

Review

From Algorithmic Decision-Making to Administrative Legitimacy: Rethinking Legal Accountability in Digital Governance

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Abstract

The growing use of algorithmic systems in public administration is transforming how public decisions are produced, justified, and contested. As automated and data-driven processes become embedded in administrative practice, traditional foundations of administrative authority, including human reasoning, procedural transparency, reason-giving, and institutional responsibility, are increasingly placed under strain. This shift creates new tensions between administrative efficiency and legal legitimacy, raising important questions about how accountability frameworks should adapt to opaque, distributed, and dynamic algorithmic decision-making processes. This paper examines the implications of algorithmic governance for administrative legitimacy and argues that existing legal accountability models are insufficient when decision-making authority is dispersed across public agencies, private technology providers, data infrastructures, and technical systems. Adopting a conceptual and normative analytical approach, the study identifies key challenges, including algorithmic opacity, fragmented responsibility, automation bias, limited contestability, and data-driven discrimination. In response, it develops a conceptual-normative accountability framework that links these challenges to corresponding legal risks and institutional responses. The framework emphasizes meaningful transparency, answerability, accessible contestation, effective human oversight, structured responsibility, auditability, and impact assessment. The analysis suggests that sustaining administrative legitimacy in the digital era requires more than regulatory adjustment. It requires lifecycle-based accountability mechanisms capable of reconnecting algorithmic decision-making with legality, procedural fairness, institutional responsibility, and public justification.

Keywords

Administrative legitimacy, Algorithmic governance, Legal accountability, Digital governance, Institutional responsibility, Public administration

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1. Introduction

1.1 Background of Algorithmic Governance

The integration of algorithmic systems into public administration has become a prominent feature of contemporary governance transformation [1]. Governments are increasingly adopting data-driven tools to support decision-making in areas such as welfare allocation, risk assessment, and regulatory enforcement. This shift reflects a broader movement toward digital governance, where technological infrastructures play an active role in shaping administrative practices [2].

Algorithmic decision-making offers advantages in efficiency and consistency, particularly in handling complex and large-scale data environments. At the same time, it reduces the direct involvement of human judgment in administrative processes. As decisions become mediated by technical systems, the traditional understanding of how authority is exercised within public institutions begins to change.

These developments introduce new forms of governance logic that emphasize prediction, optimization, and automation. However, existing legal and institutional frameworks were largely designed for human-centered decision-making. This mismatch creates tensions between emerging technological practices and established principles of administrative law [3]. This tension is not merely technical but reflects a deeper transformation in how authority is constituted and justified within administrative systems.

1.2 Problem Statement and Research Objectives

Despite the rapid expansion of algorithmic governance, current legal frameworks have not fully adapted to its structural characteristics [4]. Traditional administrative law relies on assumptions of transparency, reason-giving, and accountability that presuppose identifiable human decision-makers. In contrast, algorithmic systems often operate through complex and opaque processes that are difficult to interpret.

This opacity challenges the ability of individuals to understand, contest, and seek remedies against administrative decisions. At the same time, responsibility is frequently distributed across multiple actors, including public agencies, private developers, and data infrastructures. Such fragmentation complicates the attribution of legal responsibility and weakens existing accountability mechanisms [5].

Against this background, the central question of this study is how administrative legitimacy can be sustained in the context of algorithmic decision-making. The paper aims to examine the limitations of existing legal accountability frameworks and to explore how they can be reconfigured to address the realities of digital governance. It seeks to develop a conceptual approach that reconnects technological systems with core principles of legality, responsibility, and public trust [6].

This study adopts a conceptual and normative analytical approach, grounded in critical engagement with interdisciplinary literature on administrative law, digital governance, and algorithmic accountability. Rather than providing empirical evaluation, the paper develops a theoretically informed framework to examine how administrative legitimacy can be sustained under conditions of algorithmic decision-making.

1.3 Contribution and Structure of the Article

This article makes three contributions. First, it conceptualizes algorithmic decision-making as a structural transformation of administrative authority rather than merely a technological instrument used by public agencies. Second, it develops a normative account of legal accountability that links administrative legitimacy to transparency, answerability, contestability, human oversight, and structured responsibility. Third, it translates these normative principles into an adaptive accountability framework that connects specific algorithmic governance challenges to corresponding legal risks and institutional responses.

