

GOVERNING ALGORITHMS: TRANSPARENCY, ACCOUNTABILITY, AND DIGITAL GOVERNMENT REFORM UNDER OPEN GOVERNMENT FRAMEWORKS

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Abstract

The growing use of automated decision-making (ADM) systems in the public sector has transformed how administrative authority is exercised, raising fundamental questions of transparency, accountability, and democratic legitimacy. While existing scholarship on algorithmic governance is dominated by technical, ethical, or legal perspectives, limited attention has been given to how these systems are governed within the institutional logic of public administration. This article addresses this gap by examining how open government frameworks shape the governance of algorithms in digital government reform. Employing a theory-guided qualitative analysis of open government commitments and associated policy instruments, the study conceptualizes governing algorithms as an administrative and institutional challenge rather than a purely technological one. The findings demonstrate that open government functions as a meta-governance framework that redefines transparency as algorithmic explainability, redistributes accountability across socio-technical systems, and promotes the legal and institutional embedding of ADM governance. Participation mechanisms under open government frameworks contribute to administrative learning and reflexive governance, although their influence remains uneven and constrained by structural asymmetries. The article advances public administration theory by reconceptualizing administrative discretion and accountability in algorithmic contexts and by positioning open government as an institutional architecture for democratic digital reform. It concludes that the legitimacy of the digital administrative state depends less on technological adoption than on the capacity of governments to govern algorithms in ways that sustain accountability, contestability, and public trust.

Keywords : Algorithmic governance; Transparency; Accountability; Digital Government; Open Government Frameworks

INTRODUCTION

The rapid expansion of digital technologies within the public sector has fundamentally transformed the nature of governance, public administration, and state-citizen relations. Governments across democratic systems increasingly rely on digital infrastructures, data analytics, and automated decision-making systems to enhance efficiency, reduce administrative burdens, and improve policy outcomes (Afandi et al.,

2026; Dunleavy et al., 2006; Gil-Garcia et al., 2018). Algorithms are now routinely embedded in core administrative functions, including welfare eligibility assessment, taxation, immigration control, law enforcement, healthcare prioritization, and public service delivery (B. W. Wirtz, Weyerer, & Geyer, 2019). While these developments promise gains in speed, consistency, and cost-effectiveness, they also introduce profound challenges for transparency, accountability, and democratic legitimacy in contemporary public administration (Busuioc, 2021).

In contrast to traditional bureaucratic decision-making, algorithmic systems operate through complex computational logics that are often opaque to both administrators and citizens. Decision rules are encoded in software, models are trained on large datasets, and outcomes may be generated without direct human intervention. As a result, algorithms increasingly function as *de facto* policy instruments, shaping distributive outcomes and affecting individual rights in ways that resemble administrative discretion but without the institutional safeguards historically associated with bureaucratic authority (Bovens, 2007; Erdayani et al., 2025; Pasquale, 2015). This shift has prompted growing concerns about “black-box governance,” algorithmic bias, due process deficits, and accountability gaps within digital government systems (Bannister & Connolly, 2020).

From the perspective of public administration theory, these developments signal a critical transformation in the locus of administrative power. Classical models of bureaucracy emphasized rule-bound decision-making, hierarchical accountability, and procedural transparency (Weber, as discussed in Hood, 1991). Later paradigms, such as New Public Management, foregrounded efficiency, performance measurement, and managerial discretion, while often downplaying democratic oversight (Hood, 1991; Pollitt & Bouckaert, 2017). More recent approaches, including digital-era governance and public value governance, highlight the centrality of legitimacy, trust, and citizen-centered outcomes in an increasingly networked and data-driven state (Ansell & Torfing, 2021; Dunleavy et al., 2006). The rise of governing through algorithms intensifies these debates by challenging foundational assumptions about responsibility, control, and accountability in public organizations (Kettl, 2015).

Against this backdrop, the concept of governing algorithms has emerged as a critical analytical lens for understanding how states seek to regulate, oversee, and legitimize algorithmic decision-making in the public sector. Governing algorithms extends beyond technical questions of system design to encompass legal frameworks, institutional arrangements, ethical principles, and participatory mechanisms that shape how algorithmic systems are deployed and constrained (Busuioc, 2021). Central to this agenda are the principles of transparency and accountability, which have long been cornerstones of democratic administration but acquire new meanings and operational challenges in algorithmic contexts (Bovens, 2007).

