PEGEM EĞİTİM ve ÖĞRETİM DERGİSİ
PEGEM JOURNAL OF EDUCATION and INSTRUCTION
ISSN: 2146-0655
Pegem Journal of Education and Instruction, Vol. 16, No. 2 , 2026 (pp. 289-307)

Artificial Intelligence and the Ethics of Knowledge Documentation in Academic Research: A Legal Governance Perspective on Academic Integrity in the Humanities and Social Sciences

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Abstract

This study examines the legal and governance challenges arising from the increasing use of artificial intelligence in academic research, particularly regarding academic integrity, knowledge documentation, and scientific credibility. Although AI technologies improve research efficiency and data analysis, their misuse may lead to plagiarism, misinformation, data manipulation, and violations of intellectual property rights. Using a legal analytical approach, the study explores the limitations of traditional academic integrity frameworks in addressing AI-generated content and algorithmic knowledge production. It also analyzes the need for regulatory mechanisms capable of ensuring transparency, accountability, and ethical compliance within research environments. The paper highlights the role of universities and public institutions in developing governance policies that protect privacy and ensure responsible AI use in

academic activities. In addition, selected international frameworks, including UNESCO's AI ethics recommendations and the EU AI regulatory approach, are considered as comparative models for future legal governance in higher education and scientific research.

Keywords: Artificial Intelligence; Academic Integrity; Legal Governance; Intellectual Property; Research Ethics.

1. Introduction

The rapid development of digital technologies has profoundly reshaped the landscape of scientific research, particularly through the increasing integration of artificial intelligence systems. These technologies are no longer limited to technical or industrial applications but have become embedded in academic inquiry, especially within the humanities and social sciences, where they are used for data analysis, pattern recognition, and predictive modeling. Artificial intelligence is fundamentally transforming the way knowledge is produced, processed, and interpreted across disciplines (Russell & Norvig, 2016). In this context, research methodologies are gradually shifting from traditional manual approaches toward algorithmic and data-driven models, thereby raising new epistemological and methodological questions regarding the nature of scientific knowledge production .Despite its transformative potential, artificial intelligence presents a dual nature in academic research. On the one hand, it enhances analytical capacity, accelerates data processing, and enables researchers to identify complex patterns that would otherwise remain inaccessible. On the other hand, these advantages are accompanied by significant risks, particularly concerning the reliability of generated content and the potential misuse of automated tools in scientific

writing. AI systems introduce new forms of epistemic uncertainty that challenge traditional notions of authorship and scientific validity (Floridi et al., 2018). Consequently, the integration of artificial intelligence into research practices requires a careful balance between technological innovation and regulatory oversight to ensure the credibility of academic outputs. From a legal perspective, the increasing use of artificial intelligence in academic research reveals a significant regulatory gap. Existing legal frameworks governing scientific research and academic integrity were primarily designed for human-generated content and do not adequately address machine-generated outputs. Traditional ethical principles, particularly those related to plagiarism and citation practices, appear insufficient when confronted with AI-generated texts that may not clearly indicate human authorship or intellectual contribution. As emphasized by UNESCO (2021), the absence of comprehensive legal standards governing artificial intelligence in research environments creates uncertainty regarding accountability, responsibility, and control over academic production. This situation highlights the urgent need for updated legal instruments capable of addressing these emerging challenges within academic institutions. The use of artificial intelligence in academic research raises several critical legal concerns that directly affect the integrity of scientific production. First, the problem of plagiarism becomes more complex when AI systems generate texts that may replicate existing knowledge without proper attribution or transparency. Second, intellectual property rights are increasingly challenged, particularly with regard to the ownership of AI-generated content and the use of datasets derived from copyrighted materials during model training. Third, the credibility and authenticity of scientific

knowledge are at risk, as AI-generated outputs may appear coherent and scientifically structured while lacking verifiable academic grounding or human intellectual responsibility. These concerns collectively demonstrate that artificial intelligence is not merely a technical instrument but a legal phenomenon requiring structured regulation within academic environments. In light of these challenges, there is a clear need to develop a comprehensive legal framework governing the use of artificial intelligence in academic research, particularly in relation to knowledge documentation and research ethics. Existing literature tends to focus primarily on the ethical implications of AI, while limited attention has been devoted to its legal governance dimension within higher education and research institutions. This study therefore seeks to address this gap by adopting a legal analytical approach to examine the regulatory implications of artificial intelligence use in scientific research. Accordingly, the central research question guiding this study is: To what extent can artificial intelligence be legally regulated within academic research in order to ensure a balance between technological innovation, academic integrity, and the protection of intellectual property rights in the humanities and social sciences?.

