

Algorithmic Accountability and Administrative Decision-Making: Legal Implications of Automated Governance Systems

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Data:

Received: Jan 30, 2026;
Accepted: Jun 05, 2026;
Published: Jun 20, 2026.

Keywords:

*Algorithmic
Accountability;
Automated Decision-
Making;
Administrative Law;
Artificial Intelligence
Governance.*

Abstract: The increasing adoption of artificial intelligence (AI) and algorithmic decision-making systems has transformed public administration by enhancing efficiency, consistency, and predictive capacity in governmental decision-making processes. However, the growing reliance on automated governance systems has also generated significant legal and ethical concerns regarding transparency, accountability, due process, and the protection of fundamental rights. This article examines the legal implications of algorithmic accountability in administrative decision-making through a normative juridical approach employing doctrinal and comparative legal analysis. The study analyzes constitutional principles, administrative law doctrines, data protection regulations, and emerging AI governance frameworks to evaluate the extent to which existing legal systems can ensure accountability for automated administrative decisions. The findings reveal that although algorithmic systems improve administrative efficiency, their opaque decision-making processes, potential algorithmic bias, lack of explainability, and limited mechanisms for human oversight may undermine the principles of legality, procedural fairness, and democratic accountability. The study argues that effective automated governance requires a human-centered legal framework integrating transparency, explainability, independent oversight, risk-based regulation, and accessible judicial remedies. It proposes an Algorithmic Accountability Framework that combines administrative law principles with emerging AI governance standards to ensure that automated decision-making remains consistent with the rule of law and the protection of fundamental rights. This framework contributes to the evolving discourse on responsible AI governance and digital administrative law.



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INTRODUCTION

The rapid advancement of artificial intelligence (AI), machine learning, and big data analytics has fundamentally transformed the manner in which governments perform administrative functions.¹ Public authorities increasingly employ algorithmic systems to support or automate decision-making processes in diverse sectors, including taxation, immigration, social welfare distribution, public procurement, healthcare, law enforcement, and judicial administration. These technologies promise greater efficiency, consistency, speed, and cost-effectiveness compared with traditional bureaucratic procedures. Consequently, automated governance systems have become an integral component of digital government initiatives worldwide, reflecting the broader transition toward data-driven public administration. Nevertheless, the increasing delegation of governmental decision-making to algorithms has generated profound legal questions concerning administrative accountability, procedural fairness, and the protection of individual rights.

Administrative decision-making has traditionally been governed by fundamental principles of administrative law, including legality, transparency, reason-giving, proportionality, impartiality, accountability, and judicial review. These principles ensure that governmental authority remains subject to the rule of law while protecting citizens from arbitrary or discriminatory administrative action. Unlike conventional administrative decisions made by public officials, algorithmic systems often rely on complex computational models whose internal reasoning may be difficult to interpret or explain. The emergence of automated decision-making therefore challenges long-established legal doctrines because responsibility for administrative outcomes becomes increasingly distributed among software developers, public institutions, data providers, and AI systems themselves. As a result, identifying legal accountability within algorithmically assisted governance has become a central issue in contemporary administrative law scholarship.²

Algorithmic accountability has consequently emerged as one of the most significant normative concepts in AI governance.³ Broadly understood, algorithmic accountability refers to the legal and institutional mechanisms ensuring that automated systems remain transparent, explainable, auditable, and subject to effective human oversight. Accountability requires that public authorities retain ultimate responsibility for decisions produced or supported by algorithmic systems and that individuals affected by such decisions possess meaningful opportunities to understand, challenge, and obtain remedies against potentially unlawful administrative actions. Accordingly, algorithmic accountability extends beyond technical system performance and encompasses constitutional values, democratic legitimacy, procedural justice, and institutional responsibility within modern public administration.

Despite their considerable benefits, automated governance systems present substantial legal and ethical risks. One of the most frequently discussed concerns involves the so-called "black box" problem, whereby highly sophisticated machine learning algorithms generate outputs that cannot easily be interpreted by administrators, judges, or affected individuals. The absence of explainability complicates efforts to determine whether administrative decisions satisfy legal standards of rationality, equality, and fairness. Furthermore, algorithmic bias

¹ David Freeman Engstrom and Daniel E Ho, "Algorithmic Accountability in the Administrative State," *Yale J. on Reg.* 37 (2020): 800.

² Jennifer Cobbe, Michelle Seng Ah Lee, and Jatinder Singh, "Reviewable Automated Decision-Making," in *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (New York, NY, USA: ACM, 2021), 598–609, <https://doi.org/10.1145/3442188.3445921>.

³ Teresa Scassa, "Administrative Law and the Governance of Automated Decision Making: A Critical Look at Canada's Directive on Automated Decision Making," *UBCL Rev.* 54 (2021): 251.

arising from incomplete, inaccurate, or historically discriminatory datasets may produce unequal treatment of individuals based on race, gender, ethnicity, socioeconomic status, disability, or other protected characteristics. Such risks demonstrate that technological efficiency alone cannot justify replacing human judgment in administrative governance without corresponding legal safeguards.⁴

The legal implications of automated decision-making have attracted increasing attention within international and regional regulatory frameworks.⁵ The European Union has emerged as a global leader in regulating artificial intelligence through the General Data Protection Regulation (GDPR), particularly Article 22 concerning automated decision-making, and more recently through the Artificial Intelligence Act, which adopts a risk-based regulatory approach. These legal instruments emphasize transparency, explainability, human oversight, accountability, and protection against discriminatory algorithmic outcomes. Similar regulatory initiatives have also emerged within the Organisation for Economic Co-operation and Development (OECD), UNESCO, and the Council of Europe, reflecting growing international consensus that AI governance must remain firmly grounded in human rights, democratic values, and the rule of law.

