EISSN: 2622-9668|PISSN: 2622-982X
Volume 9 Nomor 2 Agustus 2026: 343-374
DOI: 10.30996/jhbbc.v9i2.133574
Jurnal Hukum Bisnis Bonum Commune

Constitutional Rights and Civil Liability in Indonesian Municipal Artificial Intelligence Governance

Isharyanto[1*], Satryo Sasono[2]
[1,2]Universitas Sebelas Maret, Surakarta, Indonesia
[*]Corresponding Author: isharyanto_fh@staff.uns.ac.id

Article History:
Submitted:
24-05-2026
Received:
26-05-2026
Accepted:
06-07-2026

Keywords:
artificial intelligence governance; constitutional rights; civil liability; local government; administrative decision-making

Abstract

The use of artificial intelligence in local government administration has expanded rapidly through smart city initiatives, digital public services, and data-driven decision-making systems. In Indonesia, regional governments increasingly rely on integrated digital platforms for urban monitoring, social assistance distribution, and administrative services. However, the acceleration of digital governance has not been followed by a comprehensive legal framework capable of addressing constitutional rights protection and civil liability arising from algorithmic administrative decision-making. This research aims to examine the constitutional implications and civil liability dimensions of artificial intelligence governance in local government administration, particularly concerning privacy protection and due process in administrative decision-making. This study employs normative legal research with statutory, conceptual, and policy approaches. The research analyses constitutional principles, administrative law doctrines, data protection regulations, and governance literature, supported by case-informed analysis of Jakarta Smart City and digital social assistance verification in Surabaya. The findings reveal that municipal artificial intelligence governance in Indonesia remains fragmented across various regulatory regimes and lacks clear standards regarding algorithmic accountability, procedural fairness, audit mechanisms, and liability allocation between local governments and technology vendors. This article proposes a stage-gate governance framework integrating constitutional safeguards, data governance, ethical screening, risk assessment, and public accountability mechanisms throughout the artificial intelligence lifecycle in local government administration. The novelty of this research lies in integrating constitutional rights, administrative accountability, and civil liability into a single governance framework specifically tailored to Indonesian local government realities, articulated through the concept of algorithmic public authority and a distributed liability model grounded in Article 1365 of the Civil Code.

1. Introduction

In many countries, artificial intelligence is increasingly being integrated into public services and administrative decision-making at the local government level. Recent studies indicate that risk perception and policy awareness significantly influence public support for responsible artificial intelligence in local government, while administrative law analyses emphasize that algorithm-based decisions must still adhere to the principles of legality, transparency, equality, and proportionality.[1] The legal issues that need to be addressed are not

[1] Tal Zarsky, "The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making," *Science Technology and Human Values* 41, no. 1 (2016), https://doi.org/10.1177/0162243915605575.

merely a matter of technological efficiency, but also the limits of administrative authority and the protection of citizens' rights in data-driven decisions.[2]

Various regulations have promoted the digitization of government through electronic-based governance systems, regional innovation, public services, and smart city initiatives. Articles 386 through 390 of Law Number 23 of 2014 concerning Regional Government (Law No. 23/2014) provide the legal basis for regional innovation; Presidential Regulation Number 95 of 2018 concerning the Electronic-Based Government System (Presidential Regulation No. 95/2018) has mandated that all application-based public service innovations at the regional level must now adhere to the National SPBE Architecture to ensure interoperability (the capacity of separate systems to exchange and use data) for the sake of national budget efficiency; Law Number 27 of 2022 concerning Personal Data Protection (Law No. 27/2022) has mandated that every government agency, both central and regional, secure public data managed within electronic systems; Government Regulation Number 59 of 2022 concerning Urban Development (Government Regulation No. 59/2022) encourages major cities and metropolitan areas in Indonesia to implement the Smart City concept, and Minister of Communication and Information Technology Regulation Number 4 of 2024 concerning the Administration of Concurrent Government Affairs in the Field of Communication and Information Technology establishes standard guidelines for the organization of regional digital affairs. Through Jakarta Smart City, DKI Jakarta operates a command center, the Flood Monitoring dashboard, the JAKI app, the Community Rapid Response system, and CCTV integration, while Surabaya is developing the National Single Socio-Economic Data Matching system as well as online verification of socio-economic data. Consequently, the legal issue that arises is how local governments can utilize technology without infringing upon citizens' rights to privacy, information, and equitable services.[3]

However, these legal foundations are scattered across various regulatory frameworks and have not yet formed a specific framework for the governance of artificial intelligence in local governments. Regulations concerning local government, public services, electronic systems, smart cities, and data protection operate in isolation, even though algorithm-based administrative decisions impact officials' authority, the processing of citizen data, and legal liability for damages.[4] The absence of a comprehensive framework means that oversight of artificial intelligence tends to be sector-specific and has not yet established clear standards for accountability, due process, and civil liability. Therefore, this study focuses on identifying legal issues and the need to develop a more integrated regulatory framework.[5]

---

[2] Nasim Al Balushi, "Innovating Economic Models for Smart Green Cities Through Artificial Intelligence Techniques," *International Conference for Artificial Intelligence: Applications, Innovation and Ethics, AI2E 2025*, 2025, https://doi.org/10.1109/AI2E64943.2025.10982723.

[3] Muath Mohammed Alashqar et al., "Legal Framework for Regulating AI in Smart Cities: Privacy, Surveillance, and Ethics," *International Conference for Artificial Intelligence: Applications, Innovation and Ethics, AI2E 2025*, 2025, https://doi.org/10.1109/AI2E64943.2025.10983107.

[4] Ahmed Hassebo, *Smart Cities and Surveillance Technology: Balancing Innovation, Security, and Privacy in Urban Environments* (2025), https://doi.org/10.5772/intechopen.1011457.

[5] Karen Yeung, "Algorithmic Regulation: A Critical Interrogation," *Regulation and Governance* 12, no. 4 (2018), https://doi.org/10.1111/rego.12158.

Panagopoulou's study examines algorithmic decision-making in public administration and emphasizes the need to reinterpret the principles of administrative law, particularly legality, transparency, equality, and good administration.[6] The strength of this study lies in its refinement of administrative law principles in relation to automated decisions; however, the study has not yet linked this issue to the context of local government in Indonesia or to civil liability for damages incurred by citizens. While this study is important as a theoretical foundation, it is not yet sufficient to address the legal issues arising from the governance of artificial intelligence in local governments in Indonesia.

David et al. demonstrate that risk perception and policy awareness influence public support for responsible artificial intelligence in local government.[7] These findings are useful for gauging public acceptance, but they focus on public attitudes as measured by surveys, rather than on the legal consequences of algorithm-based administrative decisions. Meanwhile, Yigitcanlar et al. propose a phased framework and oversight mechanisms for the governance of artificial intelligence in local government.[8] This is the study most closely aligned with the focus of this research because it provides an operational framework for municipal governance, namely local government. However, that framework has not yet situated constitutional rights, personal data protection, and civil liability within the context of Indonesian law. Therefore, the novelty of this article lies in the integration of three key issues that have not been fully addressed in previous research: constitutional rights, administrative law, and civil law.[9]

Schneider's study shows that the use of algorithmic models developed by the private sector can undermine transparency and accountability due to intellectual property barriers and the dominance of technology contractors.[10] However, the study is based on European Union law and therefore does not yet address issues specific to Indonesia, such as the role of local governments as data controllers, relationships with vendors, and procedural safeguards for citizens in public service decision-making.[11] Therefore, this study bridges the gap between the theory of algorithmic governance and the issue of legal accountability in the context of local government in Indonesia.

Against this backdrop, this article aims to analyze how the rights to privacy and due process should serve as the foundation for the governance of artificial intelligence in local government administrative decisions, as well as how the civil liabilities of the government and

---

[6] Fereniki Panagopoulou Logos Verlag Berlin λογος, *The European Regulation on Artificial Intelligence A First Constitutional-Ethical Consideration* (2025).

[7] Anne David et al., "Public Perceptions of Responsible AI in Local Government: A Multi-Country Study Using the Theory of Planned Behaviour," *Government Information Quarterly* 42, no. 3 (2025), https://doi.org/10.1016/j.giq.2025.102054.

[8] Tan Yigitcanlar et al., "Governing Urban AI from the Frontline: A Stage-Gate Framework for Municipal Algorithmic Decision-Making," *Smart Cities* 9, no. 5 (2026): 81, https://doi.org/10.3390/smartcities9050081.

[9] Balushi, "Innovating Economic Models for Smart Green Cities Through Artificial Intelligence Techniques."

[10] G. Schneider, "The Algorithmic Governance of Administrative Decision-Making: Towards an Integrated European Framework for Public," European Journal of Public Law, no. 2 (2023).

[11] Corinne Cath et al., "Artificial Intelligence and the 'Good Society': The US, EU, and UK Approach," *Science and Engineering Ethics* 24, no. 2 (2018), https://doi.org/10.1007/s11948-017-9901-7.

vendors need to be defined to mitigate the risk of harm to citizens.[12] The theoretical contribution of this article lies in the development of a governance framework that integrates constitutional law, administrative law, and civil law into a single analytical framework. Its practical contribution is to provide a foundation for the formulation of local policies, standards for digital system procurement, algorithmic audits, and clearer citizen complaint mechanisms. The focus of this research is to identify key legal issues and propose context-specific solutions.

2. Methods

The research method used in this article is a qualitative legal study focused on theory-building and the development of a conceptual framework.[13] This study aims to examine the protection of constitutional rights and civil liabilities in the use of artificial intelligence in local government administrative decisions. Therefore, the primary approaches employed are the legal, conceptual, and policy approaches. The study does not utilize surveys, interviews, field observations, or experiments, nor does it involve participants or respondents. The units of analysis in this research consist of legal norms, policy documents, academic literature, and documented municipal government practices. Primary data sources include the 1945 Constitution of the Republic of Indonesia, Law Number 30 of 2014 concerning Government Administration (Law No. 30/2014), Law No. 27/2022, regulations on the Electronic-Based Government System, smart city policies, and various international instruments regarding the governance of artificial intelligence. The research also utilizes secondary legal materials, including scientific journal articles, academic books, and global policy documents related to privacy protection, due process or procedural safeguards in administrative decisions, algorithmic accountability, and legal liability in digital governance. Methodologically, the research was conducted through three interrelated stages. The first stage involved a systematic literature review to identify key legal issues regarding artificial intelligence governance, constitutional rights, and civil liability. The second stage involved a normative and policy analysis of various national and international legal instruments to identify regulatory gaps regarding the use of artificial intelligence by local governments. The third stage involved conceptual refinement based on case studies of Jakarta Smart City and the digitization of social assistance verification in Surabaya, which were used as illustrations to clarify the relationship between data-driven administrative decisions, the protection of citizens' rights, and the legal responsibilities of local governments and technology vendors.[14]

Data analysis was conducted using a legal-qualitative approach through the interpretation of legal norms, thematic clustering, and the identification of legal risk patterns in the use of artificial intelligence in local government administration. The analysis began by examining the relationship between the rule of law, the right to privacy, due process, and the general principles of good governance in the context of algorithm-based administrative decisions. Furthermore, the study identifies civil law issues arising from the use of digital systems, such as the misuse of personal data, exclusion errors in the distribution of social

[12] Hannah Lebovits, "Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor," *Public Integrity* 21, no. 4 (2019), https://doi.org/10.1080/10999922.2018.1511671.
[13] Creswell, "Qualitative Inquiry and Research Design: Choosing Among Five Approaches (4th Ed.). Thousand Oaks, CA: SAGE Publications.," in *Public Administration*, vol. 77, no. 4, preprint, 2018.
[14] D. A. Prawansa et al., "Implementasi Smart City Di Kota Surabaya," *Ministrate: Jurnal Birokrasi …*, 2023.

assistance, losses resulting from algorithmic errors, and legal liability between local governments and technology providers. The literature and policy documents are then compared with digital governance practices in Jakarta and Surabaya to examine how the use of data and automated systems impacts citizens' constitutional rights while simultaneously giving rise to new civil legal relationships within digital governance. From this process, the main dimensions of a stage-based governance framework and oversight gateways were developed, encompassing organizational readiness, ethical screening, data governance, technology procurement, risk assessment, participatory oversight, monitoring, and post-implementation evaluation. The validity of the research is ensured through the use of relevant legal materials and academic sources, as well as consistent coherence between the research questions, the normative approach, and the analytical framework employed. The reliability of the research is strengthened through systematic analytical procedures and by limiting conclusions solely to aspects supported by available legal materials and literature.[15] Using this approach, this study aims to develop a framework for the governance of artificial intelligence that can strengthen the protection of citizens' constitutional rights while also establishing a basis for civil liability in local government administrative decisions based on artificial intelligence.

