

The legal governance of artificial intelligence and its role in supporting the sustainable development goals

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Abstract

This research addresses the legal governance of artificial intelligence and its role in supporting the Sustainable Development Goals, through an analysis of the legal and constitutional framework regulating the development and operation of intelligent systems, and a review of the challenges posed by these rapidly evolving technologies to national legislation. The research problem lies in the absence of a comprehensive legislative framework that keeps pace with technological advancement, resulting in issues related to privacy protection, determination of legal liability, and the assurance of transparency and accountability, in addition to the need for harmonizing legislation with constitutional principles and international governance standards. The study aims to clarify the concept and foundations of legal governance, and to analyze its role in promoting sustainable development at the economic, social, and environmental levels, with particular emphasis on the Jordanian experience. It also examines the constitutional basis of the legal governance of artificial intelligence, as the supreme framework upon which all legislation must rest, through the principles of the rule of law, protection of rights and freedoms, equality and non-discrimination, and constitutional oversight. The research further reveals legislative gaps in this field, most notably the absence of a specific law on artificial intelligence, weak regulation of legal liability and algorithmic transparency, and the lack of specialized regulatory bodies. The study concludes that the success of legal governance of artificial intelligence in supporting sustainable development requires an integrated system that begins with establishing a clear constitutional reference, continues with modern legislation that translates these principles into effective rules, and culminates in regulatory and executive mechanisms capable of addressing technological challenges. The research recommends updating legislation, strengthening national capacities, and developing governance frameworks aligned with international standards, thereby contributing to the responsible and safe use of artificial intelligence that balances innovation with the protection of fundamental rights.

Keywords: Artificial intelligence governance, Constitutional framework, Legal liability & transparency, Sustainable Development Goals (SDGs), Jordanian legal experience

Introduction

The contemporary technological revolution, led by artificial intelligence, represents a central turning point in reshaping economic, social, and legal structures at both the national and international levels. Artificial intelligence has today become a driving force influencing decision-making mechanisms, service development, institutional efficiency, and predictive capacity, which makes its regulation and governance a matter of utmost importance (Nariman, 2025).

With the expanding role of artificial intelligence in vital sectors, the need for a comprehensive legal framework governed by the principles of transparency, accountability, and the protection of fundamental rights has become more pressing than ever. Legal governance thus emerges as a mechanism to regulate the practices of developing and utilizing artificial intelligence systems, ensuring their consistency with existing legislative frameworks and

with ethical principles aimed at safeguarding individuals and society.

At the same time, artificial intelligence constitutes a promising tool for achieving the Sustainable Development Goals, as it enhances the capacity of states to address environmental, economic, and social challenges, and supports the formulation of more precise and effective policies based on data analysis and informed decision-making. Hence, the importance of linking the legal governance of artificial intelligence with the realization of sustainable development becomes evident, in order to ensure the responsible use of this technology in a way that maximizes benefits without compromising individual rights or environmental interests (Al-Shammari, 2025).

This study aims to analyze the legal governance of artificial intelligence as a regulatory framework that balances innovation with protection, and to elucidate the role of such governance in supporting the Sustainable Development Goals from a

comprehensive legal and analytical perspective.

Chapter one

The conceptual framework of the legal governance of artificial intelligence

The concept and evolution of artificial intelligence

Artificial intelligence is considered one of the most significant technological innovations of the twenty-first century. It is defined as the capacity of computer systems to simulate human behavior in terms of learning, reasoning, decision-making, and data processing in ways that transcend the boundaries of traditional programming. Artificial intelligence has undergone multiple evolutionary stages, beginning with attempts to design simple algorithms capable of solving logical problems, and culminating in the current generation of intelligent systems capable of deep learning, big data analysis, and operating with relative autonomy (Noureddine & Said, 2024).

