

Algorithmic Governance, Data Protection, and Democratic Accountability: A Comparative Legal Analysis of the European Union and China in the Regulation of Artificial Intelligence

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Abstract (English)

This article examines how artificial intelligence governance systems reshape legal accountability, institutional legitimacy, regulatory coordination, and democratic governance in the European Union and China. The study argues that AI regulation increasingly constitutes a foundational dimension of contemporary governance because algorithmic systems influence administrative decision-making, economic coordination, public surveillance, digital markets, and human-rights protection. Using comparative legal and socio-institutional analysis, the article investigates how the European Union's rights-oriented regulatory constitutionalism and China's state-centered digital governance framework produce divergent approaches to AI accountability, data protection, institutional oversight, and technological sovereignty. Drawing on constitutional documents, regulatory frameworks, judicial developments, OECD digital governance indicators, United Nations reports, World Bank governance datasets, and comparative legal scholarship, the findings demonstrate that AI governance effectiveness depends on institutional coherence, regulatory legitimacy, procedural accountability, and adaptive legal capacity. The comparison reveals that the European Union prioritizes fundamental rights protection, procedural transparency, and regulatory harmonization, whereas China emphasizes technological modernization, state coordination, and strategic digital sovereignty. The article contributes to legal scholarship by proposing a conceptual framework linking institutional capacity, algorithmic governance, legal accountability, democratic legitimacy, and sustainable socio-economic development. The findings further indicate that AI regulation may strengthen governance efficiency and innovation capacity

while simultaneously generating tensions concerning surveillance expansion, institutional asymmetry, legal fragmentation, and democratic accountability when regulatory safeguards remain insufficient.

Keywords

Artificial intelligence regulation; digital governance; data protection; comparative law; algorithmic accountability; democratic governance; legal modernization; European Union; China; digital sovereignty; governance legitimacy; socio-legal analysis.

Abstrak (Indonesia)

Artikel ini mengkaji bagaimana sistem tata kelola kecerdasan buatan (AI) membentuk kembali akuntabilitas hukum, legitimasi kelembagaan, koordinasi regulasi, dan tata kelola demokratis di Uni Eropa dan Tiongkok. Studi ini berpendapat bahwa regulasi AI semakin menjadi dimensi fundamental tata kelola kontemporer karena sistem algoritmik memengaruhi pengambilan keputusan administratif, koordinasi ekonomi, pengawasan publik, pasar digital, dan perlindungan hak asasi manusia. Dengan menggunakan analisis hukum komparatif dan sosio-institusional, artikel ini menyelidiki bagaimana konstitusionalisme regulasi berorientasi hak di Uni Eropa dan kerangka tata kelola digital yang berpusat pada negara di Tiongkok menghasilkan pendekatan yang berbeda terhadap akuntabilitas AI, perlindungan data, pengawasan kelembagaan, dan kedaulatan teknologi. Dengan mengacu pada dokumen konstitusional, kerangka kerja regulasi, perkembangan peradilan, indikator tata kelola digital OECD, laporan Perserikatan Bangsa-Bangsa, kumpulan data tata kelola Bank Dunia, dan kajian hukum komparatif, temuan menunjukkan bahwa efektivitas tata kelola AI bergantung pada koherensi kelembagaan, legitimasi regulasi, akuntabilitas prosedural, dan kapasitas hukum adaptif. Perbandingan ini mengungkapkan bahwa Uni Eropa memprioritaskan perlindungan hak-hak fundamental, transparansi prosedural, dan harmonisasi regulasi, sedangkan Tiongkok menekankan modernisasi teknologi, koordinasi negara, dan kedaulatan digital strategis. Artikel ini berkontribusi pada kajian hukum dengan mengusulkan kerangka konseptual yang menghubungkan kapasitas kelembagaan, tata kelola algoritmik, akuntabilitas hukum, legitimasi demokrasi, dan pembangunan sosial-

ekonomi berkelanjutan. Temuan lebih lanjut menunjukkan bahwa regulasi AI dapat memperkuat efisiensi tata kelola dan kapasitas inovasi sekaligus menimbulkan ketegangan terkait perluasan pengawasan, asimetri kelembagaan, fragmentasi hukum, dan akuntabilitas demokrasi ketika perlindungan regulasi tetap tidak memadai.

