

Scientific Integrity in the Era of Generative Artificial Intelligence and Digital Publishing Shifts: Challenges of Automated Writing and Predatory Journals

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Abstract: Scientific integrity constitutes a fundamental pillar of academic work; its presence enhances the credibility of scholarly output and strengthens trust and collaboration among researchers. However, the rapid transformations reshaping the academic landscape—driven by generative artificial intelligence and automated writing tools, alongside shifts in digital publishing and the proliferation of predatory journals—have introduced new challenges to scientific integrity, compounding longstanding concerns such as academic plagiarism. As AI-generated text increasingly mimics human writing, and as publishing platforms lacking rigorous peer-review standards continue to expand, a critical reassessment of strategies to counter academic misconduct has become essential. Chief among these strategies is the promotion of awareness and the cultivation of a robust value system that instills firm standards guiding researchers toward scientific integrity, discouraging the unethical use of artificial intelligence and publication in predatory journals, given the scientific, moral, and material harms such practices entail.

Keywords: Scientific integrity; generative artificial intelligence; automated writing; digital publishing; predatory journals.

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I. Introduction :

Integrity plays a vital role in fostering cooperation and strengthening interactions among individuals, thereby helping to achieve the foundational goals of such engagements. Consequently, its significance extends far beyond the economic sphere and its core requirements—such as financial transactions and commercial exchanges—to encompass various scientific disciplines. Knowledge and science represent true capital and the primary catalyst for human development, the rise of civilizations, and the advancement required for societies to progress and rank among developed nations. Therefore, developed nations devote utmost care to rigorous scientific and academic research, relentlessly striving to enlighten minds, foster critical thought, and build systematic, scientific knowledge that serves as the bedrock and actual driver of cumulative research and scientific progress.

This makes the presence of scientific integrity in academic research no less important than the anticipated outcomes of that research. Conversely, the antithesis of this—grounded in the alarming rise of academic dishonesty—renders such misconduct entirely unacceptable due to the severe scientific, moral, and material harms it inflicts. An individual who engages in such behavior steals the scientific work and achievements that others have labored hard to produce, claiming authorship for personal gain, whether for commercial profit and financial enrichment, or to secure unearned promotions, prestigious positions, and unmerited social standing.

However, this traditional framing of scientific integrity is no longer the sole focus of concern. The rapid expansion of generative artificial intelligence and automated writing tools, alongside structural shifts in the digital publishing landscape and the proliferation of predatory journals, has introduced unprecedented challenges to the foundations of rigorous research. The gravity of these developments lies in the fact that artificial intelligence systems cannot assume responsibility for the accuracy or scientific integrity of the content they generate. As the Committee on Publication Ethics (COPE, 2023) affirmed: "AI tools cannot meet the requirements for authorship." Hence, an urgent need arises to examine the nature of these challenges, analyze their implications for the scientific integrity ecosystem, and explore effective ways to mitigate their impact—particularly within higher education and scientific research institutions. Building on this premise, the study addresses the following core research problem:

Main Research Question:

To what extent have the transformations associated with generative artificial intelligence and digital publishing reshaped threats to scientific integrity, and what are the effective strategies to counter them?

Sub-questions:

- What is the nature of the new challenges posed by automated writing to the principles of academic honesty and a researcher's intellectual responsibility?
- How has the proliferation of predatory journals undermined peer-review standards within the digital publishing ecosystem?
- To what extent do generative artificial intelligence and predatory journals intersect and feed into one another, and what is the most appropriate strategy to confront them simultaneously?

Stemming from these questions, the study aims fundamentally to uncover the risks associated with automated writing and publishing in predatory journals, while proposing pathways to anchor the values of scientific integrity. To achieve these objectives, the study adopts a descriptive-analytical approach, as it allows for observing the phenomenon and deconstructing its technical and value-based dimensions to arrive at objective findings.

1. Literature Review:

The issue of scientific integrity in the age of generative artificial intelligence has forcefully asserted itself in contemporary literature, particularly with the accelerated proliferation of automated writing tools within academic and research circles. Discussions in this field are no longer restricted to the benefits of these tools in expediting workflows and easing drafting; rather, they have extended to profound questions concerning authorship, transparency, and the boundaries of scientific responsibility. Subsequently, the discourse has broadened to encompass unsettling phenomena accompanying digital publishing, such as predatory journals and paper mills.

In the Arab context, Qutb (2023), in the study titled "Artificial Intelligence Tools Research and Their Applications in Scientific Writing: A Methodological Study," examined AI tools in research writing through a systematic review of literature published between November 2022 and October 2023. The study demonstrated that the use of AI in scientific writing is expanding rapidly, yet it simultaneously necessitates the development of clearer ethical guidelines to regulate its utility within academic research. The importance of this study lies in providing an early snapshot of the spread of smart tools in academic writing, while highlighting the pressing need for ethical and institutional oversight (Qutb, 2023).

