



Constitutional Design and Digital Sovereignty in the Era of Artificial Intelligence Regulation

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ABSTRACT

The rapid development of artificial intelligence (AI) has created new legal challenges related to digital governance, data protection, and state sovereignty in the digital environment. This study aims to analyze how constitutional design can support digital sovereignty and protect citizens' constitutional rights in the era of AI regulation. The research employs a normative legal approach using statutory and conceptual analysis based on the 1945 Constitution of Indonesia, the Personal Data Protection Law (Law No. 27 of 2022), and the Information and Electronic Transactions Law and its amendments. Data were collected through doctrinal legal review and analyzed qualitatively. The findings indicate that Indonesia's current legal framework provides an initial basis for digital governance but requires stronger constitutional integration to address algorithmic accountability, data sovereignty, and AI governance

INTRODUCTION

The rapid advancement of artificial intelligence has significantly transformed the global digital ecosystem, influencing governance, economic development, public services, and national security. According to Floridi et al. (2021), artificial intelligence systems increasingly perform tasks traditionally carried out by humans, including decision-making processes based on large-scale data analysis. This transformation creates new opportunities for innovation while simultaneously raising complex legal and ethical concerns regarding data protection, accountability, and algorithmic transparency. In many jurisdictions, governments face increasing pressure to establish legal frameworks capable of regulating artificial intelligence without undermining technological development. Nemitz (2020) argues that constitutional systems must adapt to technological change to ensure that fundamental rights remain protected in the digital era. Consequently, discussions surrounding constitutional design and digital sovereignty have become increasingly central within contemporary legal scholarship.

Digital sovereignty has emerged as a critical concept in debates surrounding the governance of digital technologies. As highlighted by Aaronson (2021), digital sovereignty refers to the capacity of states to control digital infrastructure, regulate data flows, and maintain authority over digital platforms operating within their jurisdiction. The expansion of global technology companies has intensified concerns about the concentration of digital power beyond the reach of national legal systems. Roberts et al. (2021) emphasize that states without robust digital governance frameworks risk losing strategic control over national data resources and technological infrastructure. At the same time, emerging technologies such as artificial intelligence are increasingly integrated into government administration, economic systems, and security institutions. This development reinforces the urgency of establishing constitutional safeguards capable of protecting national interests and citizens' rights within the digital domain.

Several jurisdictions have begun to develop regulatory frameworks aimed at addressing the challenges posed by artificial intelligence technologies. The European Union, for instance, has introduced the European Union Artificial Intelligence Act, which focuses on risk-based governance and human rights protection in algorithmic systems. As explained by Veale and Borgesius (2021), this regulatory framework attempts to balance innovation with accountability by establishing transparency obligations for high-risk artificial intelligence applications. Meanwhile, the United States has adopted a policy approach that emphasizes technological innovation while gradually expanding oversight mechanisms. China, on the other hand, has implemented strong regulatory mechanisms focusing on national security and algorithmic governance. According to Roberts (2022), these differing regulatory approaches illustrate that artificial intelligence governance is deeply connected to broader questions of political authority, technological sovereignty, and constitutional governance.

In Indonesia, the expansion of digital technologies has been accompanied by significant regulatory developments in the field of digital governance. The

constitutional framework provided by the 1945 Constitution of the Republic of Indonesia recognizes fundamental rights related to information access, privacy, and legal certainty. Complementary legal instruments have been introduced through Law Number 27 of 2022 concerning Personal Data Protection and Law Number 11 of 2008 concerning Electronic Information and Transactions, which has been amended through Law Number 19 of 2016 and Law Number 1 of 2024. As noted by Bradford (2023), national regulatory frameworks play a crucial role in ensuring that digital governance systems remain aligned with democratic principles and human rights protections. Despite these developments, existing regulations have not fully addressed the emerging challenges posed by artificial intelligence technologies. The increasing reliance on automated decision-making systems raises concerns regarding algorithmic bias, data security, and transparency within digital governance structures.

