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University approaches to the use of AI in Bulgaria and in Morocco

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Abstract

The article analyses some of the publicly announced university policies, rules and procedures on the use of AI as well as some non-binding rules at European level. This is a topic of interest in both legal education and in other fields. However, most of the universities in Bulgaria and in Morocco have no special policies or rules for AI. In such cases they apply general antiplagiarism rules and ethical rules and standards to use of AI and of AI-created works. In Bulgaria there are just a few universities that have announced such policies or rules and procedures. In Morocco, although national strategies promoting digital transformation and AI in education have been introduced, universities have not yet adopted specific frameworks regulating the use of AI in scientific research. Most institutions continue to rely on general academic integrity and research ethics codes, which are not fully adapted to AI-generated content and its implications for authorship and originality. That leaves some issues, such as the sustainable and transparent use of AI, as well as the disclosure of AI involvement in research, unaddressed. Besides that, the general rules are not appropriate for some specifics of the use of AI in science research.

Keywords: *Artificial Intelligence, Research, Universities' policies and rules*

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Introduction[1]

Artificial intelligence (AI) has already has become a powerful tool that provides growing capabilities for research and analysis of scientific data and for creation of part or entire materials such as scientific articles, reports or theses. As research is one of the most important parts of universities' activities and is the major factor for academic development, it becomes crucial for the universities to be able to manage the use of AI. Academic research should result in original works of authorship and scientific results; AI should be used in a way not to jeopardise this fundamental aspect of academic growth. The free and extensive use of AI creates higher risks for reducing the originality of scientific works and also brings other threats. On the other hand, its capacity to process and analyse data may be extremely beneficial for scientific research. The universities should find a balanced approach to address those problems. This requires them to determine their policy regarding the use of AI in research as well as to establish rules and procedures to be applied in such cases.

One area with potentially high risks of the use of AI is legal science. This is due to factors such as the differences between the national legal systems and the applied significance of legal research. Universities' policies and rules should consider and address those specifics in the field of legal science and education. Dealing with that problem requires global interaction between the law schools and legal professionals. A very good example is the work of the European Law Faculties Association (ELFA) and its Annual Conference where academics and practitioners can share their experience and discuss critical issues. The 2026 Conference, organized by the University of Deusto in Bilbao, Spain was on the topic 'Artificial Intelligence and Legal Education' and the Resolution of the General Assembly especially addressed the need of developing and sharing pedagogical best practices and guidelines on the responsible academic use of AI tools in legal education.[2]

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[2] ELFA, 'Bilbao 2026' (*ELFA*, No date) <https://elfa-edu.org/event/bilbao-2026/> accessed 28 April 2026.

This article examines some existing strategies, policies and rules of universities in Bulgaria and in Morocco, related to the use of AI, as well as the special and general rules that these universities apply in cases involving the use of AI. The aim is to determine what the current situation in both states is, and what is needed to address this problem. On that basis conclusions may be drawn about the most problematic aspects and the possible solutions.

Use of AI in university research – European approaches

Along with the education of undergraduates and doctoral students, a major part of the activities of universities is the conduct of scientific research. Scientific research is a prerequisite for the acquisition of scientific degrees and for the academic development of teaching staff, and scientific research activity is an essential element of attestation. In addition, universities create research units where employees exclusively or mainly carry out research activities.

Scientific research implies the presence of in-depth knowledge in the relevant field, the ability to analyse scientific literature and data, the ability to formulate scientific theses and the application of appropriate methodology. Until recently, these activities could only be performed by humans, but the emergence and development of language models and AI brought about radical changes. First the algorithms and now the AI have the potential to handle huge data sets that far exceed the capabilities of human intelligence. Generative AI is already capable of creating content that, without the use of technical means, cannot be distinguished from that created by humans. AI can not only analyse data, but also formulate scientific hypotheses. It is fully capable of conducting scientific research on a given problem by analysing its state, literature and existing research, formulating a scientific hypothesis, and subjecting it to verification, including drawing the relevant scientific conclusions based on the research thus conducted. These capabilities undoubtedly open up new and significantly larger horizons for the development of science, but at the same time they also raise a number of new questions that relate to the ways and limits of using artificial intelligence in universities for research, including in other subjects, such as law.