Similarly, Al-Basha (2025) addressed shifts in the concept of scientific honesty under modern generative tools in the study "Scientific Honesty in the Era of Generative Artificial Intelligence: A Reading of Academic Integrity Shifts and Research Responsibility." The study focused on how artificial intelligence may enhance scientific productivity, while raising genuine risks associated with undisclosed reliance on automated texts, difficulties in verifying content originality, and the potential escalation of plagiarism. Consequently, the study recommended transparency and disclosure as foundational principles for safeguarding academic integrity. Its value stems from directly linking artificial intelligence to academic integrity, demonstrating that research responsibility is no longer merely an individual matter, but is also tied to how a researcher interacts with digital tools (Al-Basha, 2025).

Along the same lines, Boufedah Bedisi (2025), in "The Ethics of Scientific Research in the Context of Artificial Intelligence Technologies: An Analysis of Selected Arab and International Charters," explored Arab and international ethical frameworks governing the use of AI in scientific research. The study departed from the premise that current charters remain overly general and fail to provide adequate regulation for the research use of generative AI, thereby emphasizing the urgent need to develop clearer guidelines within universities and scientific institutions. This study adds an important dimension by bridging two levels: it not only calls for clearer institutional guidelines, but also underscores the significance of researchers' internal moral compass as the cornerstone of preserving scientific honesty. The value of this study resides in elevating the discussion from theoretical principles to institutional organization, which aligns perfectly with the current article linking scientific integrity to digital publishing shifts (Boufedah Bedisi, 2025).

Furthermore, Kashmiri and Al-Farani (2024), in their systematic review "Academic Integrity in the Era of Generative Artificial Intelligence (ChatGPT): A Systematic Literature Review," added a crucial applied dimension by reviewing literature published since the launch of ChatGPT in November 2022, encompassing 18 studies from leading educational databases (Web of Science, Taylor & Francis Online, and ERIC). The study concluded that applying ChatGPT in educational settings positively impacts teaching and learning processes, while shedding light on factors determining students' attitudes toward the application, its positive and negative impacts, and how to ensure academic integrity when applying AI in education. This study informs our research by showing that scientific integrity is not merely a matter of texts or regulations, but an issue shaped through the accumulation of global literature regarding the impact of generative AI tools on educational and academic contexts (Kashmiri & Al-Farani, 2024).

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Globally, Balalle and Pannilage (2025), in their extensive systematic literature review "Reassessing Academic Integrity in the Age of AI: A Systematic Literature Review on AI and Academic Integrity," examined the impact of artificial intelligence on academic integrity. Their findings revealed that the challenge is no longer confined to traditional plagiarism, but now includes more complex forms of undisclosed reliance on generative tools, rendering detection software insufficient unless supported by an institutional culture rooted in transparency and accountability. The significance of this study lies in framing the debate internationally, illustrating that the transformation brought about by AI in the concept of scientific integrity is not a localized phenomenon, but a global shift demanding a re-evaluation of evaluation methods and scholarly production controls (Balalle & Pannilage, 2025).

Regarding the phenomenon of paper mills, the Committee on Publication Ethics and STM report (2022), titled "Paper Mills Research Report," stands out as a primary reference addressing this issue directly. The report clarified that paper mills represent commercial entities that produce fake or dubious scholarly papers, subsequently selling them or selling authorship to researchers eager to publish. It concluded that this phenomenon is growing rapidly and threatening the integrity of the scholarly record by eroding trust in academic publishing and disrupting peer-reviewed journals. The importance of this report lies in demonstrating how unethical practices in digital publishing evolve into a structural hazard affecting the very quality of scientific research, making it an indispensable reference for any study addressing scientific integrity in the AI era (Committee on Publication Ethics & STM, 2022).

Regarding predatory journals, Shen and Björk (2015) investigated the phenomenon in a longitudinal study titled "'Predatory' Open Access: A Longitudinal Study of Article Volumes and Market Characteristics," analyzing article volumes and market characteristics based on a sample of 613 journals drawn from over 11,000 titles listed in dubious journal directories. The study demonstrated that predatory journals represent a growing enterprise capitalizing on weak oversight and the ease of digital publishing; however, the phenomenon remains largely concentrated in a limited number of countries where academic evaluation practices encourage international publishing without adequate quality control. This study contributes to our research by showing that predatory journals are not merely marginal flaws, but structural phenomena linked to specific institutional and geographical contexts that intersect with publishing ethics and compromise the scholarly record (Shen & Björk, 2015).

Overall, previous studies reveal that generative artificial intelligence represents a tool with immense potential for serving scientific research; yet, it simultaneously opens the door to escalating ethical and methodological challenges, particularly concerning automated writing, disclosure, predatory journals, and paper mills. These studies also indicate an ongoing need for more comprehensive research integrating these phenomena within a unified framework. Hence, this article complements these efforts, addressing the subject from an angle that links scientific integrity with digital publishing transformations in light of generative artificial intelligence.

2. Basic Concepts in Scientific Integrity and Its Contemporary Digital Challenges:

Familiarity with the concepts of scientific integrity and its digital challenges serves as an essential gateway to understanding the ethical dimensions underpinning contemporary academic research, as they form the theoretical foundation against which all research practices are measured. Below is an overview of the key definitions and terminology adopted in this study:

2.1. Scientific Integrity (Academic Honesty):

Scientific integrity, or academic honesty, is defined as a value-based and ethical framework that guides researchers' behaviors and ensures their commitment to the standards of sound academic work.