1.4 Methodological Approach

Methodologically, the article adopts a conceptual and normative legal analysis. It engages with literature from administrative law, public administration, digital governance, and algorithmic accountability in order to identify recurring accountability problems created by algorithmic decision-making. The literature is selected based on its relevance to four analytical themes: administrative legitimacy, legal accountability, transparency and explainability, and institutional responsibility in public-sector AI systems. The article does not seek to provide empirical measurement or a comprehensive doctrinal comparison across jurisdictions. Instead, it uses conceptual analysis to clarify the legal and normative implications of algorithmic decision-making and to develop a framework for evaluating accountability in digital administrative systems.

2. Algorithmic Decision-Making in Public Administration

This section examines the emergence and structural features of algorithmic decision-making in public administration. It first outlines the rise of data-driven governance practices, then analyzes the distinctive characteristics of algorithmic decisions, and finally discusses their implications for administrative processes.

2.1 The Rise of Algorithmic Decision-Making

Algorithmic decision-making has become increasingly embedded in public administration as governments seek to enhance efficiency and policy effectiveness [7]. Data-driven systems are now used in a wide range of administrative domains, including social welfare distribution, risk profiling, and urban management. These systems rely on large datasets and computational models to generate outputs that inform or determine administrative actions.

The adoption of such systems reflects a broader shift toward digitalization in governance, where decision-making processes are partially delegated to technical infrastructures. In this context, algorithms are not merely tools but active components in shaping administrative outcomes. Their role extends beyond assistance, as they increasingly influence how decisions are structured and justified within institutional settings.

This transformation also signals a move toward a more predictive and data-oriented model of governance. Rather than relying solely on ex post evaluation, administrative systems increasingly prioritize anticipatory decision-making based on patterns and probabilities. While this approach can improve responsiveness, it also introduces new complexities into the governance process [8].

2.2 Structural Characteristics of Algorithmic Decisions

Algorithmic decision-making differs from traditional administrative decision-making in several fundamental ways [9]. One key feature is the reliance on data processing and model-based reasoning, which often replaces or supplements human judgment. As a result, decision-making processes become less visible and more difficult to interpret from an external perspective.

Another important characteristic is the opacity of many algorithmic systems, particularly those based on complex machine learning techniques. These systems may produce outputs that are difficult to explain even to their designers, creating challenges for transparency and accountability. This lack of interpretability can undermine the ability of affected individuals to understand how decisions are made.

In addition, algorithmic decision-making often involves distributed processes that span multiple institutional and technical actors. Data may be collected from various sources, processed by different systems, and implemented by administrative agencies. This distributed structure complicates the identification of responsibility and raises questions about how accountability should be assigned [10]. It also challenges the traditional assumption that decision-making processes can be traced back to a single accountable authority.

2.3 Implications for Administrative Practice

The integration of algorithmic systems into administrative practice has significant implications for how governance is conducted [11]. Decision-making processes become more standardized and scalable, allowing administrations to handle larger volumes of cases with greater consistency. At the same time, this standardization may reduce the flexibility needed to account for individual circumstances.

Algorithmic systems also reshape the interaction between administrators and citizens. Decisions that were previously communicated and explained by human officials may now be delivered through automated systems. This can create a sense of distance between the state and the public, potentially affecting perceptions of fairness and trust.

Furthermore, the increasing reliance on algorithmic outputs may influence how administrative discretion is exercised. While algorithms can support decision-making, they may also constrain the ability of officials to deviate from predefined models. This raises broader questions about the balance between efficiency and judgment in modern governance systems [12].

Such tensions highlight the need to reconsider how administrative discretion should be exercised in increasingly automated decision environments. More broadly, this shift suggests that administrative decision-making is moving from a model of individualized judgment toward one of system-driven standardization, raising fundamental questions about the role of discretion in digital governance.

This transformation may have differentiated impacts across social groups. Individuals with limited digital literacy, particularly older populations, may face greater difficulties in understanding, navigating, or contesting algorithmically mediated decisions. As a result, access to procedural fairness may become unevenly distributed, potentially generating new forms of administrative exclusion. This highlights the need to consider not only efficiency gains but also the social implications of technologically mediated governance.

2.4 Illustrative Cases of Algorithmic Governance

To further illustrate the practical implications of algorithmic decision-making in public administration, it is useful to consider several representative scenarios where such systems have been implemented.