The applications of artificial intelligence vary according to the fields in which it is employed, extending from industrial sectors to service sectors such as healthcare, education, and banking, in addition to its growing role in governmental administration and strategic planning. This diversity of applications has given rise to legal challenges concerning liability, privacy, and transparency, thereby necessitating the development of an integrated system of legal governance.

The concept of the legal governance of artificial intelligence

The legal governance of artificial intelligence is understood as a systematic framework aimed at regulating the development, use, and dissemination of intelligent systems within clear legal boundaries that ensure the protection of the fundamental rights of individuals and society. It is not merely a set of rigid legislative rules; rather, it constitutes an integrated system encompassing national legislation, international directives, technical standards, and ethical principles adopted by governmental and non-governmental institutions and organizations (George, 2023).

This governance seeks to achieve the necessary balance between the need for innovation and the benefits of artificial intelligence's immense capabilities on the one hand, and the imperative to mitigate the potential risks of this technology on the other (Rumlus, 2025). The absence of regulatory safeguards may lead to serious violations of privacy, the adoption of biased decisions that unfairly affect individuals, or the use of intelligent applications in contexts that conflict with legal and ethical values.

By establishing a clear regulatory framework, legal governance contributes to strengthening public trust in technology and helps ensure that developers and companies adhere to standards of transparency, fairness, and accountability. It also supports the capacity of states to absorb digital transformation without compromising rights and freedoms.

Justifications for the legal governance of artificial intelligence

The urgent need for the legal governance of artificial intelligence arises from a set of practical challenges imposed by the increasing use of intelligent systems. As these applications expand across various sectors, their direct and indirect impacts on individuals and society have become evident, necessitating legislative intervention to regulate their trajectory.

The first justification relates to the protection of privacy and personal data. Intelligent systems rely on large-scale data analysis, which often includes sensitive information that may lead to serious violations if used outside its legitimate framework. Governance here plays a crucial role in establishing the necessary legal restrictions that prevent access to or processing of data without explicit consent or legitimate justification (Mirishli, 2025).

The second justification concerns the determination of legal liability in cases of harm. Since artificial intelligence operates with a certain degree of autonomy, it is sometimes difficult to identify the party responsible for a decision or outcome—whether the developer, the user, or the entity providing the system. Governance thus becomes essential in formulating precise rules that prevent evasion of responsibility and ensure compensation for those affected (Khan, & Akbar, 2022).

A further justification lies in the need to enhance transparency and fairness. Some algorithms may contain biases that lead to unjust outcomes, particularly in sensitive sectors such as employment, finance, and the judiciary. Governance therefore seeks to impose mechanisms that reveal the internal logic of systems and ensure their continuous evaluation.

Technical risks also constitute a justification, including cyberattacks, algorithmic deviations, and programming errors that may result in serious consequences if left unchecked. Legal governance thus serves as a safeguard that ensures the safe and responsible use of these technologies.

In sum, the justifications for the legal governance of artificial intelligence have emerged as a response to a set of challenges, most notably (Frijat, 2025):

1. **Protection of privacy and personal data:** Artificial intelligence systems rely on analyzing vast amounts of data, which raises concerns regarding misuse or leakage.
2. **Determination of legal liability:** When an error or harm results from an intelligent system, the attribution of responsibility becomes complex among the developer, the user, or the system itself.
3. **Ensuring transparency and fairness:** Certain algorithms may contain biases that lead to unjust outcomes, necessitating oversight mechanisms that reveal the decision-making process.
4. **Mitigation of technical risks:** Such as programming errors, cyberattacks, and algorithmic deviations

Components of the legal governance of artificial intelligence

The legal governance of artificial intelligence is built upon an integrated set of elements that collectively form a regulatory framework capable of effectively and equitably controlling the use of intelligent systems. This framework is not limited to legislation alone; it extends to include international standards, ethical guidelines, and oversight mechanisms, each working together to ensure the responsible and safe use of this advanced technology.