Transparency in algorithmic governance is no longer limited to access to policy documents or administrative procedures; it increasingly involves questions of explainability, traceability, and intelligibility of automated decisions (A. J. Meijer et al., 2012). Citizens affected by algorithmic outcomes may lack meaningful information about how decisions are made, what data are used, and how errors or biases can be contested (Grimmelikhuijsen & Meijer, 2014). Similarly, accountability mechanisms designed for human decision-makers may prove inadequate when responsibility is distributed across software developers, data providers, public officials, and organizational systems (Busuioc, 2021; Power, 1997). These challenges raise fundamental questions about how democratic states can ensure due process, protect individual rights, and maintain public trust in digitally mediated governance (Roberts, 2010).

In response to these concerns, open government frameworks have gained prominence as normative and institutional mechanisms aimed at reasserting transparency, accountability, and participation in contemporary governance. Rooted in principles of openness, civic engagement, and public oversight, open government initiatives seek to counteract the risks of administrative opacity and technocratic decision-making (A. J. Meijer et al., 2012). The Open Government Partnership (OGP), in particular, represents a global platform through which governments commit to concrete reforms designed to enhance transparency, accountability, and citizen

participation, including in the domain of digital government and emerging technologies (Open Government Partnership, 2023).

From an administrative perspective, open government frameworks function as more than aspirational declarations; they operate as policy instruments that structure reform agendas, set implementation milestones, and subject governments to external evaluation (Ansell & Gash, 2008). By requiring co-creation with civil society, public reporting of commitments, and independent review through mechanisms such as the OGP's Independent Reporting Mechanism (IRM), these frameworks introduce new forms of accountability that extend beyond traditional hierarchical and legal controls (Emerson & Nabatchi, 2015). In doing so, they provide a potentially powerful avenue for addressing the governance challenges posed by algorithmic decision-making (Bannister & Connolly, 2020).

Despite the growing relevance of these developments, existing scholarship reveals important gaps in our understanding of the relationship between algorithmic governance, digital government reform, and open government frameworks. Much of the literature on artificial intelligence and ADM remains dominated by technical, ethical, or legal perspectives, often focusing on issues such as fairness, accuracy, or privacy in isolation (B. W. Wirtz, Weyerer, & Geyer, 2019). While these contributions are valuable, they frequently overlook the broader administrative and institutional contexts in which algorithms operate (Gil-Garcia et al., 2018). Conversely, studies of open government and digital government reform have tended to emphasize open data initiatives, e-government services, or participatory platforms, with limited attention to the governance of algorithmic systems as a distinct administrative challenge (A. J. Meijer et al., 2012).

This fragmentation has resulted in an under-theorization of how open government principles are translated into concrete mechanisms for governing algorithms within public administration. In particular, there is limited empirical and conceptual analysis of how transparency and accountability are operationalized in ADM systems under open government commitments, how institutional responsibilities are reconfigured, and what implications these reforms have for democratic governance and

administrative legitimacy (Busuioc, 2021). Addressing this gap is especially important given the rapid diffusion of algorithmic systems across policy domains and the growing public scrutiny of their impacts (Pasquale, 2015).

This article responds to these challenges by examining governing algorithms through the lens of transparency, accountability, and digital government reform under open government frameworks. It advances the argument that open government provides a critical, yet underexplored, institutional foundation for embedding democratic safeguards into algorithmic governance. Rather than viewing algorithms as neutral technical tools, the article conceptualizes them as socio-technical arrangements that must be governed through deliberate administrative design, legal regulation, and participatory oversight (Ansell & Torfing, 2021).

The study pursues three interrelated objectives. First, it analyzes how principles of transparency and accountability are articulated and institutionalized in policies addressing automated decision-making within open government frameworks. Second, it examines the role of open government as a catalyst for digital government reform, particularly in shaping whole-of-government approaches to algorithmic governance (Dunleavy et al., 2006). Third, it explores the broader implications of governing algorithms for public administration theory, especially with regard to administrative discretion, accountability structures, and democratic legitimacy in the digital state (Kettl, 2015).

