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Artificial Intelligence and Administrative Law in Modern Governance

Yeri Antoni, Fatimah Nur Fauzia, Yovan Iristian

Faculty of Law, University of Dr. Soetomo

*Email Correspondence: yeriantoni.lantas.tuban@gmail.com

ABSTRACT

This research examines the transformative impact of Artificial Intelligence (AI) and algorithmic decision-making (ADM) on administrative law and modern governance. As governments increasingly integrate AI into public services—from welfare distribution and tax administration to law enforcement—foundational principles of administrative law, including legality, transparency, and accountability, face unprecedented challenges. The objective of this study is to analyze how existing legal doctrines adapt to the "black-box" nature of AI and to evaluate emerging global regulatory frameworks. Utilizing a descriptive-analytical methodology rooted in a comprehensive literature review of international legal scholarship and landmark case law, the study identifies a growing tension between administrative efficiency and the protection of fundamental rights. The findings suggest that while AI enhances productivity by reducing "noise" in human judgment, it risks entrenching systemic biases and eroding procedural fairness. The results highlight the necessity of "communicative accountability" and "prospective benchmarking" to maintain the rule of law. The study concludes that modern governance requires a transition from traditional human-centric oversight to integrated socio-technical regulatory models, exemplified by the EU AI Act and the lessons learned from the failures of systems like SyRI in the Netherlands and Robodebt in Australia.

Keywords: Artificial Intelligence, Administrative Law, Modern Governance, Algorithmic Accountability, Rule of Law

1. INTRODUCTION

The rapid advancement of autonomous artificial intelligence systems has sparked ethical and legal concerns from interdisciplinary backgrounds, particularly as these technologies move from experimental phases into the core of public institutional frameworks (Fan, 2025). In the contemporary era, governance is undergoing a structural transformation characterized by the shift from mechanical processes to "governance through algorithms" (Fan, 2025). This evolution, often referred to as the "rise of the

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algorithmic state," promises staggering innovative potential, enabling public administrations to address complex societal challenges with enhanced speed, perceived accuracy, and cost-effectiveness (Fan, 2025). However, this "algorithmisation" of public action also touchstones a technocratic shift where public affairs are increasingly regarded as technical problems requiring technical solutions, potentially overturning traditional "clinical predictions" made by public officials (Schneider, 2019).

The urgency of this research stems from the fact that the use of algorithmic decision-making (ADM) is growing faster than the regulatory and judicial capacity to oversee it (Jenkins, 2021). Previous studies have highlighted the dual nature of AI as both a tool for improving service delivery and a source of ethical complexity (Fatmawati, 2025). For instance, research by Misuraca and van Noordt (2020) emphasizes that while scholars have explored efficiency gains, few have examined the systemic consequences for bureaucratic legitimacy (Fatmawati, 2025). Similarly, the work of Coglianese and Lehr (2019) has argued that legal oversight requires meaningful access to information about how decisions are produced, a task complicated by the "black box" nature of machine learning models (Bantekas & Bratsiakou, 2025). Furthermore, scholars like Engstrom and Ho (2020) have pointed out that traditional *ex ante* and *ex post* reviews under current administrative law doctrines are insufficient for addressing the unique challenges of state-used AI (Engstrom & Ho, 2020).

The significance of this study lies in its attempt to bridge the divide between technological innovation and ethical policymaking (Fatmawati, 2025). It seeks to go beyond a mere technological assessment to uncover the broader institutional and normative implications of AI in governance (Fatmawati, 2025). The uniqueness of this research is its comparative analysis of recent global regulatory developments—such as the EU AI Act and the UK's shifting "pro-innovation" stance—alongside landmark judicial failures like the SyRI case in the Netherlands and the Robodebt scandal in

Australia (European Commission, 2024). These cases serve as critical warnings of how digital failures can erode government credibility and harm vulnerable populations (Tomlinson & McGurk, 2026).