It necessitates acknowledging intellectual property, citing the consulted source or reference, and providing complete details regarding author name, source, publisher, country, city, and publication year. A researcher must neither plagiarize the efforts and ideas of others nor distort the meaning

intended by the original author, nor alter or misrepresent the quoted concept (Obeidat et al., 1999, p. 164). Consequently, scientific integrity even facilitates the reader's ability to trace back to the source when seeking further elaboration on information partially referenced.

Internationally, ALLEA (ALL European Academies) defines scientific integrity as a set of good research practices grounded in core principles: reliability, honesty, respect, and accountability (FORRT, 2025).

The preceding definitions converge on the understanding that scientific integrity embodies high moral character and proper conduct when interacting with or relying on scholarly work produced by others, whereby the researcher attributes and assigns such work to its original author.

2.2. Plagiarism:

Plagiarism constitutes a form of illicit transfer, used to describe an individual who cheats by misappropriating ideas or information from others and claiming them as their own. It is a wrongful act regardless of whether it is intentional or unintentional; every student is expected to trace information and remain cognizant when utilizing another person's work (Imam Mohammad Ibn Saud Islamic University, 2011, pp. 7–8).

Plagiarism involves stealing ideas, paragraphs, multiple pages, or an entire research paper through paraphrasing or verbatim copying of stolen scholarly material without attributing it or clarifying its original source.

Previous definitions share the consensus that plagiarism is the act of a researcher stealing, hijacking, and misappropriating the scholarly works of others under the guise of sole authorship, thereby attributing the work to themselves while ignoring the actual creator, omitting proper citation and referencing data, and disregarding required bibliographic details. Plagiarism may encompass ideas, paragraphs, chapters, or extend to an entire research paper or book.

2.3. The Importance of Honesty and Scientific Integrity:

Plagiarism is a misappropriation of others' labor, condemned by both classical and contemporary scholars due to its explicit violation of the scientific integrity upon which the entire academic research system rests.

Honesty is regarded as the fulfillment of a duty. Addressing the necessity and importance of upholding honesty in general, and scientific integrity in particular, transcends the confines of a few pages; it has occupied a prominent space across various eras owing to its vast benefits that pave the way for critical strategic interactions, even at the global level and in sensitive matters.

The U.S. National Academies of Sciences, Engineering, and Medicine affirm that research integrity is rooted in adherence to core values encompassing objectivity, honesty, openness, fairness, accountability, and good stewardship, and that embodying these values at every research stage ensures the proper advancement and accumulation of scientific knowledge (National Academies of Sciences, Engineering, and Medicine, 2017, p. 27).

It also fosters morality, reflecting community values, ideals, behavioral patterns, and desired goals, while critically examining them to test their validity, ultimately leading to the formulation of new values (Abd al-Fattah Abd al-Kafi, 2003, p. 31).

Ethics function as a social law exercising voluntary social control over researchers; they adhere to and apply ethics as if it were formal law, yet voluntarily and without external pressure. Ethics determine what an individual's behavior should follow or abandon, in accordance with moral responsibility—which represents an individual's endurance of the consequences of their moral actions, which must be free and uncoerced (Abd al-Rahman Badawi, 1984, p. 320).

Scientific integrity is the pillar of preparing academic research due to the credibility and high capacity it provides in winning the trust of others. Achieving scientific integrity requires acquiring ideas, values, and principles across various life stages through the interplay of positive social upbringing and proper scientific nurture.

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Given the importance of honesty and scientific integrity, codes of ethics have emerged as written regulations currently spreading across all scientific disciplines. Ethics committees have likewise emerged within research institutions to monitor and reject practices violating ethical rules, thereby ensuring scientific integrity (Maurice Angers, 2006, p. 87). This highlights the necessity of reinforcing self-monitoring in academic researchers, applying plagiarism-detection software, enforcing the execution of academic work according to foundational scientific principles, and ensuring researchers possess essential prerequisites—foremost among them scientific integrity, moral responsibility, openness to criticism, satisfaction with actual proficiency levels, and dedication to their improvement, rather than climbing to false heights and appearing in lofty ranks through misappropriated works and stolen efforts that cannot be genuinely accomplished.

2.4. Generative Artificial Intelligence (GenAI):

Generative artificial intelligence is defined as an advanced generation of technical systems capable of producing novel content (texts, images, or computer code) based on training data and responding to prompts written in natural language. It transcends mere information retrieval to genuinely generate new content, relying on Large Language Models (LLMs) that enable comprehension and responsiveness to inquiries requiring advanced creativity and thinking in a manner mimicking human cognition (Zelmat, 2026, p. 979).

2.5. Paper Mills:

Paper mills refer to profit-driven organizations or entities that produce and sell fabricated or low-quality scholarly articles to researchers. These mills rely on the systematic manipulation of data and images, exploiting the "publish or perish" culture to provide researchers with shortcuts for academic promotion in exchange for financial fees (Committee on Publication Ethics & STM, 2022).

The proliferation of these practices pollutes the academic record with unreliable studies, with statistics indicating a marked increase in retracted papers resulting from paper mills between 2004 and 2022, often involving deliberate attempts by researchers to deceive editorial boards, reviewers, and readers (Candal-Pedreira et al., 2022).