Kata kunci : Regulasi kecerdasan buatan; tata kelola digital; perlindungan data; hukum perbandingan; akuntabilitas algoritmik; tata kelola demokrasi; modernisasi hukum; Uni Eropa; Tiongkok; kedaulatan digital; legitimasi tata kelola; analisis sosial-hukum.

Introduction

Artificial intelligence increasingly transforms governance systems, legal institutions, administrative coordination, market regulation, and societal organization across contemporary states. Algorithmic systems now influence financial regulation, predictive policing, digital commerce, public administration, healthcare governance, judicial decision-making, and cross-border data infrastructures. Consequently, AI governance no longer represents a specialized technological issue but a structural legal transformation affecting constitutional accountability, institutional legitimacy, economic governance, and human-rights protection (Veale & Borgesius, 2021).

This transformation reflects broader changes associated with digital capitalism, platform governance, transnational data economies, and technological sovereignty. According to the OECD (2025), more than sixty countries have adopted or proposed AI governance frameworks involving risk-based regulation, ethical standards, administrative oversight, and data-governance mechanisms. Simultaneously, the United Nations (2024) reports that AI governance increasingly shapes democratic resilience, institutional trust, labor-market adaptation, and socio-economic inequality. As algorithmic systems mediate public and private decision-making, legal systems confront growing pressure to balance innovation, accountability, security, and fundamental rights.

The issue is institutionally significant because AI governance affects both state authority and societal autonomy. Algorithmic systems increasingly shape how governments collect data, monitor populations, allocate public resources, and regulate

economic activity. Digital governance infrastructures therefore influence procedural transparency, administrative accountability, and democratic participation. The expansion of AI governance also intensifies debates concerning data sovereignty, institutional surveillance, market concentration, and regulatory legitimacy.

The issue is theoretically important because AI regulation challenges conventional assumptions regarding legal responsibility, constitutional protection, and institutional oversight. Traditional legal systems were primarily designed around identifiable human decision-makers, territorially bounded governance structures, and relatively stable administrative procedures. AI systems disrupt these assumptions by introducing opaque decision-making architectures, transnational data flows, and privately controlled algorithmic infrastructures (Cohen, 2019). Consequently, contemporary governance increasingly operates through socio-technical systems integrating legal authority, digital infrastructure, and algorithmic coordination.

The European Union and China provide analytically significant comparative cases because both are globally influential digital governance actors pursuing extensive AI regulation while exhibiting fundamentally different legal cultures, governance traditions, constitutional structures, and regulatory priorities. The European Union represents a rights-oriented governance model emphasizing human dignity, procedural accountability, data protection, and supranational regulatory harmonization. China represents a state-centered governance model emphasizing technological modernization, digital sovereignty, social stability, and centralized coordination.

The comparison is analytically valuable because both jurisdictions recognize AI as strategically important while adopting substantially different regulatory philosophies. The European Union prioritizes fundamental rights and regulatory accountability through frameworks such as the General Data Protection Regulation (GDPR) and the Artificial Intelligence Act. China prioritizes coordinated technological governance through cybersecurity law, algorithmic recommendation regulation, and state-led digital modernization policies. These differences provide important insight into how institutional structures shape AI governance outcomes.

Existing scholarship provides important foundations for understanding digital governance and legal transformation. Foucault (1977) conceptualized governance as

increasingly dependent on systems of surveillance, discipline, and institutional monitoring. Habermas (1996) emphasized the importance of procedural legitimacy and communicative rationality within democratic governance systems. Teubner (1993) argued that modern legal systems increasingly operate through complex regulatory pluralism rather than centralized legal authority alone.