Despite a growing body of scholarship, there remains a substantial gap in understanding how AI simultaneously influences administrative ethics and institutional accountability (Fatmawati, 2025). Most readers in the global legal community are grappling with the same foundational tension: whether traditional administrative law frameworks can meaningfully govern decisions made or assisted by AI (Tomlinson & McGurk, 2026). This paper aims to address this limitation by providing an integrated analysis of the epistemological shift in administrative behavior and proposing revised fundamental principles to be applied in the digital era (Fatmawati, 2025). At the end of this analysis, the research underscores the objective of establishing a sensible accountability structure that maintains incentives for innovation while protecting the fundamental rights of citizens (Engstrom & Ho, 2020).

The broader context of this transformation includes a shift from "street-level" to "system-level" bureaucracies, where information and communication technology transforms administrative discretion and constitutional control (Lee & Dai, 2025). As digital technologies are embedded in routine administrative processes, public managers are required to develop a high degree of technological fluency (Zhu, 2026). However, this methodological shift has far-reaching epistemological implications, challenging qualitative and econometric approaches and prompting the development of theories suited to high-dimensional, dynamic governance data (Zhu, 2026). Predictive models often optimize for statistical accuracy while overlooking normative issues such as fairness, transparency, and human dignity (Zhu, 2026).

Moreover, the international community has recognized that without adequate guardrails, AI could further exacerbate inequalities and digital divides (United Nations,

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2026). The UN Human Rights Office and UNESCO have introduced global standards to align AI governance with human rights and the Sustainable Development Goals (United Nations, 2026). These initiatives emphasize the importance of human oversight, transparency, and the right to remedy in cases where AI systems are used to make decisions (UNESCO, 2022). This research thus engages with a global dialogue on AI governance, seeking to identify models capable of integrating AI without undermining the principles of justice and citizen participation (Fatmawati, 2025).

2. METHOD

The method employed in this study is descriptive and analytical, providing a statement regarding the methodology of current legal and technological research. This research article utilizes a comprehensive literature review method, synthesizing findings from prior studies published in reputable international journals to examine how AI reshapes administrative processes and ethical frameworks (Jenkins, 2021). The analysis identifies emerging patterns in governance innovation, the ethical dilemmas of data-driven decision-making, and the evolving role of human oversight in automated environments. It further highlights the dual nature of AI as a tool for improving public service delivery and as a potential source of ethical complexity.

The study focuses on the "Result & Discussion" section as its primary analytical core, summarizing scientific findings and highlighting the differences between these results and previous publications. The research adopts a qualitative legal approach, analyzing international frameworks such as the EU AI Act, the UNESCO Recommendation on the Ethics of AI, and the NIST AI Risk Management Framework (European Commission, 2024). These theories and laws are used to analyze the topic of modern governance, specifically focusing on the intersection of algorithmic bureaucracy and the principles of the rule of law (Zhu, 2026).

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The analysis is limited to the period of 2020–2025, capturing the most recent developments in digital government journeys and judicial responses to automated administrative acts. Data collection involved the curation of academic papers, policy reports, and court judgments to provide a global perspective on the challenges of transparency, accountability, and fairness. The data were analyzed through thematic synthesis, identifying emerging patterns in governance innovation and the evolving role of human oversight. Through comparative and thematic synthesis, this study contributes to a deeper understanding of how AI technologies influence policy formulation and institutional integrity.

Furthermore, the method addresses the limitations of existing studies, which often address isolated aspects of automated decision-making without offering a unified doctrinal structure for judicial review. By examining the "black-box" problem and the diffusion of responsibility, the study provides a nuanced understanding of the social impact of AI on bureaucratic legitimacy and public trust. The study aims to uncover broader institutional and normative implications, emphasizing the need for balanced governance models that ensure transparency and fairness.