2.6. Digital Publishing:

Digital publishing is defined as the digital storage of information, accompanied by its adaptation, broadcasting, transmission, and electronic or digital display via communication networks, whether this information comprises texts, images, or automatically processed graphics (Badr, cited in Wikipedia, "Electronic Publishing").

2.7. Automated Writing:

In view of the absence of a standalone and mutually agreed-upon terminological definition for the specific term "automated writing" in Arabic literature, reference can be made to its closest scientific equivalent: natural language generation. This is defined as the study of computer systems aimed at understanding natural language generation from a computational scientific perspective (Shalan, cited in Mogadishu Center for Research and Studies, 2018).

2.8. Predatory and Hijacked Journals:

Predatory journals are publications primarily aimed at profit, levying fees on authors without adhering to rigorous peer-review standards or publishing quality (Chandra & Dasgupta, 2024, p. 470). In the same vein, the Supreme Council of Universities (2025) defines this phenomenon as a profit-driven, systematic publishing practice relying on unreliable content, backed by predatory publishers—institutions or entities exploiting researchers' promotion requirements to impose publication fees without delivering standard editorial, review, and archiving services, alongside a lack of transparent disclosure regarding fees, editorial and review policies, or article retraction procedures. A predatory journal typically assumes the guise of an open-access journal characterized by rapid publication, negligible attention to peer review, and a frequent reliance on email solicitations to attract research papers (Supreme Council of Universities, 2025).

In a more hazardous development, "hijacked journals" have emerged as a form of predatory journal that steals the identity of another prestigious academic journal indexed in Scopus and Web of Science databases. This is achieved by establishing a counterfeit website bearing the same name as the original journal, its International Standard Serial Number (ISSN), or the publisher's name, making it difficult to distinguish between them in order to deceive researchers and prompt them to publish their papers and pay fraudulent fees (Supreme Council of Universities, 2025).

II. Methods and Materials

This study adopted the descriptive-analytical approach, as it is the most capable of deconstructing a complex phenomenon such as scientific integrity amid accelerating technological transformations.

As for the study tool, it relied on documentary analysis of peer-reviewed academic literature and data issued by specialized international bodies in publishing ethics, such as the Committee on Publication Ethics (COPE) and the U.S. National Academies of Sciences, in addition to reviewing documented models of academic plagiarism incidents, predatory publishing, and the exploitation of artificial intelligence in authorship. The study did not resort to a field sample or quantitative measurement tools, given that the nature of the topic is fundamentally conceptual and theoretical, requiring a theoretical deconstruction of the phenomenon prior to any subsequent applied treatment that future studies might explore.

III. Results and discussion

In light of the theoretical concepts presented above, this axis addresses the results of the study and their discussion. It begins with scientific publishing ethics as the foundation for measuring the integrity of research practices, moves through the rules of dealing with sources, the causes and challenges of plagiarism, and culminates in the most prominent manifestations of predatory journals and ways to detect them.

1. Scientific Publication Ethics: (Robert A. Day et al., 2008, pp. 49–52)

Scientific publishing ethics constitute a system of procedural principles governing a researcher's behavior during the stages of preparing and publishing their research. The core dimensions underlying these ethics are outlined as follows:

1.1. Ethics as a Foundation:

A researcher must understand the ethical rules that form the basis of publishing and scientific conduct before commencing the writing of their research.

1.2. Accuracy and Investigation:

One must commit to accuracy and thorough investigation so that the author avoids distortion during editing, and refrains from publishing false information without conducting research, as this constitutes an unethical act.

1.3. Originality:

Researches must be characterized by seriousness and be documented with the citations utilized, so as not to create a false impression for the reader that old observations are novel results of a unique kind.

Additionally, a researcher must avoid submitting the same paper to multiple journals simultaneously, as this is unethical. Instead, the paper should initially be submitted to the chosen journal, and only if it is rejected should it be submitted to another journal until acceptance is secured.

1.4. Scientific Productivity and Attribution:

If a researcher includes ideas or information in their paper that are not their own, they must document the data of the sources and references from which they quoted, while distinguishing the quoted portion to avoid falling into plagiarism. To avoid excessive quoting, the researcher should paraphrase the scholarly material utilized without looking at the original reference until paraphrasing is complete,

Journalists while ensuring the preservation of the idea's original meaning and listing all consulted references and sources in the bibliography in the prescribed manner.

While these four foundations (ethics, accuracy and investigation, originality, and scientific productivity) were originally formulated within the context of traditional print publishing, digital publishing transformations have not canceled these foundations; rather, they have re-presented them in a more complex manner. Adhering to them is no longer restricted solely to individual researcher behavior, but has extended to encompass the responsibility of verifying the identity of the digital platform itself and its commitment to genuine peer-review standards before publishing within it.

Figure (1) briefly illustrates the ethics of scientific publication:



Figure (1): Bases of Scientific Publication (Prepared by the Researcher)

2. Methodological Controls for Utilizing Sources and Texts:

Scientific integrity requires a researcher to master the methods of handling literature and sources—whether traditional or modern—in a manner that ensures honesty in transmitting knowledge and employing it to serve the research objectives. This engagement relies on the following set of methodological controls:

2.1. Quotation: It should be employed in the following cases:

- If everything written by the author is important.
- If the quotation does not excessively lengthen the article.
- If excessive quotations are not used.