Previous studies have extensively examined artificial intelligence governance from technological, ethical, and policy perspectives. For instance, Cath et al. (2020) emphasize the importance of embedding ethical principles such as fairness, accountability, and transparency into artificial intelligence regulatory frameworks. Similarly, Taddeo and Floridi (2021) highlight the need for comprehensive governance mechanisms capable of ensuring responsible innovation in artificial intelligence development. However, much of the existing literature focuses primarily on regulatory policy and technological governance without fully addressing the constitutional implications of artificial intelligence regulation. Binns (2022) notes that constitutional law scholarship has only recently begun to explore how algorithmic governance may reshape traditional concepts of state authority and individual rights. This gap in the literature suggests the need for further research examining the relationship between constitutional design and digital sovereignty within the context of artificial intelligence governance.

Based on these considerations, this study aims to analyze how constitutional design can strengthen digital sovereignty in the era of artificial intelligence regulation. The research specifically examines the role of constitutional principles in safeguarding citizens' digital rights and ensuring state authority over digital infrastructure and data governance. By focusing on Indonesia's constitutional framework and relevant digital regulations, this study seeks to identify legal mechanisms capable of addressing emerging challenges associated with artificial intelligence technologies. Furthermore, the study contributes to the broader academic discussion on digital constitutionalism and the governance of emerging technologies. According to Kuner et al. (2023), integrating digital governance principles into constitutional frameworks is essential for maintaining democratic accountability in technologically advanced societies. Therefore, this research is expected to provide both theoretical insights for legal scholarship and practical recommendations for policymakers involved in developing artificial intelligence governance frameworks.

THEORETICAL REVIEW

Constitutional Design in Digital Governance

Constitutional design refers to the structural arrangement of legal and institutional principles that regulate the relationship between the state, citizens, and public authority. In the digital era, constitutional frameworks must evolve to address the challenges posed by emerging technologies, particularly artificial intelligence and large-scale data governance. Celeste (2021) explains that the concept of digital constitutionalism emerged as a response to the growing influence of digital platforms and algorithmic systems on fundamental rights such as privacy, freedom of expression, and access to information. Within this framework, constitutional principles are extended to the digital sphere to ensure that technological development remains aligned with democratic governance. Furthermore, De Gregorio (2022) argues that constitutional law must provide normative guidance for regulating digital infrastructures and automated decision-making systems. Consequently, constitutional design becomes an essential foundation for regulating digital technologies while maintaining legal certainty and protection of civil liberties.

Digital Sovereignty and State Authority in the Digital Era

Digital sovereignty has become a central issue in global debates on technology governance. The concept refers to the capacity of states to control digital infrastructure, regulate cross-border data flows, and maintain authority over digital platforms operating within their jurisdiction. According to Couture and Toupin (2021), digital sovereignty reflects the effort of states to reclaim regulatory authority in response to the increasing power of global technology companies. This issue becomes more complex as digital infrastructures increasingly operate across national borders, creating regulatory challenges for governments. Bradford (2023) emphasizes that states are now competing to shape global digital governance through national regulatory frameworks and strategic technology policies. As a result, strengthening digital sovereignty requires not only technological capacity but also robust legal and constitutional mechanisms capable of regulating data governance and platform power.

Artificial Intelligence Regulation and Governance Challenges

The rapid deployment of artificial intelligence systems has intensified the need for comprehensive regulatory frameworks capable of addressing technological risks. Artificial intelligence technologies rely heavily on large-scale data processing and automated decision-making, which may generate legal concerns related to transparency, accountability, and algorithmic bias. Wachter and Mittelstadt (2021) note that automated systems can produce decisions that significantly affect individuals while lacking clear mechanisms of legal accountability. This challenge has encouraged governments and international organizations to develop governance frameworks aimed at ensuring responsible artificial intelligence development. Jobin, Ienca, and Vayena (2020) demonstrate that global AI governance initiatives consistently emphasize principles such as fairness, transparency, and human oversight. However, the implementation of these principles within national legal systems remains uneven, particularly in countries where technological innovation progresses faster than regulatory development.