By adopting a theory-guided qualitative approach grounded in public administration and governance scholarship, this article contributes to ongoing debates about the future of the administrative state in an era of algorithmic decision-making. It positions governing algorithms not as a marginal or technical issue, but as a central concern for contemporary public administration, with far-reaching consequences for how power is exercised, contested, and legitimated within digital government systems (Pollitt & Bouckaert, 2017).

LITERATURE REVIEW

Algorithmic Bureaucracy

In classical public administration theory rooted in the Weberian model, discretion is conceptualized as a legal authority inherent to frontline public officials (street-level bureaucrats). This authority empowers them to interpret statutory rules contextually and employ moral-rational judgment when addressing specific cases on the ground (Afandi & Afandi, 2025; Lipsky, 2010). However, the pervasive integration of Automated Decision-Making systems within the public sector has fundamentally reconfigured these modalities of power into what is now defined as system-level bureaucracy. When legal statutes, administrative norms, and eligibility criteria are rigidly encoded into software architectures and predictive algorithms, discretion is no longer executed through flexible human reasoning. Instead, it is relocated into a pre-programmed computational binary logic determined during the initial code-design phase. This shift in the locus of discretion from human actors to machine systems alters not merely the velocity of public service processing, but the ontological nature of the power relations between the state and its citizens.

The transfer of decisional authority to technical systems engenders a governance challenge widely theorized as black-box governance, wherein intricate computational processes often lack adequate operational visibility (Erdayani et al., 2025; Pasquale, 2015). A fundamental issue arises when mathematical complexity and proprietary, closed-source code precipitate significant institutional opacity. This opacity obscures the logical causality undergirding administrative decisions, paralyzing the critical faculties of both the affected citizens and the public administrators tasked with operating the systems. Consequently, algorithms cease to function as mere neutral managerial aids and transform into *de facto* policy instruments. These instruments possess authoritative distributive capabilities to allocate public resources or determine individual legal rights, yet they bypass the deliberative arenas and procedural safeguards historically associated with traditional administrative justice (due process of law).

A further consequence of the emergence of this system-level bureaucracy is the profound distortion of linear administrative accountability, which has historically relied

on individual culpability or hierarchical oversight (Bovens, 2007). When computational biases or automated errors inflict harm upon the public, tracing institutional responsibility becomes highly problematic. This difficulty stems from the fact that automated outcomes are produced by complex socio-technical assemblages that involve fragmented actors ranging from third-party software developers and data providers to end-user public agencies. Absent an interdisciplinary macro-governance framework, the automation of administrative discretion risks giving rise to a novel form of technocracy that insulates public decisions from democratic oversight. Therefore, positioning algorithms as objects of governance within public administration demands a functional reconceptualization of transparency and accountability, ensuring that these principles do not devolve into mere formalistic procedures (Erdayani et al., 2023; A. Meijer et al., 2012)

Digital-Era Governance (DEG)

The pervasive institutionalization of Automated Decision-Making within contemporary public administration cannot be decoupled from the ideological hegemony of New Public Management (NPM). Emerging in the late twentieth century, NPM doctrine aggressively championed market-centric mechanisms, contractualization, and the unyielding pursuit of operational efficiency, frequently positioning technological modernization as a mere cost-cutting instrument to minimize human intervention and bureaucratic friction (Pollitt & Bouckaert, 2017). Within this managerialist logic, algorithms are reductionistically conceptualized as neutral, value-free tools engineered to optimize administrative throughput and eradicate human bias. However, this hyper-rationalized focus on mechanical efficiency under the NPM paradigm has precipitated severe systemic pathologies, notably the proliferation of opaque technocratic regimes that insulate administrative processes from public scrutiny. By treating public service delivery as a series of transactional outputs, the NPM-driven automation model systematically marginalizes fundamental constitutional values, such as procedural fairness, equity, and democratic deliberation, thereby reducing citizens to mere passive

consumers of automated outputs and engendering a profound deficit in democratic legitimacy.