Indonesia has likewise entered an era of digital public administration characterized by increasing adoption of information technology within governmental institutions. Electronic government services, digital identity systems, online licensing platforms, taxation administration, social assistance distribution, and judicial information systems increasingly rely upon automated data processing to improve administrative efficiency. National initiatives promoting digital transformation have accelerated governmental interest in employing artificial intelligence for administrative decision support. However, Indonesia's legal framework governing algorithmic decision-making remains fragmented and largely indirect, relying on constitutional principles, administrative law, personal data protection legislation, electronic information regulations, and emerging policy guidelines concerning artificial intelligence. Consequently, important legal questions regarding explainability, administrative responsibility, algorithmic auditing, and citizens' rights remain insufficiently addressed.⁶

These developments expose a widening gap between technological innovation and administrative law.⁷ Existing legal doctrines were developed primarily for human decision-makers operating within conventional bureaucratic institutions rather than autonomous or semi-autonomous computational systems. Traditional concepts such as discretion, fault, administrative responsibility, and procedural fairness require substantial reinterpretation when administrative decisions are generated or substantially influenced by machine learning algorithms. Moreover, determining legal liability becomes increasingly complex because automated governance systems involve multiple actors, including government agencies, software developers, private technology vendors, cloud service providers, and data processors. This multidimensional allocation of responsibility creates uncertainty regarding who should ultimately bear legal accountability when algorithmic decisions cause harm.

Although scholarly interest in algorithmic governance has expanded considerably

⁴ Charlotte Langer, "Decision-Making Power and Responsibility in an Automated Administration," *Discover Artificial Intelligence* 4, no. 1 (September 3, 2024): 59, <https://doi.org/10.1007/s44163-024-00152-1>.

⁵ Cary Coglianese and David Lehr, "Transparency and Algorithmic Governance," *Administrative Law Review* 71, no. 1 (2019): 1–56.

⁶ Maciej Kuziemski and Gianluca Misuraca, "AI Governance in the Public Sector: Three Tales from the Frontiers of Automated Decision-Making in Democratic Settings," *Telecommunications Policy* 44, no. 6 (July 2020): 101976, <https://doi.org/10.1016/j.telpol.2020.101976>.

⁷ Arjan Widlak, Marlies van Eck, and Rik Peeters, "Towards Principles of Good Digital Administration: Fairness, Accountability and Proportionality in Automated Decision-Making," in *The Algorithmic Society* (Routledge, 2020), 67–83.

during the past decade, several significant research gaps remain. First, much of the existing literature concentrates on the ethical dimensions of artificial intelligence while paying comparatively limited attention to administrative law as a distinct analytical framework. Second, numerous studies focus primarily on technical aspects of explainable AI or algorithmic fairness without comprehensively examining how administrative law principles should regulate governmental reliance on automated decision-making. Third, relatively few studies integrate constitutional principles, administrative accountability, data protection law, and AI governance into a unified legal framework capable of addressing the complexities of automated public administration. These limitations demonstrate the need for interdisciplinary legal scholarship capable of bridging emerging AI governance with established principles of public law.⁸

This study seeks to address these gaps by examining the legal implications of algorithmic accountability within administrative decision-making through a normative juridical approach supported by comparative legal analysis.⁹ The research analyzes constitutional principles, administrative law doctrines, data protection regulations, judicial accountability mechanisms, and emerging AI governance standards to evaluate whether existing legal frameworks adequately regulate automated governmental decision-making. Particular attention is devoted to the interaction between legality, transparency, explainability, proportionality, human oversight, and judicial remedies as essential components of accountable algorithmic governance. Through this analysis, the study identifies both normative deficiencies and opportunities for legal reform capable of strengthening democratic legitimacy in digital public administration.

This article argues that effective automated governance requires more than technological sophistication or administrative efficiency. Instead, algorithmic decision-making must operate within a comprehensive legal framework that preserves constitutional rights, procedural fairness, democratic accountability, and the rule of law.¹⁰ To achieve this objective, the article develops an Algorithmic Accountability Framework that integrates the principles of legality, transparency, explainability, human oversight, algorithmic auditing, proportionality, and effective judicial review into a coherent model for regulating AI-assisted administrative decision-making. By combining insights from administrative law, constitutional law, data protection law, and AI governance, this study contributes to the emerging scholarship on digital administrative law and offers normative recommendations for developing trustworthy, accountable, and human-centered automated governance systems in the age of artificial intelligence.

RESEARCH METHODS

This study employs a normative juridical research design using doctrinal and comparative legal approaches to examine the legal implications of algorithmic accountability in administrative decision-making within automated governance systems.¹¹ A normative legal methodology is appropriate because the research focuses on analyzing legal norms,

⁸ M.Kn. Bagus Khusfi Satyo, S.H. and M.Kn Bagus Agung Yuda Prasetyo, S.H., "Artificial Intelligence and the Future of Human Rights: Legal Accountability for Algorithmic Decision-Making in Democratic Societies.," *International Journal of Law and Social Sciences* 2, no. 1 (April 16, 2026): 54–74, <https://doi.org/10.65960/ijlss.2.1.2026.12>.

⁹ Anna Huggins, "Addressing Disconnection: Automated Decision-Making, Administrative Law and Regulatory Reform," *UNIVERSITY OF NEW SOUTH WALES LAW JOURNAL* 44, no. 3 (September 1, 2021): 1048–77, <https://search.informit.org/doi/10.3316/informit.20211005054415>.