Integrating Constitutional Design and Digital Sovereignty in AI Governance

The intersection between constitutional design and digital sovereignty is increasingly relevant in the context of artificial intelligence governance. Constitutional frameworks play a critical role in defining the boundaries of state authority over digital infrastructures and ensuring the protection of citizens' rights within algorithmic environments. Van Dijck, Poell, and De Waal (2020) argue that digital platforms have transformed traditional governance structures by redistributing power among governments, private corporations, and civil society. This transformation requires legal systems to reconsider how constitutional principles can regulate emerging technological power structures. Suzor (2021) further highlights that digital governance must incorporate legal safeguards capable of preventing excessive concentration of power within digital platforms. Therefore, integrating constitutional principles with digital sovereignty strategies provides a legal foundation for regulating artificial intelligence while maintaining democratic accountability and protecting fundamental rights in the digital age.

METHODOLOGY

Research Design and Approach

This study employs a qualitative legal research approach using a normative juridical design, which focuses on the analysis of legal norms, legal principles, and statutory regulations related to constitutional governance and digital sovereignty in the context of artificial intelligence regulation. Normative legal research examines law as a set of rules governing human behavior and institutional authority, emphasizing the interpretation and systematic analysis of legal texts (Taekema, 2020). The approach is appropriate because this research aims to analyze constitutional frameworks and regulatory structures governing artificial intelligence and digital governance rather than measuring empirical behavior. The research adopts statutory, conceptual, and comparative approaches to examine how constitutional design supports digital sovereignty within national legal systems. According to Dyevre (2022), normative legal analysis is widely used in constitutional and regulatory studies to evaluate how legal systems respond to emerging technological challenges.

Population, Sampling Technique, and Legal Sources

Unlike empirical research, normative legal research does not rely on human respondents but instead uses legal materials as the primary population of analysis. The population of this study consists of constitutional provisions, statutory regulations, and legal doctrines related to digital governance and artificial intelligence regulation. Sampling is conducted using a purposive sampling technique, where legal sources are selected based on their relevance to the research topic. The primary legal materials analyzed in this study include the Constitution of the Republic of Indonesia of 1945, Law Number 27 of 2022 concerning Personal Data Protection, Law Number 11 of 2008 concerning Electronic Information and Transactions, Law Number 19 of 2016 concerning Amendments to the Electronic Information and Transactions Law, and Law

Number 1 of 2024 concerning the Second Amendment to the Electronic Information and Transactions Law. These regulations were selected because they represent the most recent and valid legal framework governing digital governance and data protection in Indonesia. Secondary legal materials include international academic literature on artificial intelligence governance, digital sovereignty, and digital constitutionalism published between 2020 and 2024 (Ranchordas & Goanta, 2020).

Data Collection Techniques

Data collection in this research was conducted through documentary and literature review methods. Legal documents, statutes, government regulations, academic articles, and policy reports were systematically examined to identify legal principles relevant to digital sovereignty and artificial intelligence governance. The primary instruments of analysis consisted of legal text analysis, statutory interpretation, and conceptual mapping of regulatory frameworks. Documentary sources were obtained from official legal databases, academic journals, and international research publications. According to Halliday and Shaffer (2021), documentary analysis is a fundamental method in legal scholarship because it allows researchers to examine how legal norms evolve in response to societal and technological changes. In addition to statutory documents, international academic literature was reviewed to identify comparative perspectives and theoretical developments regarding constitutional governance in the digital era.