Algorithms and AI are not the first to facilitate the extraction and processing of data in conducting scientific research. Their use as research tools would undoubtedly contribute to the processing of larger volumes of information and, accordingly, to more in-depth and comprehensive studies that would not be

within the capabilities of an individual researcher. Consequently that becomes a stimulus for researchers to benefit from the use of AI.[3] While AI may support research as a highly productive tool, some questions emerge related to academic progression and to the assessment of the work of the academic staff. First, the question arises, once scientific research is carried out by a specific person and this person is indicated as its author, is it permissible to use AI, and if so, which elements and how much of the research can be the result of AI? Second, should it be indicated what was done by AI and what by the researcher? Third, can scientific theses be allowed to be determined by AI and then used by the scientific community; and fourthly, should scientific research be subject to scrutiny for its use of AI?[4] Last, but not least, researchers who use AI can gain a significant advantage over those who do not. If until recently the capabilities of algorithms and the scale of their use were relatively modest, today AI is becoming a necessary and natural tool in conducting scientific research, and universities will have to provide answers to the questions raised by adopting the appropriate strategies, policies and rules.

One of the most important questions for all universities is whether the use of AI in research activities should be allowed and encouraged, and if so, within what frameworks. There are already some common guidelines in place, such as those of the European Research Area, published by the European Commission (the AI Guidelines).[5] They are non-binding, and are intended to serve as a supporting tool for researchers and research organisations, based on

[3] A survey from Germany shows that, in 2024, '42.4% of the researchers' report being very or rather familiar with AI tools, with a further 44.0% reporting that they have used AI tools a few times. 25.9% of researchers are frequent users of AI tools and use them at least once a day or more often for their research. Only 22.2% of researchers never use AI tools for their work tasks (i.e., research, teaching, or service to the profession). 19% of respondents report directly studying or developing AI in their research'.
Marina Chugunova and others, 'Who Uses AI in Research, and for What? Large-Scale Survey Evidence from Germany' Max Planck Institute for Innovation & Competition Research Paper No. 25-11 (Social Science Research Network, 19 May 2025) <https://papers.ssrn.com/abstract=5259847> accessed 24 April 2026 at p 5.

[4] Recent research on the spread of the use of Large Language Models (LLMs) in biomedical research has discovered that at least 13.5% of 2024 abstracts were processed with LLMs: Dmitry Kobak and others, 'Delving into LLM-Assisted Writing in Biomedical Publications through Excess Vocabulary' (2025) 11 Science Advances eadt3813 <https://doi.org/10.1126/sciadv.adt3813>.

[5] European Commission Directorate-General for Research and Innovation, 'Living Guidelines on the Responsible Use of Generative AI in Research' (ERA Forum stakeholders document 2025) Second edition <https://research-and-innovation.ec.europa.eu/document/download/2b6cf7e5-36ac-41cb-aab5-0d32050143dc_en?filename=ec_rtd_ai-guidelines.pdf> accessed 15 April 2026.

the European Code of Conduct for Research Integrity[6] and on the European Commission's Ethics Guidelines for Trustworthy AI.[7] The AI Guidelines formulate four recommendations for research organisations:

1. responsible use of generative AI in research activities, which includes providing training on the use of AI, encouraging researchers to indicate when they have used AI without negative consequences, and providing rules and support for compliance with ethical norms and intellectual property legislation;
2. actively monitoring the development of the use of AI systems;
3. inclusion of references to the AI Guidelines in their research rules, research policies and ethical standards; and
4. where possible, implementing AI systems that they manage to ensure protection and confidentiality.

The Code of Practice for General-Purpose AI Models[8] is another document that contains guidelines aimed at the promotion of human-centric and trustworthy AI, while ensuring a high level of protection of health, safety, and the fundamental rights enshrined in the Charter of Fundamental Rights of the EU against harmful effects of AI, and supporting innovation..]