2. Methodology (legal and comparative approach)

The present study adopts a legal analytical methodology (legal doctrinal analysis) as its primary research approach. This method is based on the critical examination of legal norms, ethical standards, and regulatory principles governing the use of artificial intelligence in academic research. It focuses on analyzing existing rules related to academic integrity, intellectual property, and research ethics in order to assess their adequacy in addressing AI-driven transformations in knowledge

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production. The legal analytical method is particularly suitable for this study, as it allows for the interpretation of normative gaps and the identification of emerging legal challenges resulting from the integration of artificial intelligence into scientific research environments. Rather than merely describing technological developments, this approach emphasizes the evaluation of legal frameworks and their capacity to regulate new forms of epistemic production. In addition to the legal analytical method, the study adopts a comparative and normative perspective by referring to selected international regulatory and ethical frameworks governing artificial intelligence. In particular, it draws upon the UNESCO Recommendation on the Ethics of Artificial Intelligence (2021), which establishes foundational principles such as transparency, accountability, fairness, and human oversight in AI systems. It also considers emerging regulatory developments such as the European Union Artificial Intelligence Act (EU AI Act), which represents one of the most advanced legal attempts to regulate AI systems through a risk-based approach. These references are used not for direct legal transplantation, but as analytical benchmarks to evaluate the extent to which current academic environments can adapt to global standards of AI governance. By integrating these comparative elements, the study seeks to situate the legal challenges of artificial intelligence in academic research within a broader international regulatory discourse.

3. Conceptual framework (legal-theoretical analysis)

Artificial intelligence (AI) is generally defined as a branch of computer science concerned with the development of systems capable of performing tasks that normally require human intelligence, such as learning, reasoning, and decision-making. From a technical perspective, it

involves algorithms and computational models designed to simulate cognitive functions, while from a legal and regulatory standpoint, AI is increasingly understood as a socio-technical system that generates outputs with potential legal effects, particularly in terms of responsibility and accountability. As emphasized by Russell and Norvig (2016), AI systems are not merely tools of automation but complex systems that reshape human interaction with knowledge production and decision-making processes. In the context of academic research, artificial intelligence has become an essential component of the research process through various digital tools and applications. These include natural language processing systems, machine learning-based data analysis tools, automated citation generators, and generative AI platforms capable of producing academic-style texts. Such tools are increasingly used in the humanities and social sciences to assist in literature review, data interpretation, hypothesis generation, and even drafting scientific outputs. However, their integration into research workflows raises important questions regarding authorship, originality, and methodological transparency, as noted by Floridi et al. (2018), who highlight the epistemic transformations introduced by AI-driven systems in knowledge production. Academic integrity constitutes a foundational principle in scientific research, traditionally understood as the commitment to honesty, trust, fairness, and responsibility in scholarly work. It encompasses core values such as proper citation, avoidance of plagiarism, transparency in methodology, and respect for intellectual contributions. Within the academic environment, integrity is not only an ethical expectation but also a structural requirement for ensuring the credibility and reliability of scientific knowledge. According to UNESCO (2021), academic integrity

is essential for maintaining trust in education systems and research institutions, particularly in the context of emerging digital technologies that complicate the distinction between human and machine-generated knowledge. From a legal perspective, academic integrity is increasingly shifting from a purely ethical framework to a normatively structured legal principle. This transformation reflects the growing need to regulate academic conduct through enforceable standards, particularly in relation to intellectual property protection, research misconduct, and digital authorship. In this sense, academic integrity can no longer be viewed solely as a moral obligation but must be understood as part of a broader legal governance framework that ensures accountability and compliance within research institutions. This evolution is particularly significant in the context of artificial intelligence, where traditional boundaries of authorship and originality are becoming increasingly blurred. Knowledge documentation plays a central role in safeguarding both academic integrity and intellectual property rights. Traditionally associated with bibliographic referencing and source attribution, documentation now extends to digital traceability and algorithmic transparency in research processes. Proper documentation ensures that intellectual contributions are accurately recognized and that the origins of information can be verified, thereby reducing the risk of plagiarism and academic misconduct. In the context of AI-assisted research, documentation also acquires a preventive legal function, serving as a mechanism for accountability and evidentiary verification of research processes and outputs. Building on these conceptual foundations, it becomes evident that the increasing integration of artificial intelligence into academic research does not only generate methodological and epistemological

questions but also raises significant legal and regulatory challenges. The intersection between AI, academic integrity, and knowledge documentation reveals a structural shift in the governance of scientific production, where traditional ethical norms are no longer sufficient to address emerging risks. Consequently, this study transitions toward an analysis of the legal risks and challenges associated with artificial intelligence in academic research, particularly in relation to plagiarism, intellectual property violations, and liability issues within research environments.