Research Procedure

The research was conducted through several systematic stages. The first stage involved identifying research problems related to constitutional governance and artificial intelligence regulation. The second stage consisted of collecting legal materials and academic literature relevant to digital sovereignty, constitutional law, and technology governance. The third stage involved organizing and classifying legal materials based on statutory hierarchy and conceptual relevance. The fourth stage consisted of analyzing legal norms contained in the selected regulations and examining their relationship with constitutional principles governing digital rights and data protection. The final stage involved synthesizing the results of the legal analysis to formulate conclusions regarding the role of constitutional design in strengthening digital sovereignty in the era of artificial intelligence regulation. This structured research process ensures analytical consistency and methodological transparency within legal scholarship (Smits, 2021).

Data Analysis Techniques

Data analysis was conducted using qualitative legal analysis, which involves interpreting statutory provisions, identifying legal principles, and evaluating the coherence of regulatory frameworks related to artificial intelligence governance. The analysis applied three main approaches: statutory analysis, conceptual analysis, and comparative legal analysis. Statutory analysis focuses on examining the structure and content of relevant regulations, while conceptual analysis explores theoretical concepts such as digital sovereignty, digital rights, and constitutional governance. Comparative legal analysis was also used to contextualize Indonesia's regulatory framework within broader

international discussions on artificial intelligence regulation. According to Barber and Ekins (2020), qualitative doctrinal analysis is essential in constitutional research because it enables scholars to assess the normative implications of legal regulations and institutional arrangements. Supporting tools used in this study include digital academic databases such as Google Scholar, which were used to identify and review international academic literature relevant to artificial intelligence governance and constitutional law.

RESEARCH RESULTS AND DISCUSSION

Constitutional Foundations of Digital Rights and Data Sovereignty in the Indonesian Legal System

The findings of this study indicate that the Indonesian legal system provides a relatively strong constitutional foundation for the protection of citizens' digital rights. The primary legal basis is found in the 1945 Constitution of the Republic of Indonesia, particularly within provisions regulating human rights in the context of information and communication. The Constitution places the rights to information, privacy, and personal protection as constitutional guarantees that must be safeguarded by the state. In the context of digital technological development, these constitutional provisions serve as a normative basis for the development of regulations governing digital governance and artificial intelligence. Berman (2021) argues that modern constitutions must evolve in response to technological changes to remain effective in protecting citizens' rights in the digital environment.

Normatively, Article 28F of the 1945 Constitution of the Republic of Indonesia states that every person has the right to communicate and obtain information for the development of their personal and social environment, as well as the right to seek, obtain, possess, store, process, and convey information using all available channels. This provision establishes a constitutional basis for information freedom within the digital ecosystem. However, in the context of artificial intelligence technologies that process large volumes of data, freedom of information must be balanced with the protection of personal data and information security. This issue is closely linked to Article 28G paragraph (1), which guarantees the right of every person to protection of themselves, their family, honor, dignity, and property under their control. From the perspective of modern constitutional law, personal data protection is increasingly regarded as an integral component of human rights in digital societies (Brown, 2022).

The research further reveals that this constitutional framework provides a legal basis for the development of state digital sovereignty. In legal terms, digital sovereignty refers to the ability of the state to regulate and control information systems, digital infrastructure, and data governance within its jurisdiction. In practice, global digital technological development often challenges the authority

of states in controlling cross-border data flows. This phenomenon is reinforced by the growing dominance of global technology corporations in managing digital data. Within technology law scholarship, strengthening digital sovereignty is considered an important strategy for states to maintain the integrity of their national legal systems in the era of digital globalization (Flew, 2021).

The findings also demonstrate that digital sovereignty is closely connected to the protection of citizens' constitutional rights. Non-transparent data governance may create risks such as privacy violations, algorithmic discrimination, and misuse of personal information. Consequently, the state bears a constitutional obligation to ensure that digital technological development does not undermine the fundamental rights of citizens. Cohen (2020) suggests that modern legal systems must adopt regulatory frameworks capable of balancing technological innovation with digital rights protection. In this context, constitutional law functions as a normative framework guiding the development of fair and accountable digital regulations.