A growing number of universities in Europe have adopted policies, guidelines and rules for the use of AI and made them public on their websites. For example, ETH Zürich published 'Generative AI in Teaching & Learning Guidelines' in 2024[9] that establishes three principles: responsibility, transparency, and fairness. KU Leuven has adopted 'General Guidelines for

[6] ALLEA - All European Academies, 'The European Code of Conduct for Research Integrity' (ALLEA - All European Academies 2023) Revised edition <https://doi.org/10.26356/ECoC> accessed 2 January 2026.
[7] Independent High-level Expert Group on Artificial Intelligence, 'Ethics Guidelines for Trustworthy AI' (European Commission 2019) <https://www.europarl.europa.eu/cmsdata/196377/AI%20HLEG_Ethics%20Guidelines%20for%20Trustworthy%20AI.pdf> accessed 15 April 2026.
[8] Alexander Peukert and Céline Castets-Renard, 'EU AI Act: General-Purpose AI Code of Practice' (*EU AI Act: GPAI Code of Practice*, 10 July 2025) <https://code-of-practice.ai/> accessed 24 April 2026.
[9] Rectorate Unit for Teaching and Learning, 'Generative AI in Teaching and Learning - Guidelines' (ETH Zürich 2024) <https://ethz.ch/content/dam/ethz/main/eth-zurich/education/ai_in_education/Generative%20AI%20in%20Teaching%20and%20Learning%20-%20Guidelines%20ETH.pdf> accessed 24 April 2026.

permitted use of GenAI'.[10] The latter require researchers to follow three principles when using AI, namely: transparency (correctly attributing all acquired information or ideas), safety (protecting confidential data at input, evaluating output for accuracy, bias, quality and relevance) and sustainability (considering the energy cost and using AI only when it adds value to the research). ALLEA[11] also addresses the use of AI in research in its 'European Code of Conduct for Research Integrity'.[12] The Code requires researchers to report their results and methods, including the use of external services or AI and automated tools; as well as to disclose the use of AI and points out as an unacceptable practice hiding the use of AI or automated tools in the creation of content or drafting of publications.

This brief overview demonstrates that the main issues that are the subject of existing policies, strategies, rules and guidelines can be identified. These include ethical use, in particular the disclosure of the use of AI in scientific research, the fair use of AI in accordance with academic standards, namely as an aid and tool for conducting scientific research, verification of the reliability of the results presented by AI, protection against data misuse and respect for IP rights. At this stage, detailed rules are lacking, and organisations mainly define general guidelines and principles that should be observed. Given the constant development of its capabilities and the growth of its potential, such rules will have to be created by all universities and research organisations.

Rules and policies for the use of AI in scientific research in Bulgaria

At the national level

Bulgaria has adopted at national level a strategic document that address issues related to the use of AI in education and research. The Concept for the

[10] KU Leuven, 'General Guidelines for Permitted Use of GenAI' (*KU Leuven*, 5 February 2026) <https://www.kuleuven.be/english/genai/general-guidelines> accessed 15 April 2026.
[11] ALLEA – All European Academies (see n6 above) is a European federation of academies of sciences and humanities, founded in 1994 that represents more than 50 academies from nearly 40 EU and non-EU countries.
[12] ALLEA (n6).

Development of AI in Bulgaria until 2030[13] contains a section dedicated to the creation of knowledge and skills for the development of AI in the country, which also includes certain measures to be adopted by higher education. These measures envisage the study of the impact of AI on society, as well as the development of standards for building reliable AI by including it in university educational programmes in informatics and technical specialised academic disciplines focused on the legal, ethical and social aspects of AI; disciplines for studying the impact of AI in faculties of sociology, law and humanities, and the use of AI by universities to improve information systems for education management.

