

Artificial Intelligence Governance, Algorithmic Accountability, and Administrative Law Reform: A Comparative Legal Analysis of Canada and South Korea

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Abstract (English)

This article examines how artificial intelligence (AI) governance and administrative law reform reshape institutional accountability, public-sector legitimacy, regulatory transparency, and sustainable governance in Canada and South Korea. The study argues that AI governance increasingly constitutes a structural transformation of administrative law because algorithmic decision-making systems, automated public services, and predictive governance technologies influence regulatory authority, public accountability, socio-economic inclusion, and democratic legitimacy. Using comparative legal and socio-institutional analysis, the article investigates how Canada's rights-oriented and ethics-centered AI governance framework and South Korea's innovation-driven and digitally integrated governance model generate divergent approaches to algorithmic accountability, public-sector automation, regulatory oversight, and institutional coordination. Drawing on government AI frameworks, OECD digital-governance indicators, administrative-law reforms, World Bank governance datasets, UNESCO AI ethics reports, and comparative legal scholarship, the findings demonstrate that effective AI governance depends on regulatory coherence, institutional adaptability, procedural accountability, and public legitimacy. The comparison reveals that Canada prioritizes rights-based administrative safeguards, ethical accountability, and procedural transparency, whereas South Korea emphasizes technological integration, administrative efficiency, and coordinated digital-state transformation. The article contributes to legal scholarship by proposing a conceptual framework linking AI governance, administrative accountability, institutional trust, regulatory resilience, and sustainable socio-

economic development. The findings further indicate that algorithmic governance may strengthen administrative efficiency and policy responsiveness while simultaneously generating tensions concerning automated discrimination, surveillance expansion, institutional opacity, and democratic accountability when legal safeguards remain insufficient.

Keywords

Artificial intelligence governance; administrative law; algorithmic accountability; comparative law; digital governance; Canada; South Korea; automated decision-making; regulatory transparency; socio-legal governance; institutional legitimacy; digital-state transformation.

Abstrak (Indonesia)

Artikel ini mengkaji bagaimana tata kelola kecerdasan buatan (AI) dan reformasi hukum administrasi membentuk kembali akuntabilitas kelembagaan, legitimasi sektor publik, transparansi regulasi, dan tata kelola berkelanjutan di Kanada dan Korea Selatan. Studi ini berpendapat bahwa tata kelola AI semakin menjadi transformasi struktural hukum administrasi karena sistem pengambilan keputusan algoritmik, layanan publik otomatis, dan teknologi tata kelola prediktif memengaruhi otoritas regulasi, akuntabilitas publik, inklusi sosial-ekonomi, dan legitimasi demokrasi. Dengan menggunakan analisis hukum komparatif dan sosio-institusional, artikel ini menyelidiki bagaimana kerangka kerja tata kelola AI yang berorientasi pada hak dan berpusat pada etika di Kanada dan model tata kelola yang didorong oleh inovasi dan terintegrasi secara digital di Korea Selatan menghasilkan pendekatan yang berbeda terhadap akuntabilitas algoritmik, otomatisasi sektor publik, pengawasan regulasi, dan koordinasi kelembagaan. Dengan mengacu pada kerangka kerja AI pemerintah, indikator tata kelola digital OECD, reformasi hukum administrasi, kumpulan data tata kelola Bank Dunia, laporan etika AI UNESCO, dan kajian hukum komparatif, temuan menunjukkan bahwa tata kelola AI yang efektif bergantung pada koherensi regulasi, adaptabilitas kelembagaan, akuntabilitas prosedural, dan legitimasi publik. Perbandingan ini mengungkapkan bahwa Kanada memprioritaskan perlindungan administratif berbasis hak, akuntabilitas etis, dan transparansi prosedural, sedangkan Korea Selatan menekankan integrasi teknologi, efisiensi administratif, dan transformasi negara digital yang terkoordinasi. Artikel ini

berkontribusi pada kajian hukum dengan mengusulkan kerangka kerja konseptual yang menghubungkan tata kelola AI, akuntabilitas administratif, kepercayaan institusional, ketahanan regulasi, dan pembangunan sosial-ekonomi berkelanjutan. Temuan lebih lanjut menunjukkan bahwa tata kelola algoritmik dapat memperkuat efisiensi administratif dan responsivitas kebijakan sekaligus menimbulkan ketegangan terkait diskriminasi otomatis, perluasan pengawasan, ketidaktransparan institusional, dan akuntabilitas demokratis ketika perlindungan hukum tetap tidak memadai.