However, the research also indicates that constitutional provisions in Indonesia remain relatively general and do not explicitly regulate artificial intelligence governance. The Constitution mainly establishes fundamental principles concerning human rights and information protection. Meanwhile, AI technologies introduce new challenges such as automated decision-making, algorithmic governance in public policy, and large-scale data processing. These developments require the strengthening of constitutional design through the creation of more specific implementing regulations. In digital constitutionalism studies, the reinterpretation and expansion of constitutional norms are viewed as essential strategies for addressing technological transformations (Young, 2021).

Overall, this study confirms that Indonesia's constitutional design provides a normative foundation for the development of digital governance and artificial intelligence regulation. Nevertheless, the implementation of these constitutional principles still requires reinforcement through comprehensive sectoral regulations. Integrating human rights principles, personal data protection, and digital sovereignty is essential to ensure that artificial intelligence technologies are utilized responsibly. In this regard, the Constitution serves not only as a source of legal legitimacy but also as a normative guideline for developing technology governance policies in the digital era.

National Regulatory Framework for Digital Governance and Data Protection

The findings indicate that Indonesia's national regulatory framework has undergone significant development in regulating digital data governance. One of the most important regulations in this context is Law Number 27 of 2022 concerning Personal Data Protection. This law represents Indonesia's first comprehensive legal instrument specifically addressing personal data protection

within the digital ecosystem. Its adoption reflects the increasing recognition of the importance of data protection in modern digital societies. Within the field of technology law, personal data protection regulation is considered a crucial instrument for balancing technological innovation with individual rights protection (Greenleaf, 2021).

Normatively, Article 1 paragraph (1) of Law Number 27 of 2022 defines personal data as any data relating to an identified or identifiable individual, either directly or indirectly, through electronic or non-electronic systems. This definition indicates that the scope of personal data protection under Indonesian law is broad and covers various forms of digital information. Furthermore, Article 3 of Law Number 27 of 2022 explicitly states that personal data protection constitutes part of human rights protection. This provision reinforces the connection between technology regulation and constitutional rights protection. In contemporary digital law scholarship, recognizing personal data protection as a human right represents a significant development in safeguarding citizens in digital societies (Kuner, 2023).

In addition to the Personal Data Protection Law, digital governance in Indonesia is also regulated by Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE Law). This law serves as the primary legal framework governing electronic systems and digital transactions in Indonesia. According to Article 5 paragraph (1), electronic information and/or electronic documents and their printed versions constitute valid legal evidence. This provision demonstrates that the Indonesian legal system formally recognizes digital documents within judicial processes. Such recognition is particularly important in modern digital environments where electronic systems are increasingly central to social and economic activities (Michaels, 2020).

The regulatory framework has evolved through several amendments. Law Number 19 of 2016 introduced the first amendment to the ITE Law, primarily aimed at addressing interpretative issues and improving regulatory clarity. Subsequently, Law Number 1 of 2024 was enacted as the second amendment to the ITE Law. This latest amendment strengthens provisions concerning the responsibilities of electronic system providers and the protection of individuals within digital environments. From a technology governance perspective, these regulatory developments demonstrate the legal system's gradual adaptation to the dynamic evolution of digital technologies (Edwards, 2022).

Despite these developments, the study finds that Indonesia still lacks a comprehensive regulatory framework specifically governing artificial intelligence. Existing regulations address digital governance and personal data protection but do not directly regulate AI technologies. In contrast, several

jurisdictions—most notably the European Union—have begun developing specialized AI regulatory frameworks. Comparative technology governance studies indicate that establishing comprehensive AI regulation is increasingly regarded as a strategic priority for states seeking to strengthen their digital sovereignty (Smuha, 2021).

Therefore, while Indonesia's existing regulatory framework provides a solid legal basis for digital governance, further regulatory development remains necessary. The emergence of artificial intelligence requires more specific rules concerning algorithmic transparency, automated decision-making accountability, and responsible AI deployment. Integrating constitutional principles with personal data protection regulations and digital system governance frameworks represents a crucial step toward building a more adaptive digital governance system.