The National Strategy for the Development of Artificial Intelligence in Bulgaria to 2030 (the Strategy),[14] prepared by the Bulgarian Academy of Sciences in turn defines the main areas of impact and specific measures, including: the development of research capacity for high-level scientific achievements; the creation of knowledge and skills for the development and use of AI; support for innovations aimed at implementing AI in practice; raising awareness and building trust in society; and the creation of a regulatory framework for the development and use of reliable AI in accordance with international regulatory and ethical standards, as well as the creation of conditions for financing and sustainable investments for the development of AI. Section 5.6. of the document emphasises the need to create a regulatory framework for the development and use of AI in accordance with international regulatory and ethical standards. It states that "the principles of respect for fundamental rights, non-discrimination and protection of personal data should be considered as an integral part of the requirements that guarantee the safety of AI technologies."[15] The Strategy emphasises the need to pay attention to the risks of harm and abuse in the use of AI. In order to ensure the necessary conditions for ensuring the development of reliable AI technologies in

[13] Adopted by Minutes 72 of the regular meeting of the Council of Ministers of 16 December 2020. The concept offers a comprehensive vision for the development and use of AI in the country and is based on the strategic and programme documents of the European Commission: Ministry of e-Government, 'Concept for the Development of Artificial Intelligence in Bulgaria until 2030' (*Ministry of e-Government*, 2022) <https://egov.government.bg/wps/portal/ministry-meu/strategies-policies/digital.transformation/itis-national-strategic-documents/ai.development.concept.2030> accessed 2 January 2026.

[14] Връзки с обществеността, 'Национална Стратегия За Развитието На Изкуствения Интелект в България До 2030 г. Разработи БАН' (*Българска академия на науките*, 13 July 2020) <https://www.bas.bg/?p=30731> accessed 2 January 2026.

[15] Ibid, page 33.

Bulgaria, it is proposed to assess the applicability and effectiveness of existing regulatory provisions on the safety of new products incorporating AI technologies. It provides for the creation of a national framework for assessing the risks associated with the development of AI technologies, which should also include the Pan-European methodology for assessing high-risk AI technologies. [16]

The current national legislation does not contain explicit provisions on the use of AI in scientific research. In this regard, the provisions on the prohibition of plagiarism in the acquisition of scientific degrees and the holding of academic positions, established in the Act on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), may be applied. Plagiarism in scientific research leads as a consequence to the refusal to award scientific titles and to hold academic positions, respectively to their annulment. According to the definition provided in section 1(7) of ZRASRB, ‘ “Plagiarism” is the presentation as one's own of works that were fully or partially written or created by another, or the use of scientific results published by another, without reference or citation in the procedures for acquiring scientific degrees or holding academic positions’. It is evident that the aforementioned definition was created before the development of AI capabilities, since it requires that the works be written by ‘another’, which implies a person. But regardless of this, when interpreted in the spirit of the prohibition established by ZRASRB, and taking into account the current capabilities of AI, the concept of ’other‘ should also cover AI and apply in cases of AI-generated research submitted by candidates for scientific degrees or for academic positions.

At the university level

There are just a few universities in the country that have special internal policies that address the use of AI in educational and in research work. The Chemical Technology and Metallurgical University (CTMU) has adopted a ‘Policy on the Use of AI’,[17] which contains principles and rules for the use of AI in the educational, research, administrative and other activities of the university. The policy aims to promote the ethical, transparent and responsible

[16] Ibid, page 33.
[17] Chemical Technology and Metallurgical University, ‘ПОЛИТИКА ЗА ИЗПОЛЗВАНЕТО НА ИЗКУСТВЕН ИНТЕЛЕКТ (ИИ)’ (Chemical Technology and Metallurgical University, 2025) <https://mmu2.uctm.edu/uctm/downloads/norm_docs/2025/politics_AI.pdf> accessed 2 January 2026.

application of AI technologies, while ensuring academic integrity, the quality of education and the protection of personal data and intellectual property. The policy provides that the use of AI should be based on the principles of ethics and transparency, academic integrity, human oversight and judgement, data protection and confidentiality. The use of AI in scientific research is allowed to assist researchers, as well as to automate certain activities. The use of AI is considered unacceptable when it is without verification of the results, when AI's outcomes are presented as one's own, as well as in cases of lack of disclosure that AI was used, and when providing access to protected or sensitive data or to intellectual property objects, in violation of the exclusive rights

The American University in Bulgaria, the Center for Information, Democracy, and Citizenship (CIDC), has invited LCC University, Bard College Berlin, European Humanities University, BISLA and Central European University, to develop the AI Aware Universities Project addressing the growing influence of AI on universities and education and has formulated 'AI Policy Recommendations'[18] including the following principles:

1. Skill development and assessment;
2. Mutual trust and transparency;
3. Clear expectations;
4. Alignment;
5. Ethical and pedagogically appropriate AI-use;
6. Disclosure requirements; and
7. Academic integrity and enforcement.