In the domain of social welfare, algorithmic systems have been used to detect potential fraud and allocate benefits. These systems often rely on large-scale data analysis to identify patterns of risk. While they can improve administrative efficiency, they may also produce false positives and disproportionately affect certain social groups, raising concerns about fairness and due process.

In law enforcement, predictive policing tools have been adopted to anticipate crime hotspots and allocate police resources accordingly. Such systems operate on historical data and statistical correlations, which may reinforce existing patterns of surveillance and bias. This raises questions about whether algorithmically informed decisions can meet the standards of impartiality expected in public administration.

In regulatory governance, automated systems are increasingly used to assess compliance risks and prioritize inspections. While these tools enhance the capacity of regulatory agencies to manage complex environments, they also shift decision-making authority toward technical systems, making it more difficult to trace how specific regulatory actions are justified.

These examples demonstrate that algorithmic decision-making is not merely a technical enhancement of administrative processes, but a structural transformation that reshapes how authority is exercised, how decisions are justified, and how accountability is maintained in contemporary governance systems. These cases indicate that the challenges of algorithmic governance are not context-specific, but reflect a broader structural shift in how administrative authority is exercised across different domains.

A well-documented example is the Australian Robodebt scheme, in which an automated debt recovery system generated welfare debts through income-averaging methods that were later found to be legally flawed. The scheme caused significant financial and psychological harm to affected individuals and was ultimately held to be unlawful. For the purposes of this article, Robodebt illustrates how algorithmic administration can undermine legality and legitimacy when automated outputs are treated as authoritative without adequate explanation, human review, contestability, or clear institutional responsibility. The case therefore demonstrates that failures of algorithmic governance are not merely technical errors, but broader failures of administrative accountability involving insufficient explanation, inadequate human review, weak contestability, and unclear institutional responsibility.

3. Administrative Legitimacy under Algorithmic Governance

This section explores how the concept of administrative legitimacy is challenged and reconfigured in the context of algorithmic governance. It begins by clarifying the theoretical foundations of legitimacy, then identifies key challenges introduced by algorithmic systems, and finally considers how legitimacy can be reconstructed in digital environments.

3.1 Conceptual Foundations of Administrative Legitimacy

Administrative legitimacy traditionally refers to the justification of public authority through legal validity, procedural fairness, and public acceptance [13]. In classical administrative law, legitimacy is closely linked to the idea that decisions are made by identifiable authorities who are bound by legal norms and accountable for their actions. This framework assumes that decision-making processes are transparent enough to be examined and contested by affected individuals.

Legitimacy is also grounded in procedural principles such as reason-giving, participation, and reviewability. These elements ensure that administrative decisions are not only lawful but also perceived as fair and justifiable. As a result, legitimacy is not solely a matter of formal legality but also of how decisions are produced and communicated within institutional contexts [14]. In this sense, legitimacy operates as both a legal and sociological construct, linking institutional procedures with public perceptions of fairness.

However, these foundational assumptions are increasingly challenged by the integration of algorithmic systems into governance. When decision-making processes are partially delegated to technical systems, the traditional link between authority and human agency becomes less clear. This shift raises questions about whether existing conceptions of legitimacy remain adequate in digitally mediated environments. This shift indicates that legitimacy can no longer be understood solely as a property of institutional procedures, but must also account for the epistemic and operational characteristics of algorithmic systems.

3.2 Legitimacy Challenges in Algorithmic Contexts

The introduction of algorithmic decision-making creates new challenges for administrative legitimacy, particularly in relation to transparency and explainability [15]. Many algorithmic systems operate through complex data processing mechanisms that are difficult for external observers to interpret.

Another significant challenge concerns the distribution of responsibility within algorithmic governance systems. Decisions are often the result of interactions between multiple actors, including public institutions, private technology providers, and data infrastructures. This fragmentation makes it difficult to identify who is accountable for specific outcomes, thereby weakening traditional mechanisms of legal control [16].

In addition, algorithmic systems may reproduce or amplify existing biases embedded in data or model design. Such outcomes can undermine perceptions of fairness and equality, which are essential components of administrative legitimacy. Such biases are often rooted in historical data patterns and structural inequalities, including those related to socioeconomic status, race, or institutional discrimination. When embedded into decision-making systems, these biases can be reproduced at scale, reinforcing existing disparities rather than mitigating them. When affected individuals perceive decisions as arbitrary or unjustified, trust in public institutions may be eroded. This not only raises concerns about discrimination but also undermines the normative expectation that administrative decisions should be based on impartial and reasoned judgment.