Strengthening Constitutional Design for Algorithmic Accountability and AI Governance

The findings of this research demonstrate that the rapid development of artificial intelligence presents significant challenges for constitutional legal systems. AI technologies enable the use of algorithms in various decision-making processes, including public administration, economic systems, and digital services. Algorithmic systems can significantly improve efficiency and accuracy in data processing and policy implementation. However, automated decision-making systems also raise concerns regarding legal accountability and transparency. Within technology governance studies, algorithmic accountability has emerged as a critical issue in ensuring that artificial intelligence systems operate fairly and responsibly (Burrell, 2021).

The study reveals that the Indonesian legal system does not yet provide specific regulatory mechanisms addressing algorithmic accountability in AI systems. Existing regulations focus primarily on personal data protection and electronic system governance. However, artificial intelligence often involves automated decision-making processes that can directly affect individual rights. From a digital governance perspective, algorithmic transparency is considered a key principle in ensuring that automated systems remain subject to public oversight. Without transparency, it becomes difficult for citizens to understand how algorithmic decisions affecting them are produced (Pasquale, 2020).

In this context, strengthening constitutional design becomes essential to ensure that artificial intelligence technologies remain within the framework of legal governance. Constitutional law can function as a normative foundation for developing principles of AI governance oriented toward human rights protection. Several jurisdictions have begun adopting constitutional approaches to digital governance under the concept of digital constitutionalism. This

approach emphasizes that digital technologies must be regulated according to democratic principles, transparency, and public accountability (Suzor, 2021).

The research findings also indicate that strengthening constitutional design may involve integrating digital rights principles into public policy frameworks. These principles include privacy protection, access to information, and the right of individuals to understand how their data are processed within digital systems. In practice, these rights can be strengthened through implementing regulations that clarify oversight mechanisms for AI technologies. Daly (2023) argues that recognizing digital rights as part of fundamental human rights represents an essential step in responding to global technological transformations.

Furthermore, strengthening digital sovereignty is closely linked to the state's ability to regulate the activities of global technology corporations. Many major digital platforms operate artificial intelligence systems that process user data on a global scale. This situation creates challenges for national legal systems seeking to enforce domestic regulations. Studies on platform governance highlight the importance of regulatory strategies capable of balancing technological innovation with the protection of national interests (Van Dijck, 2021).

In conclusion, strengthening constitutional design represents a crucial step in addressing the legal challenges posed by artificial intelligence technologies. The Constitution not only serves as the legal basis for protecting citizens' rights but also functions as a normative framework guiding digital governance policies. Integrating constitutional principles into artificial intelligence regulation will help create a digital governance system that is transparent, accountable, and aligned with fundamental human rights in the digital age.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that Indonesia's constitutional framework provides an initial normative foundation for digital governance and the protection of citizens' digital rights through provisions in the 1945 Constitution, the Personal Data Protection Law (Law No. 27 of 2022), and the Electronic Information and Transactions Law along with its amendments. However, these regulations remain general and have not yet specifically addressed the governance of artificial intelligence, particularly concerning algorithmic accountability, transparency, and automated decision-making. Strengthening constitutional design through more specific implementing regulations and policy frameworks is therefore necessary to ensure effective protection of digital rights and national data sovereignty. The study recommends that policymakers develop a comprehensive regulatory framework for artificial intelligence governance that integrates constitutional

principles, human rights protection, and digital sovereignty in order to support responsible technological innovation while safeguarding public interests.

FURTHER STUDY

This research is limited to normative legal analysis based on statutory regulations and conceptual frameworks, without empirical examination of the practical implementation of artificial intelligence governance in Indonesia. Future research is recommended to incorporate empirical or comparative approaches, including analysis of policy implementation, institutional capacity, and international regulatory models for artificial intelligence governance.

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