2.2. Paraphrasing: It should be performed in the following cases:

- If the author's wording is difficult for readers to understand.
- If there is an objective to demonstrate the researcher's ability to properly comprehend the author.

2.3. Summarization: A researcher should summarize in the following cases:

- If there is no necessity for the entirety of the author's text, such as when the author provides examples or explanations that are unnecessary to include in the researcher's own article.
- If relying on quotation or paraphrasing excessively lengthens the text (Imam Mohammad Ibn Saud Islamic University, 2011, p. 18).

3. Causes of Plagiarism and Academic Dishonesty:

Multiple causes and motives drive students and researchers to commit academic dishonesty and plagiarism. This behavior is not restricted to a single group within the academic community, as it affects both students and researchers (given that researchers were students at one stage), even though its goals and motives vary according to scientific level and the cultural and social contexts of different countries.

3.1. At the International Level:

Academic dishonesty at this level encompasses both groups. Below is an overview concerning students: research reports on academic integrity based on international studies on cheating (as cited by Gulf News) by Professor Dr. Donald McCabe, professor of management and global business at Rutgers University in the United States and founding president of the Center for Academic Integrity, indicate that student cheating occurs worldwide under the following rationales: (Naidoo, 2008)

In the United Arab Emirates, many students justify cheating as a common practice occurring in universities.

A number of students also justify cheating due to the difficulty or exhausting nature of some of their courses, placing the responsibility on faculty members for relying on difficult materials and tests.

Cheating is likewise linked to gender variables and the type of assessment; it has been observed that male students cheat more on exams, whereas female students tend to cheat on written assignments.

In the same context, a number of students participating in the same report expressed similar perceptions reflecting the deep-rooted nature and normalization of this phenomenon within the university environment. Some view the exchange of answers during exams as merely "sharing information" rather than cheating in the strict sense, while others link their resort to cheating to the pressure of late exam preparation, and some attribute it to students' initial reluctance to work hard, whereas a few tend to view cheating as an inevitable, widespread global phenomenon.

In addition to McCabe's findings, some individuals may also resort to academic dishonesty and plagiarism out of fear of disappointing parents and loved ones in the event of failure, or apprehension regarding ridicule and negative social stigma upon receiving poor grades (Researcher's formulation).

3.2. At the Local Level (Algeria):

At this level, the reasons driving researchers to commit academic dishonesty lie in the following:

Stealing the efforts of others, due to the inability to expend the required effort or intellectual poverty, and the dominance of a desire for an effortless transition and graduation without hardship; this motive may persist later when the student becomes a researcher or employee striving to secure stable and permanent employment with the least possible effort;

Or for the purpose of rapid promotion and acquiring high positions of prestigious status and strong authority without exerting the necessary effort;

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Or for the purpose of commercialization and earning abundant financial profit by selling scholarly work to publishing houses, research centers, or any entity in need of it to solve a specific problem, make an important invention, or add it to a scientific record and enrich a curriculum vitae;

Or with the intent of distortion and misrepresentation to place the actual creator in a dilemma or embarrassing situation with the entity that commissioned the work and awaits its delivery (Researcher's formulation).

It is worth noting in this context that dishonesty acquired during the educational stage may not stop at that phase; rather, it may extend or evolve later during the scientific research stage if it is not addressed and confronted early on in the student (Researcher's formulation).

4. The Role of Socialization in Anchoring Scientific Integrity:

Socialization is the adaptation of an individual to their culture, society, and peers through the acquisition of habits and characteristics that render them fit for social life and enable them to participate in its activities. Socialization can be considered part of cultural socialization that helps the individual achieve cultural adaptation, thereby integrating their function with those around them.

Iyad Ahmed Mohammed argues that sound upbringing of a child from an early age regarding honesty, seriousness in life, study, and scientific research—whether at home or at the university—helps them self-actualize. He also emphasized the necessity for university professors to commit in their behavior to the formal and informal ethical standards enshrined in religion and community culture (Iyad Ahmed Mohammed Ibrahim, 2015, p. 274). This is reinforced when the university values distinguished scientific efforts by endorsing and rewarding professors and researchers conducting scientific work characterized by integrity.

Al-Duwaik affirms that integrity is achieved by grounding a set of rules and values, including honesty, truthfulness, avoiding harm to others, and promoting the general public interest of society. According to Zaher, people's values reflect on their social environment and represent mental determinants for their choices, guiding their behavior (Amira Abd al-Salam Zayed, 2015, p. 128).

From this perspective, early socialization plays a major role in enabling the individual to acquire a strong value system that supports the principles and values of honesty and truthfulness in all dealings—whether public or scientific. Scientific dealings require continuous awareness-raising and the development of a culture of scientific integrity in completing work and research across various stages of an individual's academic upbringing. This is achieved through awareness and sensitization campaigns, holding seminars, and delivering lectures centered on the importance of scientific integrity, illustrating the points of harm resulting from plagiarism, and outlining the laws and disciplinary procedures enforced in cases of non-compliance. Concurrently, care must be taken to provide the necessary time, financial support, and facilities for conducting scientific research. The university must not trivialize its focus on scientific research—which is one of its primary functions—nor treat it merely as a routine procedure for promotion, financial gain, or wage increases that leaves researchers unappreciative of its importance and devoid of moral responsibility.