3. Results and Discussion

3.1. Constitutional Risks in the Governance of Artificial Intelligence by Local Governments

The development of artificial intelligence in local government administration signals a fundamental shift in the relationship between the state and its citizens. Local governments no longer merely perform conventional administrative functions but are increasingly relying on data-driven digital systems for oversight, public services, the distribution of social assistance, transportation management, and urban space monitoring. In this context, the use of artificial intelligence cannot be understood merely as a technical tool to improve bureaucratic efficiency. The use of this technology directly impacts citizens' constitutional rights because administrative decisions generated through data-driven systems have the potential to determine public access to public services, social assistance, mobility, and even their own private spaces.

In the Indonesian context, this transformation is clearly evident in the development of Jakarta Smart City and the digitization of social services in Surabaya. Jakarta Smart City has established a command center, the Flood Monitoring Dashboard, the Jakarta Kini (JAKI) app, CCTV integration, and the Community Rapid Response (CRM) system, which processes community data in real time.[16] The Surabaya City Government is developing the National Single Socioeconomic Database (DTSEN), digital socioeconomic verification, and welfare data matching as the basis for social assistance distribution and development planning. These two

[15] Matthew J. Page et al., "The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews," in *BMJ*, vol. 372, preprint, 2021, https://doi.org/10.1136/bmj.n71.
[16] Satria Arkhanta and Teuku Afrizal, "Collaborative Governance Untuk Optimalisasi Pelaksanaan Aplikasi JAKI dalam Koridor Jakarta Smart City di Provinsi Jakarta," *Jurnal Ilmiah Administrasi Publik* 9, no. 3 (2023).

initiatives demonstrate that local government administration is increasingly moving toward a data-driven governance model.[17]

The main issue that arises is that the expanding use of data and algorithms in local government has not been accompanied by adequate legal protections for citizens' constitutional rights. The right to privacy, the right to legal protection, the right to adequate public services, and the right to due process in administrative decisions are at risk of being undermined when decision-making is carried out through non-transparent automated systems. In the context of a democratic rule-of-law state, the use of technology cannot justify the curtailment of citizens' rights to transparency and procedural safeguards.

The right to privacy is one of the most central issues in the governance of artificial intelligence by local governments. Although the 1945 Constitution of the Republic of Indonesia does not explicitly mention the right to privacy, such protection can be derived from Article 28G(1), which guarantees the protection of one's person, family, honor, dignity, and sense of security. Furthermore, Article 28F guarantees citizens' right to obtain and disseminate information. In the context of digital governance, these two provisions form the constitutional basis for the protection of personal data and the limitation of state intervention in citizens' private spheres.

The Constitutional Court (*Mahkamah Konstitusi*, the Indonesian court of constitutional review) has progressively constructed the right to privacy from these provisions. In Decision Number 50/PUU-VI/2008, which reviewed the criminalization of online defamation, the Court located the protection of personal matters, family, honor, and reputation within Article 28G(1) and drew on Article 12 of the Universal Declaration of Human Rights and Article 17 of the International Covenant on Civil and Political Rights to define privacy as freedom from arbitrary interference with private affairs.[18] This interpretation confirms that privacy operates as a constitutional right in Indonesia even though the constitutional text never uses the word.

The Court clarified the status of this right in Decision Number 5/PUU-VIII/2010 concerning the constitutionality of interception rules in the Electronic Information and Transactions Law. The Court held that the right to privacy belongs to the category of derogable rights, namely rights that may be limited, rather than to the non-derogable rights enumerated in Article 28I(1). The decisive constitutional consequence is procedural. Any limitation must satisfy Article 28J(2), which permits restrictions only when they are established by statute (*undang-undang*) and pursue legitimate aims in a democratic society. On this basis the Court annulled Article 31(4) of the law, which had delegated the regulation of interception procedures to a government regulation, because an instrument below the level of a statute cannot carry a limitation of a constitutional right.[19]

Decision Number 20/PUU-XIV/2016 extended this line of reasoning to electronic data. The Court ruled that electronic information and electronic documents obtained through interception possess evidentiary value only when the interception is conducted at the request of law enforcement authorities within the framework of statutory powers, and it treated the

[17] Yoshiko Naiki, "Smart Cities and International Trade Law," *World Trade Review* 23, no. 3 (2024), https://doi.org/10.1017/S1474745624000077.
[18] Constitutional Court of the Republic of Indonesia, Decision Number 50/PUU-VI/2008.
[19] Constitutional Court of the Republic of Indonesia, Decision Number 5/PUU-VIII/2010.

unconsented collection of personal electronic data by state organs as a presumptively unlawful intrusion into the private sphere.[20] Read together, the three decisions recognize personal data protection as an integral component of the constitutional right to privacy and establish a test of statutory basis, legitimate purpose, and proportionality for any state activity that processes personal data.

This constitutional construction carries direct consequences for municipal artificial intelligence governance. Large-scale data integration in Jakarta Smart City and algorithmic verification of welfare data in Surabaya constitute limitations of the constitutional right to privacy and must therefore meet the requirements of Article 28J(2). Most of these practices currently rest on presidential regulations, ministerial regulations, regional regulations, and administrative discretion rather than on a specific statutory mandate that defines the scope of data collection, retention, and algorithmic processing. Measured against the standard articulated in Decision Number 5/PUU-VIII/2010, this regulatory position is constitutionally fragile because rights-limiting data practices are being authorized through instruments below the level of a statute.

Jakarta Smart City demonstrates how local governments are beginning to integrate various sources of citizen data into a single digital government ecosystem. Mobility data, CCTV footage, citizen complaints, geospatial information, health service data, and various forms of public digital interaction are collected and processed to support administrative decision-making. On one hand, this model enhances government efficiency and enables rapid responses to urban issues. On the other hand, large-scale data integration also expands the state's surveillance capabilities over its citizens.[21]

The use of CCTV analytics, predictive monitoring, and real-time data integration points to a trend toward surveillance governance, or governance based on digital surveillance. In such a model, the government gains far greater capabilities to monitor public behavior through continuous data processing.[22] This situation raises questions regarding the proportionality of state intervention in citizens' right to privacy. In modern constitutional theory, restrictions on rights are justified only if they are lawful, proportionate, and necessary for a legitimate public interest.

The term surveillance governance requires conceptual precision before it can carry analytical weight. In this article, surveillance governance refers to a mode of governing in which the continuous, population-wide, and largely automated collection and analysis of behavioral data becomes a primary instrument through which public authorities observe, classify, and act upon citizens. The concept differs from e-government, which denotes the digitization of administrative services and internal processes, and from smart governance, which emphasizes data-supported policy coordination and citizen participation. The distinguishing feature lies in the direction of the information flow. E-government and smart governance digitize transactions that citizens initiate, while surveillance governance generates

[20] Constitutional Court of the Republic of Indonesia, Decision Number 20/PUU-XIV/2016.
[21] Tommy Kurnia and Achmad Djunaedi, "Tahapan Perkembangan Provinsi DKI Jakarta Menuju Smart City," *TATALOKA* 22, no. 4 (2020), https://doi.org/10.14710/tataloka.22.4.538-555.
[22] Vito Albino et al., "Smart Cities: Definitions, Dimensions, Performance, and Initiatives," *Journal of Urban Technology* 22, no. 1 (2015), https://doi.org/10.1080/10630732.2014.942092.

knowledge about citizens independently of any transaction, often without their awareness, and uses that knowledge to anticipate and steer behavior.[23]

Measured against this definition, the deployment of CCTV systems is not automatically a form of surveillance governance. A camera used for traffic counting or incident response remains an instrument of service delivery. The qualifying threshold is crossed when CCTV feeds are combined with analytics, identification capabilities, and cross-database integration so that the system produces continuous, individualized, and retrievable records of behavior in public space. The Jakarta configuration meets this threshold because camera networks are linked to a command center, complaint data, and city dashboards that permit longitudinal observation of persons and places. The constitutional relevance of the classification follows directly. Once a system functions as surveillance, its operation constitutes an ongoing limitation of the right to privacy and must satisfy the statutory basis and proportionality requirements described above.

This issue is further complicated by the fact that local government data governance in Indonesia lacks clear standards for algorithmic auditing and oversight. Although Article 1(4) and Article 19 of Law No. 27/2022 designate local governments as controllers of personal data, oversight of public data usage remains sectoral and administrative in nature. There are no standards specifically regulating explainability or the obligation to explain how algorithms are used in administrative decision-making.

In the international literature, Solove argues that privacy cannot be understood merely as the confidentiality of individual information, but also as protection against the abuse of power. When the state has the capacity to collect and process large amounts of public data without adequate oversight, an imbalance in the power relationship between the government and its citizens arises.[24] In the context of local government in Indonesia, this issue is evident in the lack of an independent mechanism to oversee the use of data in smart city systems. In addition to privacy rights, the use of artificial intelligence in local government administration also raises issues of due process or procedural safeguards in administrative decision-making. Pursuant to Articles 5, 7, and 10(1) of Law No. 30/2014, every government action must comply with the principles of legality, transparency, accountability, and fairness. Furthermore, according to Article 10(1)(d), Article 61(1), and Articles 75 through 78 of the General Principles of Good Governance, citizens are entitled to the right to be heard, to receive a rationale for government decisions, and to file an objection if they are harmed by administrative actions of the state.

However, the use of automated administrative decision-making has the potential to undermine these principles. The Surabaya City Government, for example, uses digital verification and data matching for welfare data to determine the distribution of social assistance and public welfare services. While this system does improve administrative efficiency and the accuracy of aid distribution, this study found that such digital mechanisms

[23] Hassebo, *Smart Cities and Surveillance Technology*.
[24] Daniel Solove, *Understanding Privacy* (2008), https://ssrn.com/abstract=1127888Electroniccopyavailableat:https://ssrn.com/abstract=1127888Electroniccopyavailableat:https://ssrn.com/abstract=1127888.

also carry the risk of exclusion errors and data mismatches when residents are excluded from the beneficiary category due to data errors or algorithmic processing.

