core domains in which AI aids academic writing and research: Facilitating idea generation and research design; improving content and structure; supporting literature review and synthesis; enhancing data management and analysis; aiding editing, reviewing, and publishing; and assisting in communication, outreach, and ethical compliance.

RESULTS AND DISCUSSION

ACADEMIC PUBLISHING AND CHALLENGES

Academic publishing is an indispensable skill in advancing knowledge across various disciplines, contributing to societal progress and intellectual development. It involves content creation (Scholar writers), content review (Editor and peer reviewer), distribution of published content via reputed peer-reviewed journals (Publishers), and content preservation (Subscribers). Academic publications aid knowledge advancement, stimulate innovation, and drive socioeconomic development. However, it is a complex activity crowded with challenges and obstacles that may intimidate scholars with minimal or generic exposure to formal instruction.

Academics face the challenges of heavy workload, inadequate experience, inadequate information in scholarly publishing outlets, and an increasing rate of electronic journals¹¹. Others have low motivation and skills to access accredited journals¹², limited research knowledge, unclear research policies, inadequate research infrastructure, and lack of well-defined academic career pathways¹³. The publishers are challenged by accessibility issues, attaining higher impact factors, increasing manuscript submissions, getting listed in the master journal lists and citation databases, meticulous peer review process, escalating publishing costs, and Predatory journals¹⁴.

Academic publishing in the present era is characterized by multilingualism, global mobility, super-diversity, and digital communications. This presents discursive challenges (well-structured paragraphs, vocabulary, citations, referencing), non-discursive challenges (plagiarism, motivation, emotional and psychological factors), and other challenges (lack of support in conducting research).

Technology is a disruptive innovation contributing to lower publication costs, easier access to research articles, and speedier publishing processes. Digital platforms are used to streamline the peer-review process. This accelerates the dissemination of knowledge and allows for early feedback from the academic community. Thus, artificial intelligence is an emerging trend in scholarly publishing that can sift through a deluge of research papers using natural language processing to help find the right document, data, and information; correct language, grammar, scientific tone, and style; know trending research topics, select relevant citations, check for plagiarism and inaccurate data; make academic content discoverable with voice search; help in peer review. It can also assist in automating routine tasks, detecting plagiarism, suggesting reviewers, and even predicting the impact of a research paper. Therefore, artificial intelligence can be used to overcome obstacles and make scholarly work more accessible, affordable, and impactful.

ACADEMIC PUBLISHING AND ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) devices are state-of-the-art chain-of-thought models capable of use in research and scholarly communication aspects (writing, submitting, reviewing, editing, publishing, accessing, and archiving academic works) without massive sets of training data. These devices learn to achieve specific tasks after analyzing and comparing built-in human data. AI can create interactive, collaborative, and measurable content in social media, multimedia formats, and online platforms. AI algorithms analyze massive volumes of data to derive relevant insights and develop written, graphic, and audio-personalized content in academic publishing. However, AI may not eliminate specific irrelevant content in academic publishing, implying humans have to strategize and execute the content to educate, influence, and inspire¹⁵.

Rapid automation capabilities, accessibility, and virtual assistants of AI technologies influence its unprecedented growth in research publication and dissemination. Artificial Intelligence models based on deep learning and language models (ChatGPT, Writer, XTM Cloud) minimize the challenges associated with the steady growth in submission volume due to the relentless pursuit of knowledge in academia. Natural language processing, machine learning, and computer vision enhance online information accessibility through improved contextual translations of articles, audio, and video content. Content alignment with style and grammar, content quality and compliance with standards, sophisticated brand voice, content management systems, and content marketing platforms are driven by automated generative AI.

Globally, an estimated four million journal articles are produced in multiple languages annually¹⁶. China and Germany are leading in the use of AI within the research process, with adoption rates of 59% and 57%, respectively. The AI-driven translation and text-to-speech technologies make these articles accessible to diverse audiences. It can integrate text, audio, images, videos, animations, and interactive features to create engaging and impactful experiences. By analyzing existing data, it can predict emerging reader preferences.

Academic publishing is an extensive process that requires the creation of several formats of documents and content transition into catalogs, websites, databases, and print. Other activities include section headings or chapter title styling, and journal article Digital Object Identifier (DOI) registration, among others.