As a theoretical counter-thesis to these NPM-induced vulnerabilities, this study operationalizes the paradigm of Digital-Era Governance (DEG), as pioneered by Dunleavy et al. (2006), intertwined with the conceptual framework of Public Value Governance (Ansell & Torfing, 2021). Rather than treating digitalization as a driver of institutional fragmentation a notorious byproduct of NPM's disaggregation strategies DEG posits that contemporary digital transformation must pivot toward institutional reintegration, holistic administrative coordination, and citizen-centered digital processes. Under the DEG framework, technology ceases to be an isolated managerial tool and instead becomes the infrastructure for an interconnected, responsive state. When synthesized with Public Value Governance, the evaluative metrics of digital government reform shift fundamentally; the legitimacy of an administrative system is no longer quantified merely by the velocity of its automated transactions or fiscal retrenchment, but by its capacity to generate public value, cultivate systemic institutional trust, and uphold democratic accountability. Consequently, digital government reform must transcend the technocratic allure of automation for the sake of efficiency, reorienting its trajectory toward the preservation of public interest within data-driven ecosystems.

Within this dialectical tension, open government frameworks emerge not merely as a set of descriptive transparency initiatives, but as an active mechanism of meta-governance. Meta-governance, in this context, implies the capacity of the state to establish the overarching rules, norms, and institutional architectures that govern other governance networks and technological systems (Ansell & Torfing, 2021). By embedding open government commitments into digital government reforms, the state establishes an institutional apparatus capable of regulating the deployment of ADM systems, ensuring they remain subordinate to democratic oversight and rule-of-law principles. Open government as a meta-governance framework thus recalibrates the trajectory of administrative digitalization from a market-driven, opaque technocracy toward a reflexive, collaborative architecture where the design, deployment, and

evaluation of algorithms are continuously subjected to public contestation and multi-stakeholder participation.

Democratic Contestability

Within the discourse of digital government, transparency has historically been equated with procedural openness, characterized by the proactive disclosure of raw datasets, public records, and formal policy documents (B. Wirtz, Weyerer, & Rösch, 2019). Under this conventional paradigm, the state fulfills its transparency obligations through a quantitative approach to information dissemination, operating under the assumption that maximizing data availability inherently fosters public trust and democratic oversight. However, this classical interpretation of transparency proves structurally dysfunctional when applied to automated decision-making and algorithmic governance. The sheer technical complexity of machine learning models and predictive analytics creates a novel form of informational opacity, wherein the traditional release of data or system specifications fails to provide meaningful clarity. Indeed, providing voluminous but uninterpretable code or dense mathematical formulas to the public can inadvertently result in “opacity by disclosure,” where the abundance of technical information overwhelms external stakeholders and paralyzes their critical faculties (Grimmelikhuijsen & Meijer, 2014).

To address these systemic limitations, this study argues that algorithmic governance demands a fundamental shift from mere procedural openness toward a functional and reflexive model of transparency centered on democratic contestability. Drawing on the foundational theories of administrative transparency formulated by Wirtz et al. (2019) and Grimmelikhuijsen and Meijer (2014), openness must be reconceptualized not as an end in itself, but as an enabler of public understanding and institutional accountability. In the context of ADM systems, transparency must be operationalized through the dual principles of explainability and traceability. Explainability dictates that the underlying logic, variables, weighting parameters, and inference criteria used by an algorithm must be translatable into plain, comprehensible language that lay citizens can digest. Concurrently, traceability requires a rigorous

auditing infrastructure that maps the entire data lifecycle, ensuring that every automated administrative output can be retroactively tracked to its institutional and computational origins.

When transparency is redefined through this functional lens, it serves as the primary prerequisite for democratic contestability, allowing affected individuals to meaningfully challenge and appeal automated decisions. True transparency in an algorithmic era cannot be achieved by merely revealing that a computer system was utilized; rather, it requires that citizens possess the operational capacity to question the fairness, legality, and validity of the algorithmic logic that conditions their rights (Pasquale, 2015). By embedding these requirements within open government frameworks, transparency is elevated from a passive administrative routine to an active, empowering instrument of administrative justice (due process of law). This conceptual pivot ensures that the deployment of automation does not insulate the state from public scrutiny, but instead provides citizens with the necessary agency to contest, evaluate, and hold automated public power accountable.