The above principles are mainly aimed at the use of AI in education. It is also recommended that all students and faculty complete an AI Literacy course on a regular basis.

At this stage, universities in Bulgaria have not yet focused their attention on creating special internal policies and rules for the use of AI in scientific research. In this situation, some of the cases can be resolved by applying general internal rules on the prohibition of plagiarism and ethical academic standards. However, this is not enough to cover all the issues that arise from

[18] American University in Bulgaria, 'AI Aware Universities' (*American University in Bulgaria*, 2026) <https://www.aubg.edu/center-for-information-democracy-and-citizenship-cidc/ai-aware-universities/> accessed 2 January 2026.

the possibilities for using AI in scientific research. Problems such as the disclosure of the use of AI and the sustainable use of AI remain completely unaddressed.

Rules and policies for the use of AI in scientific research in Morocco

The question of how AI should be regulated within scientific research is increasingly central in global academic debates. Over the past decade, universities worldwide have moved from general ethical principles toward operational governance frameworks that explicitly integrate AI into research workflows, including transparency requirements, auditability mechanisms, and documentation of algorithmic limitations. In this evolving context, the Middle East and North Africa region (MENA) and the African continent face particular challenges shaped by structural inequalities, emerging digital ecosystems, and pressing demands for responsible innovation. Although Morocco has positioned itself as one of the leading countries in North Africa in terms of digital transformation, the national governance of AI in scientific research remains at an early but dynamic stage of development.

At the national level

The Moroccan approach to AI in scientific research is deeply anchored in a broader national agenda of digital transformation and knowledge economy building. Over the last decade, Morocco has progressively recognised AI not only as a technological asset, but as a strategic driver for educational modernisation, industrial competitiveness, and scientific sovereignty.[19] National discourse increasingly presents AI as a lever for innovation capacity, reflecting a political intention to position Morocco within the emerging global AI landscape. However, despite this strategic orientation, there is still no binding regulatory framework dedicated to the academic use of AI, and the governance of AI-assisted research remains governed indirectly through

[19] Ministère de la Transition Numérique et de la Réforme de l'Administration, 'Stratégie Nationale "Digital Morocco 2023' (*Royaume du Maroc* 2024) <https://www.maroc.ma/fr/strategies-politiques-publiques/maroc-digital-2030> accessed 2 January 2026.

general scientific ethics, higher education regulations, and integrity-based principles.[20]

The turning point in this trajectory can be associated with the launch of several governmental initiatives that integrate AI into Morocco's digital development vision. National digital transformation strategies consistently emphasise innovation, big data integration, and the modernisation of scientific infrastructures, placing universities and research institutions at the centre of digital capacity building.[21]

Governmental programmes promoting AI in public administration, education, and industry illustrate the country's ambition to foster a national ecosystem capable of creating, training, and deploying intelligent systems.[22] These orientations reflect a willingness not only to adopt advanced technologies, but also to cultivate a generation of researchers and students equipped with digital skills and computational literacy.

Yet, the legal and institutional apparatus regulating AI in scientific research remains programmatic rather than normative. Strategic documents encourage AI adoption but do not precisely define the thresholds between assistance and intellectual substitution, the conditions of disclosure of AI-generated content, the accountability of researchers using automated tools, nor the protocols for verifying the authenticity and traceability of algorithmically produced material.[23] This regulatory vacuum is particularly salient in postgraduate research production. Doctoral theses, grant-funded projects and scientific articles increasingly integrate AI tools for literature screening, quantitative modelling, language refinement, or even the drafting of theoretical frameworks. However, the absence of explicit national rules means that evaluations rely primarily on traditional anti-plagiarism guidelines, which were