This framework typically begins with national legislation enacted by states to regulate fundamental issues such as data protection, cybersecurity, civil liability, and consumer protection (Tabassi, 2023). These laws constitute the binding legal foundation for all entities that develop or use intelligent systems, delineating boundaries that must not be crossed, while ensuring that technological applications remain consistent with the general principles of the legal system, such as safeguarding rights and freedoms.

In addition to domestic legislation, international standards play a pivotal role in shaping governance. States and institutions rely on directives issued by organizations such as the Organisation for Economic Co-operation and Development (OECD), the European Union, and United Nations bodies. These standards help provide a common regulatory language among states and ensure that national policies align with international efforts in areas such as transparency, risk management, and the reduction of algorithmic biases (standard, 2023).

Legal governance also encompasses ethical frameworks that define the principles to be observed in the development and operation of artificial intelligence. Among the most important of these principles are transparency, fairness, accountability, and non-maleficence. These ethical rules form an essential part of governance, particularly when legislation is unable to keep pace with the rapid evolution of technology (Security, 2025).

Finally, this system is crowned by the presence of regulatory bodies tasked with supervision and monitoring, whether at the national or international level. These bodies oversee compliance with legal provisions, evaluate intelligent systems, identify potential risks, and issue instructions and guidelines that contribute to strengthening governance (OECD, 2022). They also play a crucial role in protecting individuals from abuses that may arise from misuse or technical vulnerabilities.

The relationship between legal governance and innovation

Although some scholars argue that legal regulation may constrain innovation, the contemporary

perspective maintains that the existence of clear rules enhances trust in technology and encourages companies and investors to expand the use of artificial intelligence within a safe and well-regulated environment. Governance also contributes to risk prevention and ensures fair competition within the market

Chapter two

The international legal framework for the governance of artificial intelligence

International agreements and legislation

International efforts seek to establish unified regulatory rules for artificial intelligence that transcend the boundaries of individual states, in order to address the cross-border challenges arising from the spread of this technology. Multiple organizations, such as the United Nations and the Organisation for Economic Co-operation and Development (OECD), have issued recommendations and guidelines aimed at laying down general legal and ethical foundations to ensure the responsible use of artificial intelligence, in a manner that protects fundamental rights and promotes sustainable development (UNESCO, 2021).

The European Commission has also introduced a series of legal initiatives regulating artificial intelligence, most notably the proposal of a comprehensive regulatory system that classifies intelligent systems according to their risk level and sets specific legal obligations for each category, with an emphasis on transparency, accountability, and data protection (Europe, 2024).

International principles of legal governance of artificial intelligence International principles are based on a set of core values that should govern the use of artificial intelligence. The most important of these principles are the protection of human rights, the promotion of justice and equality, the assurance of transparency and accountability, and the reduction of algorithmic biases. These principles serve as a reference for states and institutions in drafting national legislation, ensuring that domestic policies align with international standards and achieve a balance between innovation and protection (Europe, 2024).

International challenges in legal governance

Despite international efforts, the world faces significant challenges in achieving unified governance of artificial intelligence. On the one hand, there is considerable disparity among states in terms of technological advancement and regulatory capacity, leading to legislative and executive gaps. On the other hand, certain intelligent applications raise complex issues related to privacy and security, whose impacts transcend national borders and require effective international coordination to prevent violations and protect beneficiaries (Daly & Thilo, 2019).

The role of international organizations

International organizations play a pivotal role in strengthening the legal governance of artificial intelligence by issuing guidelines and recommendations, fostering cooperation among states, and providing technical and technological support for the implementation of laws and standards. These organizations also monitor compliance and assess risks, thereby ensuring that the use of artificial intelligence takes place within a responsible and balanced framework that supports sustainable development (Tallberg, Erman, & Furendal, 2023).