The incompatibility between automated decision-making and Indonesian administrative law can be specified doctrinally rather than merely asserted. The principle of legality (*asas legalitas*, the requirement that administrative action rest on law) demands that every administrative action stand on an identifiable legal basis and remain within the boundaries of conferred authority. An algorithmic system trained on historical data develops decision criteria that no statute has enacted and no official has formally adopted. When such criteria determine eligibility or priority, the operative norm of the decision is generated by the system rather than by law, which strains the legality principle at its foundation.

A similar tension arises with the requirement of reasoned decision-making. Articles 5, 7, and 10(1) of Law No. 30/2014 oblige officials to base decisions on accurate facts and to provide reasons that citizens can examine, while Article 61(1) and Articles 75 through 78 Law No. 30/2014 give citizens the right to object and to appeal administratively. These rights presuppose that a decision has an articulable rationale. Automated systems frequently produce outputs whose internal logic cannot be reconstructed even by their operators, which leaves the duty to state reasons satisfied, at best, by generic explanations. Legal certainty suffers in parallel because identical factual situations can receive different treatment after silent model updates, and the affected citizen has no means of detecting the change.

Transparency, accountability, and the right to administrative review complete the doctrinal picture. Review under Law No. 30/2014 and judicial review before the administrative courts both depend on the ability to identify the decision, the decision-maker, and the grounds of the decision. Where an algorithmic recommendation substantially shapes the outcome, each of these elements becomes blurred. The conclusion is not that automation is inherently unlawful. Automated administrative decision-making is lawful only when it is embedded in arrangements that preserve a statutory basis for the decision criteria, a human official who owns the decision and its reasons, and an accessible procedure through which citizens can contest the result.

In a number of cases involving digital social assistance during the COVID-19 pandemic, citizens have had difficulty obtaining an explanation as to why they were not registered or were removed from the list of aid recipients. This situation highlights how opaque decision-making can undermine citizens' right to understand the basis for government administrative actions. This issue is significant because due process is not merely a formal administrative procedure, but a component of constitutional protection against arbitrary state action.

Institutional findings substantiate that exclusion errors are an empirically documented phenomenon rather than a speculative risk. The Ombudsman of the Republic of Indonesia reported that, by early June 2020, 817 of the 1,004 complaints received through its pandemic complaint channel, equivalent to 81.37 percent, concerned the distribution of social assistance, with unregistered eligible residents and registered residents who never received assistance among the dominant grievances.[25] Between June 2020 and October 2021, the institution

[25] Ombudsman Republik Indonesia, "Evaluasi Penyaluran Bantuan Sosial (Bansos) Tahap Satu, Covid-19," June 2020, https://ombudsman.go.id/artikel/r/artikel--evaluasi-penyaluran-bantuan-sosial-bansos-tahap-satu-covid-19-.

recorded a further 275 formal complaints and 691 consultation requests concerning social welfare services, and its final investigation report directed corrective actions to the Ministry of Social Affairs, with the accuracy of beneficiary targeting data listed first among four supervisory concerns.[26]

Audit findings point in the same direction and indicate that the errors arise primarily from the interaction between data quality and automated identity matching. The Supreme Audit Agency (*Badan Pemeriksa Keuangan*, BPK) found that the Integrated Social Welfare Data (DTKS) determination of January 2020 contained 10,992,479 household members with invalid national identity numbers, 16,373,682 with invalid family card numbers, and 86,465 duplicate identity numbers, and that cash social assistance was disbursed to 239,154 beneficiary families holding invalid identity numbers and 14,475 families holding duplicate numbers. Following these findings and parallel findings by the Financial and Development Supervisory Agency and the Corruption Eradication Commission, the Ministry of Social Affairs deactivated 21.15 million entries from the beneficiary database in 2021.[27] These figures demonstrate that automated matching against flawed registries converts data defects into administrative exclusions at scale. The exclusion error is therefore a joint product of data governance deficiencies and matching system design, and the successor framework now used for verification inherits the same risk wherever matching is automated without accessible correction procedures.

Citron and Pasquale refer to this phenomenon as a "scored society," a condition in which administrative assessments of citizens are increasingly determined by data processing and predictive models that are not easily understood by the public.[28] In the context of local government, such a system could create a new form of digital discrimination, particularly against vulnerable groups who rely on public services and social assistance.[29]

Table 1 highlights the major constitutional risks identified in the context of local government artificial intelligence governance and serves as a reference point for the subsequent discussion

Table 1. Constitutional Risks in Local Government Artificial Intelligence Governance

Governance Aspects	Jakarta	Surabaya	Constitutional Implications
Data Integration	Integration of CCTV, CRM, JAKI, and city dashboard	Integration of welfare data and DTSEN	Risks of privacy violations and profiling

[26] Ombudsman Republik Indonesia, "Penyaluran Bansos Kerap Bermasalah, Ombudsman Berikan Saran Tindakan Korektif kepada Kemensos," December 26, 2021, https://www.ombudsman.go.id/news/r/penyaluran-bansos-kerap-bermasalah--ombudsman-berikan-saran-tindakan-korektif-kepada-kemensos.

[27] Indonesia.go.id, "Benahi DTKS, 21 Juta Data Penerima Bansos Dipangkas," May 29, 2021, https://indonesia.go.id/kategori/editorial/2838/benahi-dtks-21-juta-data-penerima-bansos-dipangkas.

[28] Danielle Keats Citron and Frank Pasquale, "The Scored Society: Due Process for Automated Predictions," *Washington Law Review* 89, no. 1 (2014).

[29] Yasinta Najwa et al., "Analisis Efektivitas Program Perlindungan Sosial Dalam Meningkatkan Kesejahteraan Kelompok Rentan Di Indonesia," *Al-I'timad: Jurnal Dakwah Dan Pengembangan Masyarakat Islam* 2, no. 1 (2024), https://doi.org/10.35878/alitimad.v2i1.1131.

Governance Aspects	Jakarta	Surabaya	Constitutional Implications
Decision-Making	Real-time data-driven monitoring and response	Verification of digital social assistance	The potential for opaque decision-making
Transparency	The algorithmic mechanism is not fully transparent	Verification criteria are not always accessible to residents	Weak right to an explanation
Due Process	Digital oversight has not yet undergone an independent audit	Administrative challenges	Risk of procedural unfairness
Legal Oversight	Regulations are scattered and fragmented	There are no standards for algorithmic audits	Fragmentation of AI governance

Source: Compiled from Jakarta Smart City, the Surabaya City Government, and the author's analysis.

This situation demonstrates that the use of artificial intelligence in local government can no longer be discussed solely within the framework of technological innovation. The issues that have arisen have shifted into the realm of constitutional governance, as they concern restrictions on citizens' rights and changes in the relationship between the state and society in the digital sphere.[30] This study emphasizes that local governments' governance of artificial intelligence must be built on clear constitutional safeguards, including privacy protections, due process, algorithmic transparency, and the right to seek legal redress for administrative actions based on digital systems. The constitutional exposure of current practices can be summarized by mapping each governance risk to the constitutional provision it implicates.[31] To provide a more structured constitutional analysis, Table 2 aligns the governance risks arising from local government artificial intelligence governance with the constitutional provisions designed to address them.

Table 2. Mapping of Governance Risks to Constitutional Provisions in Local Government Artificial Intelligence Governance

Governance Risk	Constitutional Provision	Potential Violation
Mass Data Integration	Article 28G(1)	Privacy infringement
Algorithmic Profiling	Article 28D(1)	Unequal treatment
Automated Benefit Allocation	Article 28D(1)	Due process violation
Opaque Algorithms	Article 28F	Denial of right to information
Lack of AI Audit	Article 28I(4)	Failure of state protection duty

Source: Compiled by the author based on the 1945 Constitution of the Republic of Indonesia and research findings

[30] Ming Sung Kuo, "Democracy and Emergency: Finding the Constitutional Foundation of the Knowledgeable State in Social Dynamics," *Journal of Law and Society* 50, no. S1 (2023), https://doi.org/10.1111/jols.12432.

[31] Alexander Wuttke et al., "Populist Citizens in Four European Countries: Widespread Dissatisfaction Goes with Contradictory but Pro-Democratic Regime Preferences," *Swiss Political Science Review* 29, no. 2 (2023), https://doi.org/10.1111/spsr.12548.

3.2. Regulatory Fragmentation and Gaps in Local Government Governance of Artificial Intelligence

This study found that one of the fundamental issues in the use of artificial intelligence in local governments in Indonesia is the fragmentation of legal regulations. While the implementation of smart cities and digital government is indeed growing rapidly, the regulatory framework governing data use, algorithmic decision-making, the protection of citizens' rights, and legal liability remains scattered across various legal regimes that are not fully integrated. This situation has led to the adoption of artificial intelligence outpacing the administrative legal system's ability to regulate and oversee it.[32]

Normatively, the use of digital technology in local government is legitimized by Law No. 23/2014. Articles 386 through 390 provide local governments with the flexibility to innovate in the administration of government and the delivery of public services. These provisions serve as the legal basis for local governments to establish command centers, city dashboards, public service applications, and data integration systems. However, the law was not specifically designed to regulate the use of artificial intelligence or algorithm-based administrative decision-making. Article 391 of Law No. 23/2014 also requires local governments to provide a local government information system covering regional development and finance. This provision demonstrates that government digitalization is indeed part of national policy. However, these regulations are more oriented toward strengthening administration and bureaucratic efficiency than protecting citizens' constitutional rights within the digital government ecosystem.[33]

The silence of the Law No. 23/2014 on artificial intelligence does not end the legal analysis, because the use of such systems can plausibly be located within two existing doctrines. The first is regional discretion. Local governments may argue that the choice of administrative instruments, including algorithmic ones, falls within the managerial freedom that accompanies their attributed functions. The second is regional innovation. Articles 386 through 390 define regional innovation as all forms of renewal in the administration of regional government, subject to principles that include effectiveness, public interest orientation, and accountability, require its stipulation in regional regulations or regional head regulations, and protect officials from liability when an innovation fails despite good-faith implementation. Algorithmic systems for service delivery fit this definition of renewal comfortably, which means the Law No. 23/2014 in fact authorizes their adoption rather than merely failing to mention them.

This authorization, however, is constitutionally bound. The innovation provisions confer power to reorganize administration, not power to limit constitutional rights, and the liability protection for failed innovation covers the fiscal failure of a program, not harm inflicted on citizens through unlawful data processing or wrongful exclusion. Under Article 28J(2) of the constitution, as construed in Decision Number 5/PUU-VIII/2010, any rights-limiting dimension of a digital innovation requires a statutory foundation. A regional

[32] E. Yu. Tikhaleva, "'Smart Cities': Legal Regulation and Potential of Development," *Journal of Digital Technologies and Law* 1, no. 3 (2023), https://doi.org/10.21202/jdtl.2023.35.
[33] Ade Uswatun Hasanah et al., "Inovasi Pelayanan Publik Berbasis Teknologi Digital : Tantangan Dan Peluang Di Pemerintah Daerah," *INNOVATIVE: Journal Of Social Science Research* 4, no. 5 (2024).

regulation or a regional head regulation is therefore an adequate vehicle for the administrative side of digital innovation, but an inadequate vehicle for its rights-limiting side. The practical consequence is a layered requirement. Local governments may innovate with algorithmic systems based on Articles 386 through 390, but the data collection, profiling, and automated determinations embedded in those systems must trace back to statutes such as the Law No. 27/2022, and where no statute covers the practice, the constitutional default is that the practice is impermissible.