Contemporary scholarship on digital governance further highlights institutional adaptation challenges. Cohen (2019) argues that informational capitalism restructures governance through platform-based power and data extraction systems. Zuboff (2019) demonstrates how surveillance capitalism transforms institutional and economic relations through behavioral monitoring infrastructures. While previous studies emphasize surveillance and digital governance, current scholarship often fails to explain comparatively how legal systems mediate AI accountability and institutional legitimacy.

Other scholars focus on algorithmic regulation and constitutionalism. Yeung (2018) argues that algorithmic governance increasingly reshapes public administration and legal accountability. Brownsword (2021) emphasizes that technological regulation challenges conventional legal doctrines regarding responsibility and procedural fairness. Existing literature therefore suggests that AI governance simultaneously creates regulatory opportunity and democratic risk.

Research on comparative AI governance similarly identifies tensions between innovation and accountability. Bradford (2020) argues that the European Union increasingly exports regulatory norms globally through “the Brussels effect.” Creemers (2022) demonstrates that China’s digital governance system integrates technological modernization with centralized political coordination. However, current scholarship remains limited in comparatively evaluating how rights-based and sovereignty-oriented AI governance systems influence institutional legitimacy and sustainable governance outcomes.

Several gaps remain within existing scholarship. First, a theoretical gap persists regarding the integration of constitutional governance theory, digital regulation analysis, and socio-legal institutionalism. Second, an empirical gap exists because many studies focus on AI ethics without systematically examining comparative governance structures and implementation mechanisms. Third, a comparative institutional gap remains

concerning rights-oriented and sovereignty-oriented AI governance models. Fourth, a policy coordination gap exists because AI governance frequently operates across fragmented institutional and transnational regulatory systems. Fifth, a justice and sustainability gap persists because digital governance discussions often prioritize innovation while underestimating democratic accountability and long-term socio-legal legitimacy.

The novelty of this article lies in conceptualizing AI governance as a socio-legal institutional transformation rather than merely a technological regulatory issue. The article argues that AI governance outcomes depend on the interaction among constitutional structures, institutional capacity, regulatory coordination, and democratic legitimacy. By comparing the European Union and China, the article contributes to legal scholarship through a comparative framework linking algorithmic governance, institutional accountability, digital sovereignty, and sustainable socio-economic development.

The analytical framework proposes the following causal relationship: institutional structures shape regulatory coordination and AI governance architecture; governance systems mediate procedural accountability and legal transparency; legal accountability influences institutional trust and democratic legitimacy; adaptive legal governance strengthens regulatory resilience and socio-economic stability; and these processes collectively shape sustainable governance outcomes.

The research objective of this study is to comparatively analyze how AI governance systems influence legal accountability, institutional legitimacy, democratic governance, and sustainable socio-economic development in the European Union and China.

Method

This study employs comparative legal and socio-institutional analysis integrating constitutional theory, digital governance studies, regulatory sociology, and comparative public-law analysis to examine AI governance systems in the European Union and China. The research design is theoretically grounded in legal institutionalism, regulatory governance theory, constitutional pluralism, and socio-technical governance

frameworks. The European Union and China were selected because both represent globally influential regulatory systems pursuing extensive AI governance while exhibiting substantial variation in constitutional structure, regulatory philosophy, institutional accountability, and digital sovereignty strategy. The European Union represents a supranational and rights-oriented governance system characterized by procedural accountability, judicial review, and regulatory harmonization. China represents a centralized and sovereignty-oriented governance system characterized by coordinated digital modernization, strategic state capacity, and integrated technological governance. Comparative variables include AI accountability mechanisms, data-protection systems, regulatory transparency, judicial oversight, digital sovereignty, institutional legitimacy, governance coordination, and socio-economic adaptation.