5. Challenges of Generative Artificial Intelligence and Automated Writing in Scientific Research:

Scientific publishing has recently witnessed a prominent emergence of generative artificial intelligence tools that have transformed various stages of the research and writing process, enabling researchers to improve workflows and manuscript quality; however, the scientific research community has not yet reached a point of full comprehension regarding the proper use of these tools (Al-Hassan & Al-Marzouq, 2025, p. 9).

The core dilemma lies in these tools' lack of the ability to contribute to what is known as "deep theory"—namely, formulating original arguments and connecting ideas in novel ways, as they merely repeat what is already known rather than providing innovative insights. This limits the depth and originality of scholarly works and undermines the innovative contributions necessary for scientific development (Al-Hassan & Al-Marzouq, 2025, p. 9).

Adding to the gravity of these challenges is the potential exploitation of these tools to "produce fake research papers with fabricated data, results, and references" (Ferrara, 2024, p. 555), which could pollute academic databases and mislead researchers who might subsequently rely upon them in their work.

Emerging in this context is what is termed the "lazy use of generative artificial intelligence"—the over-reliance on these tools without verifying output quality or managing it, exposing the researcher to the risk of plagiarism, article retraction, and diminished skills. Furthermore, it threatens critical thinking and review skills among future generations of researchers (Al-Hassan & Al-Marzouq, 2025, pp. 14–15). Moreover, the absence of disclosure regarding the use of these tools constitutes an ethical violation that casts doubt on the integrity of scientific and editorial standards.

6. Ways to Detect Predatory Journals:

After reviewing the challenges of generative artificial intelligence, predatory journals emerge as another novel threat to scientific integrity. While the regulatory definition of this phenomenon was noted earlier, international academic literature traces the origin of the term to scholarly communications librarian Jeffrey Beall, who since 2010 has documented lists of publishers and journals with suspicious publishing practices. This later crystallized into a consensus formulation adopted by an international team of prominent researchers and publishers from ten countries, describing these journals as entities that "prioritize self-interest at the expense of scholarship" and are characterized by a lack of transparency and aggressive solicitation tactics directed at researchers. This aligns with Elmore and Weston's (2020) view that they are publications that "claim to be legitimate scholarly journals but misrepresent their publishing practices" (p. 607). Despite differing angles of presentation, this confirms that both regulatory and academic literature converge on the core of the phenomenon: the absence of genuine peer review alongside the continuous collection of fees.

Based on this foundation, it is now necessary to examine the prominent characteristics of these journals and ways to detect them to enable researchers to avoid them, as well as to review Algerian efforts deployed to combat them.

6.1. Characteristics of Predatory Journals:

Predatory journals possess numerous distinguishing characteristics. To help researchers detect them and avoid falling victim to them, the most prominent characteristics are presented as follows:

- The absence of a genuine peer-review process despite claims of conducting it.
- Aggressive solicitation through unsolicited emails offering rapid publication in exchange for fees.
- Acceptance of papers without actual scrutiny of their quality or scholarly content.
- Provision of misleading information regarding impact factors, indexing, or editorial board members to impart a veneer of false credibility.
- Imposition of high publication fees without providing promised services or ensuring the actual dissemination of the research.
- The absence of any mechanism for corrections or article retractions after discovering errors in them, and the lack of permanent retrieval of published articles via the journal's website despite their inclusion in the table of contents of the issue in which they were published.
- Use of non-institutional email addresses (such as gmail.com or yahoo.com) instead of the journal's official email, which serves as an indicator of the absence of a genuine institutional identity for the publisher.

6.2. Algerian Efforts in Combating Predatory Publishing:

The Ministry of Higher Education and Scientific Research is keen to safeguard the quality of national scientific production. This interest has materialized in the establishment and activation of two integrated digital mechanisms within institutional and digital immunization frameworks to combat predatory publishing in Algeria, serving the Algerian researcher from two different aspects: facilitation of publishing, and monitoring and classification.

6.2.1. The First Mechanism: The Algerian Scientific Journal Platform (ASJP):

The ASJP platform is considered the electronic portal comprising hundreds of classified and unclassified Algerian scientific journals. This platform was developed and is managed by the Research Center in Scientific and Technical Information (CERIST), which handles the technical management of the platform under the supervision of the Ministry of Higher Education and Scientific Research, while responsibility for the scientific value of each journal's content remains with its own editorial board rather than CERIST. The platform provides every researcher with a personal account enabling them to browse journals, select the most appropriate vessel for their specialization, and submit their paper directly through the system with complete transparency, replacing correspondence via email which is sometimes exploited in predatory or fraudulent publishing operations. Furthermore, the platform contributes to making published articles widely accessible and easing the complexities that used to accompany print publishing, making the retrieval and downloading of scientific content clearer and more straightforward, as illustrated in Figure (2):