[20] Committee on Knowledge and Information Society (CESE), 'Artificial Intelligence (AI) in Morocco: What Areas and What Prospects?' (Committee on Knowledge and Information Society 2024) <https://www.cese.ma/media/2024/12/ENG-synthe%CC%80seArtificial-intelligence-AI-1.pdf> accessed 2 January 2026.
[21] Above (n19).
[22] Global AI Ethics and Governance Observatory, 'Morocco' (*UNESCO* 2024) <https://www.unesco.org/ethics-ai/en/morocco> accessed 2 January 2026.
[23] UNESCO, 'Recommendation on the Ethics of Artificial Intelligence' (UNESCO 2022) SHS/BIO/PI/2021/1 <https://unesdoc.unesco.org/ark:/48223/pf0000381137> accessed 2 January 2026.

not initially designed to address generative systems capable of producing original-appearing scientific text.

From an ethical and epistemological perspective, the situation reveals an emerging tension between innovation and academic integrity. On one hand, AI offers substantial opportunities for Moroccan researchers, especially in contexts where access to computational resources, scientific databases and research funding is limited.[24] Intelligent systems can accelerate data collection, expand analytical reach, reduce linguistic barriers in academic publication, and contribute to the international visibility of Moroccan research. On the other hand, unregulated use exposes universities to new vulnerabilities, including ghost-writing through AI, dilution of cognitive contribution, over-reliance on machine-generated sources, and the risk of circulating unverified content or fabricated references.[25] In such a context, the lack of explicit disclosure obligations complicates the assessment of originality, authorship and methodological rigour.

The national challenge is therefore no longer limited to deciding whether AI should be integrated into research, but rather how it should be governed. Morocco stands at a stage where the development of legal and ethical frameworks is required to accompany technological adoption. This includes establishing criteria defining acceptable levels of AI assistance in research, developing disclosure templates for theses and scientific papers, and determining responsibilities in cases where AI-generated misinformation influences research outcomes.[26] Such frameworks would also need to consider data protection, intellectual property rights, algorithmic accountability, and the management of potential biases embedded in training datasets.

A forward-looking perspective suggests that Morocco has the capacity to progress rapidly toward structured regulation. The existence of national strategies for digital transformation, the growing involvement of ministries in AI policy design, and the alignment of educational priorities with Fourth Industrial Revolution skills all constitute fertile ground for the implementation of a dedicated AI governance framework in research.[27] The next step lies in

[24] Above (n20).
[25] UNESCO, Guidance for generative AI in education and research (UNESCO 2023) <https://doi.org/10.54675/EWZM9535> accessed 22 June 2026.
[26] Ibid.
[27] Above (n19).

translating strategic vision into concrete mechanisms that universities, laboratories and doctoral schools can operationalise, not to restrict innovation, but to guarantee transparency, responsible use and scientific credibility.

At the university level

At the institutional level, Moroccan universities occupy a pivotal position in shaping how AI is incorporated into scientific research practices. While national strategies increasingly highlight the transformative role of digital technologies, university environments remain the primary testing grounds where the opportunities and vulnerabilities of AI integration are most visibly expressed. However, in contrast with global trends toward structured institutional governance, Moroccan universities have not yet developed explicit internal frameworks regulating the academic use of AI in research. This regulatory gap has led institutions to rely on general principles of academic integrity, scientific ethics and anti-plagiarism standards, none of which were designed to address the methodological, epistemic and authorship challenges introduced by generative AI systems.

The absence of clear institutional directives is particularly significant given that universities constitute the core of Morocco's knowledge production ecosystem. In emerging economies, AI adoption is expanding more rapidly within universities than formal governance structures can adapt. This is visible in Moroccan doctoral schools, where AI tools increasingly support literature synthesis, methodological design, linguistic refinement and data analysis. While these practices can enhance research efficiency and reduce barriers to scientific publication, the lack of institutional norms raises critical concerns about authorship attribution, scientific originality, and the transparency of research processes.