These challenges suggest that algorithmic governance does not simply introduce technical changes but fundamentally reshapes the conditions under which legitimacy is constructed and maintained. As a result, traditional legal frameworks may struggle to address the normative implications of algorithmic decision-making [17]. This suggests that legitimacy in algorithmic governance is increasingly contingent upon the capacity of institutions to make complex decision processes intelligible and accountable.

3.3 Reconfiguring Legitimacy in Digital Governance

In response to these challenges, there is a growing need to rethink administrative legitimacy in the context of digital governance [18]. Rather than relying solely on traditional legal doctrines, legitimacy must be reconceptualized to account for the role of technological systems in shaping decision-making processes. This requires a shift from a purely human-centered model of authority to a hybrid model that integrates both human and algorithmic elements.

Reconfiguring legitimacy in digital governance requires institutional arrangements that make algorithmic decision-making intelligible, reviewable, and attributable. The specific accountability mechanisms through which this can be achieved are developed in the following section.

Finally, institutional adaptation is necessary to align governance structures with the realities of algorithmic decision-making. This may involve the development of regulatory frameworks, oversight mechanisms, review procedures, and governance designs that are specifically capable of addressing the legal and technical dimensions of algorithmic administration.

Through these adjustments, administrative legitimacy can be reconstructed in a way that is compatible with the evolving landscape of digital governance. This transformation suggests that legitimacy must be continuously maintained through the interaction between legal norms, institutional practices, and technological systems.

4. Legal Accountability in Algorithmic Administration

This section focuses on the transformation of legal accountability in the context of algorithmic decision-making. It first examines the limitations of traditional accountability frameworks, then proposes key dimensions for rethinking accountability, and finally outlines an adaptive framework suited to digital governance.

4.1 Limitations of Traditional Accountability Frameworks

Legal accountability in administrative law has traditionally been grounded in the identification of responsible decision-makers and the possibility of reviewing their actions through established legal procedures [19]. This model assumes that decisions are made by human actors who can provide reasons, be subject to scrutiny, and bear responsibility for outcomes. However, algorithmic decision-making challenges these assumptions in fundamental ways.

One limitation lies in the difficulty of attributing responsibility within algorithmic systems. Decisions are often produced through interactions between software developers, data sources, and administrative agencies, making it unclear who should be held accountable for specific outcomes [20]. This diffusion of responsibility weakens the effectiveness of traditional accountability mechanisms that rely on clear lines of authority.

Another limitation concerns the opacity of algorithmic processes. When decision-making logic is embedded in complex computational models, it becomes difficult for affected individuals and oversight bodies to evaluate whether decisions comply with legal standards. This lack of transparency undermines procedural safeguards such as reason-giving and the right to contest administrative decisions.

In addition, existing legal frameworks may not adequately address the dynamic nature of algorithmic systems, which can evolve over time through updates and data inputs. This introduces challenges for regulatory oversight, as accountability mechanisms must adapt to systems that are not static but continuously changing [21]. As a result, accountability becomes less about identifying individual fault and more about governing complex socio-technical

systems.

4.2 Core Dimensions of Legal Accountability in Algorithmic Systems

To address these limitations, legal accountability in algorithmic administration must be redefined along several key dimensions [22]. Traditional accountability mechanisms are premised on identifiable decision-makers, transparent reasoning processes, and stable institutional chains of responsibility. Algorithmic decision-making unsettles each of these assumptions because administrative outcomes may be shaped by complex data inputs, opaque model operations, private technology providers, and continuously updated technical systems. As a result, accountability can no longer be understood merely as the retrospective attribution of fault after an unlawful or unfair decision has occurred. It must instead operate as a structured and ongoing framework that governs how algorithmic systems are designed, deployed, explained, reviewed, and corrected within public administration. In this context, four dimensions are particularly important: transparency, answerability, contestability, and structured responsibility.

4.2.1 Meaningful Transparency

The first dimension is transparency, which requires that the functioning and influence of algorithmic systems be made understandable in legally meaningful ways. This does not necessarily require full disclosure of technical code or model architecture. Rather, transparency should provide affected individuals, oversight bodies, and courts with accessible information about the relevant data inputs, decision factors, and institutional uses of algorithmic outputs. Such transparency is necessary to support meaningful scrutiny of algorithmically mediated administrative decisions.