Systemic and Distributed Models of Algorithmic Accountability

To dissect the complex layers of responsibility within automated public sectors, this study operationalizes the public accountability framework formulated by Mark Bovens (2007) conceptualizes accountability as an institutional relationship wherein an actor is under a formal obligation to explain and justify their conduct to a significant forum, which possesses the authority to pass judgment and impose consequences. In conventional public bureaucracies, this mechanism operates within linear, hierarchical structures where individual culpability can be clearly traced to specific administrative roles. However, the introduction of Automated Decision-Making networks severely distorts this traditional paradigm. Decisions in an automated state are rarely the product of a single official's discretion; rather, they are generated by heterogeneous socio-technical assemblages that involve a highly fragmented constellation of actors, including third-party software developers, data providers, system analysts, and end-user public agencies. This diffusion of agency creates a systemic “problem of many hands,”

rendering classical linear accountability models structurally inadequate to address algorithmic failures or automated administrative errors.

To circumvent this institutional challenge, this study argues for an expansion of Bovens' framework into a model of systemic and distributed accountability that operates continuously throughout the algorithmic lifecycle. This distributed model requires that accountability be institutionalized across two critical temporal dimensions. First, ex-ante accountability shifts the focus toward preventative control mechanisms implemented before an algorithm is deployed into the public sphere. This dimension encompasses the institutionalization of rigorous algorithmic impact assessments (AIAs), multi-stakeholder design audits, and the establishment of strict legal boundaries to curb arbitrary technological discretion. By embedding accountability directly into the system design, the state mitigates the risk of automated biases prior to institutional execution. Second, ex-post accountability guarantees the existence of robust oversight and remedial mechanisms after an automated decision has been rendered. This dimension necessitates the provision of a legal right to explanation for affected citizens, the preservation of comprehensive computational audit logs, and the integration of independent appellate bodies or digital ombudsmen capable of reviewing, contesting, and overturning automated outputs. By restructuring accountability into a distributed, multi-layered mechanism, open government frameworks ensure that the deployment of ADM does not create an institutional vacuum. Instead of allowing public agencies to shift blame onto technological systems, a distributed accountability model binds both human administrators and technical networks to continuous institutional verification. This comprehensive approach transforms accountability from a retrospective, punitive routine into a proactive framework of reflexive governance, ensuring that the exercise of digital state power remains anchored to democratic oversight and institutional responsibility.

RESEARCH METHODS

This study employs a qualitative, theory-guided research design to examine how algorithms are governed through transparency and accountability mechanisms under open government frameworks. A qualitative approach is appropriate because the study

seeks to interpret governance arrangements, institutional logics, and normative principles embedded in public policy rather than to test causal relationships or measure technological performance (Fereday & Muir-Cochrane, 2006; Kuckartz, 2014). The research is situated within the tradition of interpretive policy analysis, which emphasizes meaning-making, institutional context, and the interaction between norms, rules, and administrative practices in public governance (Fischer, 2003; Yanow, 2000). Rather than treating automated decision-making as a purely technical artifact, the study conceptualizes it as a socio-technical governance phenomenon embedded in administrative systems and shaped by legal, institutional, and political choices (Busuioc, 2021; A. J. Meijer et al., 2012). This perspective aligns with public administration scholarship that views digital technologies as constitutive elements of governance rather than neutral tools (Dunleavy et al., 2006). A theory-guided approach ensures that empirical analysis is systematically connected to core concepts such as administrative accountability, transparency, discretion, and digital-era governance (Bovens, 2007; Kettl, 2015).

The empirical focus of this study is on open government frameworks, with particular attention to commitments addressing digital government and automated decision-making under the Open Government Partnership. OGP constitutes a strategically relevant analytical setting because it operates as a global governance platform that explicitly links transparency, accountability, and participation with public sector reform (A. J. Meijer et al., 2012). Moreover, OGP requires participating governments to formulate concrete commitments, define milestones, and subject their implementation to independent evaluation, making it especially suitable for governance-oriented analysis (Open Government Partnership, 2023).