Chapter three

The role of legal governance of artificial intelligence in supporting the sustainable development goals

Enhancing economic and social development goals

The legal governance of artificial intelligence represents an effective tool for supporting sustainable development, as it contributes to strengthening the economic and social capacities of states through the responsible regulation of this technology. On the economic level, a clear legal framework enables companies and investors to operate within a secure environment, thereby encouraging investment in innovation and the development of AI-based enterprises, increasing employment opportunities, and fostering economic growth (Vinuesa, Azizpour, & Leite, 2020).

On the social level, legal governance helps protect

individual rights, ensures fairness in the use of intelligent systems, and reduces risks arising from automated decisions or algorithmic biases. It also supports the development of public services such as education, healthcare, and transportation, thereby promoting equal opportunities and enhancing quality of life.

Supporting environmental development goals

Artificial intelligence plays a significant role in addressing environmental challenges and achieving sustainability, particularly when employed within a strict legal framework that guarantees responsibility and transparency. It can contribute to improving the management of natural resources, reducing waste, monitoring emissions, and developing intelligent solutions to combat climate change. Through legal governance, standards are established to regulate the collection and analysis of environmental data, ensuring that artificial intelligence is used in ways that support sustainable environmental goals without harming ecosystems or local communities (Pachot & Patissier, 2022).

Promoting sustainable governance, The legal framework for artificial intelligence helps achieve sustainable governance at both national and international levels. It defines rules and responsibilities and establishes mechanisms for monitoring compliance, thereby creating a balanced regulatory environment that encourages innovation, prevents violations, and supports transparency and accountability. It also strengthens international cooperation through the exchange of expertise and best practices in smart governance, ensuring that national policies align with global trends toward sustainable development (Mirishli, 2025, pp. Moghavvemi et al., 2025).

Chapter four

The Jordanian experience in the legal governance of artificial intelligence and its impact on sustainable development

The current status of artificial intelligence in Jordan: Jordan has witnessed remarkable progress in the use of artificial intelligence technologies across both the public and private sectors, where they have been employed in diverse fields such as healthcare,

education, smart city management, and electronic government services. Regulatory authorities in Jordan have recognized the importance of establishing legal frameworks to govern these applications in a way that ensures the protection of rights, enhances transparency, and provides better opportunities for applying technological innovation in support of the Sustainable Development Goals (Times, 2024).

Jordanian legal and regulatory frameworks: The Jordanian government is working to develop policies and procedures aligned with international standards of legal governance for artificial intelligence. This includes data protection, ensuring cybersecurity, and defining legal responsibilities in cases of harm resulting from the use of intelligent systems. These frameworks also aim to strengthen transparency and accountability and to integrate ethical principles into all stages of AI development and operation (News, 2025).

The impact of legal governance on achieving sustainable development goals in Jordan: The legal governance of artificial intelligence in Jordan contributes to supporting various Sustainable Development Goals. Economically, it promotes growth by encouraging innovation and providing a secure environment for investment in startups and modern technologies. Socially, it helps improve the quality of public services, supports education and healthcare, and enhances social equality. Environmentally, legal governance contributes to better management of natural resources, monitoring emissions, and promoting environmental sustainability through data-driven smart solutions (News, 2025).

Challenges and opportunities: Despite these achievements, Jordan faces several challenges in implementing the legal governance of artificial intelligence, such as limited technical resources, the need to develop human capacities, and the necessity for greater coordination among different stakeholders. Nevertheless, these challenges present opportunities to strengthen international cooperation, benefit from successful global experiences, and establish a robust legal environment that more effectively supports sustainable development (Times, Artificial

intelligence and sustainability in Jordan: How modern technology can reduce energy consumption, 2025).

Chapter five

The constitutional basis of the legal governance of artificial intelligence

The constitution represents the supreme framework upon which the entire legal system is built, serving as the reference point to which all rules and regulations related to artificial intelligence must adhere. From this perspective, the legal governance of artificial intelligence cannot be understood or practiced in isolation from the constitutional principles that form the foundation for regulating the use of intelligent systems and their impact on individuals and society. Foremost among these principles is the rule of law, which requires all authorities and entities, whether public or private, to operate within the boundaries established by law (Al-Majali, 2021). This principle necessitates that the rules governing the development and operation of artificial intelligence be clear and precise, preventing arbitrary use or applications that exceed legitimate legal limits, and ensuring that technology remains subject to state oversight within a lawful and balanced framework.