3. RESULT & DISCUSSION

The Impact of Algorithmic Decision-Making on Fundamental Principles of Administrative Law

The introduction of Artificial Intelligence (AI) into the public sector represents a fundamental shift in the epistemological foundations of administrative behavior (Fatmawati, 2025). Traditionally, administrative law has been structured around the concepts of human discretion, reasoned judgment, and the identifiable public official (Ameen et al., 2026). However, the emergence of "algorithmic bureaucracy" challenges these norms by introducing algorithmic rationality and data-driven prediction as the new

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engines of governance (Fatmawati, 2025). This transformation is not merely a change in tools but a redefinition of administrative capacity, requiring a reassessment of the Weberian concept of discretion in hybrid decision-making contexts where human judgment integrates with algorithmic output (Zhu, 2026). The shift from "street-level" to "system-level" bureaucracy highlights how technology transforms discretion and constitutional control (Lee & Dai, 2025).

The principle of legality, a cornerstone of administrative law, requires that all administrative actions have a basis in law and conform to applicable legal standards (Panagopoulou, 2024). In the context of algorithmic governance, this principle demands that algorithmic data processing be founded on rules of law rather than arbitrary logic (Panagopoulou, 2024). A significant challenge arises when the "source of authority" becomes obscured by the complexity of machine learning models or when agencies use AI tools without an explicit statutory mandate (Kastanas & Pavlidis, 2025). For the principle of legality to be respected, the design and implementation of the algorithm must be regulated by law and, ideally, published for public control (Panagopoulou, 2024). This ensures that "code as law" does not bypass the "rule of law" (Editorial Board, 2025). Furthermore, errors in algorithms are substantively attributed to human designers, emphasizing that legality must be maintained throughout the AI lifecycle (Panagopoulou, 2024).

Administrative discretion presents perhaps the most complex challenge to the integration of AI (Panagopoulou, 2024). Algorithms, particularly those based on linear programming, are highly effective in "binding authority" scenarios—such as calculating taxes based on fixed variables (Panagopoulou, 2024). However, in areas where the administration has "discretionary authority," machines often appear "awkward" (Panagopoulou, 2024). The nuanced weighing of public interest and the consideration of unique individual circumstances—tasks central to human administrative discretion—are

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ill-suited to non-linear algorithmic processing (Jenkins, 2021). Furthermore, there is a risk of "automation bias," where human officials increasingly defer to algorithmic outputs without adequate independent justification, effectively hollow-out the exercise of meaningful discretion (Kastanas & Pavlidis, 2025). This challenges the long-standing legal doctrine that administrative law is structured around human discretion and reasoned judgment (Ameen et al., 2026).

Transparency and the "duty to state reasons" are also undergoing a significant evolution. The traditional requirement for a "reasoned decision" is challenged by the "black box" problem of certain AI systems, where it is difficult or impossible to trace how a specific output was reached (Bantekas & Bratsiakou, 2025). In modern governance, transparency must move beyond technical explainability to "communicative accountability" (Obuba, 2026). This involves providing both "model-level" explanations (how the system functions generally) and "instance-level" explanations (why a specific decision was made in a particular case) (Kastanas & Pavlidis, 2025). Without access to intelligible explanations, citizens lose their ability to contest decisions, and courts struggle to assess whether administrative actions meet the standards of rationality (Ameen et al., 2026). Transparency acts as an antidote to abuses of power, ensuring that algorithms serve the common good (Jenkins, 2021).

Principle	Impact of AI/Algorithmic Decision-Making	Core Legal Concern
Legality	Obscures source of authority; requires algorithmic data processing to be rule-based.	Lack of explicit statutory basis for algorithmic actions.
Discretion	Blurs boundary between rules and discretion; risk of automation bias.	Deferral to machine output without human weighing of public interest.

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Transparency	The "Black Box" problem; limits ability to state specific reasons.	Difficulty in conducting judicial review of opaque computational processes.
Good Admin.	Potential for objectivity; benefit of rapid processing of large data volumes.	Biases in data inputs lead to human partiality being encoded in code.
Equality	Reproduces structural bias; uses "proxies" for protected categories.	Discrimination occurring without intent, complicating proof and causation.