¹⁰ Stefano Civitarese Matteucci, "Public Administration Algorithm Decision- Making and the Rule of Law," *European Public Law* 27, no. Issue 1 (March 1, 2021): 103–30, <https://doi.org/10.54648/EURO2021005>.

¹¹ John Creswell and J David Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Sage publications, 2017).

constitutional principles, administrative law doctrines, statutory regulations, judicial interpretations, and emerging regulatory frameworks governing artificial intelligence (AI) and automated decision-making. The study adopts a conceptual approach to clarify the legal meaning of algorithmic accountability, transparency, explainability, human oversight, and administrative responsibility, while the comparative approach evaluates international regulatory developments and best practices that may inform future legal reforms. Primary legal materials include constitutional provisions, administrative law statutes, data protection legislation, the European Union's General Data Protection Regulation (GDPR), the Artificial Intelligence Act, the Charter of Fundamental Rights of the European Union, the OECD AI Principles, the UNESCO Recommendation on the Ethics of Artificial Intelligence, and relevant judicial decisions concerning automated decision-making and administrative accountability. Secondary legal materials consist of scholarly books, peer-reviewed journal articles, policy papers, official reports, and legal commentaries addressing administrative law, AI governance, digital constitutionalism, and algorithmic regulation.

The collected legal materials were analyzed through qualitative doctrinal analysis supported by functional comparative legal methods. The doctrinal analysis identifies and evaluates the fundamental legal principles governing automated administrative decision-making, including legality, transparency, explainability, procedural fairness, proportionality, accountability, human oversight, non-discrimination, and effective judicial remedies. Subsequently, the comparative analysis examines how these principles are implemented across different legal frameworks to identify regulatory strengths, institutional challenges, and emerging best practices in AI governance. The findings are interpreted through the theoretical perspectives of administrative law, the rule of law, and human rights to assess whether existing legal frameworks provide sufficient safeguards against arbitrary, opaque, or discriminatory algorithmic decisions. Based on this analysis, the study develops an Algorithmic Accountability Framework as a normative governance model integrating constitutional protection, administrative responsibility, independent oversight, algorithmic auditing, explainability, and judicial review to ensure that automated governance systems remain consistent with democratic values, legal certainty, and the protection of fundamental rights.

ANALYSIS AND DISCUSSION

Legal Foundations of Algorithmic Decision-Making in Contemporary Public Administration

The digital transformation of public administration has fundamentally altered the manner in which governments design, implement, and evaluate administrative decisions.¹² Advances in artificial intelligence (AI), machine learning, cloud computing, and big data analytics have enabled public institutions to automate numerous administrative functions that were previously performed exclusively by human officials. This transformation has accelerated the emergence of automated governance, a governance model in which algorithmic systems support or independently perform administrative tasks through the continuous processing of large volumes of digital information. Consequently, public administration is increasingly characterized by data-driven decision-making intended to improve efficiency, consistency, accuracy, and responsiveness in governmental service delivery.

Automated governance represents an important evolution of digital government. While earlier e-government initiatives primarily digitized administrative procedures without substantially altering decision-making structures, contemporary automated governance

¹² Marion Oswald, "Algorithm-Assisted Decision-Making in the Public Sector: Framing the Issues Using Administrative Law Rules Governing Discretionary Power," *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 376, no. 2128 (September 13, 2018): 20170359, <https://doi.org/10.1098/rsta.2017.0359>.

employs AI to generate recommendations, predict administrative outcomes, classify citizens, allocate public resources, and support regulatory enforcement. Governments increasingly utilize predictive analytics to optimize policy implementation and administrative management, thereby shifting public administration from reactive bureaucratic processes toward proactive and data-informed governance. This transformation illustrates that digital technologies no longer function merely as administrative tools but have become integral components of governmental decision-making itself.¹³

The emergence of big data governance has further accelerated algorithmic decision-making within the public sector.¹⁴ Governments now collect enormous quantities of information from taxation systems, population registries, social welfare databases, health records, digital identity platforms, financial transactions, and public service applications. AI systems analyze these datasets to identify behavioral patterns, assess risks, detect anomalies, and support administrative planning. Although these capabilities enhance institutional efficiency and policy effectiveness, they simultaneously raise concerns regarding informational privacy, algorithmic bias, transparency, and the concentration of governmental power over personal data. Consequently, algorithmic governance must be accompanied by comprehensive legal safeguards capable of balancing administrative innovation with the protection of constitutional rights.

These developments have contributed to what scholars increasingly describe as algorithmic bureaucracy, a new administrative paradigm in which computational systems perform functions traditionally exercised through bureaucratic discretion. Rather than relying solely on the subjective judgment of public officials, algorithmic bureaucracy applies standardized computational models to produce administrative outputs based upon predefined criteria and predictive analyses. This transformation potentially improves consistency by reducing human error and administrative arbitrariness. However, it also creates significant legal challenges because algorithmic reasoning frequently lacks transparency and may obscure the rationale underlying governmental decisions. As a result, administrative law must adapt to ensure that technological efficiency does not undermine democratic accountability or procedural justice.¹⁵

Within administrative law, governmental decisions are traditionally understood as legally binding acts issued by competent public authorities that produce legal consequences for individuals or legal entities.¹⁶ Administrative decision-making is therefore governed by fundamental principles including legality, legal certainty, impartiality, proportionality, transparency, accountability, and procedural fairness. Public officials exercising administrative authority are expected to justify their decisions through rational legal reasoning while respecting constitutional rights and statutory limitations. The introduction of algorithmic systems into administrative processes does not diminish these legal obligations. Instead, automated decision-making requires the reinterpretation of established administrative doctrines to ensure that algorithmically generated decisions remain subject to the same constitutional standards governing conventional administrative action.