In addition to the Regional Government Law, the development of digital governance is also supported by Presidential Regulation No. 95/2018. This regulation serves as the primary foundation for the integration of government digital services to prevent the duplication of applications and budget waste. In practice, SPBE encourages local governments to build data integration, service interoperability, and the digitization of public administration. However, the primary focus of SPBE remains on the effectiveness of bureaucratic governance and service efficiency, rather than on managing algorithmic risks and ensuring procedural fairness. The legal consequence of this orientation is concrete. Because SPBE prescribes architectural and interoperability standards without prescribing procedural standards for automated decisions, administrative outputs produced through SPBE platforms enter the legal system without a defined duty of explanation, without audit requirements, and without a designated locus of responsibility. A citizen adversely affected by such an output faces a decision that is formally attributable to an agency but substantively generated by an unregulated technical process, which weakens both the right to object under Law No. 30/2014 and the ability of the administrative courts to test the reasoning of the decision.[34]

A similar situation is evident in Presidential Regulation Number 39 of 2019 concerning One Data Indonesia. This regulation promotes the integration and standardization of government data as a basis for decision-making. In the context of smart cities, this policy serves as the foundation for the development of data-driven governance across various regions. However, large-scale data integration also increases the risk of profiling, misuse of personal data, and digital surveillance if not accompanied by adequate control mechanisms. The issue of personal data protection has indeed begun to receive attention through Law No. 27/2022. This regulation designates local governments as personal data controllers responsible for the security and use of citizens' data. In the context of artificial intelligence governance, these provisions are crucial because nearly all digital government systems rely on the collection and processing of citizens' data.

This study found that Law No. 27/2022 does not yet specifically regulate the use of algorithms in administrative decision-making. There are currently no provisions governing citizens' rights to receive explanations for automated decisions, the right to object to certain forms of profiling, or the government's obligation to conduct algorithmic audits of systems

[34] Aadil Bari et al., "Advancements in Waste Management: A Comprehensive Review of Artificial Intelligence Applications in Smart Cities," *Smart Construction and Sustainable Cities* 4, no. 1 (2026), https://doi.org/10.1007/s44268-026-00088-8.

used in public services. As a result, legal protections for citizens remain incomplete and do not yet address all the implications of using artificial intelligence in local government.[35]

This regulatory fragmentation indicates a regulatory lag, a delay in the legal system's response to advancements in digital government technology. Technology is evolving rapidly through platform integration, big data processing, and predictive systems, while regulations move more slowly and tend to be sector-specific. Under these circumstances, local governments are implementing digital innovations without clear national standards regarding algorithmic accountability, explainability, and independent oversight mechanisms.[36] The challenges posed by regulatory fragmentation are further detailed in Table 3, which identifies the principal gaps, overlaps, and inconsistencies within the current governance framework.

Table 3. Regulatory Fragmentation in Local Government Artificial Intelligence Governance

Regulation	Constitutional Function	Regulatory Gap	Consequence
Law No 23/2014	Innovation authority	No AI safeguards	Unchecked discretion
Presidential Regulation No 95/2018	Digital governance	No due process standards	Opaque decisions
Presidential Regulation No. 39/2019	Data integration	No anti-profiling safeguards	Privacy risks
Law No. 27/2022	Data protection	No right to explanation	Weak procedural protection
Law No. 19/2016	Electronic legality	No AI accountability	Accountability vacuum
BSSN Regulation No. 4/2021	Cybersecurity	No fairness auditing	Algorithmic bias risk

Source: Compiled by the author from various relevant regulations.

This fragmentation of regulations indicates that artificial intelligence governance in Indonesia is still dominated by a sectoral approach. While each regulation addresses certain aspects of digital technology, they have not yet formed a governance framework that integrates the protection of constitutional rights, administrative oversight, and legal accountability into a single, cohesive system. As a result, local governments have considerable discretion in determining how technology is used in public services.[37]

From an administrative law perspective, this situation raises questions about the legality of government actions. The use of artificial intelligence in administrative decision-making has

[35] Robert Cowley et al., "The Smart City and Its Publics: Insights from across Six UK Cities," *Urban Research and Practice* 11, no. 1 (2018), https://doi.org/10.1080/17535069.2017.1293150.
[36] Yanqu Huang et al., "A Study of Risk Accumulation in Financial Systems from the Perspective of Complex Networks," *Financial Innovation* 12, no. 1 (2026), https://doi.org/10.1186/s40854-025-00840-6.
[37] João Carlos N. Bittencourt et al., "On the Role of AI in Building Generative Urban Intelligence," *Artificial Intelligence Review* 59, no. 2 (2026), https://doi.org/10.1007/s10462-025-11469-3.

the potential to alter the scope of public officials' discretion.[38] Decisions that were previously made directly by administrative officials are now increasingly influenced by algorithmic recommendations and automated data processing. This issue is significant because modern administrative law is founded on the principle that every government action must be legally accountable and subject to review through appeal mechanisms and judicial oversight.

Administrative law doctrine sharpens this concern. Discretion is inherently vested in public officials as persons exercising public office; its exercise must remain subject to review, and Articles 22 through 24 of Law No. 30/2014 condition lawful discretion on legitimate purpose, sound reasoning, and the absence of abuse of authority. Each of these requirements presupposes a human decision-maker who selects among alternatives and can articulate why. Algorithmic recommendation systems gradually displace this judgment. When officials routinely adopt system outputs, whether from deference to technical authority, workload pressure, or reluctance to deviate from a documented recommendation, the substance of the decision migrates to the system while the formal authority remains with the official.

The displacement creates an accountability asymmetry that administrative law is not yet equipped to resolve. An artificial intelligence system cannot be summoned before an administrative court, cannot be made the addressee of an objection, and cannot bear the legal responsibility that attaches to the exercise of public authority, yet citizens suffer real consequences from decisions heavily shaped by algorithmic outputs. The official who signs the decision remains formally responsible, but a responsibility that the responsible person cannot substantively explain renders review formal rather than effective. The doctrinal answer developed in this article is to treat reliance on an algorithmic recommendation as itself an exercise of discretion. The decision to adopt the output, the decision not to verify it, and the decision to deploy the system in the first place are all human decisions that satisfy the conditions for administrative review, which keeps the chain of accountability anchored in persons even where the content of the decision originates in a machine.

When it comes to artificial intelligence, the issue of accountability becomes more complex because administrative decisions are often the result of a combination of technological systems, data processing, and human intervention, the boundaries of which are not entirely clear. This situation creates what Zarsky refers to as the "opacity problem", a condition in which the decision-making process becomes difficult to understand, even for the institutions operating the system.[39] Another issue that has emerged is local governments' dependence on private technology vendors. Both the Jakarta Smart City initiative and the social digitization system in Surabaya demonstrate that local governments are heavily reliant on third-party digital platform integration, data processing, and software support. This dependence creates vendor lock-in, a situation in which local governments become so dependent on a single technology provider that it becomes difficult to conduct independent oversight of the systems they use.

---

[38] Jiawei Tong et al., "From Urban Dynamics to Intelligence: A Spatiotemporal Framework for Cross-Modal Urban Crowd Flow Management," *Cities* 174 (2026), https://doi.org/10.1016/j.cities.2026.107097.

[39] Zarsky, "The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making."

Applied concretely, the opacity problem manifests at specific points in both cities.[40] In the Jakarta ecosystem, three mechanisms operate without public visibility into their decision logic. The prioritization rules of the citizen complaint response system determine which reports receive attention first, the analytics applied to integrated CCTV feeds determine which events are flagged for intervention, and the aggregation rules of the city dashboards determine how neighborhoods are represented to decision-makers. In Surabaya, the matching rules that compare welfare applicants against the integrated socio-economic data, including the thresholds at which discrepancies trigger exclusion, are not published, and rejected residents receive the result of the verification without the criteria that produced it.

This opacity has a precise consequence for judicial protection. Review before the administrative courts requires the claimant to identify a decision and to articulate the grounds on which it is defective, and it requires the court to test the factual basis and reasoning of the contested action. A resident excluded by an unexplained data match can do neither, because the operative criteria are inaccessible, and the court receives an administrative record in which the substantive reasoning occurred inside a system that the defendant agency itself may be unable to reconstruct. Opacity, therefore, does more than reduce the quality of administration. It disables the two procedural premises on which the Indonesian system of administrative justice depends, namely an identifiable rationale and a reviewable record.

From a civil law perspective, the relationship between local governments and technology vendors raises issues of contractual governance and the allocation of legal liability.[41] When data breaches, algorithmic errors, or losses resulting from automated systems occur, questions arise regarding who should be held accountable. Does the responsibility lie with local governments as public service providers, or with vendors as developers of digital systems? Indonesia does not yet have clear regulations regarding the division of these responsibilities. In practice, the use of proprietary systems often prevents local governments from having full access to the algorithmic logic employed by vendors. This situation limits public oversight and increases the risk of opaque governance.[42]

In civil law, damages resulting from the use of digital systems may be classified as a tort under Article 1365 of the Civil Code. The elements of a tort may arise in cases of misuse of personal data, algorithmic processing errors, or administrative decisions that cause harm to citizens. Such damages are not only material in nature but may also take the form of immaterial damages resulting from privacy violations and the loss of access to social rights. The issue of local government governance regarding artificial intelligence concerns not only gaps in technical regulations but also changes in the legal relationship between the state, technology, and citizens.[43] Therefore, the development of municipal AI governance in Indonesia requires

---

[40] Zarsky, "The Trouble with Algorithmic Decisions."

[41] Erik Beulen et al., "Formal and Relational Governance of Artificial Intelligence Outsourcing," *Information Systems and E-Business Management* 20, no. 4 (2022), https://doi.org/10.1007/s10257-022-00562-7.

[42] Sumardi et al., "Analisis Transformasi Birokrasi Melalui Pengembangan E-Government Di Indonesia," *Journal of Government Insight* 1, no. 2 (2021), https://doi.org/10.47030/jgi.v1i2.308.

[43] Surajit Bag et al., "Artificial Intelligence Driven Ethical Procurement Systems, Circular Economy and Governance: A Supplier Performance Analysis," *Journal of Purchasing and Supply Management*, ahead of print, 2025, https://doi.org/10.1016/j.pursup.2025.101075.

an approach that integrates administrative law, constitutional law, and civil law into a single coherent and accountable regulatory framework.

3.3. A Stage-Based Governance Model and Oversight Gateways in Local Government

The main issue regarding the governance of artificial intelligence in local governments lies not only in the lack of regulations but also in the absence of operational mechanisms capable of translating legal principles into concrete administrative procedures.[44] Various regulations have articulated general principles such as transparency, accountability, personal data protection, and good public service, indeed. Most of these principles, however, remain at the normative level and have not been integrated into the cycle of algorithm-based decision-making.[45]

In local government practice, this situation means that oversight of technology use is often reactive, occurring only after disputes, data breaches, or administrative errors have arisen. This study found that local governments do not yet have standardized procedures regarding when digital systems should be tested, who is responsible for conducting risk assessments, and how the protection of citizens' rights is incorporated into technology design from the outset.