4. Legal risks and challenges of artificial intelligence in academic research

Artificial intelligence represents a dual-use technology within academic research environments. While it offers unprecedented opportunities for accelerating scientific production, improving analytical efficiency, and facilitating access to information, it simultaneously creates new legal and ethical vulnerabilities that directly affect the integrity of scientific knowledge. The increasing dependence on AI systems in research processes has transformed these technologies from auxiliary tools into active participants in knowledge production, thereby raising complex legal questions concerning accountability, transparency, and legitimacy within academic institutions. One of the most significant risks associated with artificial intelligence in academic research is the emergence of indirect or concealed forms of plagiarism. Unlike traditional plagiarism, which involves the direct appropriation of another person's work, AI-generated plagiarism may occur through the production of texts derived from large datasets without clear attribution or traceability. Generative AI systems are capable of reproducing existing ideas, structures, and

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linguistic patterns in ways that may evade conventional plagiarism detection mechanisms. According to Stokel-Walker and Van Noorden (2023), the widespread use of generative AI tools in academic writing has intensified concerns regarding originality and the erosion of authentic scholarly contribution. Consequently, the distinction between legitimate assistance and academic misconduct has become increasingly blurred.

Artificial intelligence also creates a profound crisis regarding scientific authorship and academic responsibility. Traditional academic systems are based on the assumption that scientific outputs are the product of identifiable human intellectual effort. However, AI-generated content challenges this assumption by introducing machine-produced texts into academic discourse. This raises a fundamental legal question: who should be considered the author of AI-assisted research outputs? The ambiguity surrounding authorship further complicates the allocation of responsibility for inaccuracies, fabricated information, or ethical violations contained within AI-generated material. As a result, existing authorship standards appear insufficient for addressing the realities of algorithmically assisted scientific production. Another major challenge concerns the violation of intellectual property rights through the reuse of protected data and copyrighted materials in AI training processes. Most generative AI systems are trained on vast quantities of digital content collected from books, articles, databases, and online platforms, often without explicit authorization from rights holders. This situation raises concerns regarding unlawful reproduction, unauthorized derivative use, and infringement of copyright protections. Furthermore, AI-generated outputs themselves may unintentionally reproduce portions of

copyrighted works, thereby exposing researchers and institutions to potential legal disputes concerning ownership and fair use limitations.

The reliability of data and scientific accuracy also constitute major concerns in AI-assisted research. Artificial intelligence systems are capable of generating inaccurate references, fabricated citations, or misleading analytical conclusions, particularly when relying on probabilistic language generation models. These systems do not possess genuine understanding or scientific judgment but instead generate outputs based on statistical predictions derived from training data. Consequently, researchers who rely excessively on AI-generated content may unintentionally disseminate false or unverifiable information, thereby undermining the credibility of academic research and compromising scientific integrity. Within this context, the legal responsibility of researchers becomes increasingly significant. Researchers remain ethically and legally accountable for the accuracy, authenticity, and legality of the content they submit, regardless of the technological tools used during the research process. The use of artificial intelligence does not eliminate the researcher's obligation to verify sources, ensure originality, and comply with academic standards of citation and transparency. Failure to exercise adequate oversight over AI-generated content may expose researchers to allegations of academic misconduct, copyright infringement, or professional negligence, particularly where false or misleading information is disseminated under their authorship.

Institutional responsibility also emerges as a critical dimension of AI governance in academic research. Universities, research centers, and academic laboratories play a central role in establishing standards for the ethical and legal use of artificial intelligence technologies. Their

responsibilities include developing internal guidelines, implementing mechanisms for detecting AI-assisted misconduct, and promoting awareness regarding the legal implications of generative technologies. In addition, academic institutions may face reputational and legal consequences if they fail to adopt adequate governance frameworks capable of preserving research integrity and protecting intellectual property within increasingly digitalized research environments.