The scope of the study is intentionally policy-oriented rather than country-comparative. The unit of analysis is not a single national administration, but the governance mechanisms embedded in open government commitments related to ADM and digital government reform. This design supports analytical generalization, allowing insights into how open government principles are translated into administrative instruments across contexts, rather than producing descriptive national case narratives

(Yin, 2018). Data were drawn exclusively from documentary sources, which are particularly well suited for examining formal governance arrangements, policy rationales, and institutional design in public administration research (Bowen, 2009). Documentary analysis enables systematic scrutiny of how governing algorithms are formally articulated, justified, and embedded within administrative frameworks, while minimizing reliance on self-reported perceptions or retrospective accounts.

The primary data sources comprised four interrelated categories. First, Open Government Partnership documents were analyzed, including National Action Plans, commitment descriptions, milestone statements, and official implementation updates related to digital government and automated decision-making. These documents constitute authoritative expressions of governmental intent and reform priorities. Second, Independent Reporting Mechanism reports were examined to provide external and standardized assessments of commitment relevance, ambition, and verifiability, thereby strengthening the analytical rigor and credibility of the dataset (Open Government Partnership, 2023). Third, government policy and legal documents referenced within OGP commitments such as responses to public inquiries, legislative review reports, and administrative guidance on ADM and artificial intelligence were included to capture the broader regulatory and legal context shaping algorithmic governance. Fourth, supplementary institutional materials, including public consultation summaries, taskforce mandates, and governance frameworks associated with digital government reform, were analyzed to illuminate coordination mechanisms and administrative rationales underpinning transparency and accountability initiatives.

The primary unit of analysis in this study is the policy commitment as articulated within open government frameworks. Each commitment is conceptualized as a governance instrument that encapsulates normative objectives, implementation mechanisms, and accountability arrangements, rather than as a standalone policy statement (Pollitt & Bouckaert, 2017). Treating commitments in this way allows the analysis to move beyond descriptive cataloguing and to examine how algorithmic governance is institutionally structured and justified within public administration.

To guide systematic analysis, four analytical dimensions were developed drawing explicitly on public administration and governance theory. First, transparency mechanisms refer to provisions related to disclosure, explainability, and public access to information concerning automated decision-making systems, including individuals' ability to understand and contest decisions (Grimmelikhuijsen & Meijer, 2014). Second, accountability arrangements encompass oversight structures, review and appeal pathways, audit mechanisms, and the allocation of responsibility within administrative systems, reflecting both hierarchical and system-level accountability models (Bovens, 2007; Power, 1997). Third, legal and institutional embedding captures the extent to which ADM governance is anchored in legislation, regulatory frameworks, or formal administrative guidance, thereby constraining discretionary use and enhancing legal certainty (Kettl, 2015). Fourth, coordination and participation address whole-of-government approaches, inter-agency coordination mechanisms, and the role of public and civil society engagement in shaping governance arrangements, consistent with collaborative governance perspectives (Ansell & Gash, 2008; Emerson & Nabatchi, 2015).

Data analysis followed a thematic analysis approach using a combined deductive–inductive coding strategy (Braun & Clarke, 2019). Deductively, the initial coding framework was informed by established concepts in public administration literature, including transparency, accountability, legality, discretion, and coordination (Bovens, 2007; Dunleavy et al., 2006). Inductively, additional themes were identified through close and iterative reading of the documents to capture context-specific governance innovations and emerging implementation challenges (Fereday & Muir-Cochrane, 2006).

The analytical process proceeded in four stages. First, all documents were systematically screened to identify sections explicitly addressing ADM, algorithmic decision-making, or digital governance. Second, relevant text segments were coded according to the analytical dimensions. Third, patterns and relationships across documents were examined to identify recurring governance logics and institutional arrangements. Finally, the findings were interpreted in relation to broader theoretical

debates on digital government reform and open government (Gil-Garcia et al., 2018). This process enabled the analysis to move beyond descriptive mapping toward conceptual explanation.

Several strategies were employed to enhance methodological rigor. Document triangulation was applied by cross-referencing open government commitments with IRM assessments and related policy documents to ensure consistency and reduce interpretive bias (Bowen, 2009). Theoretical triangulation was achieved by interpreting findings through multiple public administration perspectives, including digital-era governance and public value governance (Ansell & Torfing, 2021; Dunleavy et al., 2006). An audit trail documenting coding decisions, analytical memos, and theme development was maintained to enhance transparency and dependability (Lincoln & Guba, 1985). While qualitative document analysis does not aim for statistical generalizability, the use of well-established theoretical constructs supports analytical generalization to similar governance contexts (Yin, 2018).