This issue highlights a gap between legal principles and operational governance. While the principles of administrative law and the protection of constitutional rights are indeed enshrined in various regulations, they have not yet been translated into procedural governance that local governments can consistently implement.[46] Therefore, this study develops a stage-gate governance framework, a model based on stages and oversight gates, as a framework that integrates legal principles, administrative oversight, and technology risk management into a single structured control system.[47]

The stage-gate model was originally developed in innovation management and project management to control complex processes through tiered stages separated by formal evaluation points. At each review gate, a project may be continued, revised, postponed, or terminated based on the results of risk assessments and implementation readiness. In the context of local government AI governance, this approach is particularly relevant because the use of digital technology involves citizens' rights and requires multi-layered oversight from the earliest stages of system development.[48]

---

[44] Ugo Fratesi et al., "Challenging Conventional Wisdom on Administrative Capacity With Open Data: Could 'Administrative Throughput' Be the Missing Link Between Administrative Inputs and Outputs?," *Governance* 39, no. 2 (2026), https://doi.org/10.1111/gove.70117.

[45] Robert Cowley and Federico Caprotti, "Smart City as Anti-Planning in the UK," *Environment and Planning D: Society and Space* 37, no. 3 (2019), https://doi.org/10.1177/0263775818787506.

[46] Apurv Bhogibhai Patel and Vibhore Bakshi, *Global Narratives of AI and IoT for Future Smart Cities from the Perspective of Fostering Urban Mobility*, in *Future Smart Cities: A Blueprint for Inclusive and Sustainable Living* (2026), https://doi.org/10.1016/B978-0-443-33667-6.00001-X.

[47] Albert Meijer and Manuel Pedro Rodríguez Bolívar, "Governing the Smart City: A Review of the Literature on Smart Urban Governance," *International Review of Administrative Sciences* 82, no. 2 (2016), https://doi.org/10.1177/0020852314564308.

[48] Burcu Aracıoğlu et al., *An Integrated Approach to Social, Technological, Economic, Environmental and Ethical Dimensions in AI-Driven Smart and Sustainable Mobility*, in *Handbook of Technological Forecasting and Roadmapping* (2026), https://doi.org/10.4337/9781035330850.00018.

The transposition of a model from innovation management into the regulation of public power requires justification, because managerial efficiency is not a source of legal authority. The justification offered here is structural rather than substantive. The stage-gate model is adopted not for its content but for its architecture of mandatory sequential checkpoints, an architecture that public law already employs whenever it requires ex-ante evaluation before a risk-bearing activity may proceed. Environmental impact assessment conditions licensing on a prior structured review, and Article 34 of Law No. 27/2022 obliges controllers to conduct a data protection impact assessment before processing that carries high risk. In both instances, an instrument that originated in management practice was converted into a binding legal requirement by attaching legal standards to its checkpoints and legal consequences to their omission. The framework proposed in this article performs the same conversion. Each gate is re-functioned as a legality checkpoint at which constitutional safeguards, data protection obligations, and liability arrangements must be demonstrated, and passage through a gate without that demonstration renders the subsequent deployment procedurally defective. The model, therefore, does not import managerial logic into public law. It imports a procedural skeleton onto which public law grafts its own standards.

Organizational readiness serves as the first stage in the governance of artificial intelligence by local governments. This stage is crucial because many local governments adopt digital technologies without adequate organizational readiness. In practice, digitalization is often understood merely as the procurement of applications or the integration of platforms, whereas the governance of artificial intelligence requires adequate legal, technical, administrative, and ethical capacity.[49]

Organizational readiness encompasses local governments' ability to manage data, understand algorithmic risks, oversee technology vendors, and establish mechanisms to protect citizens' rights. This study found that many regions do not yet have human resources with specialized expertise in algorithmic auditing, personal data protection, and digital risk assessment. As a result, local governments are heavily reliant on technology vendors to understand the very systems they use themselves.

The second stage is ethical and constitutional screening. This study found that most local government digital projects have not undergone specific testing regarding their impact on privacy rights, due process, and non-discrimination. Yet data-driven administrative decisions have the potential to directly affect citizens' rights. In this stage, every artificial intelligence project must be evaluated based on the principles of proportionality, necessity, and constitutional safeguards. Local governments must be able to explain why a particular system is necessary, how data is processed, who has access to the data, and how citizens can file a complaint if they are harmed by an automated system.

The third phase is data governance and procurement oversight.[50] This study found that technology procurement is the most vulnerable aspect of *municipal AI governance* because local

[49] Kritika Sha et al., "Governing Disruptive Technologies for Inclusive Development in Cities: A Systematic Literature Review," *Technological Forecasting and Social Change* 203 (2024), https://doi.org/10.1016/j.techfore.2024.123382.

[50] Aji Baskoro, "Combating Corruption in Procurement: The Synergy of Law Enforcement, Civil Society, and Digital Oversight," *Jurnal Pengadaan Indonesia* 4, no. 1 (2025), https://doi.org/10.59034/jpi.v4i1.59; Jawade Hafidz et al., "Contemporary Legal Accountability Reform in Public Procurement: A

governments often lack sufficient bargaining power with technology vendors. Many digital contracts focus solely on the procurement of services without including detailed provisions regarding algorithmic audits, access to system logic, public data management, and the allocation of legal liability.[51] To provide a structured understanding of the implementation process, Table 4 outlines the stages of artificial intelligence governance undertaken by local governments.

Table 4. Stages of Artificial Intelligence Governance by Local Governments

Stages	Supervisory Focus	Key Risk	Legal Implications
Organizational Readiness	Institutional and human resource readiness	Vendor dependency	Administrative accountability
Ethical and Constitutional Screening	Privacy and due process	Violation of constitutional	Constitutional safeguards
Data Governance and Procurement Oversight	Data and contract management	Data misuse	Civil liability
Risk Assessment	Algorithmic bias and discrimination	Exclusion error	Breach of fairness
Monitoring and Public Complaint	Public oversight	Opaque governance	Right to file an administrative objection
Post-Implementation Evaluation	Audit and evaluation	System failure	Legal liability

Source: Developed by the author based on the results of the research analysis.

The fourth stage is risk assessment. In the context of digital governance, risks are not only technical in nature but also social and constitutional. This study found that many local governments do not yet have risk assessment mechanisms in place to address the potential for algorithmic discrimination, exclusion errors, and data bias. In the context of digital social assistance, for example, data errors can cause citizens to lose access to basic social rights. Urban surveillance, the integration of CCTV, and predictive analytics can expand surveillance of the public without clear boundaries. Therefore, risk assessment must be conducted not only from the perspective of system security but also from the perspective of social impact and the protection of citizens' rights.

The fifth stage is monitoring and public complaints. Research has found that many local government digital systems do not provide adequate administrative appeal mechanisms. Citizens are often merely the subjects of data collection without sufficient access to understand how administrative decisions are made. In a democratic state governed by the rule of law, the

Framework Integrating Ethical Norms and Anti-Corruption Mechanisms," *MILRev: Metro Islamic Law Review* 4, no. 1 (2025), https://doi.org/10.32332/milrev.v4i1.10664.

[51] Farah Elbehairy et al., "Who Are You? Examining the Multifaceted Innovation Roles of Municipal Governments in AI Governance," *Technovation* 147 (2025), https://doi.org/10.1016/j.technovation.2025.103303.

use of public technology must remain subject to the principle of accountability. Therefore, every algorithm-based system must provide mechanisms for explanation, access to data correction, and administrative appeal procedures that are easily accessible to the public.[52] Without such mechanisms, digital governance risks reducing citizens to mere objects of administrative data processing.

The sixth stage is post-implementation evaluation. This study found that most local government digital projects focus more on initial implementation than on long-term evaluation. However, artificial intelligence systems are dynamic and continue to evolve through the processing of new data. Therefore, oversight cannot stop once the system is operational. Post-implementation evaluation must include algorithmic audits, social impact testing, data security evaluations, and assessments of the effectiveness of citizens' rights protections. Independent oversight is essential to ensure that evaluations are not conducted solely by the institutions operating the systems themselves.[53] The claim of novelty advanced by this framework requires positioning against existing models rather than mere assertion. Three bodies of work define the current state of the field, and each leaves a gap that this study addresses.

Yigitcanlar and colleagues propose a stage-gate framework for municipal algorithmic decision-making that structures oversight across the system lifecycle.[54] That framework supplies the procedural form adopted here, but it was developed without reference to a specific constitutional order and treats rights protection as one evaluation criterion among many rather than as a gating condition. Panagopoulou reinterprets administrative law principles for automated decisions within the European regulatory environment, which presupposes the European Union rules on artificial intelligence and data protection as background norms that Indonesia lacks.[55] Schneider analyzes how proprietary models undermine transparency in administrative decision-making, again within European law, and concentrates on procurement and intellectual property barriers without extending the analysis to constitutional rights or tort liability.[56] The framework developed in this study differs from each of these in two respects. It makes constitutional safeguards and civil liability allocation mandatory gate conditions rather than evaluation criteria, and it calibrates the gates to documented Indonesian conditions, namely statutory fragmentation, vendor dependence, and weak local audit capacity. The claim is therefore not that the stage-gate form is new. The contribution lies in its conversion into a constitutionally anchored legality instrument for Indonesian local government, one that treats technology not as a legal vacuum but as government action subject to the rule of law.

---

[52] Muath Alyileili and Alex Opoku, "Sustainable and Inclusive AI Governance in Municipal Self-Service Systems: Ethical, Smart-Government, and Generative AI Perspectives," *Sustainability* 18, no. 2 (2026), https://doi.org/10.3390/su18020849.

[53] Charles H. Jones et al., "People Analytics and Organizational Psychology: Building a High-Performance, Innovative Culture in the Pharmaceutical Industry," in *Drug Discovery Today*, vol. 30, no. 10, preprint, 2025, https://doi.org/10.1016/j.drudis.2025.104476.

[54] Yigitcanlar et al., "Governing Urban AI from the Frontline."

[55] Panagopoulou, *The European Regulation on Artificial Intelligence*.

[56] Schneider, "The Algorithmic Governance of Administrative Decision-Making."

A phased approach offers significant advantages for local governments. First, this approach allows for the identification of risks at an early stage, before the system is widely implemented. Second, it clarifies the division of responsibilities among local governments, technology vendors, and internal oversight units. Third, it enhances the system's auditability, that is, its ability to be legally monitored and examined. There are a number of limitations to this model. An overly bureaucratic oversight structure can slow down public service innovation, particularly in local governments with limited administrative capacity. Additionally, there is a risk that evaluation mechanisms will be carried out merely as administrative formalities rather than serving as substantive oversight tools.