Kata kunci : Tata kelola kecerdasan buatan; hukum administrasi; akuntabilitas algoritmik; hukum perbandingan; tata kelola digital; Kanada; Korea Selatan; pengambilan keputusan otomatis; transparansi regulasi; tata kelola sosial-hukum; legitimasi institusional; transformasi negara digital.

Introduction

Artificial intelligence increasingly reshapes public administration, regulatory systems, legal governance, and institutional coordination across contemporary societies. Automated decision-making systems, predictive analytics infrastructures, biometric identification technologies, and machine-learning governance tools now influence public-service delivery, welfare administration, immigration systems, urban governance, and judicial administration. Consequently, AI governance no longer represents merely a technological policy issue but a structural transformation affecting constitutional legitimacy, administrative accountability, socio-economic inclusion, and democratic governance (UNESCO, 2024).

The acceleration of AI-driven governance reflects broader transformations associated with digital-state modernization, data-driven policymaking, and algorithmic administration. According to the OECD (2025), more than seventy percent of advanced economies have integrated AI systems into administrative decision-making processes, while automated governance infrastructures increasingly shape public-sector efficiency, institutional trust, and regulatory responsiveness. Simultaneously, the World Bank (2024) reports that digital public-administration systems significantly influence governance legitimacy, public-service accessibility, and socio-economic inequality.

The issue is institutionally significant because AI governance increasingly affects state authority, regulatory accountability, public-sector legitimacy, and citizen rights simultaneously. Algorithmic governance systems increasingly shape welfare eligibility, law-enforcement monitoring, immigration processing, and administrative adjudication. Consequently, legal systems confront growing pressure to balance innovation, administrative efficiency, procedural fairness, data protection, and democratic accountability.

The issue is also theoretically important because AI governance challenges conventional assumptions regarding administrative discretion, legal accountability, and institutional authority. Traditional administrative-law systems historically relied on human decision-making, procedural review mechanisms, and bureaucratic accountability structures. AI governance disrupts these assumptions by enabling algorithmic systems to exercise quasi-administrative authority through predictive analytics, automated classifications, and data-driven decision infrastructures (Crawford, 2021). As a result, governance increasingly operates through socio-technical systems integrating algorithmic infrastructures, public administration, and regulatory oversight.

Canada and South Korea provide analytically significant comparative cases because both are globally influential digital-governance actors pursuing extensive AI-integration strategies while exhibiting fundamentally different governance philosophies, institutional structures, and administrative priorities. Canada represents a rights-oriented and ethics-centered governance framework emphasizing procedural transparency, human-rights protections, and accountable AI systems. South Korea represents an innovation-driven and digitally integrated governance framework emphasizing technological modernization, smart-state transformation, and administrative coordination.

The comparison is analytically valuable because both jurisdictions prioritize AI-driven administrative modernization while adopting substantially different governance pathways. Canada emphasizes ethical oversight and procedural safeguards through frameworks such as the Directive on Automated Decision-Making and the Artificial Intelligence and Data Act initiatives. South Korea emphasizes coordinated digital transformation and technological integration through national AI strategies and smart-

government infrastructures. These differences provide important insight into how institutional systems shape AI governance outcomes.

Existing scholarship provides important foundations for understanding governance transformation and administrative legitimacy. Weber (1978) emphasized the importance of bureaucratic rationality and procedural legitimacy within administrative systems. Habermas (1996) argued that governance legitimacy depends on procedural accountability and communicative rationality. Foucault (1977) conceptualized governance as increasingly dependent on surveillance and disciplinary infrastructures.

Contemporary scholarship on AI governance further highlights institutional adaptation challenges. Crawford (2021) argues that AI systems increasingly reproduce political and institutional power asymmetries through data-driven governance structures. Pasquale (2015) demonstrates that algorithmic systems often create “black box” governance environments undermining transparency and accountability. While previous studies emphasize algorithmic governance and ethical AI, current scholarship often fails to explain comparatively how administrative-law systems mediate institutional legitimacy and automated accountability.

Other scholars focus on digital-state transformation and public-sector modernization. Veale and Brass (2019) argue that algorithmic governance increasingly reshapes public-administration systems and regulatory oversight mechanisms. Eubanks (2018) demonstrates that automated public-sector systems may reproduce socio-economic inequality and administrative exclusion. Existing literature therefore suggests that AI governance simultaneously creates administrative opportunity and institutional risk.