The empirical basis integrates constitutional and regulatory documents, GDPR and EU AI Act materials, China's Cybersecurity Law and algorithmic governance regulations, Court of Justice of the European Union jurisprudence, OECD digital governance indicators, United Nations digital governance reports, World Bank institutional datasets, and Scopus-indexed scholarship on AI governance, digital constitutionalism, comparative law, and socio-legal governance systems. Analytical interpretation combines comparative legal analysis with institutional governance evaluation by examining policy implementation mechanisms, regulatory architectures, procedural safeguards, administrative oversight systems, and governance outcomes. Reliability is strengthened through triangulation across legal documents, institutional governance reports, judicial evidence, and peer-reviewed scholarship. Validity is supported by linking governance variables to observable institutional mechanisms and legal outcomes rather than speculative assumptions. Ethical and governance considerations include surveillance expansion, data privacy, algorithmic discrimination, procedural transparency, and democratic accountability. The study is limited by evolving AI technologies, rapidly changing regulatory frameworks, and differences in institutional reporting systems; however, analytical consistency is maintained by focusing on causal relationships connecting institutional structures, legal governance systems, regulatory accountability, and sustainable socio-economic development.

Findings and Discussion

1. Institutional Structures and AI Governance Architecture

The first major finding is that AI governance effectiveness depends fundamentally on institutional architecture rather than technological regulation alone. The European Union and China both recognize AI as strategically transformative, yet their governance systems produce different regulatory pathways and institutional priorities.

The European Union's AI governance architecture emphasizes rights-based constitutionalism, procedural accountability, and supranational regulatory harmonization. The GDPR and AI Act establish risk-based governance systems prioritizing transparency, data protection, human oversight, and accountability mechanisms. Regulatory authority is distributed across supranational institutions, national regulators, judicial review systems, and data-protection authorities.

China follows a different governance pathway characterized by centralized coordination and sovereignty-oriented digital governance. AI regulation is integrated within broader state-led modernization strategies emphasizing technological innovation, cybersecurity, social stability, and digital sovereignty. Governance systems strongly prioritize coordinated implementation and institutional responsiveness through centralized administrative structures.

The comparison reveals regulatory divergence in institutional priorities. The European Union prioritizes procedural legitimacy and rights protection, whereas China prioritizes technological coordination and governance capacity. Despite these differences, both systems demonstrate that AI governance increasingly functions as a foundational dimension of institutional modernization.

This finding contributes to comparative legal scholarship by demonstrating that AI governance systems are embedded within broader constitutional and political traditions. Habermas' (1996) theory of procedural legitimacy is particularly relevant in the European Union's rights-oriented governance structure, whereas China demonstrates the importance of coordinated administrative capacity within technologically intensive governance systems.

2. Data Protection, Privacy Governance, and Legal Accountability

The second finding concerns the relationship between data governance and institutional accountability. AI systems depend heavily on large-scale data collection, algorithmic processing, and predictive analytics, making data protection central to legal governance legitimacy.

In the European Union, privacy governance functions as a constitutional and regulatory principle strongly connected to fundamental rights protection. GDPR enforcement mechanisms emphasize informed consent, procedural transparency, accountability obligations, and judicial oversight. Data governance therefore operates within a rights-oriented constitutional framework emphasizing individual autonomy and legal proportionality.

China's governance system emphasizes data security, digital sovereignty, and coordinated administrative regulation. Regulatory frameworks involving cybersecurity, algorithmic recommendation systems, and data governance increasingly establish state oversight mechanisms while also supporting technological modernization and digital economic development.

The comparison reveals different legal conceptions of governance legitimacy. The European Union conceptualizes privacy primarily through rights protection and constitutional accountability, whereas China conceptualizes data governance primarily through state coordination and digital security management.

This finding aligns with Cohen's (2019) argument that informational governance increasingly restructures institutional authority through data infrastructures. The evidence further suggests that data-protection systems significantly influence public trust, institutional legitimacy, and governance accountability.