A particularly important issue concerns the relationship between algorithmic systems and administrative discretion. Administrative discretion enables public authorities to select among legally permissible alternatives when statutory provisions do not prescribe a single

¹³ David Restrepo-Amariles, "Algorithmic Decision Systems: Automation and Machine Learning in the Public Administration," *The Cambridge Handbook of the Law of Algorithms* (2020), 2020.

¹⁴ Dirk Brand, "Algorithmic Decision-Making and the Law," 2020.

¹⁵ Rebecca Williams, "Rethinking Administrative Law for Algorithmic Decision Making," *Oxford Journal of Legal Studies* 42, no. 2 (May 23, 2022): 468–94, <https://doi.org/10.1093/ojls/gqab032>.

¹⁶ Will Bateman, "Algorithmic Decision-Making and Legality: Public Law Dimensions," 2019.

mandatory outcome. Traditionally, such discretion is exercised by human officials capable of considering contextual factors, ethical considerations, and exceptional circumstances. Automated decision-making, however, often relies upon predefined computational rules or machine learning models whose outputs may limit opportunities for individualized assessment. Excessive reliance upon algorithmic recommendations therefore risks transforming administrative discretion into rigid computational determinism, potentially reducing flexibility and fairness in governmental decision-making. Consequently, preserving meaningful human oversight remains essential for ensuring that algorithmic systems complement rather than replace responsible administrative judgment.¹⁷

The principle of legality and the requirements of due process become increasingly significant within algorithmically assisted governance.¹⁸ Under the rule of law, every administrative decision must possess a clear legal basis, pursue a legitimate governmental objective, and comply with procedural safeguards established by law. Individuals affected by administrative decisions should receive adequate notice, access to relevant information, opportunities to present objections, and effective mechanisms for administrative or judicial review. These procedural guarantees remain equally applicable where decisions are generated or substantially influenced by AI systems. Accordingly, the use of algorithmic decision-making cannot exempt public authorities from their constitutional obligation to ensure transparency, fairness, and accountability throughout the administrative process.

The practical application of AI within public administration illustrates both the opportunities and legal complexities of automated governance. In taxation administration, algorithmic systems are employed to identify potential tax evasion, assess compliance risks, and prioritize audits. Immigration authorities increasingly rely upon predictive analytics to evaluate visa applications, detect document irregularities, and manage border security. Licensing authorities utilize automated systems to process permits and verify regulatory compliance, while healthcare institutions apply AI to optimize patient prioritization, allocate medical resources, and support clinical decision-making. Similarly, welfare agencies employ algorithmic models to determine eligibility for social assistance, whereas law enforcement agencies increasingly utilize predictive policing technologies to identify locations or individuals considered at elevated risk of criminal activity. These applications demonstrate that AI has become deeply embedded within contemporary administrative governance.¹⁹

The rapid expansion of automated administrative decision-making has prompted the development of comprehensive international regulatory frameworks governing artificial intelligence.²⁰ The OECD AI Principles emphasize inclusive growth, human-centered values, transparency, robustness, accountability, and responsible innovation. Likewise, the UNESCO Recommendation on the Ethics of Artificial Intelligence advocates the protection of human dignity, human rights, non-discrimination, fairness, explainability, and democratic governance in AI deployment. These international instruments establish globally recognized normative standards requiring governments to ensure that AI systems remain consistent with constitutional values and public accountability rather than functioning solely as instruments of administrative efficiency.

¹⁷ Jennifer Cobbe, "Administrative Law and the Machines of Government: Judicial Review of Automated Public-Sector Decision-Making," *Legal Studies* 39, no. 4 (December 9, 2019): 636–55, <https://doi.org/10.1017/lst.2019.9>.

¹⁸ Cecilia Magnusson Sjöberg, "Algorithms in Public Administration," in *The Rule of Law and Automated Decision-Making* (Cham: Springer International Publishing, 2023), 195–208, https://doi.org/10.1007/978-3-031-30142-1_9.

¹⁹ Benedict Sheehy and Yee-Fui Ng, "The Challenges of AI Decision-Making in Government and Administrative Law: A Proposal for Regulatory Design," *Ind. L. Rev.* 57 (2023): 665.

²⁰ Markku Suksi, *The Rule of Law and Automated Decision-Making: Exploring Fundamentals of Algorithmic Governance* (Springer Nature, 2023).

Regional legal developments within Europe further reinforce these principles. The European Union Artificial Intelligence Act introduces a comprehensive risk-based regulatory framework that classifies AI systems according to their potential impact on fundamental rights and public safety. Complementing this legislation, Article 22 of the General Data Protection Regulation (GDPR) grants individuals protection against decisions based solely on automated processing that produce legal or similarly significant effects, while recognizing rights to human intervention, explanation, and contestation. Moreover, the Council of Europe Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law seeks to ensure that AI development remains firmly grounded in democratic governance, constitutionalism, and the protection of fundamental rights. Collectively, these instruments illustrate the international trend toward human-centered AI governance based upon accountability and legal oversight.