Research on comparative digital governance similarly identifies tensions between innovation and accountability. Nemitz (2018) argues that AI governance increasingly challenges constitutional protections and democratic oversight systems. However, current scholarship remains limited in comparatively evaluating how rights-oriented and innovation-driven governance systems influence public legitimacy and sustainable administrative governance.

Several gaps remain within existing scholarship. First, a theoretical gap persists regarding the integration of administrative-law theory, socio-legal institutionalism, and

algorithmic-governance analysis. Second, an empirical gap exists because many studies focus on technological ethics without systematically evaluating comparative governance structures and implementation mechanisms. Third, a comparative institutional gap remains concerning rights-oriented and innovation-driven AI governance systems. Fourth, a policy coordination gap exists because algorithmic governance frequently operates across fragmented institutional and regulatory systems. Fifth, a justice and sustainability gap persists because AI-governance discussions often prioritize efficiency while underestimating socio-economic inclusion and democratic accountability.

The novelty of this article lies in conceptualizing AI governance as a socio-administrative transformation rather than merely a technological regulatory issue. The article argues that governance outcomes depend on the interaction among administrative-law systems, institutional accountability, algorithmic infrastructures, and democratic legitimacy. By comparing Canada and South Korea, the article contributes to legal scholarship through a comparative framework linking AI governance, administrative accountability, institutional trust, and sustainable governance development.

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

The research objective of this study is to comparatively analyze how AI governance systems influence administrative accountability, institutional legitimacy, procedural transparency, and sustainable socio-economic governance in Canada and South Korea.

Method

This study employs comparative legal and socio-institutional analysis integrating administrative-law theory, digital-governance studies, socio-legal institutionalism, and comparative public-law analysis to examine AI governance systems in Canada and South

Korea. The research design is theoretically grounded in procedural-legitimacy theory, algorithmic-governance analysis, regulatory pluralism, and socio-technical governance frameworks. Canada and South Korea were selected because both represent globally influential AI-governance systems pursuing advanced public-sector digitalization while exhibiting substantial variation in governance philosophy, institutional architecture, and regulatory implementation strategy. Canada represents a rights-oriented and ethics-centered governance system characterized by procedural accountability, human-rights protections, and transparency safeguards. South Korea represents an innovation-driven and digitally integrated governance system characterized by coordinated smart-government infrastructures, administrative modernization, and technological integration. Comparative variables include algorithmic accountability mechanisms, administrative transparency, institutional oversight, public-sector automation, data governance, citizen protections, governance legitimacy, and socio-economic inclusion.

The empirical basis integrates government AI strategies, administrative-law reforms, OECD digital-governance indicators, UNESCO AI ethics frameworks, World Bank institutional datasets, and Scopus-indexed scholarship on algorithmic governance, administrative law, comparative digital governance, and socio-legal regulatory systems. Analytical interpretation combines comparative legal analysis with institutional governance evaluation by examining policy implementation mechanisms, oversight structures, algorithmic transparency frameworks, administrative-review systems, and governance outcomes. Reliability is strengthened through triangulation across legal frameworks, governance indicators, institutional reports, and peer-reviewed scholarship. Validity is supported by linking governance variables to observable institutional mechanisms and public-administration outcomes rather than speculative assumptions. Ethical and governance considerations include automated discrimination, surveillance expansion, procedural opacity, socio-economic exclusion, and democratic accountability. The study is limited by rapidly evolving AI technologies, changing governance frameworks, and differences in national reporting systems; however, analytical consistency is maintained by focusing on causal relationships connecting institutional structures, legal governance systems, administrative accountability, and sustainable socio-economic development.

Findings and Discussion

1. Institutional Architecture and AI Governance Coordination

The first major finding is that AI-governance effectiveness depends fundamentally on administrative and institutional architecture rather than technological adoption alone. Canada and South Korea both prioritize AI-driven governance modernization, yet their institutional systems produce different regulatory pathways and administrative priorities.

Canada's governance architecture emphasizes procedural transparency, ethical oversight, and rights-based accountability. Administrative AI systems are increasingly evaluated through human-rights standards, procedural-review mechanisms, and public-sector transparency requirements. Governance authority remains distributed across federal institutions, regulatory agencies, and ethics-governance frameworks.

South Korea follows a different governance pathway characterized by coordinated digital-state integration and centralized technological modernization. Smart-government infrastructures institutionalize AI systems across transportation, welfare administration, urban governance, and public-service coordination.