3. Algorithmic Accountability and Democratic Governance

The third finding is that AI governance generates tensions concerning procedural fairness, algorithmic accountability, and democratic legitimacy. Algorithmic systems increasingly influence administrative decision-making, digital markets, public services, and content governance, creating new challenges for legal oversight.

The European Union's governance system attempts to institutionalize algorithmic accountability through transparency requirements, risk classification systems, and

procedural safeguards. Judicial review and regulatory oversight mechanisms increasingly evaluate proportionality, discrimination risks, and accountability obligations.

China's governance system emphasizes coordinated platform governance, algorithmic regulation, and content-management systems within a centralized digital governance structure. Regulatory interventions increasingly target platform behavior, data monopolization, and digital market coordination while maintaining strong state oversight.

The comparison demonstrates that AI accountability mechanisms reflect broader governance philosophies. The European Union prioritizes procedural legality and regulatory pluralism, whereas China prioritizes coordinated governance efficiency and institutional control.

This finding contributes to socio-legal scholarship by demonstrating that algorithmic governance systems are fundamentally legal-political institutions rather than neutral technical infrastructures. Sustainable AI governance therefore requires balancing innovation, administrative effectiveness, and democratic accountability.

4. Regulatory Resilience, Digital Sovereignty, and Sustainable Governance

The fourth finding is that long-term AI governance sustainability depends on adaptive legal systems capable of integrating innovation, accountability, and socio-economic resilience. Both the European Union and China increasingly frame AI governance as a strategic governance issue linked to economic competitiveness, institutional resilience, and geopolitical influence.

The European Union promotes digital constitutionalism through regulatory harmonization and rights-based governance standards intended to strengthen institutional legitimacy and transnational governance coherence. Regulatory resilience is associated with procedural transparency, judicial accountability, and supranational coordination.

China emphasizes digital sovereignty and technological self-sufficiency through coordinated industrial policy, digital infrastructure development, and integrated

governance systems. Regulatory resilience is associated with centralized coordination capacity and strategic technological modernization.

The comparison reveals that governance sustainability emerges through different institutional pathways. The European Union demonstrates rights-oriented regulatory resilience, whereas China demonstrates sovereignty-oriented governance resilience. Both systems illustrate that AI governance increasingly shapes broader questions concerning legal modernization, economic governance, and institutional legitimacy.

This finding extends comparative governance scholarship by demonstrating that digital governance systems function simultaneously as regulatory, constitutional, and geopolitical institutions shaping sustainable socio-economic development.

Table 1. Analytical Matrix of Comparative Legal and Governance Development

Variable	European Union	China	Empirical Evidence	Analytical Interpretation
Governance architecture	Supranational and rights-oriented governance	Centralized and sovereignty-oriented governance	OECD and UN reports identify contrasting governance structures	Institutional systems shape regulatory pathways
AI regulatory philosophy	Risk-based regulation and procedural accountability	Coordinated digital governance and technological modernization	EU AI Act and Chinese regulatory frameworks reveal differing priorities	Governance philosophy influences legal implementation
Data governance	Fundamental-rights-oriented privacy protection	State-centered cybersecurity and data coordination	GDPR and cybersecurity law demonstrate differing legal conceptions	Privacy governance reflects constitutional structure
Institutional oversight	Judicial review and distributed	Centralized administrative coordination	Comparative legal evidence demonstrates	Oversight systems shape

	regulatory authorities		varying accountability structures	governance legitimacy
Algorithmic accountability	Transparency and procedural safeguards	Coordinated platform governance and administrative supervision	Regulatory documents reveal divergent accountability mechanisms	AI accountability reflects governance ideology
Digital sovereignty	Regulatory harmonization and strategic autonomy	National technological self-sufficiency and state coordination	Governance reports show differing geopolitical governance models	AI governance intersects with sovereignty politics
Governance tension	Regulatory fragmentation and implementation complexity	Surveillance concentration and procedural opacity concerns	Comparative governance debates institutionally	Digital governance creates legitimacy trade-offs
Sustainability implication	Rights-based regulatory resilience	Coordinated sovereignty-based governance resilience	Comparative institutional evidence demonstrates distinct resilience pathways	Sustainable governance requires balancing innovation and accountability

The analytical matrix demonstrates that the European Union and China represent distinct institutional pathways of AI governance transformation. The European Union prioritizes procedural accountability and rights-based governance, whereas China prioritizes coordinated digital sovereignty and administrative efficiency. Both systems achieve significant governance capacity, yet they produce different relationships among law, institutions, digital infrastructures, and democratic legitimacy.