Therefore, the effectiveness of artificial intelligence governance depends not only on regulatory design but also on institutional culture, the quality of local leadership, and the existence of independent public oversight. Without a commitment to the rule of law and the protection of citizens' rights, the use of technology in government risks reinforcing the concentration of digital power without adequate accountability. The future of municipal AI governance in Indonesia cannot be built solely through technological innovation. Artificial intelligence governance must move toward constitutional digital governance, a model of digital governance that places the protection of constitutional rights, administrative due process, and legal accountability as the primary foundations for the use of public technology.[57]

3.4. Theoretical and Practical Implications of Artificial Intelligence Governance in Local Government

The development of artificial intelligence in local government has shifted part of the administrative process from officials acting through visible bureaucratic procedures to computational systems operating through data collection, algorithmic processing, and automated outputs. The relationship between the state and its citizens is increasingly mediated by technology. Because the factual profiles of Jakarta Smart City and the Surabaya welfare data systems have been described in the preceding sections, this section concentrates on what that mediation does to constitutional protection and legal liability rather than restating the systems themselves.

In Jakarta, the decisive legal observation is that the strengthening of digital administrative capacity simultaneously expands the capacity for surveillance governance. The integration of camera networks with real-time data-based monitoring creates conditions in which public spaces and citizens' activities become continuously observable. The legal issue is not the existence of the technology but the absence of clear legal boundaries regarding the scope of data collection, retention periods, access to data, and independent oversight of its use.

In the context of constitutional governance, this situation indicates that digital governance in Jakarta has not yet been fully established based on constitutional safeguards. The government does indeed have the legitimacy to use technology in public services and urban security.[58] However, the use of surveillance technology must remain subject to the

[57] Patel and Bakshi, *Global Narratives of AI and IoT for Future Smart Cities from the Perspective of Fostering Urban Mobility*.
[58] Indrawati et al., "Smart Security and Safety Index Measurement: A Case Study in Bandung Indonesia," *Humanities and Social Sciences Reviews* 7, no. 5 (2019), https://doi.org/10.18510/hssr.2019.7518.

principles of proportionality and the protection of citizens' privacy rights. This study found that there are no mechanisms explicitly guaranteeing citizens' rights to know how their data is processed, who has access to that data, and how corrections can be made in the event of data misuse or errors.[59]

The JAKI application compresses the legal point into a single example. Each interaction by residents, whether a complaint, a service request, or an information query, generates new administrative data stored in local government systems.[60] The local government consequently functions simultaneously as a provider of public services and as a manager of large-scale public data, two roles that carry different legal obligations and that current arrangements do not separate.

This study finds that these changes have important theoretical implications for the concept of the digital rule of law. In conventional governance, oversight of state actions is typically directed at administrative actions that are directly visible. However, in data-driven governance, the state's influence on citizens often operates through data processing and system logic that are not visible. Therefore, constitutional safeguards in the digital age must not only protect citizens from direct repressive state actions but also protect them from excessive data processing and digital surveillance without adequate controls.[61]

Surabaya presents a different configuration with parallel legal implications. Where Jakarta concentrates digital capacity on urban monitoring, Surabaya concentrates it on social welfare governance, using data matching against the integrated socio-economic data and digital verification as the basis for administrative decisions on the distribution of assistance. The legal center of gravity, therefore, shifts from privacy toward procedural fairness.

From a public administration perspective, this model improves bureaucratic efficiency and accelerates the delivery of social services. However, this study found that the algorithmic use of welfare data also poses a serious risk of exclusion errors. Residents who are excluded from receiving assistance due to data errors or digital processing often face difficulties in obtaining adequate administrative explanations. This situation indicates that the use of artificial intelligence in social services can reduce residents' access to procedural fairness.

The issue of due process is particularly evident in the Surabaya case. In a conventional administrative system, citizens who do not receive social assistance generally still have direct access to administrative officials to request clarification.[62] However, in digital data-based systems, administrative decisions increasingly rely on the results of electronic verification and

---

[59] Anderson Saccol Ferreira, "Citizens' Quality of Life and the Conceptual Relationship with Smart Cities: A Literature Review," *International Journal of Advanced Engineering Research and Science* 8, no. 7 (2021), https://doi.org/10.22161/ijaers.87.19.

[60] Dinda Zubaida and Suci Megawati, "Implementasi Aplikasi Jakarta Kini (JAKI) dalam Mewujudkan Smart City di Unit Pelaksana Teknis Jakarta Smart City," *Publika*, ahead of print, 2023, https://doi.org/10.26740/publika.v11n3.p2231-2242.

[61] Simon Elias Bibri et al., "Artificial Intelligence of Things for Synergizing Smarter Eco-City Brain, Metabolism, and Platform: Pioneering Data-Driven Environmental Governance," *Sustainable Cities and Society* 108 (2024), https://doi.org/10.1016/j.scs.2024.105516.

[62] Laili Dwi Agustina et al., "Smart City : Upaya Pembangunan Kota Surabaya," *Aplikasi Administrasi: Media Analisa Masalah Administrasi*, ahead of print, 2023, https://doi.org/10.30649/aamama.v26i2.209.

automated data matching. As a result, the decision-making process has become increasingly technocratic and difficult for the public to understand.[63]

This situation has the potential to create digital exclusion among vulnerable groups. Poor residents who lack digital literacy or adequate access to online verification mechanisms are the most vulnerable to administrative errors. The digitization of social services is not always synonymous with expanded access to public services and can exacerbate administrative inequalities if not accompanied by robust procedural safeguards. The Surabaya case also highlights significant implications for the development of civil law within digital governance.[64] When citizens lose access to social assistance due to data errors or digital system failures, the resulting harm is no longer merely administrative in nature. Such harm can have a direct impact on citizens' economic well-being, access to healthcare, and survival. Algorithmic errors and digital system failures may give rise to legal liability under the principle of tort.[65]

Both Jakarta and Surabaya exhibit the same pattern: an increasing reliance by local governments on data processing and digital systems for administrative decision-making. However, this expansion of digital capabilities has not been accompanied by the development of adequate legal accountability frameworks. Local governments remain more focused on service efficiency and technology integration than on establishing mechanisms for algorithmic auditing, explainability, and procedural fairness. To explore variations in local government practices, Table 5 compares the implementation of artificial intelligence governance in Jakarta and Surabaya and assesses the associated legal consequences.

Table 5. A Comparison of Artificial Intelligence Governance and Its Legal Implications in Jakarta and Surabaya

Aspects of Analysis	Jakarta	Surabaya	Legal Implications
Digital Governance Orientation	Data-driven urban monitoring and public service integration	Integration of welfare data and social assistance distribution	Illustrating the various uses of AI in local government administration
Key Digital Infrastructure	Jakarta Smart City, JAKI, command center, Flood Monitoring Dashboard, CCTV integration, CRM	DTSEN, digital socioeconomic verification, social assistance data integration	Local governments are increasingly relying on data-driven governance
Forms of Data Use	Real-time monitoring, mapping of citizen reports, traffic monitoring, and	Matching welfare data, verifying social assistance recipients	The use of data influences residents' administrative decisions

[63] Ferreira, "Citizens' Quality of Life and the Conceptual Relationship with Smart Cities: A Literature Review."
[64] Peter Barcik et al., "The Future Possibilities and Security Challenges of City Digitalization," *Smart Cities* 6, no. 1 (2023), https://doi.org/10.3390/smartcities6010008.
[65] Lu Shen et al., "City Digitalization and Corporate Financial Fraud: An Information Asymmetry Perspective," *Journal of Management Studies*, ahead of print, 2025, https://doi.org/10.1111/joms.13197.

Aspects of Analysis	Jakarta	Surabaya	Legal Implications
	monitoring of public spaces		
Privacy Risks	Digital monitoring and CCTV integration enhance surveillance governance	The integration of social data increases the risk of profiling the poor	Potential violations of the right to privacy and informational self-determination
Risiko Due Process	The mechanism for algorithmic oversight is not yet transparent	Residents are having trouble getting an explanation for the exclusion error in social assistance	Weak procedural fairness
Administrative Risks	Reliance on real-time data processing	Data errors and exclusion errors in social assistance	The potential for digital maladministration
Relationships with Technology Vendors	High reliance on the integration of digital platforms and systems	Reliance on data matching systems and digital services	The risk of vendor lock-in and opaque algorithms
Civil Implications	Potential disputes arising from data misuse and digital surveillance	Potential lawsuits arising from residents' losses due to errors in social assistance data	Expansion of civil liability in digital governance
Oversight Mechanisms	There has not yet been an independent algorithmic audit	The digital administrative appeal process remains limited	The need for governance oversight
Constitutional Implications	Privacy rights and restrictions on digital surveillance	The right to public services and administrative due process	The Need for Constitutional Safeguards in Municipal AI Governance

Source: Compiled by the author based on research findings regarding Jakarta Smart City and the digitization of social services in the City of Surabaya.

The Jakarta and Surabaya cases converge on a conceptual conclusion that this article formulates as algorithmic public authority. Algorithms possess no legal personality. They cannot hold office, bear duties, or be sued. Yet in both cities they demonstrably participate in the exercise of public authority. They shape which complaints are prioritized, they determine which residents are classified as eligible for assistance, and they influence how public resources are allocated across neighborhoods and programs. In a constitutional state, it is participation in the exercise of public authority, rather than formal status as an authority, that triggers public law scrutiny.

From this premise follows the central normative proposition of this article. The limitations that constitutional and administrative law impose on public authorities must extend to algorithmically assisted decision-making processes. Whatever an official could not lawfully do directly, an official cannot lawfully do through a system. An official may not decide without a legal basis, may not decide without reasons, may not discriminate, and may

not evade review. A decision process in which an algorithm supplies the criteria, the classification, or the priority must therefore be structured so that each of these prohibitions remains effective. This requires statutory grounding of decision criteria, explainability sufficient to support the duty to state reasons, bias controls sufficient to honor equality, and records sufficient to enable review.

Conceptualizing algorithms as participants in public authority moves the analysis beyond a case-study account of two cities. It supplies a general doctrinal test, namely, whether a system participates in the exercise of public authority, that determines when constitutional and administrative law scrutiny attaches, regardless of the technology involved or the level of government deploying it. The concept also explains why purely managerial or contractual responses to algorithmic risk are insufficient. Procurement clauses and service standards govern the relationship between the government and its vendor, while algorithmic public authority concerns the relationship between the state and the citizen, which only public law can govern.[66]

The civil liability dimension of this relationship requires systematic development, beginning with a distinction among three sources of wrongdoing that current discussions tend to merge. An administrative wrong exists when the governmental decision itself is legally defective, for instance, when a resident is excluded from assistance through a procedure that violates Law No. 30/2014. An algorithmic wrong exists when the system generates an erroneous, biased, or inaccurate output, for instance, a false negative in identity matching that misclassifies an eligible household. A vendor error exists when the system as supplied is defective, inadequately tested, or improperly configured for the data environment in which it operates. The three wrongs can occur independently. A procedurally sound decision may rest on a defective output, and a technically sound system may be deployed through a defective procedure, so collapsing them into a single notion of system failure obscures both the cause of the harm and the identity of the responsible party.

The distinction matters because each wrong points to a different defendant, a different standard of care, and a different body of law. The administrative wrong engages the liability of the government for unlawful administrative action. The algorithmic wrong engages the duty of the deploying agency to validate and monitor the systems it uses, since the agency, not the citizen, is positioned to detect output defects. The vendor wrongfully engages contractual liability toward the government and, where defective design foreseeably harms third parties, tortious liability toward citizens.