Indonesia has likewise initiated legal and policy reforms supporting digital transformation within public administration. Constitutional protection derives principally from the 1945 Constitution, particularly the guarantees concerning equality before the law, legal certainty, and the protection of fundamental rights. These constitutional principles are complemented by Law Number 30 of 2014 concerning Government Administration, which establishes the legal foundations of administrative decision-making, administrative discretion, good governance, and governmental accountability. Additional regulatory support is provided through Law Number 27 of 2022 concerning Personal Data Protection, the Electronic Information and Transactions Law, and the government's National Artificial Intelligence Strategy, which collectively encourage responsible AI innovation while emphasizing digital transformation across governmental institutions. Nevertheless, these legal instruments regulate algorithmic governance only indirectly and do not yet provide a comprehensive framework specifically addressing automated administrative decision-making, explainability, algorithmic auditing, or institutional accountability.

The foregoing analysis demonstrates that algorithmic decision-making has become an indispensable component of contemporary public administration and will continue to expand alongside technological innovation and digital government initiatives. However, legal development has not progressed at the same pace as technological advancement. Existing administrative law frameworks were primarily designed for human decision-makers rather than algorithmically assisted governance, resulting in regulatory uncertainty regarding responsibility, transparency, explainability, procedural fairness, and judicial accountability. Consequently, future legal reform should move beyond merely facilitating technological innovation toward constructing a comprehensive governance framework that integrates administrative law, constitutional principles, human rights, and AI governance. Such an approach is essential to ensure that automated decision-making strengthens rather than undermines the rule of law, democratic legitimacy, and public trust in digital government.

Comparative Analysis of Algorithmic Accountability in Automated Administrative Decision-Making

The comparative analysis demonstrates that Indonesia and the European Union have adopted significantly different regulatory approaches to algorithmic accountability in automated administrative decision-making.²¹ While both jurisdictions recognize the growing importance of artificial intelligence (AI) in public administration, their legal responses reflect different governance priorities. Indonesia has primarily focused on promoting digital transformation and administrative efficiency through the adoption of emerging technologies,

²¹ Engstrom and Ho, "Algorithmic Accountability in the Administrative State."

whereas the European Union has sought to ensure that technological innovation remains firmly embedded within constitutional principles, human rights protection, and the rule of law. Consequently, the European regulatory model places greater emphasis on accountability, transparency, and individual rights than the Indonesian framework.

The first area of comparison concerns transparency, which constitutes one of the most fundamental principles of accountable administrative governance. Transparency requires public authorities to disclose the legal basis, procedural logic, and operational mechanisms underlying administrative decisions so that affected individuals can understand how governmental authority has been exercised. In the context of algorithmic decision-making, transparency extends beyond ordinary administrative disclosure by requiring information regarding the use of automated systems, data processing methods, and the role of algorithms in producing administrative outcomes. Without adequate transparency, individuals cannot effectively evaluate whether administrative decisions comply with constitutional and statutory requirements.²²

Indonesia has not yet established comprehensive legal standards governing algorithmic transparency in public administration.²³ Existing legislation, including the Government Administration Law, the Personal Data Protection Law, and the Electronic Information and Transactions Law, recognizes general principles of openness and good governance but does not specifically regulate transparency obligations for AI-assisted administrative decisions. Consequently, public institutions possess considerable discretion regarding the disclosure of algorithmic processes, creating legal uncertainty concerning citizens' rights to receive meaningful explanations of automated governmental decisions.

In contrast, the European Union has institutionalized transparency through robust explainability requirements embedded within the General Data Protection Regulation (GDPR), the Artificial Intelligence Act, and related regulatory instruments. Individuals affected by automated decision-making possess rights to receive meaningful information concerning the logic involved in algorithmic processing, particularly where such decisions produce legal or similarly significant effects. Explainability therefore functions not merely as a technical requirement but as a legal safeguard ensuring procedural fairness, democratic accountability, and effective judicial supervision. The European model demonstrates that transparency is indispensable for maintaining public trust in algorithmic governance.²⁴

The second point of comparison concerns human oversight, which remains a defining characteristic of accountable AI governance. Human oversight ensures that automated systems support rather than replace governmental responsibility for administrative decisions.²⁵ In Indonesia, AI is generally introduced as a technological instrument intended to improve administrative efficiency, while ultimate responsibility formally remains with public officials. Nevertheless, existing regulations do not establish detailed legal standards defining the scope, intensity, or procedural requirements of human supervision over algorithmic decision-making. As a result, oversight frequently remains administrative rather than legally structured, creating uncertainty regarding the degree to which human officials must independently evaluate

²² Madalina Busuioc, "Accountable Artificial Intelligence: Holding Algorithms to Account," *Public Administration Review* 81, no. 5 (September 11, 2021): 825–36, <https://doi.org/10.1111/puar.13293>.

²³ Prawira, "Algorithmic Governance and Legal Accountability: A Comparative Analysis of Artificial Intelligence Regulation in Public Decision-Making," *International Journal of Law and Political Authority* 1, no. 2 SE-Articles (April 17, 2026): 43–53, <https://researchfrontiers.id/corpus/article/view/125>.

²⁴ Rik Peeters, "The Agency of Algorithms: Understanding Human-Algorithm Interaction in Administrative Decision-Making," ed. Sarah Giest and Stephan Grimmelijsen, *Information Polity* 25, no. 4 (December 4, 2020): 507–22, <https://doi.org/10.3233/IP-200253>.

²⁵ Jakub Sawicki, "The Role of Decision-Making Algorithms in Public Administration – Legal and Ethical Challenges," *Zeszyt Prawniczy UAM*, no. 15 (December 22, 2025): 99–111, <https://doi.org/10.14746/zpuam.2025.15.8>.

algorithmic recommendations before issuing legally binding decisions.