The comparison reveals governance divergence in institutional priorities. Canada prioritizes procedural legitimacy and ethical accountability, whereas South Korea prioritizes administrative efficiency and technological integration. Despite these differences, both systems demonstrate that AI governance increasingly functions as a foundational dimension of state modernization.

This finding contributes to comparative administrative-law scholarship by demonstrating that algorithmic governance systems are embedded within broader institutional and governance traditions. Weber's (1978) theory of bureaucratic legitimacy is particularly relevant because AI systems increasingly reshape administrative authority and procedural accountability.

2. Algorithmic Accountability, Transparency, and Public Legitimacy

The second finding concerns the relationship between algorithmic transparency and institutional legitimacy. Automated decision-making systems increasingly shape

public-service access, legal classifications, and administrative adjudication, making procedural accountability central to public trust.

In Canada, AI governance strongly emphasizes explainability, human oversight, and procedural transparency. Regulatory frameworks attempt to balance technological innovation with accountability safeguards through impact assessments, transparency obligations, and human-review requirements.

South Korea's governance model emphasizes administrative responsiveness, digital integration, and coordinated technological implementation. Transparency mechanisms operate within a governance framework prioritizing efficiency and public-sector modernization while maintaining relatively strong centralized oversight.

The comparison reveals different conceptions of governance legitimacy. Canada conceptualizes administrative legitimacy primarily through procedural fairness and rights protection, whereas South Korea conceptualizes legitimacy primarily through institutional effectiveness and coordinated governance capacity.

This finding aligns with Habermas' (1996) argument that institutional legitimacy depends on socially recognized procedural accountability and communicative trust. The evidence further suggests that algorithmic transparency significantly influences public confidence and governance sustainability.

3. Surveillance Governance, Data Protection, and Administrative Power

The third finding is that AI governance increasingly generates tensions concerning surveillance expansion, data governance, and institutional authority. Algorithmic systems improve administrative efficiency and predictive governance while simultaneously increasing governance asymmetry and institutional opacity.

Canada's governance framework attempts to institutionalize accountability through procedural-review systems, rights protections, and regulatory safeguards concerning data use and automated decision-making. Legal frameworks increasingly evaluate proportionality, transparency, and discriminatory risk.

South Korea's governance framework emphasizes integrated data infrastructures, technological coordination, and smart-state efficiency. Regulatory interventions

prioritize administrative modernization and digital-service expansion while maintaining centralized governance coordination.

The comparison demonstrates that algorithmic-accountability systems reflect broader governance philosophies. Canada prioritizes procedural legality and citizen protections, whereas South Korea prioritizes coordinated technological governance and administrative efficiency.

This finding contributes to socio-legal scholarship by demonstrating that AI systems are fundamentally governance institutions rather than neutral technological tools. Sustainable algorithmic governance therefore requires balancing innovation, administrative efficiency, procedural accountability, and citizen rights.

4. Institutional Resilience, Socio-Economic Inclusion, 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 inclusion simultaneously.

Canada promotes governance resilience through institutionalized ethical review systems, procedural safeguards, and rights-based oversight mechanisms. Governance resilience is associated with legal predictability, transparency protections, and democratic accountability.

South Korea emphasizes adaptive governance resilience through smart-government infrastructures, integrated digital coordination, and rapid technological implementation. Governance resilience is associated with innovation capacity, administrative responsiveness, and institutional modernization.

The comparison reveals that sustainable AI governance emerges through different institutional pathways. Canada demonstrates rights-oriented procedural resilience, whereas South Korea demonstrates innovation-centered administrative resilience. Both systems illustrate that AI governance increasingly shapes broader questions concerning institutional trust, socio-economic inclusion, and democratic legitimacy.

This finding extends administrative-law scholarship by demonstrating that algorithmic-governance systems simultaneously function as legal, technological, and socio-political institutions shaping sustainable governance development.

Table 1. Analytical Matrix of Comparative Legal and Governance Development

Variable	Canada	South Korea	Empirical Evidence	Analytical Interpretation
Governance architecture	Rights-oriented and ethics-centered governance	Innovation-driven and integrated smart-state governance	OECD and UNESCO reports identify contrasting governance systems	Institutional structures shape AI-governance pathways
AI governance philosophy	Procedural accountability and human oversight	Administrative modernization and technological integration	Comparative AI frameworks reveal differing priorities	Governance philosophy influences implementation
Transparency mechanisms	Explainability and impact-assessment obligations	Coordinated digital-administration oversight	Comparative governance evidence demonstrates varying transparency systems	Algorithmic accountability reflects institutional traditions
Institutional oversight	Distributed ethical and administrative oversight	Centralized smart-government coordination	Governance indicators reveal differing accountability mechanisms	Oversight systems shape public legitimacy
Data governance	Rights-based privacy and anti-discrimination emphasis	Integrated data infrastructure and predictive coordination	Comparative governance indicators demonstrate divergent governance models	AI governance intersects with institutional authority
Governance tension	Administrative	Surveillance and	Comparative	AI governance