Ultimately, the legal risks associated with artificial intelligence in academic research reveal the existence of a substantial regulatory gap at both national and international levels. Current legal frameworks remain fragmented and largely inadequate for addressing the unique challenges posed by AI-generated scientific content. While ethical guidelines and soft-law instruments have begun to emerge, there is still no comprehensive legislative framework specifically dedicated to regulating artificial intelligence within academic research practices. This legal vacuum underscores the urgent necessity of developing specialized regulatory approaches capable of balancing technological innovation with the protection of academic integrity, intellectual property rights, and public trust in scientific knowledge.

5. Governance and regulation of artificial intelligence in academic research

The growing integration of artificial intelligence into academic research environments makes legal and institutional regulation an urgent necessity rather than a purely theoretical option. The absence of clear regulatory mechanisms risks transforming AI technologies into sources of academic

disorder capable of undermining scientific credibility and weakening public trust in research institutions. As artificial intelligence increasingly influences the production, interpretation, and dissemination of scientific knowledge, legal intervention becomes essential to establish boundaries between legitimate technological assistance and unlawful academic practices. In this context, regulation should not be understood as an obstacle to innovation, but rather as a mechanism for ensuring responsible and sustainable technological integration within higher education and research systems. The governance of artificial intelligence in academia also reflects a broader transition from ethical guidance toward binding legal regulation. For many years, debates surrounding AI relied primarily on voluntary ethical principles such as fairness, transparency, and responsibility. However, the rapid expansion of generative AI systems has demonstrated the limitations of purely ethical approaches in addressing concrete legal disputes related to authorship, intellectual property, and accountability. According to Cath et al. (2018), ethical frameworks alone are insufficient unless supported by enforceable legal mechanisms capable of ensuring compliance and institutional oversight. Consequently, the evolution of AI governance increasingly requires transforming ethical expectations into legally binding standards applicable within academic and research institutions. At the national level, states play a central role in regulating the use of artificial intelligence within educational and research sectors. National legislation must establish clear legal definitions concerning AI-assisted academic production, determine the limits of acceptable use, and define sanctions applicable to research misconduct involving generative technologies. Furthermore, legislative frameworks should address issues related to data

protection, digital authorship, and algorithmic accountability in order to provide legal certainty for researchers and institutions alike. The development of national AI strategies by several governments demonstrates an increasing recognition that artificial intelligence governance constitutes part of public policy and national scientific sovereignty. Beyond legislative intervention, universities and research institutions themselves bear direct responsibility for establishing internal governance systems capable of regulating AI use within academic environments. Institutional governance may include the adoption of AI usage policies, mandatory disclosure requirements for AI-assisted content, integrity review procedures, and specialized ethics committees dedicated to digital research practices. Universities are also expected to provide training programs aimed at enhancing researchers' awareness of legal and ethical risks associated with AI systems. Effective institutional governance therefore represents the first operational layer of regulation, translating abstract legal principles into practical academic standards.

At the international level, several organizations and regulatory initiatives have begun to establish global governance principles for artificial intelligence. The UNESCO Recommendation on the Ethics of Artificial Intelligence (2021) represents one of the most comprehensive international instruments addressing AI governance through principles such as human oversight, transparency, accountability, and protection of fundamental rights. Similarly, the European Union has developed the EU Artificial Intelligence Act, which introduces a risk-based regulatory framework designed to classify AI systems according to their societal impact and potential harm. These international initiatives reflect the emergence of a transnational regulatory discourse seeking to harmonize

governance standards while preserving human-centered technological development. An effective governance framework for artificial intelligence in academic research must also incorporate clear accountability mechanisms. Accountability requires the identification of responsible actors in cases involving academic misconduct, copyright infringement, dissemination of false information, or misuse of AI-generated content. This includes determining the respective responsibilities of researchers, universities, software developers, and digital platforms involved in the production or circulation of AI-assisted research outputs. According to Veale and Borgesius (2021), accountability constitutes a central principle in AI regulation because it ensures that technological systems remain subject to legal scrutiny and human supervision rather than operating within a normative vacuum.