The European Union adopts a considerably stronger approach by requiring meaningful human oversight for high-risk AI systems. The AI Act and GDPR emphasize that individuals should not become subject to significant administrative decisions based solely on automated processing without opportunities for human intervention. Human oversight includes the authority to review algorithmic outputs, suspend automated recommendations, correct computational errors, and override decisions where legal or ethical concerns arise. This approach reinforces democratic legitimacy by ensuring that public authority ultimately remains exercised by accountable human decision-makers rather than autonomous computational systems.²⁶

A third distinction concerns institutional accountability. Effective administrative governance requires clear allocation of legal responsibility whenever algorithmic systems produce unlawful or discriminatory decisions. Indonesia currently lacks a comprehensive legal framework specifying institutional liability among government agencies, software developers, technology vendors, and data processors involved in automated administrative systems. Consequently, responsibility for algorithmic errors remains fragmented across multiple actors, making it difficult for affected individuals to identify legally accountable institutions or obtain effective administrative remedies.

The European Union has developed a more integrated accountability framework grounded in constitutional principles, administrative law, and data protection regulation. Public authorities deploying AI systems remain legally responsible for decisions affecting individuals, irrespective of whether computational technologies assist or automate administrative processes. Regulatory obligations concerning documentation, compliance monitoring, algorithmic risk management, and institutional governance collectively ensure that accountability remains firmly attached to governmental institutions rather than transferred to technological systems. This institutional approach prevents governments from avoiding legal responsibility by attributing controversial administrative outcomes to algorithmic processes.

The fourth area of comparison concerns judicial review, which represents one of the most important guarantees of the rule of law. In Indonesia, administrative decisions generated through algorithmic assistance remain subject to judicial review under general administrative law principles. However, existing procedural mechanisms do not specifically regulate challenges against AI-generated decisions, nor do they establish explicit rights to contest automated processing, demand algorithmic explanations, or require independent technical evaluation during judicial proceedings. Consequently, judicial review remains relatively limited in addressing the unique legal complexities associated with automated governance.²⁷

By contrast, the European Union provides considerably stronger judicial protection. Article 22 of the GDPR recognizes the right of individuals not to be subject to decisions based solely on automated processing in specified circumstances and grants procedural rights to obtain human intervention, express views, and contest automated outcomes. Judicial institutions further apply proportionality review, procedural fairness, and fundamental rights analysis when evaluating algorithmic decision-making. These safeguards collectively strengthen legal certainty while ensuring that algorithmic governance remains subject to effective judicial scrutiny.

Differences are equally evident regarding due process and algorithmic fairness. Indonesia's administrative legal framework guarantees procedural fairness in general administrative proceedings but contains relatively limited provisions specifically addressing

²⁶ Oswald, "Algorithm-Assisted Decision-Making in the Public Sector: Framing the Issues Using Administrative Law Rules Governing Discretionary Power."

²⁷ Restrepo-Amariles, "Algorithmic Decision Systems: Automation and Machine Learning in the Public Administration."

automated decision-making. Likewise, legal standards concerning algorithmic bias, fairness assessment, and discriminatory outcomes have not yet been comprehensively regulated. In contrast, the European Union has integrated procedural safeguards and algorithmic fairness into its AI governance framework through mandatory risk assessments, bias mitigation measures, continuous monitoring, data quality requirements, and conformity assessments for high-risk AI systems. These mechanisms seek to prevent discriminatory outcomes before algorithmic systems are deployed rather than merely providing remedies after harm has occurred.

The comparative analysis indicates that the European Union has developed a Human-Centered AI Governance model in which artificial intelligence is regulated as an instrument serving constitutional rights, democratic accountability, and the rule of law.²⁸ Transparency, explainability, mandatory human oversight, institutional accountability, judicial protection, and algorithmic fairness operate as mutually reinforcing safeguards designed to ensure responsible automated governance. Indonesia, by contrast, continues to pursue a Technology-Oriented Administrative Governance model that prioritizes digital innovation and administrative modernization while legal safeguards remain fragmented and largely indirect. Although recent legislative developments demonstrate meaningful progress, future reforms should strengthen explainability requirements, institutional accountability, judicial remedies, algorithmic auditing, and mandatory human oversight in order to ensure that automated administrative decision-making remains consistent with the principles of good governance, constitutional democracy, and the protection of fundamental rights.

Developing an Algorithmic Accountability Framework for Democratic Administrative Governance

The comparative analysis demonstrates that the increasing integration of artificial intelligence into public administration requires a governance framework capable of balancing technological innovation with the fundamental principles of administrative law, constitutionalism, and democratic accountability.²⁹ Existing regulatory approaches frequently emphasize either technological development or ethical AI principles without providing a comprehensive legal structure capable of governing automated administrative decision-making. Consequently, this study proposes an Algorithmic Accountability Framework for Democratic Administrative Governance as its principal theoretical contribution. The framework is designed to ensure that algorithmic systems operate not as autonomous substitutes for governmental authority but as legally accountable instruments supporting public administration under the rule of law.