This situation mirrors broader dynamics observed across African higher education systems. Studies conducted in connection with the African Union's Continental AI Strategy[28] reveal that most universities on the continent face similar structural challenges: limited institutional preparedness, uneven digital skills among faculty and postgraduate students, fragmented infrastructures, and the absence of official guidelines on acceptable and prohibited uses of AI in

[28] African Union, 'Continental Artificial Intelligence Strategy' (*African Union*, 9 August 2024) <https://au.int/en/documents/20240809/continental-artificial-intelligence-strategy> accessed 2 January 2026.

academic writing and research workflows. Moroccan universities reflect this continental pattern, where the integration of AI appears driven primarily by individual initiative rather than institutional policy.

Another dimension concerns the profound asymmetry of digital competencies within Moroccan universities. A report by the World Bank[29] on digital skills, innovation and economic transformation highlights that higher education institutions in Africa face significant disparities in access to digital resources and advanced skills training, which hampers their ability to contribute equally to the digital economy and to research capacity building. As a result, AI becomes both an opportunity and a source of inequality, reinforcing divides between researchers with access to digital infrastructures and those operating in less technologically equipped environments.

The risks associated with unregulated AI use have attracted growing attention globally. AI is a major disruptor of traditional plagiarism-detection systems which highlights the increasing difficulty of distinguishing between human-authored and machine-generated scientific text. Without institutional protocols requiring disclosure of AI involvement or providing methodological safeguards, Moroccan universities face heightened risks of ghost-writing, fabricated citations, algorithmically generated misinformation, and reduced cognitive authorship: issues already documented in international higher education contexts.

In addition to integrity concerns, universities must also address epistemic risks. AI-generated research outputs may reproduce biases embedded in training datasets, distort theoretical frameworks, or generate misleading interpretations of scientific literature. These are risks identified by the UNESCO International Institute for Higher Education in Latin America and the Caribbean [30] in its global assessment of AI in universities. For Moroccan institutions, which increasingly encourage international publication and competitiveness, these

[29] Jamil Salmi, Alice Amegah and Aarya Rajendra Shinde, 'Digital Skills, Innovation, and Economic Transformation: Opportunities and Challenges for Sub-Saharan Africa' (World Bank Group 2025) Education Working Paper 15 <https://thedocs.worldbank.org/en/doc/a607bb6e3b76d2be0f3db8db34dcf73e-0140022025/related/5EDU-WP-15-Digital-skills-innovation-and-economic-transformation.pdf> accessed 15 April 2026.

[30] UNESCO International Institute for Higher Education in Latin America and the Caribbean (IESALC) 'ChatGPT and Artificial Intelligence in Higher Education: Quick Start Guide' (UNESCO 2023)<https://unesdoc.unesco.org/ark:/48223/pf0000386670> accessed 24 June 2026.

risks may compromise the credibility of research outcomes if adequate oversight mechanisms are not implemented.

To address these challenges, Moroccan universities would benefit from advancing toward structured institutional governance of AI in research. International models suggest the establishment of AI ethics committees within universities, explicit disclosure requirements in theses and publications, updated academic integrity policies that distinguish AI assistance from AI substitution, and capacity-building programs on AI literacy for supervisors and doctoral candidates.[31] Integrating modules on responsible AI in doctoral training would further reinforce epistemic accountability and foster a culture of responsible digital scholarship.

Ultimately, the university level represents the most strategic locus for regulating the academic use of AI in Morocco. While national strategies set broad orientations, it is within universities that ethical norms, research standards and evaluation processes must evolve to ensure the transparent, responsible and credible integration of AI into scientific inquiry. By adopting proactive and structured governance mechanisms, Moroccan universities can position themselves not only as users of AI technologies, but as leaders in shaping an ethical, methodologically rigorous and innovation-driven academic ecosystem.

Conclusion

The comparative analysis of university policies on the use of AI in Bulgaria and Morocco reveals both convergence and divergence in their institutional responses to this emerging ethical and regulatory challenge. Despite the growing integration of AI tools in research and academic writing, both countries remain in an early stage of policy formalisation. In Bulgaria, a few universities have begun developing explicit internal regulations, focusing on responsible use, human oversight, and academic integrity, while others continue to rely on traditional anti-plagiarism frameworks that were not designed to address the complexities of generative AI.