The potential of AI to reduce "noise"—the unwanted variability in human judgment—is a significant finding in administrative contexts (Organisation for Economic Co-operation and Development, 2025). By ensuring consistent outcomes regardless of the contextual factors that might influence a human judge (such as the time of day), algorithms can reduce arbitrary disparities in justice administration and public service delivery (Organisation for Economic Co-operation and Development, 2025). However, the trade-off remains the loss of "clinical" human insight, reinforcing the need for a balanced approach where AI serves as a support system rather than a total replacement for human accountability (Schneider, 2019). Algorithmic judgement can be more objective, yet "algorithmic neutrality" is not guaranteed because humans feed the data (Panagopoulou, 2024).

Finally, the principle of equality and non-discrimination is tested by the potential for algorithms to reproduce or even amplify historical biases embedded in training data (Fan, 2025). Bias in AI can occur without explicit intent, as data-driven models may rely on "proxy" variables (such as zip codes) that correlate with protected characteristics like race or income level (Jenkins, 2021). To uphold the principle of equality, administrative systems must be designed to be unbiased, requiring periodic audits and security mechanisms to mitigate the reproduction of structural discrimination (Panagopoulou,

2024). The OECD identifies productivity, responsiveness, and accountability as key opportunity areas for AI, but these benefits are contingent upon managing the "exclusion risks" that could exacerbate inequalities and the digital divide (United Nations, 2026).

The shift from big data to algorithm-driven governance is touched upon even in the delivery of public services, ranging from police allocation to food stamps (Schneider, 2019). These algorithms manage individual behavior and allocate resources, effectively becoming outright governance tools. This technological disruptor necessitates a rethink of administrative law, as private-public partnerships create a bi-directional flow of datasets that might prioritize technical efficiency over constitutional protections. The increasing quantitative importance of algorithms transforms them into engines of public affairs management, exerting a new form of technocratic control over society (Schneider, 2019).

In terms of organizational impact, AI adoption is increasingly strategic, influencing long-term planning and institutional resilience (Obuba, 2026). Public leaders must cultivate AI literacy and ethical stewardship to navigate the interactions between human judgment and machine outputs. The challenges are not uniform; in developing countries, disparities in data quality and infrastructure amplify risks related to exclusion and unequal access (Obuba, 2026). Effective governance requires constant innovation, yet the invention must withstand legal scrutiny and public accountability (Fan, 2025). This suggests a need for a unified doctrinal structure for judicial review of algorithmic administration (Ameen et al., 2026).

Global Regulatory Frameworks and Accountability Mechanisms: From Soft Law to the EU AI Act and Judicial Oversight

As the "algorithmic state" expands, the focus of legal scholarship has shifted toward constructing robust accountability structures. The Harvard Law Review (2025) distill

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recent legislative efforts into four primary regulatory methods: prohibiting use in sensitive contexts, regulating process (notice and appeals), regulating inputs (training data), and regulating outputs (auditing and testing) (Editorial Board, 2025). While most current bills focus on outputs, there is a growing recognition that accountability cannot rely on litigation alone; it must be embedded throughout the AI lifecycle (Engstrom & Ho, 2020). This includes the development of "internal administrative law," where agencies develop robust protocols and hire "data ethicists" to oversee deployment (Engstrom & Ho, 2020).

The European Union's Artificial Intelligence Act (2024) stands as the world's first comprehensive legal framework, adopting a "risk-based" approach (European Commission, 2024). It categorizes AI systems into four risk levels: unacceptable, high-risk, limited risk, and minimal risk. High-risk systems, which include many applications used by public authorities (such as welfare allocation, law enforcement, and justice administration), are subject to stringent obligations (European Commission, 2024). These include requirements for high-quality training data, detailed documentation, transparency, and "meaningful human oversight" (Article 14) (European Commission, 2024). Critics and scholars argue, however, that the concept of human oversight remains under-defined and may struggle against institutional capacity limitations and the inherent "black box" nature of machine learning (Bantekas & Bratsiakou, 2025).