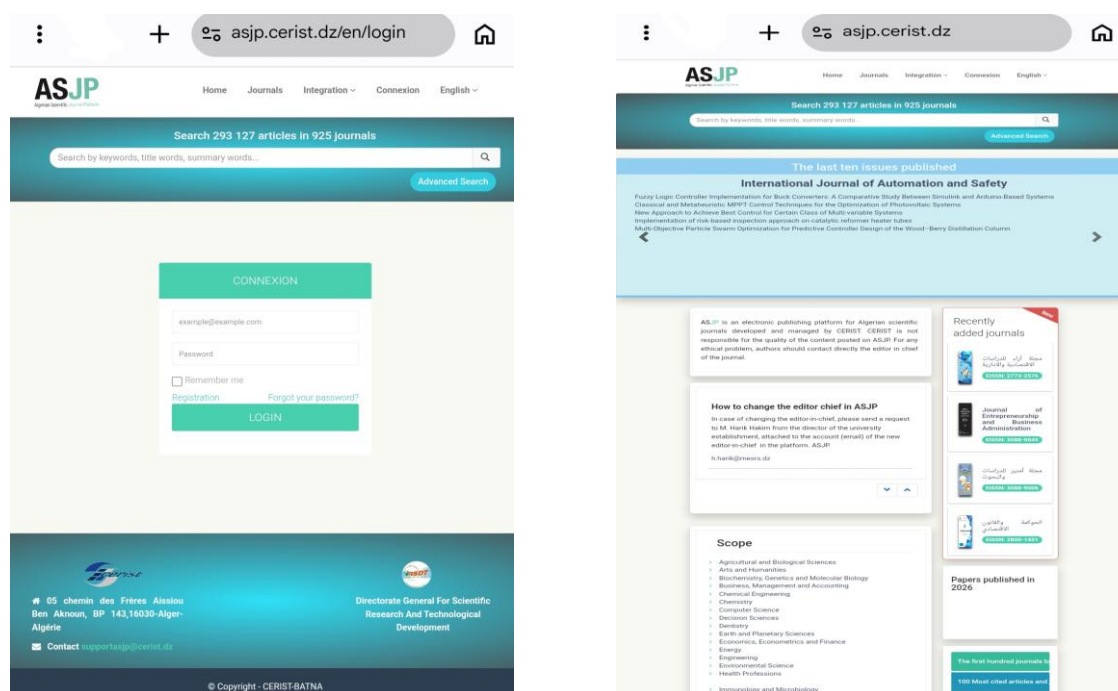


**Figure (2): Main Interface and Login Page of the Algerian Scientific Journal Platform (ASJP)
(Research Center in Scientific and Technical Information, n.d.).**

6.2.2. The Second Mechanism: The General Directorate for Scientific Research and Technological Development (DGRSDT)

Unlike ASJP, DGRSDT is not a publishing platform, but rather an administrative general directorate affiliated with the Ministry of Higher Education and Scientific Research. It operates under the provisions of Law No. 98-11 dated August 22, 1998 (as amended and supplemented), which defines the national policy for scientific research and technological development (Directorate General for Scientific Research and Technological Development, n.d.). This directorate is tasked with publishing and updating classification lists of rigorous national and international journals within two main categories: Category (A) and Category (B). Its digital platform also includes a comprehensive inventory of all national scientific journals, including those classified under Category (C) and even unclassified journals.

Alongside its classification mission, DGRSDT publishes a special file containing lists of predatory journals and predatory publishers, updated periodically and regularly from 2018 to the present day, with the aim of warning researchers and sparing them from falling into the trap of entities lacking the minimum scientific and ethical standards (Directorate General for Scientific Research and Technological Development, n.d.).

6.2.3. The Latest Update of the Lists

According to the Directorate's official pages, the lists of journals classified under Categories (A) and (B), as well as the lists of predatory journals and publishers, were updated in July 2026. The Directorate stipulates that accredited journals in Categories (A) and (B) must not be predatory, must not be issued by a predatory publisher, and must not impose paid publication fees (with the exception of journals indexed in Web of Science or Scopus). Furthermore, the Directorate urges researchers to verify the reliability of any journal before publishing in it, to refrain from publishing in hijacked or fake journals, and emphasizes the necessity of reporting any suspicious journal not yet included in its lists (Directorate General for Scientific Research and Technological Development, n.d.).

6.2.4. The Developmental Aspect

Conversely, the Directorate's data demonstrates a continuous developmental aspect: several Algerian journals affiliated with national universities have ascended from Category © to Category (B) as a result of efforts to improve peer-review, documentation, and publishing standards exerted by these journals' editorial boards. Some unclassified journals also enter the classification tier once they meet the required terms and standards, while other journals continue working to develop their academic and technical standards in pursuit of joining rigorous global journals, as illustrated in Figure (3):

Scientific Integrity in the Era of Generative Artificial Intelligence and Digital Publishing Shifts: Challenges of Automated Writing and Predatory