The deeper analytical implication is that AI governance effectiveness depends on institutional alignment among constitutional structures, regulatory systems, governance legitimacy, and technological modernization strategies. Sustainable digital governance therefore emerges from socio-legal coordination rather than technological regulation alone.

Conceptual Model

Institutional Capacity → Regulatory Coherence and AI Governance → Legal Accountability and Procedural Transparency → Governance Legitimacy and Regulatory Resilience → Sustainable Socio-Economic Development

Institutional capacity shapes the coherence and effectiveness of AI governance systems through regulatory coordination, administrative oversight, and legal adaptation. Regulatory coherence and AI governance influence procedural accountability, algorithmic transparency, and institutional supervision. Legal accountability and procedural transparency shape governance legitimacy, public trust, and democratic resilience. Governance legitimacy and regulatory resilience strengthen institutional stability, innovation sustainability, and socio-economic adaptation. Sustainable socio-economic development represents the long-term outcome involving legal modernization, technological governance, institutional accountability, and adaptive digital transformation.

Conclusion

This study comparatively examined how AI governance systems influence legal accountability, institutional legitimacy, democratic governance, and sustainable socio-economic development in the European Union and China. The findings demonstrate that AI governance constitutes a structural legal transformation involving constitutional systems, regulatory institutions, digital infrastructures, and governance legitimacy.

The direct answer to the research objective is that institutional structures significantly shape the effectiveness and legitimacy of AI governance systems. The European Union's rights-oriented regulatory framework strengthens procedural accountability and fundamental-rights protection, while China's sovereignty-oriented governance model strengthens centralized coordination and technological modernization. Both systems produce adaptive governance capacity through different institutional pathways.

The theoretical contribution of this article lies in integrating constitutional governance theory, socio-legal institutionalism, digital regulation scholarship, and

comparative governance analysis within one analytical framework. The article advances legal scholarship by conceptualizing AI governance as a socio-legal governance transformation linking law, institutional authority, digital sovereignty, and democratic legitimacy.

The empirical contribution lies in systematically comparing supranational rights-oriented governance and centralized sovereignty-oriented governance using comparative legal documents, institutional indicators, and governance evidence. The findings demonstrate that AI governance outcomes depend on institutional coherence, regulatory legitimacy, procedural accountability, and adaptive legal capacity.

The legal and policy implications are substantial. Governments should strengthen algorithmic transparency, judicial oversight mechanisms, cross-border regulatory coordination, procedural accountability systems, and rights-based governance protections. AI governance systems should balance technological innovation with democratic legitimacy and institutional accountability.

The justice and sustainability implications are equally important. Sustainable digital governance requires legal systems capable of integrating innovation, public trust, procedural fairness, and socio-economic resilience simultaneously. Governance systems that prioritize efficiency without accountability risk weakening long-term institutional legitimacy and democratic stability.

The study has limitations because AI technologies and digital governance systems continue evolving rapidly across jurisdictions. Future research should examine transnational AI governance harmonization, comparative judicial responses to algorithmic governance, and the long-term relationship between AI regulation and democratic resilience.

Overall, this article concludes that AI governance represents not merely a technological regulatory challenge but a foundational transformation of legal institutions, governance systems, and democratic accountability. Sustainable digital futures depend on institutional systems capable of integrating innovation, legitimacy, legal accountability, and socio-economic resilience within coherent governance frameworks.

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