Transparency likewise represents a fundamental requirement for the lawful and ethical integration of artificial intelligence into academic research. Researchers should be required to disclose the use of AI systems in the preparation of scientific outputs, particularly where generative tools contribute to drafting, analysis, or data interpretation. Transparency obligations may also extend to documenting the nature of AI assistance provided, the extent of machine involvement, and the verification procedures applied by the researcher. Such measures are essential for preserving scientific trust, ensuring methodological clarity, and enabling evaluators to distinguish between human intellectual contribution and automated generation processes. In light of these considerations, this study proposes a multidimensional legal governance model for regulating artificial intelligence in academic research. This proposed model is based on four complementary pillars: first, the

establishment of binding national legislation governing AI-assisted academic production; second, the adoption of institutional governance mechanisms within universities and research centers; third, the implementation of mandatory transparency and disclosure obligations concerning AI use; and fourth, the creation of specialized accountability systems capable of addressing legal disputes arising from AI-generated scientific content. Such a governance framework seeks to balance technological innovation with the protection of academic integrity, intellectual property rights, and the credibility of scientific knowledge in the digital era.

6. Discussion

The findings of this study demonstrate that the governance of artificial intelligence in academic research requires a delicate balance between technological innovation and legal regulation. Excessive regulatory restrictions may hinder scientific progress and limit the benefits offered by AI-driven research tools, while the absence of legal oversight risks undermining academic integrity and weakening public confidence in scientific institutions. Therefore, the challenge does not lie in opposing technological advancement, but rather in constructing regulatory mechanisms capable of integrating innovation within a framework of legal responsibility and ethical accountability. In this regard, the concept of “responsible innovation” becomes central to the governance of artificial intelligence in higher education and research environments.

At the same time, the study reveals that the benefits associated with artificial intelligence cannot be separated from the legal and ethical risks it generates. AI technologies significantly enhance research efficiency, facilitate access to information, and improve analytical capabilities,

particularly in data-intensive disciplines. Nevertheless, these advantages are accompanied by substantial risks related to plagiarism, misinformation, authorship ambiguity, intellectual property violations, and the erosion of human oversight in scientific production. As observed by Mittelstadt et al. (2016), the complexity of AI systems creates new forms of ethical and legal vulnerability that cannot be adequately addressed through traditional governance models alone. Consequently, any evaluation of artificial intelligence in academic research must adopt a risk-benefit approach that recognizes both its transformative potential and its disruptive implications. The discussion further highlights that legal intervention has become an immediate necessity rather than a future possibility. The rapid expansion of generative AI technologies has outpaced the development of existing legal frameworks, leaving academic institutions and researchers operating within a fragmented and uncertain regulatory environment. In the absence of binding legal standards, ethical principles remain insufficient to guarantee compliance, accountability, or effective dispute resolution. The increasing reliance on AI-generated content within academic contexts therefore requires the establishment of enforceable legal norms capable of protecting scientific integrity and ensuring responsible technological use. This necessity is reinforced by the growing international recognition that artificial intelligence governance constitutes a matter of public interest and institutional legitimacy. Finally, the study demonstrates that the regulation of artificial intelligence in academic research cannot be approached from a purely legal perspective. The complexity of AI systems requires an interdisciplinary framework that combines law, ethics, technology, and educational governance in order to produce

effective and sustainable regulatory solutions. Legal rules alone cannot fully address the technical dimensions of algorithmic systems, just as technological innovation cannot operate independently from ethical and societal considerations. According to Coeckelbergh (2020), the governance of artificial intelligence demands continuous interaction between normative principles, technological expertise, and human-centered values. Accordingly, future regulatory approaches should adopt a multidisciplinary orientation capable of responding to the evolving nature of artificial intelligence and its impact on scientific knowledge production.

Acknowledgments

The author would like to express sincere appreciation to all mentors, colleagues, and peers whose guidance, insightful feedback, and continuous encouragement have greatly supported the completion of this research.Special acknowledgment is extended to Dr. Faisal, as well as IDRIS, Zaki, and Morad from the University of Sfax, Tunisia, for their valuable support and collaboration. The author also wishes to recognize his co-authors, who are listed in this article, for their cooperation, scientific contribution, and teamwork throughout the preparation of this work (M.E.S.B). Deep gratitude is also dedicated to my beloved mother, whose unconditional love, patience, and sacrifices have been a constant source of strength and motivation during this journey. Finally, this work is lovingly dedicated to the cherished memory of my beloved brother, Fouad Belkessam, whose enduring spirit continues to inspire and guide me. May this research stand as a humble tribute to his memory.

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