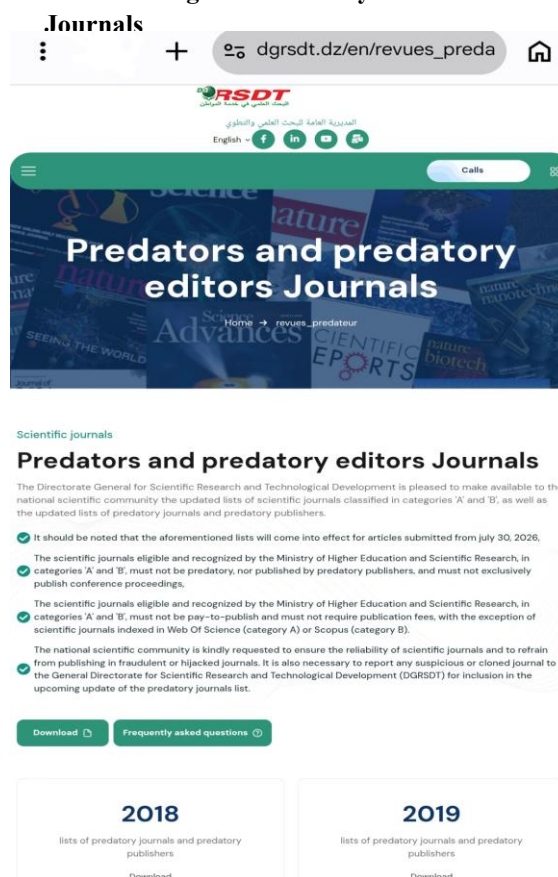


Figure (3): Interface of Classified Scientific Journal Lists and Predatory Journal Lists at the General Directorate for Scientific Research and Technological Development (Directorate General for Scientific Research and Technological Development, n.d.).

It becomes clear from the foregoing that threats to scientific integrity are no longer restricted, as they once were, to their traditional form represented by plagiarism; rather, they have extended today to encompass two novel patterns that intersect with one another: the unguided reliance on generative artificial intelligence on the one hand, and publishing in predatory journals on the other. It is noticeable through analysis that these two phenomena do not proceed in isolation from one another, but rather intersect and feed into each other at an alarming pace.

In this context, the researchers Jian and Yaeger (2025) argue that fake science produced by paper mills evolves in the era of artificial intelligence to constitute an escalating threat to scientific integrity and trust in information, in what can be described as an intense technical race between two parties:

"While Gen AI allows paper mills to produce more sophisticated fake papers in larger quantities, the scientific community is also actively developing AI-based tools to detect fake science" (p. 167).

Hence, it is clear that dealing with either of these two threats in isolation remains an incomplete approach that falls short; effectively confronting them necessitates an integrated strategy that combines regulating the use of artificial intelligence, seriously verifying the credibility of publishing

platforms, and employing rigorous technical tools to detect falsification, all simultaneously rather than separately.

IV. Conclusion:

In conclusion, this article demonstrates that for decades, scientific integrity remained anchored in confronting traditional forms of dishonesty—foremost among them plagiarism—whose roots are formed during an individual's social and academic upbringing stages. However, the study's findings reveal that these efforts alone are no longer sufficient in light of the developments produced by generative artificial intelligence and digital publishing transformations. It has become clear that these tools, despite their contributions to improving research workflows, carry considerable risks, most notably the potential to generate research with fabricated data, results, and references, in addition to undermining genuine innovative contributions. Similarly, predatory journals represent another extension of this threat by exploiting the academic publishing model to achieve financial gains at the expense of research quality and credibility.

Based on the foregoing, and answering the problem posed in the introduction, it can be said that the transformations associated with generative artificial intelligence and digital publishing have indeed contributed to fundamentally reshaping threats to scientific integrity. These threats are no longer restricted to plagiarism in its traditional sense (misappropriating the efforts of others), but have expanded to encompass novel, more complex, and harder-to-detect patterns: the ethically unguided reliance on automated writing on the one hand, and publishing in platforms lacking minimum peer-review standards on the other. As for the ways to confront these patterns, they rely, in our assessment, on an integrated triad: continuous awareness of their risks, commitment to ethical disclosure regarding any use of artificial intelligence tools, and prior verification of a journal's credibility before publishing in it.

1. Recommendations

In light of all the foregoing, we can recommend the following:

- The necessity for universities and research centers to establish clear and binding policies regulating the disclosure of any use of generative artificial intelligence tools in the preparation of scientific research and publications.
- Intensifying awareness and training programs directed at researchers, particularly those new to scientific research, on how to distinguish between rigorous scientific journals and predatory journals prior to submitting for publication, as well as training them on the correct and acceptable methods of using generative artificial intelligence tools.
- Activating the role of specialized academic committees in verifying research integrity to keep pace with the novel patterns of violations associated with modern digital technologies.
- Encouraging the university professor to fulfill their guiding role in anchoring the values of scientific integrity among young researchers, considering this an extension of their role in proper academic upbringing.
- Working to develop institutional guidelines or tools for the early detection of practices involving unethical reliance on artificial intelligence and publishing in predatory journals.

2. Future Research Horizons:

Building upon the research axes addressed, the study proposes two main tracks for future research: first, conducting exploratory field studies to measure the extent of awareness among researchers and university professors regarding the risks of undisclosed reliance on generative artificial intelligence tools in scientific writing. Second, conducting exploratory studies to uncover the real, unannounced reasons—in addition to the overt and well-known reasons—underlying the resort of professors and researchers to publish in predatory journals or utilize paper mills, particularly within the Algerian or broader Arab context.

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