The proposed framework is grounded in the premise that algorithmic decision-making should never be viewed merely as a technological process. Instead, every automated administrative decision represents an exercise of public authority that directly affects the rights and obligations of citizens. Accordingly, algorithmic governance must remain subject to constitutional guarantees, administrative law principles, judicial control, and democratic oversight. Rather than replacing human responsibility, artificial intelligence should function as a decision-support mechanism operating within clearly defined legal boundaries. This human-centered approach ensures that governmental legitimacy is preserved despite increasing reliance on automated technologies.³⁰

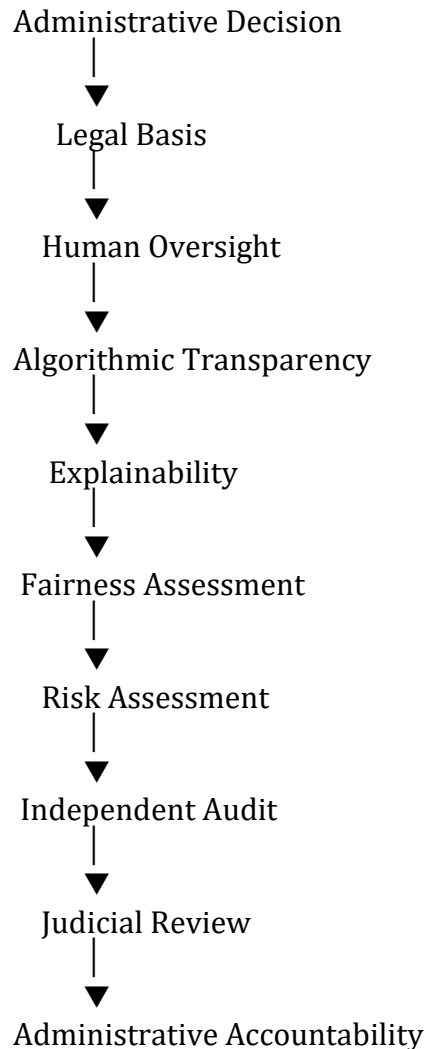
Based on these considerations, this study develops an integrated governance model

²⁸ Brand, "Algorithmic Decision-Making and the Law."

²⁹ Engstrom and Ho, "Algorithmic Accountability in the Administrative State."

³⁰ Min Kyung Lee et al., "WeBuildAI," *Proceedings of the ACM on Human-Computer Interaction* 3, no. CSCW (November 7, 2019): 1–35, <https://doi.org/10.1145/3359283>.

consisting of interconnected legal safeguards that operate sequentially throughout the administrative decision-making process.³¹ Each component functions as an institutional checkpoint intended to prevent arbitrary decision-making while promoting transparency, fairness, accountability, and legal certainty. The proposed framework is illustrated as follows:



The first component is legality, which constitutes the constitutional foundation of algorithmic governance.³² Under the rule of law, public authorities may employ AI only when expressly authorized by legislation enacted through democratic procedures. Every automated administrative decision must therefore possess a clear legal basis specifying the scope of algorithmic authority, permissible objectives, procedural safeguards, institutional responsibilities, and citizens' rights. The legality principle prevents arbitrary technological experimentation by ensuring that algorithmic systems remain subordinate to constitutional and statutory requirements rather than administrative convenience alone.

The second component is human oversight, which preserves meaningful human control over automated administrative decision-making. Human oversight may operate through two

³¹ Ms. Sheetal Sharma, "Governance in the Age of Algorithms: Ethical Dilemmas and Administrative Reforms," *International Journal of English Literature and Social Sciences* 10, no. 2 (2025): 379–88, <https://doi.org/10.22161/ijels.102.58>.

³² Salvatore Stanizzi, "AI-Mediated Public Decision-Making and Democratic Exclusion: Governance Risks and Accountability Frameworks," *AI & Future Society* 2, no. 1 (April 1, 2026): 26–34, <https://doi.org/10.63802/afs.V2.I1.242>.

complementary models. The human-in-the-loop approach requires direct human participation before legally binding decisions are finalized, allowing public officials to evaluate algorithmic recommendations independently. Meanwhile, the human-on-the-loop approach permits continuous supervision of algorithmic operations while enabling human intervention whenever computational outcomes appear inaccurate, discriminatory, or legally problematic. Both models ensure that responsibility for governmental decisions ultimately remains with accountable public authorities rather than autonomous technological systems.³³

The third component is algorithmic transparency and explainability. Transparency requires governmental institutions to disclose the existence, purpose, and operational characteristics of algorithmic systems employed in administrative decision-making.³⁴ Explainability complements transparency by requiring that affected individuals receive understandable reasons explaining how algorithmic processing contributed to particular administrative outcomes. These explanations should be sufficiently meaningful to enable citizens to evaluate the legality, fairness, and proportionality of governmental decisions. By strengthening explainability, public authorities enhance procedural fairness while reinforcing public trust in digital government initiatives.

The fourth component is algorithmic fairness, which seeks to prevent discriminatory administrative outcomes arising from biased datasets, flawed computational models, or unequal algorithmic treatment. Fairness requires AI systems to operate consistently with constitutional principles of equality before the law and non-discrimination. Accordingly, algorithmic design should incorporate bias detection, representative training datasets, continuous fairness testing, and corrective mechanisms capable of mitigating discriminatory impacts. Integrating fairness assessments throughout the algorithmic life cycle ensures that administrative decisions remain objective, impartial, and legally justifiable irrespective of technological complexity.

The fifth component is risk assessment, reflecting the recognition that different AI applications present varying levels of legal and societal risk. Administrative systems affecting fundamental rights—such as taxation, immigration, criminal justice, healthcare, or social welfare—should be classified as high-risk AI requiring enhanced legal safeguards. Prior to deployment, public authorities should conduct comprehensive assessments evaluating legal, ethical, technical, and societal risks associated with algorithmic implementation. Risk assessment should not be limited to initial system design but continue throughout operational deployment through continuous monitoring capable of identifying emerging risks, unintended consequences, or declining system performance.