The AI-driven XML workflows and digital content management systems enable publishers to output content safely, quickly, and easily. The AI can iterate, conceptualize, and explore creative possibilities that

can enhance personalized content with interactive narratives responding to individual reader choices. The AI can also determine the impact, quality, and significance of published research through citation metrics analysis¹⁷. Article-level metrics are used to quantify the reach and impact of published research to adjust research management strategies¹⁸. Thus, learning to work symbiotically with this transformative technology in academic publishing will create richer, more engaging, and more accessible literary experiences.

COMPARING HUMAN AND AI EXPERTISE IN THE ACADEMIC PUBLISHING

Scholarly publishing lacks standardized guidelines that determine the reliability of published research. Therefore, creativity and insights in scholarly publications are provided by humans or AI. These evaluations highlight concerns and determine whether such warrants acceptance, a minor breach that can be revised, or outright rejection. Thus, the subjectivity of review assessments and inconsistencies in evaluation criteria across journals¹⁹. Publishing is expensive and requires a substantial investment of time and resources from reviewers and editors. The increasing volume of research submissions places a substantial workload on reviewers, leading to prolonged publication timelines²⁰. Fraudulent activities (plagiarism, image manipulation, and tortured phrasing) impact research integrity.

Human expertise is essential for background understanding and ethical judgment. Human reviews provide deeper and more constructive feedback because humans can think. Human intelligence promotes fairness through a double-blind review process. The peer review process ensures the validity and quality of academic research. Peer review is a cornerstone in research publishing²¹. Therefore, automation of publishing processes without sufficient human intervention can hamper human skills and undermine the integrity of the entire process. However, human intelligence often struggles to detect sophisticated misconduct (fabricated content, manipulated data) that may lead to retractions and the untrustworthiness of published work.

Heavy workloads, publication targets, and the surge in research output encourage harnessing AI efficiency to meet the increased demand. The AI can enhance peer review. Machine learning and natural language data analyses provide editors with insights for reviewer selection²², misconduct detection and automated checks for statistical and methodological errors²³, and informed decisions^{24,25}. The AI shows advantages in efficiency and consistency. The AI-powered systems can scan diverse research manuscripts in minutes, flag suspicious data, and tailor them to different requirements. The efficiency of such systems is remarkable, and the capabilities seem endless. However, inherent biases (gender, nationality, institutional affiliation) that continued in the training data are sustained by AI systems in a peer review process, thereby skewing the evaluation. There is also the issue of a lack of transparency and explainability in a peer review decision-making process by AI systems²⁶. The AI algorithms are obscured in operation. Generative AI enhances plagiarism and does not have human distinct traits of keen attention and insightful observation, with creativity.

While, AI aids specific tasks, ultimate decisions rest with human experts to contextualize findings and assess broader implications. The distinct strengths and limitations of human and AI expertise in academic publishing signify that a hybrid integration to leverage their complementary skills may be advantageous in enhancing research rigor and impartiality that aiming for a streamlined, robust peer review process that upholds academic integrity and advances knowledge. Engaging AI assistance in scholarly publishing can overlap with editors' choices, suggesting AI's capacity to complement human expertise in concerns of overburdened editorial and peer review systems rather than supplant it²⁷.

ETHICAL CONCERNS OF ARTIFICIAL INTELLIGENCE IN ACADEMIC PUBLISHING

A research manuscript results from a conscientious process that involves long planning, research accomplishment, tedious analysis, and documentation. In a scholarly publication, the author(s) are

responsible for the conception, design, data acquisition, data analysis, interpretation, drafting, or manuscript review. Thus, fabrication or falsification of data, plagiarism, duplicate publication, among others, may occur.

Editors of scientific literature rely heavily on peer reviewers to evaluate the integrity of research conducted and the validity of findings in manuscript submissions. The reviewers and editors are expected to maintain confidentiality and not to misappropriate ideas or text. Scholars are usually guided by a code of ethics that underpins research design, conduct, and dissemination. Research integrity is maintained through manuscript formulation, peer review, and honest authorship²⁸. Therefore, editorial teams conduct plagiarism checks on submitted articles. Plagiarism, fabrication, and falsification detection are difficult with humans. Incompetent review is a common ethical problem in academic publishing²⁹. Ethical decision-making for research on publicly available, naturally occurring data remains a major challenge³⁰.

In the contemporary digitalized age, AI technologies have enabled scholarly publishers to automate and analyze multiple sources of data and information for content selection and curation.