4.2.2 Institutional Answerability

The second dimension is answerability. Public authorities must remain able to justify decisions that are informed or shaped by algorithmic systems. Even when automated tools are used for risk assessment, prioritization, or recommendation, administrative agencies must be able to explain and defend final outcomes within a legal framework. Algorithmic systems should therefore support administrative reasoning rather than replace the obligation of public institutions to give reasons.

4.2.3 Contestability and Review

The third dimension is contestability. Affected individuals must have meaningful opportunities to challenge both the outcome of an algorithmically mediated decision and the process through which it was produced. This requires accessible review procedures, the possibility of human reconsideration, and mechanisms capable of addressing both legal and technical issues. Without contestability, algorithmic decision-making risks weakening procedural fairness by making administrative outcomes difficult to understand or question.

4.2.4 Structured Responsibility

Finally, responsibility must be clearly structured within algorithmic governance systems. Because algorithmic decision-making often involves public agencies, private developers, data providers, and system operators, accountability requires a clear allocation of roles and obligations across the lifecycle of the system. Public authorities should not be able to avoid responsibility by attributing contested decisions to technical systems or external vendors. Clarifying these responsibilities is essential for maintaining the integrity of legal accountability [23].

4.3 Toward an Adaptive Accountability Framework

Building on these dimensions, an adaptive framework for legal accountability is necessary to align administrative law with the realities of digital governance [24]. Such a framework should integrate legal principles with technological practices, ensuring that accountability mechanisms remain effective in complex and evolving environments. In this context, accountability must be understood as an ongoing process rather than a fixed institutional arrangement.

To make the proposed adaptive framework more concrete, Table 1 links the principal structural challenges of algorithmic administration to their corresponding legal or legitimacy risks and recommended accountability responses.

Table 1. Accountability framework for algorithmic administration.

Algorithmic governance challenge	Legal / legitimacy risk	Recommended accountability response
Opacity of algorithmic reasoning	Weak explainability, limited reviewability, and difficulty providing legally meaningful reasons	Meaningful transparency through accessible explanations, disclosure of key decision factors, and audit documentation
Fragmented responsibility	Unclear attribution of accountability among public agencies, private vendors, developers, data providers, and system operators	Structured responsibility through clear allocation of duties across the system lifecycle and identifiable institutional responsibility
Automation bias	Over-reliance on algorithmic outputs and weakening of administrative discretion	Effective human oversight through human-in-the-loop review, override capacity, and mandatory review for high-impact decisions
Limited contestability	Weak procedural fairness, limited remedies, and difficulty challenging algorithmically mediated decisions	Accessible review mechanisms, including appeal procedures, human reconsideration, and technical review capacity
Data bias	Discriminatory or unequal administrative outcomes caused by biased data, model design, or historical patterns	Bias monitoring through algorithmic impact assessments, dataset review, periodic audits, and post-deployment monitoring
Dynamic change	Accountability gaps after model updates, retraining, or changes in data inputs	Continuous accountability through version control, audit trails, periodic reassessment, and lifecycle-based monitoring

Table 1 shows that accountability in algorithmic administration cannot be reduced to transparency alone. It requires a combination of meaningful explanation, structured responsibility, effective human oversight, accessible contestation, bias monitoring, and continuous review throughout the lifecycle of algorithmic systems.

One key element of this framework is the incorporation of human oversight into algorithmic decision-making processes. Maintaining human involvement in critical stages of decision-making can help preserve normative judgment and provide a point of accountability within administrative systems. This approach also facilitates the application of legal standards to algorithmically influenced decisions.

Another important element is the development of institutional mechanisms that support oversight and regulation. This may include specialized review bodies, auditing procedures, and regulatory guidelines tailored to algorithmic systems. These mechanisms can enhance the capacity of legal institutions to monitor and evaluate the use of technology in governance.

Furthermore, accountability frameworks should be designed to accommodate the dynamic nature of algorithmic systems. This requires continuous monitoring and periodic reassessment of systems to ensure that they remain aligned with legal and ethical standards. By adopting an adaptive approach, legal accountability can evolve alongside technological innovation. This adaptive approach highlights the necessity of aligning legal frameworks with the evolving operational logic of algorithmic systems.