Harm in algorithmic governance, however, rarely originates from a single actor, which is why this article advances a theory of distributed liability. A wrongful exclusion from social assistance may be traceable in part to the government authority that deployed the system without adequate validation, to the vendor that delivered a matching engine unsuited to the quality of the available identity data, to the data manager whose registry contained the invalid entries documented in the audit findings discussed above, and to the operator who adopted the automated result without the verification that the circumstances required. The conventional assumption that liability can always be traced to a single wrongdoer exercising

[66] Yeung, "Algorithmic Regulation."

direct control over the harmful conduct becomes difficult to sustain when the harmful outcome emerges from the interaction of governmental institutions, private vendors, datasets, software architectures, and human operators.

Indonesian tort doctrine possesses the raw material to absorb this reality. Article 1365 of the Civil Code establishes liability for unlawful acts that cause harm through fault, and the surrounding provisions extend responsibility to harm caused by negligence and by things under one's supervision. Applied to algorithmic governance, the unlawfulness element can be satisfied by the violation of statutory duties under Law No. 27/2022 or Law No. 30/2014, by the violation of citizens' subjective rights to privacy and to lawful administration, or by conduct contrary to the care required in social intercourse, which for a deploying agency includes validating a system before relying on it. The fault element must be assessed per participant, because the agency, the vendor, and the data manager each breach different duties.

The doctrine nevertheless requires evolution in two respects to address distributed algorithmic harm. The first concerns causation. Where the harm results from the combined operation of defective data, defective matching, and omitted verification, no single contribution may satisfy a strict *conditio sine qua non* test (the requirement that the harm would not have occurred without the specific act), and the doctrine must accept proportional or joint and several liability among participants whose contributions jointly produced the harm. The second concerns proof. The information needed to establish which component failed lies entirely with the government and the vendor, so the burden of explaining the decision pathway should shift to the defendants once the claimant establishes the harm and the involvement of the system. Without these adjustments, the formal availability of Article 1365 coexists with the practical impossibility of ever succeeding in a claim, and the accountability gap created by distributed algorithmic decision-making remains open. These adjustments define the contribution of this article to the literature on civil liability in artificial intelligence governance, because they convert a descriptive concern about technological risk into a doctrinal pathway through which Indonesian courts can allocate responsibility.[67]

This study demonstrates that the concept of algorithmic accountability in local government cannot be separated from the local social and administrative context.[68] Most theories of artificial intelligence governance have evolved from the experiences of developed countries with relatively strong institutional capacities. However, in the Indonesian context, artificial intelligence governance must take into account bureaucratic fragmentation, digital literacy disparities, limited oversight capacity, and local governments' high dependence on technology vendors.[69]

This study expands the concept of municipal AI governance by placing constitutional rights and civil liability at the core of government technology oversight. The use of artificial

[67] Citron and Pasquale, "The Scored Society."
[68] Ritwick Ghosh, "Data-Driven Governance and Performances of Accountability: Critical Reflections from US Agri-Environmental Policy," *Science as Culture* 33, no. 1 (2024), https://doi.org/10.1080/09505431.2023.2175654.
[69] Dwi Saleha et al., "Legal Analysis of Human Rights Protection within Smart City Policy Implementation in Indonesia," *The Easta Journal Law and Human Rights* 4, no. 01 (2025), https://doi.org/10.58812/eslhr.v4i01.778.

intelligence cannot be measured solely by the success of system integration or the efficiency of public services, but also by the system's ability to protect citizens' rights and provide mechanisms for legal accountability in the event of administrative harm.[70]

The practical implications of these findings are crucial for public policy-making in Indonesia. The Jakarta Smart City initiative and the digitization of social assistance in Surabaya demonstrate that local governments require national guidelines on algorithmic audits, public data oversight, and digital-based administrative appeal mechanisms. Without such standards, the use of technology risks expanding the discretionary power of local governments without adequate legal oversight.[71]

Furthermore, this study highlights the need to strengthen the institutional capacity of local governments in understanding the legal implications of digital technology. Local governments cannot fully delegate the management of digital systems to technology vendors without building internal capacity for data oversight and system audits. Excessive reliance on vendors will weaken the position of local governments in ensuring the protection of citizens' rights. The cases of Jakarta and Surabaya demonstrate that the primary challenge of municipal AI governance in Indonesia lies not in the ability to adopt technology, but in the ability to establish a legal framework capable of regulating that technology to ensure it remains subject to the rule of law, the protection of constitutional rights, and civil accountability.

4. Conclusions

The article argues that the use of artificial intelligence in local government administrative decisions must be understood as a matter of both constitutional rights and civil liability. In the Indonesian context, privacy protection and due process have not yet been sufficiently guaranteed when local governments use data-driven systems and algorithms. At the same time, relationships with technology vendors also necessitate clearer regulations regarding legal liability. The analysis grounds these claims in the privacy jurisprudence of the Constitutional Court, formulates the concept of algorithmic public authority to extend public law limitations to algorithmically assisted decisions, and develops a distributed liability framework under Article 1365 of the Civil Code for harms produced jointly by government agencies, technology vendors, and data managers.

Based on these findings, this study underscores the need for an artificial intelligence governance framework based on oversight stages, ranging from institutional readiness, ethical and constitutional screening, data and procurement oversight, to post-implementation evaluation. This framework can be applied as a basis for the formulation of local policies, standards for the procurement of digital systems, and algorithmic audit mechanisms. Local governments need to prioritize the protection of citizens' rights as a prerequisite for technology use, rather than as a corrective measure after harm has occurred. On the other hand, further research should test this framework through empirical studies in specific local

[70] A. S. Kartashov, "Smart Cities and Constitutional Rights and Freedoms: Confrontation or Alliance?," *Proceedings of the Institute of State and Law of the RAS* 18, no. 4 (2023), https://doi.org/10.35427/2073-4522-2023-18-4-kartashov.

[71] Dara O'Rourke and Niklas Lollo, "Incentivizing Environmental Improvements in Supply Chains through Data-Driven Governance," *California Management Review* 64, no. 1 (2021), https://doi.org/10.1177/00081256211049827.

governments to ensure that the proposed model does not remain merely conceptual but can indeed be applied in the practice of digital governance.

5. Acknowledgements

The authors gratefully acknowledge the support and research facilities provided by the Faculty of Law, Universitas Sebelas Maret, Surakarta.

6. Funding (optional)

No funding was received for this study.

7. References

Alashqar, Muath Mohammed, Ahmed F. S. Abulehia, Ahmad Ali Atieh, Mo'men Hani Mahmoud, and Mohammad Mahmoud Saleem Alzubi. "Legal Framework for Regulating AI in Smart Cities: Privacy, Surveillance, and Ethics." International Conference for Artificial Intelligence: Applications, Innovation and Ethics, AI2E 2025, 2025. https://doi.org/10.1109/AI2E64943.2025.10983107.

Albino, Vito, Umberto Berardi, and Rosa Maria Dangelico. "Smart Cities: Definitions, Dimensions, Performance, and Initiatives." Journal of Urban Technology 22, no. 1 (2015). https://doi.org/10.1080/10630732.2014.942092.

Alyileili, Muath, and Alex Opoku. "Sustainable and Inclusive AI Governance in Municipal Self-Service Systems: Ethical, Smart-Government, and Generative AI Perspectives." Sustainability 18, no. 2 (2026). https://doi.org/10.3390/su18020849.

Aracıoğlu, Burcu, Haydar Yalçın, and Tugrul U. Daim. An Integrated Approach to Social, Technological, Economic, Environmental and Ethical Dimensions in AI-Driven Smart and Sustainable Mobility. In Handbook of Technological Forecasting and Roadmapping. 2026. https://doi.org/10.4337/9781035330850.00018.

Arkhanta, Satria, and Teuku Afrizal. "Collaborative Governance Untuk Optimalisasi Pelaksanaan Aplikasi JAKI dalam Koridor Jakarta Smart City di Provinsi Jakarta." Jurnal Ilmiah Administrasi Publik 9, no. 3 (2023).

Bag, Surajit, Muhammad Sabbir Rahman, Shivam Gupta, and Ana Beatriz Lopes de Sousa Jabbour. "Artificial Intelligence Driven Ethical Procurement Systems, Circular Economy and Governance: A Supplier Performance Analysis." Journal of Purchasing and Supply Management, ahead of print, 2025. https://doi.org/10.1016/j.pursup.2025.101075.

Balushi, Nasim Al. "Innovating Economic Models for Smart Green Cities Through Artificial Intelligence Techniques." International Conference for Artificial Intelligence: Applications, Innovation and Ethics, AI2E 2025, 2025. https://doi.org/10.1109/AI2E64943.2025.10982723.

Barcik, Peter, Aneta Coufalikova, Petr Frantis, and Jiri Vavra. "The Future Possibilities and Security Challenges of City Digitalization." Smart Cities 6, no. 1 (2023). https://doi.org/10.3390/smartcities6010008.

Bari, Aadil, Oroos Arshi, and Surajit Mondal. "Advancements in Waste Management: A Comprehensive Review of Artificial Intelligence Applications in Smart Cities." Smart Construction and Sustainable Cities 4, no. 1 (2026). https://doi.org/10.1007/s44268-026-00088-8.

Baskoro, Aji. "Combating Corruption in Procurement: The Synergy of Law Enforcement, Civil Society, and Digital Oversight." Jurnal Pengadaan Indonesia 4, no. 1 (2025). https://doi.org/10.59034/jpi.v4i1.59.

Beulen, Erik, Albert Plugge, and Jos van Hillegersberg. "Formal and Relational Governance of Artificial Intelligence Outsourcing." Information Systems and E-Business Management 20, no. 4 (2022). https://doi.org/10.1007/s10257-022-00562-7.

Bibri, Simon Elias, Jeffrey Huang, and John Krogstie. "Artificial Intelligence of Things for Synergizing Smarter Eco-City Brain, Metabolism, and Platform: Pioneering Data-Driven Environmental Governance." Sustainable Cities and Society 108 (2024). https://doi.org/10.1016/j.scs.2024.105516.

Bittencourt, João Carlos N., Thommas K. S. Flores, Thiago C. Jesus, and Daniel G. Costa. "On the Role of AI in Building Generative Urban Intelligence." Artificial Intelligence Review 59, no. 2 (2026). https://doi.org/10.1007/s10462-025-11469-3.

Cath, Corinne, Sandra Wachter, Brent Mittelstadt, Mariarosaria Taddeo, and Luciano Floridi. "Artificial Intelligence and the 'Good Society': The US, EU, and UK Approach." Science and Engineering Ethics 24, no. 2 (2018). https://doi.org/10.1007/s11948-017-9901-7.

Citron, Danielle Keats, and Frank Pasquale. "The Scored Society: Due Process for Automated Predictions." Washington Law Review 89, no. 1 (2014).

Cowley, Robert, and Federico Caprotti. "Smart City as Anti-Planning in the UK." Environment and Planning D: Society and Space 37, no. 3 (2019). https://doi.org/10.1177/0263775818787506.

Cowley, Robert, Simon Joss, and Youri Dayot. "The Smart City and Its Publics: Insights from across Six UK Cities." Urban Research and Practice 11, no. 1 (2018). https://doi.org/10.1080/17535069.2017.1293150.