The sixth component is independent algorithm audit, which introduces external oversight into algorithmic governance. Independent audits should evaluate algorithmic systems periodically to determine compliance with legal requirements concerning transparency, fairness, data quality, cybersecurity, privacy protection, and administrative accountability. External reviewers possessing technical and legal expertise should assess algorithmic design, training data, operational accuracy, documentation, and institutional governance. Compliance assessments conducted by independent bodies strengthen public confidence by ensuring that governmental institutions remain accountable for technological systems operating within public administration.

The seventh component is judicial review, which guarantees effective legal remedies for individuals adversely affected by automated administrative decisions. Citizens should possess

³³ CHANGKUI LI, “AI-Driven Governance: Enhancing Transparency and Accountability in Public Administration,” *Digital Society & Virtual Governance* 1, no. 1 (February 20, 2025): 1–16, <https://doi.org/10.6914/dsvg.010101>.

³⁴ UCHECHUKWU C AJUZIEOGU, “Algorithmic Governance and Democratic Accountability: A Novel Framework for Constitutional Adaptation in the Digital State,” 2025.

explicit rights to challenge algorithmic decisions before independent courts, obtain meaningful explanations regarding automated processing, request human reconsideration, and receive compensation where unlawful administrative actions cause measurable harm. Judicial institutions should likewise possess authority to review algorithmic design, evaluate compliance with constitutional principles, and invalidate administrative decisions generated through unlawful, discriminatory, or procedurally defective AI systems. Effective judicial review therefore functions as the ultimate safeguard protecting individual rights against arbitrary automated governance.³⁵

The eighth component is democratic accountability, which extends algorithmic governance beyond judicial institutions to broader democratic oversight mechanisms. Parliamentary oversight should supervise governmental adoption of AI technologies through legislative scrutiny, budgetary review, and regulatory evaluation. Transparency should be reinforced through periodic public reporting concerning AI deployment, algorithmic performance, audit findings, and risk management strategies. Public participation should likewise be institutionalized by enabling citizens, civil society organizations, academic experts, and professional associations to contribute to AI policymaking, regulatory development, and evaluation processes. These participatory mechanisms ensure that algorithmic governance remains responsive to democratic values rather than driven solely by technological or bureaucratic priorities.

The Algorithmic Accountability Framework for Democratic Administrative Governance represents the principal contribution of this study to the fields of administrative law and AI governance. Unlike existing regulatory approaches that address legality, transparency, fairness, or accountability separately, the proposed framework integrates these principles into a coherent governance model encompassing legality, human oversight, transparency, explainability, fairness assessment, risk management, independent auditing, judicial review, and democratic accountability. The framework demonstrates that responsible automated governance requires not only technological innovation but also comprehensive legal institutions capable of preserving constitutional rights, procedural justice, and democratic legitimacy. By adopting this integrated model, governments can develop AI-assisted administrative systems that enhance public sector efficiency while remaining fully consistent with the rule of law, good governance, and the protection of fundamental rights in the digital era.

CONCLUSION

This study demonstrates that the rapid integration of artificial intelligence into public administration has fundamentally transformed administrative decision-making while simultaneously challenging the foundational principles of administrative law, constitutionalism, and democratic governance. The comparative analysis reveals that although both Indonesia and the European Union recognize the strategic importance of AI in improving governmental efficiency, their regulatory approaches differ significantly. The European Union has developed a comprehensive Human-Centered AI Governance model through the integration of the Artificial Intelligence Act, the General Data Protection Regulation (GDPR), and robust institutional safeguards emphasizing transparency, explainability, human oversight, algorithmic fairness, and effective judicial protection. In contrast, Indonesia's regulatory framework remains fragmented and primarily oriented toward supporting digital transformation through sectoral legislation, including the Government Administration Law, the Personal Data Protection Law, and the Electronic Information and Transactions Law. While

³⁵ Gideon Areo, "Algorithmic Governance and the Redefinition of Bureaucratic Accountability in Digital States," 2025.

these legal instruments provide an important foundation for digital governance, they have not yet established a coherent legal framework specifically governing algorithmic accountability, institutional responsibility, independent oversight, and procedural safeguards for automated administrative decision-making. Consequently, Indonesia's current regulatory model continues to reflect a technology-oriented administrative governance approach in which technological innovation has advanced more rapidly than the legal mechanisms necessary to ensure accountability and the protection of fundamental rights. Building upon these findings, this study proposes an Algorithmic Accountability Framework for Democratic Administrative Governance as its principal theoretical contribution. The framework integrates legality, human oversight, algorithmic transparency, explainability, fairness assessment, risk assessment, independent algorithm auditing, judicial review, and democratic accountability into a unified governance model designed to regulate AI-assisted administrative decision-making under the rule of law. Rather than perceiving artificial intelligence as an autonomous decision-maker, the proposed model positions AI as a decision-support instrument operating within constitutional boundaries and subject to continuous legal, institutional, and democratic oversight. Accordingly, future legal reform in Indonesia should prioritize the enactment of comprehensive AI legislation, strengthen independent supervisory institutions, institutionalize mandatory human oversight and algorithmic auditing, expand judicial remedies for individuals affected by automated decisions, and enhance transparency and public participation in AI governance. By integrating administrative law principles with emerging international standards on responsible artificial intelligence, the proposed framework offers a normative roadmap for developing trustworthy, accountable, and human-centered automated governance systems that preserve democratic legitimacy while embracing technological innovation.

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