4.4 Legal Anchors: The General Data Protection Regulation (GDPR), Automated Decision-Making, and the European Union Artificial Intelligence Act (EU AI Act)

The GDPR and the EU AI Act, now adopted as Regulation (EU) 2024/1689, provide useful legal reference points for the accountability framework developed in this article, although they should not be treated as complete solutions. Under the GDPR, automated decision-making is addressed through a combination of restrictions, information rights, and safeguards. However, the existence and scope of a strong individual “right to explanation” remain legally contested. For this reason, the GDPR is best understood as supporting procedural transparency and contestability rather than as providing a fully developed model of algorithmic accountability.

The EU AI Act is oriented toward systemic governance. Its risk-based framework imposes stronger obligations on AI systems that pose greater risks to rights, safety, or public interests. This is particularly relevant in public administration, where algorithmic systems used for welfare, policing, migration, education, and public services may substantially affect individuals. The Act’s focus on risk management, data governance, documentation, transparency, and human oversight closely reflects the accountability dimensions proposed in this article.

5. Toward a Reconfigured Model of Digital Administrative Legitimacy

This section develops a broader theoretical synthesis of administrative legitimacy in the digital era. It analyzes the shift in governance rationality, discusses the need for institutional recalibration, and reflects on how public trust and normative coherence can be maintained in algorithmic governance systems.

5.1 From Legal Control to Hybrid Governance Rationality

The transformation of administrative decision-making through algorithmic systems suggests a broader shift in governance rationality [25]. Traditional models of legal control emphasize hierarchical authority and rule-based decision-making, which are grounded in human judgment and institutional procedures. In contrast, algorithmic governance introduces a hybrid form of rationality that combines legal norms with computational logic. This hybrid rationality reflects a shift from rule-based governance toward data-driven and model-based decision paradigms.

This hybridization challenges the conventional separation between legal reasoning and technical processes. As algorithmic systems increasingly participate in decision-making, governance becomes a site of interaction between normative and technical logics. This requires a reconceptualization of how legitimacy is constructed within administrative systems.

5.2 Institutional Recalibration and Governance Design

To sustain administrative legitimacy, institutions must adapt to the structural characteristics of algorithmic governance [26]. This involves rethinking not only legal rules but also the design of governance processes. Institutional recalibration requires aligning legal principles with the operational realities of algorithmic systems.

One important aspect of this process is the integration of legal accountability into system design. Rather than treating accountability as an external constraint, it should be embedded within the architecture of algorithmic systems. This approach ensures that governance principles are incorporated at the level of system development and implementation. In this context, governance design becomes a crucial site where legal principles and technical systems must be integrated.

In addition, institutional adaptation may involve the creation of new forms of oversight that are capable of addressing both legal and technical dimensions. These mechanisms can enhance the capacity of administrative systems to respond to the challenges posed by algorithmic decision-making [27].

It is also important to note that accountability architectures vary across jurisdictions. Some regulatory approaches emphasize formalized accountability, risk classification, and ex ante compliance mechanisms, while others rely more heavily on fragmented, sector-specific rules, agency-level oversight, and ex post remedies. This diversity highlights the need for context-sensitive governance models in algorithmic administration.

5.3 Reconstructing Public Trust in Algorithmic Administration

Public trust is a central component of administrative legitimacy and is directly affected by the use of algorithmic systems in governance [28]. When administrative decisions are perceived as opaque, unreviewable, or detached from identifiable institutional responsibility, trust in public institutions may be weakened. This highlights the importance of ensuring that algorithmic governance remains aligned with societal expectations of fairness, legality, and responsibility.

Reconstructing trust requires not only technical improvement but also institutional and normative adjustment. Transparency, accountability, and participation must be reinterpreted in ways that are compatible with digitally mediated decision-making. This requires channels through which affected individuals can understand the basis of algorithmically informed decisions, question their accuracy or fairness, and obtain meaningful institutional responses.

Public trust should therefore be understood as the institutional outcome of accountable design, reviewable procedures, and credible responsibility structures, rather than as a general expectation that citizens will accept algorithmic systems. Ultimately, the legitimacy of algorithmic administration depends on the ability of governance systems to balance efficiency with normative expectations of fairness, legality, transparency, and responsibility. Achieving this balance is essential for maintaining the credibility and authority of public institutions in the digital era [29].