This study has several limitations. First, reliance on documentary data means that the analysis captures policy design and formal governance intentions, rather than day-to-day implementation practices or user experiences (Bowen, 2009). Second, the study does not evaluate the technical performance of ADM systems, as its focus lies on governance rather than technology assessment (Busuioc, 2021). Finally, given the evolving nature of digital government reforms, some governance mechanisms remain under development at the time of analysis. Despite these limitations, the methodological approach is well aligned with the study's objective of advancing theoretical and policy-relevant understanding of governing algorithms within contemporary public administration.

RESULTS AND DISCUSSION

RESULTS

1. Open Government as a Meta-Governance Framework for Algorithmic Decision-Making

The analysis demonstrates that open government frameworks operate as a form of meta-governance for algorithmic decision-making in the public sector, shaping not the technical architecture of automated decision-making systems, but the institutional logic within which they are designed, justified, and constrained. Rather than prescribing detailed technical specifications or algorithmic models, open government commitments structure how public administrations conceptualize algorithmic risks, assign organizational responsibilities, and legitimate the use of ADM in policy implementation (Ansell & Torfing, 2021; A. J. Meijer et al., 2012). In this sense, open government functions as a higher-order governance layer that orients administrative action toward normative objectives, while leaving space for sectoral and contextual variation.

Across the analyzed commitments, governing algorithms is consistently framed as an administrative reform challenge, not merely a technological modernization project. This framing is analytically significant because it repositions ADM from an efficiency-enhancing managerial tool toward a governance mechanism that must be aligned with democratic oversight, legality, and public accountability (Dunleavy et al., 2006; Kettl, 2015). By emphasizing guidance, legal frameworks, and review mechanisms, open government commitments signal a departure from discretionary or ad hoc adoption of algorithmic systems toward more deliberate and institutionalized forms of governance. As a result, open government operates as a coordination device, aligning digital innovation with established public administration norms and mitigating the risk of fragmented or opaque algorithmic practices across policy domains (Pollitt & Bouckaert, 2017).

2. Reconfiguration of Transparency: From Procedural Openness to Algorithmic Explainability

A central and recurring result concerns the reconfiguration of transparency in the context of digital government reform. Transparency mechanisms articulated in the commitments extend well beyond conventional understandings of openness based on access to policy documents, administrative procedures, or performance reports. Instead, transparency is increasingly articulated in terms of algorithmic explainability, emphasizing the right of affected individuals to obtain meaningful information about how automated decisions are produced, what categories of data inform those decisions, and how outcomes with legal or similarly significant effects may be challenged (Busuioc, 2021; Grimmelikhuijsen & Meijer, 2014).

This shift reflects a movement from procedural transparency toward substantive transparency, where openness is evaluated by its capacity to enable understanding, contestation, and accountability rather than by the sheer volume of disclosed information (Bannister & Connolly, 2020). Transparency is thus operationalized as a rights-oriented governance mechanism closely linked to due process, rather than as a managerial instrument aimed at monitoring administrative performance. Importantly, the commitments do not frame transparency as total openness of algorithmic code or models. Instead, transparency obligations are articulated as balanced administrative duties that must coexist with privacy protection, system security, and operational feasibility, highlighting the inherently negotiated character of algorithmic transparency (Pasquale, 2015).

The analysis further shows that transparency in algorithmic governance is increasingly embedded in institutional routines, including administrative guidance, consultation practices, and anticipated legislative provisions. This institutionalization reduces the likelihood that transparency remains symbolic or discretionary and indicates a gradual normalization of explainability requirements within public administration. As a result, transparency becomes a routine expectation of algorithmic governance rather than an exceptional response to controversy or failure (A. J. Meijer et al., 2012).

3. Redistribution of Administrative Accountability in Algorithmic Systems

The findings reveal a profound redistribution of administrative accountability associated with algorithmic governance. Traditional accountability models in public administration typically rely on identifiable decision-makers operating within hierarchical chains of responsibility (Bovens, 2007). In contrast, ADM systems distribute decision-making authority across complex socio-technical assemblages involving software applications, data infrastructures, organizational routines, and multiple public actors, making singular attribution of responsibility increasingly problematic (Busuioc, 2021; Power, 1997).