Risk Category (EU AI Act)	Administrative Context/Examples	Regulatory Requirement
Unacceptable Risk	Social scoring by governments; harmful manipulation.	Strict Prohibition.
High Risk	Welfare benefit applications; law enforcement; justice systems.	Rigorous assessments; Human oversight; Logging/Traceability.
Limited Risk	Chatbots for public triage.	Transparency obligations (notifying users of AI use).

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Minimal Risk	Spam filters; AI-enabled administrative spreadsheets.	No specific requirements beyond general law.
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In the United Kingdom, the regulatory posture has shifted from a "wait and see," light-touch strategy toward the development of a distinct legal framework (Tomlinson & McGurk, 2026). The UK Law Commission has described the development of a coherent legal framework for automated decision-making as "the most significant current challenge in public law" (Tomlinson & McGurk, 2026). This shift is partly driven by the realization that an absence of robust regulation exposes individuals to systemic administrative errors and exposes the government to significant political and financial risks (Tomlinson & McGurk, 2026). High-profile international failures, specifically the SyRI case in the Netherlands and the Robodebt scandal in Australia, have served as stark warnings for UK policymakers (Tomlinson & McGurk, 2026).

The SyRI case (2020) is among the first in the world where a court invalidated a digital welfare fraud detection system for breaching human rights (IAPP, 2021). The District Court of The Hague found that SyRI did not strike a "fair balance" between societal interest and privacy because the system was too opaque, collected too much data, and lacked specific indicators for its "risk model" (IAPP, 2021). The court noted the risk that SyRI was biased against people in lower-income neighborhoods, labels the practice as a "surveillance state for the poor" (Appelman et al., 2021). This judgment emphasized that states bear a distinct responsibility when employing new technologies to ensure they respect the "administrative rule of law" (Kastanas & Pavlidis, 2025). The absence of transparency hampered the court's ability to address claims of discrimination.

The Robodebt scandal in Australia further illustrates the "malign policy" implications of automated systems (Hannah & Botterill, 2025). The system used a highly inaccurate and illegal method to automate the identification of welfare overpayments, causing significant distress and even loss of life among vulnerable citizens (Chowdhury,

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2024). A key finding of the Royal Commission was that the government agency unlawfully bypassed the requirement to exercise human discretion before cancelling income support (Huggins, 2025). The Robodebt case highlights the danger of "siloing" legal expertise from policy processes, where senior leadership prioritizes budget savings over basic legal questions (Hannah & Botterill, 2025). It also illustrates that ADM systems can mass-replicate human rights violations if not properly governed (Chowdhury, 2024).

Global Instrument/Policy	Originating Body	Key Focus Area
EU AI Act (2024)	European Union	Mandatory risk-based regulation for high-risk systems.
NIST AI RMF	USA (NIST)	Voluntary framework: Govern, Map, Measure, Manage.
Ethics Recommendation	UNESCO	Human rights, transparency, and human oversight as cornerstones.
Framework Convention	Council of Europe	Legally binding international treaty on AI and human rights.
UN Global Digital Compact	United Nations	Inclusive governance and alignment with SDGs.

To mitigate these risks, Engstrom and Ho propose "prospective benchmarking" as a novel oversight approach (Engstrom & Ho, 2020). This requires agencies to reserve a random set of cases for manual decision-making to serve as a ground-truth test for the validity and legality of machine outputs. By comparing machine results against human benchmarks, agencies, courts, and the public can detect and correct errors in real-time (Engstrom & Ho, 2020). Other scholars suggest the implementation of an "AI Golden Rule": automated systems may approve a rights claim (positive determination), but any negative determination must be automatically assigned for review by a human

administrator (Sheehy & Ng, 2024). This approach balances efficiency with fairness, particularly for vulnerable populations (Sheehy & Ng, 2024).