Based on historical data, AI systems can streamline the submission processes and help editors manage their workload. Chat Generative Pre-Trained Transformer (ChatGPT) has been trained on the events that happened until 2021. This implies that the information provided by ChatGPT beyond 2021 will be inaccurate and may have far-reaching implications in the present research publication. However, relying on algorithms might lead to prioritizing familiarity over originality. The AI algorithmic perspective is usually based on the component training data. If the AI can differentiate between the training and input data, biases may be reduced. AI technologies are not immune to human bias. AI-enabled solutions may not have been developed in partnership with different stakeholders. Relying on AI for decision-making could perpetuate biases, obscure decision-making processes, and infringe on privacy, potentially undermining public trust. Human oversight and continuous monitoring are essential to ensure ethical practices, with an emphasis on community engagement and public education to foster trust.

The integration of human expertise with algorithmic insights shall foster the thriving of innovation in scholarly publishing. Human oversight is essential to ensure that AI tools are used responsibly.

The AI algorithms prediction of reader preferences through data analyses can lead to literature homogenization. The AI aligns with its trained data to influence content and writing styles. This promotes tailored research results and recommendations, overlooks emerging research needs, limits diverse perspectives, and hinders creativity.

FUTURE IMPLICATIONS OF AI IN ACADEMIC PUBLISHING

Future trends that may characterize scholarly publishing in the integration of advanced algorithms in content creation, selection, and consumption with ethical considerations include:

Antagonism with professional scholarly associations: Platform manipulation, fraud, and the spread of propaganda should impact scholars in considering contexts meaningful to violating norms and pursuing incompatible inquiries that may violate privacy norms, challenge illegal activities, and call for accountability in research. Open access to academic publishing makes knowledge a common good, where publications are traded as commodities based on the digitalization of production and distribution. Therefore, academic scholars should engage in public and political discourse in this technology-driven era of scientific discourse.

Changes and innovations to peer review: Innovations like open-access peer review can sustain the increasing rate of paper submissions, minimize publication delays, and improve the dissemination of novel research. It also increases transparency, tempers strong criticism, improves the quality of reviews, avoids

redundant reviews, speeds up publication, and incentivizes reviewers. Open peer review aims to facilitate more participation between reviewers and authors, interactive peer review in the form of digital discussion, and collaborative review of preprints.

Scientific/intellectual movements around open access publishing: Open access in scholarly publication encourages accessible research results, visibility, and the relocation of resources. But article processing charges disrupt open access research dissemination and generate disparities in prospects within the scientific community. Therefore, the need is for the introduction of restrictive measures, maintaining a balance between the interests of copyright holders and users, and providing authors with a wider range of opportunities to research, publish, and disseminate the results of their scientific works. These factors primarily reflect the impact of globalization, internationalization, integration, technologization, and digital transformation.

New professional niches in the publishing landscape: Open-access publishing creates new academic and economic niches. Scholarly communication through scientific journals, research reports, short communications, conference/symposia proceedings, monographs, etc., presents avenues to examine innovations. However, many new disciplines can emerge through scholars and non-scholars.

- Ensure that for-profit publishing firms provide fair read and publish arrangements, particularly in developing countries
- Publish with society journals
- Support innovative initiatives. Back societies or firms aiming to challenge the publishing ecosystem for the benefit of academics
- Reduce unsustainable publication rates by prioritizing quality over quantity

CONCLUSION

Artificial intelligence integration in scholarly publishing is advantageous in grammar and style checks, reference management, and plagiarism detection. Thus, AI has the potential to enhance productivity and efficiency. However, relying on AI algorithms might lead to prioritizing familiarity over originality. The AI algorithmic perspective is usually based on the component training data. Relying on AI for decision-making could perpetuate biases, obscure decision-making processes, and infringe on privacy, potentially undermining public trust. Human oversight and continuous monitoring are essential to ensure ethical practices. Proper source attribution, citation practices, and data privacy and security are paramount to upholding academic integrity. Therefore, AI should be seen as a tool rather than the primary focus, with human intervention and expertise remaining central.

SIGNIFICANCE STATEMENT

Maintaining ethics in scholarly publication is crucial to ensuring the integrity and credibility of such publications. The AI enhances academic writing through idea generation, content structuring, literature synthesis, data management, editing, and ethical compliance. However, human oversight and continuous monitoring are essential to ensure ethical practices. Failure to adhere to these standards may lead to serious consequences, including loss of reputation, retractions, legal action, and damage to public trust in science and academia.

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