	complexity and implementation delays	centralized-control concerns	governance debates differ institutionally	creates accountability trade-offs
Regulatory resilience	Procedural and rights-oriented resilience	Adaptive and innovation-centered resilience	Comparative AI-governance evidence demonstrates distinct resilience pathways	Sustainable governance requires institutional adaptation
Socio-economic implication	Inclusive accountability and citizen protections	Efficient digital-state modernization	Comparative socio-economic indicators reveal differing governance outcomes	AI governance shapes institutional transformation

The analytical matrix demonstrates that Canada and South Korea represent distinct institutional pathways of AI-governance transformation. Canada prioritizes procedural accountability and ethical oversight, whereas South Korea prioritizes technological integration and administrative modernization. Both systems achieve significant governance capacity, yet they produce different relationships among algorithmic governance, institutional legitimacy, citizen protections, and administrative efficiency.

The deeper analytical implication is that AI-governance effectiveness depends on institutional alignment among administrative-law systems, algorithmic accountability mechanisms, public legitimacy, and socio-economic inclusion strategies. Sustainable AI governance therefore emerges from socio-legal coordination rather than technological implementation alone.

Conceptual Model

Institutional Capacity → AI Governance and Administrative Coordination → Algorithmic Accountability and Procedural Transparency → Institutional Trust and Regulatory Resilience → Sustainable Socio-Economic Governance

Institutional capacity shapes the coherence and effectiveness of AI-governance systems through administrative coordination, legal adaptation, and oversight mechanisms. AI governance and administrative coordination influence algorithmic accountability, procedural transparency, and citizen protections. Algorithmic accountability and procedural transparency shape institutional trust, socio-economic inclusion, and governance legitimacy. Institutional trust and regulatory resilience strengthen administrative stability, policy responsiveness, and adaptive governance modernization. Sustainable socio-economic governance represents the long-term outcome involving algorithmic accountability, institutional legitimacy, inclusive governance, and resilient administrative transformation.

Conclusion

This study comparatively examined how AI-governance systems influence administrative accountability, institutional legitimacy, procedural transparency, and sustainable socio-economic governance in Canada and South Korea. The findings demonstrate that AI governance constitutes a structural socio-administrative transformation involving public administration, legal systems, technological infrastructures, and democratic legitimacy.

The direct answer to the research objective is that institutional structures significantly shape the effectiveness and legitimacy of AI-governance systems. Canada's rights-oriented governance framework strengthens procedural accountability and ethical oversight, while South Korea's innovation-driven governance framework strengthens administrative coordination and technological responsiveness. Both systems produce adaptive governance resilience through different institutional pathways.

The theoretical contribution of this article lies in integrating administrative-law theory, socio-legal institutionalism, digital-governance analysis, and comparative governance studies within one analytical framework. The article advances legal scholarship by conceptualizing AI governance as a socio-administrative transformation linking institutional legitimacy, algorithmic accountability, and sustainable governance.

The empirical contribution lies in systematically comparing rights-oriented and innovation-driven governance systems using AI strategies, administrative-law reforms, governance indicators, and institutional evidence. The findings demonstrate that AI-governance outcomes depend on institutional coherence, procedural legitimacy, algorithmic transparency, and adaptive legal capacity.

The legal and policy implications are substantial. Governments should strengthen algorithmic-review mechanisms, transparency obligations, anti-discrimination protections, public-sector oversight systems, and citizen-accountability safeguards. AI-governance systems should balance innovation with procedural fairness and democratic legitimacy.

The justice and sustainability implications are equally important. Sustainable AI governance requires legal systems capable of integrating technological modernization, socio-economic inclusion, institutional trust, and long-term accountability simultaneously. Governance systems that prioritize efficiency without transparency risk weakening public legitimacy and socio-political stability.

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

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

Ucapan Terimakasih

Ini harus menjadi ucapan terima kasih Anda kepada siapa pun, lembaga atau apa pun yang membantu atau berkontribusi pada penelitian penulis, dapat berupa satu kalimat atau lebih

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