Creswell. "Qualitative Inquiry and Research Design: Choosing Among Five Approaches (4th Ed.). Thousand Oaks, CA: SAGE Publications." In Public Administration, vol. 77. no. 4. Preprint, 2018.

David, Anne, Tan Yigitcanlar, Kevin Desouza, et al. "Public Perceptions of Responsible AI in Local Government: A Multi-Country Study Using the Theory of Planned Behaviour." Government Information Quarterly 42, no. 3 (2025). https://doi.org/10.1016/j.giq.2025.102054.

Elbehairy, Farah, Luca Mora, and Ralf Martin Soe. "Who Are You? Examining the Multifaceted Innovation Roles of Municipal Governments in AI Governance." Technovation 147 (2025). https://doi.org/10.1016/j.technovation.2025.103303.

Ferreira, Anderson Saccol. "Citizens' Quality of Life and the Conceptual Relationship with Smart Cities: A Literature Review." International Journal of Advanced Engineering Research and Science 8, no. 7 (2021). https://doi.org/10.22161/ijaers.87.19.

Fratesi, Ugo, Felipe Livert, Laura Polverari, and Cristina Zerbinati. "Challenging Conventional Wisdom on Administrative Capacity With Open Data: Could 'Administrative Throughput' Be the Missing Link Between Administrative Inputs and Outputs?" Governance 39, no. 2 (2026). https://doi.org/10.1111/gove.70117.

Ghosh, Ritwick. "Data-Driven Governance and Performances of Accountability: Critical Reflections from US Agri-Environmental Policy." Science as Culture 33, no. 1 (2024). https://doi.org/10.1080/09505431.2023.2175654.

Hafidz, Jawade, Aditya Noviyansyah, Muhamamd Dias Saktiawan, Agus Prasetia Wiranto, and Ahmed Kheir Osman. "Contemporary Legal Accountability Reform in Public Procurement: A Framework Integrating Ethical Norms and Anti-Corruption Mechanisms." MILRev: Metro Islamic Law Review 4, no. 1 (2025). https://doi.org/10.32332/milrev.v4i1.10664.

Hasanah, Ade Uswatun, Sutinah Andaryani, Feni Huspita Sari, and Ida Utami Dwikurniawati. "Inovasi Pelayanan Publik Berbasis Teknologi Digital : Tantangan Dan Peluang Di Pemerintah Daerah." INNOVATIVE: Journal Of Social Science Research 4, no. 5 (2024).

Hassebo, Ahmed. Smart Cities and Surveillance Technology: Balancing Innovation, Security, and Privacy in Urban Environments. 2025. https://doi.org/10.5772/intechopen.1011457.

Huang, Yanqu, Caiping Yu, and Yongzeng Lai. "A Study of Risk Accumulation in Financial Systems from the Perspective of Complex Networks." Financial Innovation 12, no. 1 (2026). https://doi.org/10.1186/s40854-025-00840-6.

Indrawati, Tania Dayarani, and Husni Amani. "Smart Security and Safety Index Measurement: A Case Study in Bandung Indonesia." Humanities and Social Sciences Reviews 7, no. 5 (2019). https://doi.org/10.18510/hssr.2019.7518.

Jones, Charles H., Nick Rosemarino, and Catarina R. Dolsten. "People Analytics and Organizational Psychology: Building a High-Performance, Innovative Culture in the Pharmaceutical Industry." In Drug Discovery Today, vol. 30. no. 10. Preprint, 2025. https://doi.org/10.1016/j.drudis.2025.104476.

Indonesia.go.id. "Benahi DTKS, 21 Juta Data Penerima Bansos Dipangkas." May 29, 2021. https://indonesia.go.id/kategori/editorial/2838/benahi-dtks-21-juta-data-penerima-bansos-dipangkas.

Constitutional Court of the Republic of Indonesia. Decision Number 50/PUU-VI/2008.

Constitutional Court of the Republic of Indonesia. Decision Number 5/PUU-VIII/2010.

Constitutional Court of the Republic of Indonesia. Decision Number 20/PUU-XIV/2016.

Ombudsman Republik Indonesia. "Evaluasi Penyaluran Bantuan Sosial (Bansos) Tahap Satu, Covid-19." June 2020. https://ombudsman.go.id/artikel/r/artikel--evaluasi-penyaluran-bantuan-sosial-bansos-tahap-satu-covid-19-.

Ombudsman Republik Indonesia. "Penyaluran Bansos Kerap Bermasalah, Ombudsman Berikan Saran Tindakan Korektif kepada Kemensos." December 26, 2021. https://www.ombudsman.go.id/news/r/penyaluran-bansos-kerap-bermasalah--ombudsman-berikan-saran-tindakan-korektif-kepada-kemensos.

Kartashov, A. S. "Smart Cities and Constitutional Rights and Freedoms: Confrontation or Alliance?" Proceedings of the Institute of State and Law of the RAS 18, no. 4 (2023). https://doi.org/10.35427/2073-4522-2023-18-4-kartashov.

Kuo, Ming Sung. "Democracy and Emergency: Finding the Constitutional Foundation of the Knowledgeable State in Social Dynamics." Journal of Law and Society 50, no. S1 (2023). https://doi.org/10.1111/jols.12432.

Kurnia, Tommy, and Achmad Djunaedi. "Tahapan Perkembangan Provinsi DKI Jakarta Menuju Smart City." TATALOKA 22, no. 4 (2020). https://doi.org/10.14710/tataloka.22.4.538-555.

Laili Dwi Agustina, Nur Fitri Ana Melati, Febian Ragil Prawesti, and Fierda Nurany. "Smart City : Upaya Pembangunan Kota Surabaya." Aplikasi Administrasi: Media Analisa Masalah Administrasi, ahead of print, 2023. https://doi.org/10.30649/aamama.v26i2.209.

Lebovits, Hannah. "Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor." Public Integrity 21, no. 4 (2019). https://doi.org/10.1080/10999922.2018.1511671.

Meijer, Albert, and Manuel Pedro Rodríguez Bolívar. "Governing the Smart City: A Review of the Literature on Smart Urban Governance." International Review of Administrative Sciences 82, no. 2 (2016). https://doi.org/10.1177/0020852314564308.

Naiki, Yoshiko. "Smart Cities and International Trade Law." World Trade Review 23, no. 3 (2024). https://doi.org/10.1017/S1474745624000077.

Najwa, Yasinta, Puspa Dewi Amanda, Fatmawati Fatmawati, Safiq Al-Kalam, and Sarah Nuraini Wahyudi. "Analisis Efektivitas Program Perlindungan Sosial Dalam Meningkatkan Kesejahteraan Kelompok Rentan Di Indonesia." Al-I'timad: Jurnal Dakwah Dan Pengembangan Masyarakat Islam 2, no. 1 (2024). https://doi.org/10.35878/alitimad.v2i1.1131.

O'Rourke, Dara, and Niklas Lollo. "Incentivizing Environmental Improvements in Supply Chains through Data-Driven Governance." California Management Review 64, no. 1 (2021). https://doi.org/10.1177/00081256211049827.

Page, Matthew J., Joanne E. McKenzie, Patrick M. Bossuyt, et al. "The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews." In BMJ, vol. 372. Preprint, 2021. https://doi.org/10.1136/bmj.n71.

Panagopoulou Logos Verlag Berlin λογος, Fereniki. The European Regulation on Artificial Intelligence A First Constitutional-Ethical Consideration. 2025.

Patel, Apurv Bhogibhai, and Vibhore Bakshi. Global Narratives of AI and IoT for Future Smart Cities from the Perspective of Fostering Urban Mobility. In Future Smart Cities: A Blueprint for Inclusive and Sustainable Living. 2026. https://doi.org/10.1016/B978-0-443-33667-6.00001-X.

Prawansa, D. A., N. Nesya, and M. Tyrta. "Implementasi Smart City Di Kota Surabaya." Ministrate: Jurnal Birokrasi …, 2023.

Saleha, Dwi, Djuhrijjani Djuhrijjani, Reni Awaliyah, Wahyul Furqon, and Eko Sudarmanto. "Legal Analysis of Human Rights Protection within Smart City Policy Implementation in Indonesia." The Easta Journal Law and Human Rights 4, no. 01 (2025). https://doi.org/10.58812/eslhr.v4i01.778.

Schneider, G. "The Algorithmic Governance of Administrative Decision-Making: Towards an Integrated European Framework for Public." European Journal of Public Law, no. 2 (2023).

Sha, Kritika, Araz Taeihagh, and Martin De Jong. "Governing Disruptive Technologies for Inclusive Development in Cities: A Systematic Literature Review." Technological

Forecasting and Social Change 203 (2024). https://doi.org/10.1016/j.techfore.2024.123382.

Shen, Lu, Kevin Zheng Zhou, and Daokang Luo. "City Digitalization and Corporate Financial Fraud: An Information Asymmetry Perspective." Journal of Management Studies, ahead of print, 2025. https://doi.org/10.1111/joms.13197.

Solove, Daniel. Understanding Privacy. 2008. https://ssrn.com/abstract=1127888Electroniccopyavailableat:https://ssrn.com/abstract=1127888Electroniccopyavailableat:https://ssrn.com/abstract=1127888.

Sumardi, Adi Nawir, and Suardi Mukhlis. "Analisis Transformasi Birokrasi Melalui Pengembangan E-Government Di Indonesia." Journal of Government Insight 1, no. 2 (2021). https://doi.org/10.47030/jgi.v1i2.308.

Tikhaleva, E. Yu. "'Smart Cities': Legal Regulation and Potential of Development." Journal of Digital Technologies and Law 1, no. 3 (2023). https://doi.org/10.21202/jdtl.2023.35.

Tong, Jiawei, Guangyu Wang, Shuihua Wang, and John Moraros. "From Urban Dynamics to Intelligence: A Spatiotemporal Framework for Cross-Modal Urban Crowd Flow Management." Cities 174 (2026). https://doi.org/10.1016/j.cities.2026.107097.

Wuttke, Alexander, Christian Schimpf, and Harald Schoen. "Populist Citizens in Four European Countries: Widespread Dissatisfaction Goes with Contradictory but Pro-Democratic Regime Preferences." Swiss Political Science Review 29, no. 2 (2023). https://doi.org/10.1111/spsr.12548.

Yeung, Karen. "Algorithmic Regulation: A Critical Interrogation." Regulation and Governance 12, no. 4 (2018). https://doi.org/10.1111/rego.12158.

Yigitcanlar, Tan, Anne David, Raveena Marasinghe, et al. "Governing Urban AI from the Frontline: A Stage-Gate Framework for Municipal Algorithmic Decision-Making." Smart Cities 9, no. 5 (2026): 81. https://doi.org/10.3390/smartcities9050081.

Zarsky, Tal. "The Trouble with Algorithmic Decisions: An Analytic Road Map to Examine Efficiency and Fairness in Automated and Opaque Decision Making." Science Technology and Human Values 41, no. 1 (2016). https://doi.org/10.1177/0162243915605575.

Zubaida, Dinda, and Suci Megawati. "Implementasi Aplikasi Jakarta Kini (JAKI) dalam Mewujudkan Smart City Di Unit Pelaksana Teknis Jakarta Smart City." Publika, ahead of print, 2023. https://doi.org/10.26740/publika.v11n3.p2231-2242.