5.4 Toward a Normative Synthesis

The challenges posed by algorithmic governance cannot be addressed through isolated legal or technical measures alone [30]. Instead, they require a broader normative synthesis that integrates administrative law, institutional design, and technological governance. From this perspective, administrative legitimacy should be understood as an emergent property of the interaction between legal norms, institutional practices, and technological infrastructures.

Such a synthesis emphasizes the need for coherence between system design, legal accountability, and public oversight. Algorithmic systems should not be treated as external tools simply added to existing administrative structures. Rather, they should be governed as integral components of public decision-making. By embedding transparency, human oversight, contestability, and responsibility into digital governance systems, public institutions can preserve the normative foundations of administrative authority while adapting to technological change.

5.5 Limitations of the Study

This article has several limitations. First, it offers a conceptual and normative analysis rather than an empirical evaluation of algorithmic decision-making in public administration. It therefore does not measure how particular algorithmic systems affect administrative outcomes in practice. Second, although the article refers to legal developments such as the GDPR and the EU AI Act, it does not provide a detailed doctrinal comparison across jurisdictions. Third, the Robodebt scheme and other examples are used illustratively rather than as full case studies. Future research could apply the proposed accountability framework to specific administrative domains, such as welfare administration, migration control, predictive policing, or tax enforcement, in order to assess how transparency, contestability, oversight, and responsibility operate in concrete institutional settings.

6. Conclusion

The expansion of algorithmic decision-making in public administration has introduced profound changes to how governance is structured, exercised, and evaluated. As algorithmic systems become embedded in administrative processes, they reshape not only the techniques of decision-making but also the normative foundations through which administrative authority is justified. This transformation requires a reconsideration of how legitimacy and accountability can be maintained when public decisions are increasingly mediated by data-driven and automated systems.

This study has examined the implications of algorithmic governance for administrative legitimacy and has highlighted the limitations of existing legal accountability frameworks. Traditional models of administrative accountability are grounded in assumptions of identifiable human decision-makers, transparent reasoning processes, and clearly defined lines of responsibility. These assumptions are increasingly strained by algorithmic systems that are opaque, distributed, dynamic, and often dependent on multiple public and private actors. As a result, legal accountability can no longer be understood only as the retrospective attribution of individual fault. It must also operate as a structured and ongoing framework for governing the design, deployment, review, and correction of algorithmic systems.

In response to these challenges, the paper has argued for a reconfigured model of legal accountability based on transparency, answerability, contestability, human oversight, and structured responsibility. These principles are central to sustaining administrative legitimacy in digital governance because they reconnect algorithmic decision-making with legality, procedural fairness, institutional responsibility, and public justification. The analysis has further shown that accountability must be embedded across the lifecycle of algorithmic systems, from system design and data governance to administrative use, appeal procedures, auditability, and post-deployment monitoring.

In practical terms, this analysis points to several implementation requirements. Public authorities using algorithmic systems in high-impact administrative decisions should establish mandatory human review before final decisions are issued. They should maintain audit trails that record relevant data inputs, model outputs, human interventions, and reasons for final administrative decisions. Algorithmic impact assessments should be conducted before deployment and repeated periodically after implementation. Independent oversight bodies or specialized review mechanisms should be empowered to examine both the legal and technical dimensions of algorithmic systems. Affected individuals should also have access to clear appeal procedures, including the possibility of human reconsideration and meaningful explanation of the factors that influenced the decision.

More fundamentally, algorithmic governance should not be viewed solely as a technical development or an administrative efficiency tool. It represents a transformation in governance rationality, in which legal norms and computational processes jointly shape the exercise of public authority. Addressing this transformation requires moving beyond traditional models of individual fault toward more adaptive, systemic, and institutionally grounded approaches to accountability.

Ultimately, the future of administrative legitimacy depends on the ability of legal and institutional frameworks to evolve alongside technological change. The durability of administrative legitimacy will depend on whether public institutions can make algorithmic systems explainable, reviewable, contestable, and institutionally attributable. By reconciling algorithmic decision-making with principles of transparency, contestability, human oversight, and structured responsibility, public institutions can develop governance systems that are both effective and normatively grounded. The central challenge of algorithmic governance is therefore not only to improve administrative efficiency, but also to redefine the foundations of legitimacy in the digital age.

Conflict of Interest

The author declares no conflict of interest.

Generative AI Statement

Generative artificial intelligence tools were used only to assist with language editing and clarity improvement. The author reviewed and approved the final manuscript and takes full responsibility for its content.

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