The evolution of judicial review in the machine age requires courts to adapt the "arbitrary and capricious" standard. Rather than demanding a "human-readable" explanation for every micro-decision, judicial review should focus on the "systemic validity" of the model, evaluating the agency's internal governance, data representativeness, and the rigor of its validation procedures (Engstrom & Ho, 2020). Furthermore, the responsibility for AI-assisted outcomes must be clearly defined to avoid the "diffusion of responsibility" between system providers (private contractors) and deployers (public agencies) (Bantekas & Bratsiakou, 2025). Procurement contracts should mandate transparency and auditability as non-negotiable terms to ensure that "trade secret" claims do not shield government actions from public scrutiny (Engstrom & Ho, 2020).

The international framework is also strengthening, with the Council of Europe's AI Framework Convention serving as the first legally binding international treaty (Vrije Universiteit Amsterdam, 2024). This treaty promotes innovation while mitigating risks to democracy and the rule of law. National laws must not contradict these international treaties, requiring governments to amend national laws accordingly (Vrije Universiteit Amsterdam, 2024). In the United States, states are introducing diverse legislation, such as Montana's "Right to Compute" law and worker protections in civil service law regarding AI use (National Conference of State Legislatures, 2025). These evolving expectations call for institutional commitment to interdisciplinary public service education, ensuring that public managers are technologically fluent and ethically grounded (Zhu, 2026).

Ultimately, the goal of modern governance is to move toward "trustworthy AI" (UNESCO, 2022). This requires a human-rights-centered approach based on proportionality, safety, and fairness. As highlighted by UNESCO, the protection of

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human dignity must be the cornerstone of AI ethics, ensuring that technologies do not displace ultimate human responsibility (UNESCO, 2022). By establishing robust guardrails—such as mandatory Algorithmic Impact Assessments and the appointment of "chief technologists" within agencies—public administrations can harness the benefits of AI while upholding the core principles of justice and democratic accountability (Engstrom & Ho, 2020). The journey toward digital government is a transformation that necessitates a new methodological toolbox and a re-enchantment of public administration through responsible technology use (Zhu, 2026).

4. CONCLUSION

The integration of Artificial Intelligence and algorithmic decision-making into modern governance is not merely a technological upgrade but a paradigm shift that destabilizes traditional administrative law doctrines. This research has demonstrated that while AI offers significant opportunities for productivity and the reduction of "noise" in human judgment, it simultaneously creates profound risks for the principles of legality, discretion, and equality. The failures of systems like SyRI and Robodebt underscore the "catastrophic" impact that poorly designed, opaque, and non-discretionary automated systems can have on vulnerable populations, highlighting a critical gap between state commitments to human rights and actual administrative practice.

To preserve the rule of law in the "algorithmic state," it is essential for public administrations to transition from reactive judicial review to proactive governance models. This includes the adoption of "prospective benchmarking" to validate machine outputs against human standards and the implementation of the "AI Golden Rule," ensuring that negative administrative determinations are always subject to human oversight. Furthermore, the duty to state reasons must evolve into a standard of "communicative accountability," providing intelligible justifications that allow citizens to exercise their

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right to appeal. Accountability cannot rely on litigation alone; it must be embedded in the design, procurement, and deployment of systems through internal administrative protocols.

The findings also emphasize the necessity of robust regulatory frameworks like the EU AI Act, which mandate risk-management practices for high-impact AI categories. However, legal regulation alone is insufficient without institutional capacity-building, including the integration of legal and technical expertise within public agencies to prevent the "siloing" of accountability. Modern governance must ensure that "code" remains subservient to the "rule of law," prioritizing human dignity and transparency over the mere pursuit of mechanical efficiency. Only through such an integrated, human-centric approach can AI be transformed from a "moral test" for institutions into a legitimate tool for reinforcing public trust and enhancing the quality of public service delivery in a digital era.

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