[31] Organisation for Economic Co-operation and Development (OECD) 'OECD Digital Education Outlook*2026: Exploring Effective Uses of Generative AI in Education' (*OECD Publishing 2026) <https://doi.org/10.1787/062a7394-en> accessed 24 June 2026.

In Morocco, the absence of binding institutional frameworks similarly leads universities to apply general research ethics and integrity rules. However, national efforts such as the Artificial Intelligence Strategy 2023–2030[32] demonstrate political awareness of the importance of responsible AI governance. The challenge now lies in translating this strategic vision into concrete institutional mechanisms such as AI disclosure requirements, ethical committees, and researcher training programs to ensure transparency, originality, and accountability in AI-assisted scientific research.

At both national and institutional levels, the findings underline the need for a comprehensive governance framework that aligns ethical standards, technological innovation, and academic integrity. Establishing clear disclosure protocols, sustainability principles, and AI literacy programs across universities will not only safeguard research credibility but also foster a culture of responsible digital transformation. Ultimately, the sustainable and ethical integration of AI in research requires coordinated action between governments, universities, and academic communities to balance innovation with integrity and to ensure that AI remains a tool for scientific advancement rather than a source of ethical ambiguity.

Interaction between stakeholders should be at all possible levels, not only nationwide, but also worldwide. In addition, it should take into account the specific features of individual areas of scientific research. For example, in the field of legal science, a very important role in the development of appropriate rules and policies for the use of artificial intelligence can be played by organisations such as ELFA, which create the necessary conditions for regular exchange of ideas and experience between a large number of law schools from dozens of countries.

Building on the comparative insights between Bulgaria and Morocco, several policy measures can be proposed to enhance the ethical and sustainable governance of AI in scientific research. The first is for both countries to develop national AI governance frameworks for research specifically addressing the use of AI in research activities. These frameworks should go beyond general digital strategies by setting binding standards on data transparency, disclosure of AI-assisted content, and the accountability of researchers for algorithmic outputs. Such frameworks must be aligned with

[32] Above (n19).

international guidelines, including the OECD Principles on AI[33] and the UNESCO Recommendation on the Ethics of AI,[34] to ensure global consistency.

Another measure at university level is the creation of AI ethics committees. Each university should create or adapt existing research ethics committees to include AI governance expertise. These bodies would evaluate AI-assisted projects, assess the risks of bias or data misuse, and ensure that human oversight remains central to research processes. Embedding AI ethics at the institutional level would bridge the current gap between technological innovation and moral responsibility.

Thirdly, mandatory disclosure and transparency requirements need to be established. Academic institutions should require researchers and students to declare any use of AI tools in writing, data analysis, or experimental design. Disclosure statements, appended to theses or publications, would enhance research credibility and prevent unintentional plagiarism or misattribution of authorship.

Another important measure is to integrate AI literacy and research ethics into doctoral training. Graduate programmes should include compulsory modules on AI ethics, data integrity, and algorithmic accountability. Training the next generation of researchers in the responsible use of AI will ensure sustainable adoption and foster a culture of ethical innovation. Promotion of international cooperation and benchmarking is also of major importance. Regional cooperation among European, MENA, and African universities should be strengthened to share best practices and co-develop guidelines for responsible AI in research. Joint initiatives and comparative studies can accelerate institutional learning and harmonise governance models across contexts.

Last, but not least, is to ensure sustainable and inclusive AI practices. Both Bulgaria and Morocco should encourage the development of green and socially responsible AI research ecosystems. Policies must consider the environmental footprint of AI computation and promote equitable access to digital infrastructure and training opportunities for researchers from underrepresented regions.

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[33] OECD, 'AI Principles' (*OECD* 2024) <https://www.oecd.org/en/topics/ai-principles.html> accessed 15 April 2026.
[34] Above (n23).

In essence, effective AI governance in academia requires a shift from reactive regulation to proactive stewardship. By combining clear ethical standards, institutional accountability, and capacity-building, Bulgaria and Morocco can move toward a shared vision of AI that strengthens scientific integrity, promotes innovation, and ensures that technology serves the advancement of knowledge rather than its distortion.