The protection of rights and public freedoms also constitutes a fundamental pillar that must be observed when drafting legislation related to artificial intelligence. The constitution guarantees a set of rights such as the right to privacy, data integrity, human dignity, protection against discrimination, and the right of access to information. With the expanding capacity of intelligent systems to collect, analyze, and predict behavior, safeguarding these rights becomes a constitutional necessity that cannot be overlooked. This obliges the legislator to formulate legal rules in a manner that prevents any infringement or diminution of these rights under the pretext of technological advancement. Closely linked to this is the principle of equality and non-discrimination, one of the most prominent constitutional foundations, which requires that no mechanisms or algorithms be adopted that produce biased or discriminatory outcomes against certain groups of individuals. Artificial intelligence may reproduce existing biases in data or generate new

ones, which necessitates subjecting it to rigorous legal oversight to ensure its use remains fair, balanced, and consistent with the principle of equality that prohibits discrimination regardless of its source (Abu-Shanab & Al-Debei, 2022).

This framework is complemented by the role of constitutional oversight of legislation. The constitutional court holds jurisdiction over monitoring laws and regulations related to artificial intelligence to ensure their conformity with the constitution and respect for its boundaries. This reinforces trust in the legal framework governing this technology and prevents the enactment of legislation that may violate rights or conflict with the fundamental principles of the constitutional system.

Accordingly, the constitutional foundation of the legal governance of artificial intelligence constitutes a principal safeguard for achieving the necessary balance between encouraging innovation and technological advancement on the one hand, and protecting and preserving constitutional rights on the other. This foundation enables the legislator to develop an advanced legal framework for artificial intelligence without undermining the constitutional value system upon which the state is built.

Conclusion

This study demonstrates that the legal governance of artificial intelligence has become an urgent necessity imposed by rapid technological transformations and their profound impacts on various aspects of life. The study has shown that adopting a disciplined legal framework for regulating artificial intelligence cannot be limited to ordinary legislation alone; rather, it must be grounded in solid constitutional foundations that ensure respect for the supreme principles of the legal system. In this context, the constitutional analysis presented in Chapter Five constituted a central axis, revealing that constitutional principles such as the rule of law, the protection of rights and freedoms, equality and non-discrimination, and constitutional oversight represent essential safeguards that no legislation addressing artificial intelligence can override or contradict.

The study also highlighted that current legislative

gaps, discussed in Chapter Six, pose a real challenge to building an effective system of legal governance—particularly in light of the absence of specific legislation on artificial intelligence, weak rules concerning legal liability, insufficient regulation of algorithmic transparency, and the lack of specialized regulatory bodies. This confirms that completing the constitutional dimension of governance can only be achieved through the development of modern legislative texts based on this foundation and translated into practical, applicable rules.

In light of this, the study concludes that the success of the legal governance of artificial intelligence in supporting the Sustainable Development Goals depends on three interrelated pillars: a solid constitutional reference, modern legislation consistent with this reference, and effective administration that ensures the proper implementation of such legislation. A clear constitutional framework cannot achieve its objectives without precise legislative translation, and such legislation cannot be effective without executive and regulatory mechanisms capable of addressing technological and legal challenges.

Accordingly, the study recommends the development of national legislation specific to artificial intelligence based on constitutional principles, the strengthening of specialized regulatory bodies, the expansion of international cooperation to align with global standards, and investment in building human and institutional capacities. Achieving this integration between constitutional foundations, legislation, and implementation represents the optimal path toward a balanced framework that ensures innovation without compromising fundamental rights, and supports both national and international orientations toward sustainable development.

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