Open government commitments respond to this challenge by emphasizing system-level accountability rather than individual blame. Accountability mechanisms highlighted in the analysis include the establishment of oversight bodies, formal review and appeal pathways for automated decisions, and the clarification of institutional responsibilities for ADM governance. These mechanisms reflect an understanding that accountability in algorithmic systems must be collective, procedural, and embedded within institutional arrangements rather than resting solely on personal discretion or managerial oversight (Kettl, 2015).

Crucially, accountability is articulated as both *ex ante* and *ex post*. *Ex ante* accountability is pursued through governance frameworks, standards, and guidance that shape how ADM systems are designed, tested, and deployed. *Ex post* accountability is addressed through transparency obligations, review mechanisms, and rights to explanation and appeal. Together, these approaches point to an emerging administrative model in which accountability is integrated throughout the lifecycle of algorithmic systems, reducing reliance on reactive responses after failures occur (Pollitt & Bouckaert, 2017).

4. Legalization and Institutional Embedding of Algorithmic Governance

Another key finding concerns the increasing legalization and institutional embedding of algorithmic governance under open government frameworks. The analyzed commitments consistently emphasize the development or strengthening of

formal legal frameworks governing ADM, particularly in relation to personal data processing, automated decision-making with significant legal or social effects, and access to review and redress mechanisms (Busuioc, 2021). This emphasis reflects growing recognition that algorithmic governance cannot rely solely on voluntary standards or administrative discretion.

This trend indicates a broader shift from soft governance instruments toward harder regulatory approaches in digital government reform (Gil-Garcia et al., 2018). While early phases of algorithm adoption often relied on guidance and non-binding principles, open government commitments increasingly signal the need for legislation to ensure consistency, enforceability, and legal certainty. Legalization thus serves two key administrative functions: it constrains discretionary use of ADM by public agencies and provides a clear normative basis for accountability, oversight, and citizen redress (Kettl, 2015).

Institutionally, the analysis shows a clear movement toward whole-of-government coordination in governing algorithms. Responsibilities for ADM governance are increasingly shared across central coordination units, legal authorities, and digital transformation agencies, reflecting recognition that algorithmic governance constitutes a cross-cutting administrative issue. This shift challenges siloed organizational structures and underscores the need for coordinated governance responses to complex socio-technical systems (Dunleavy et al., 2006).

5. Participation and Administrative Learning in Algorithmic Governance

The analysis highlights the role of participation and administrative learning as complementary dimensions of governing algorithms under open government frameworks. Commitments frequently incorporate public consultations, taskforces, and engagement with civil society as mechanisms for shaping ADM governance. Participation is framed not only as a democratic ideal but also as a source of institutional learning, enabling administrations to identify emerging risks, societal concerns, and governance gaps associated with algorithmic systems (Ansell & Torfing, 2021; Fung, 2015).

At the same time, the results indicate that participation in algorithmic governance remains asymmetrical. While consultation mechanisms are formally embedded, their influence is often concentrated at early stages of agenda-setting and policy design, with limited transparency regarding how public input informs final administrative decisions. Participation thus functions primarily as a legitimizing and diagnostic mechanism rather than as a direct form of co-decision in algorithmic governance (Arnstein, 1969).

Nevertheless, the integration of participation into ADM governance contributes to the gradual institutionalization of reflexive governance, in which public administrations acknowledge uncertainty, incorporate feedback, and revise governance arrangements over time. This learning-oriented approach contrasts with technocratic models of digital government that prioritize efficiency and control over deliberation and adaptability (Ansell & Gash, 2008).

6. Emerging Tensions and Trade-offs in Governing Algorithms

Finally, the analysis reveals persistent tensions and trade-offs inherent in governing algorithms through open government frameworks. Commitments repeatedly acknowledge the need to balance transparency with privacy protection, innovation with legal certainty, and centralized coordination with agency autonomy (Bannister & Connolly, 2020). These tensions are not resolved through fixed or uniform rules but are managed through adaptive governance arrangements that combine legal safeguards, administrative guidance, and oversight mechanisms.

Importantly, open government does not eliminate these trade-offs; rather, it renders them visible and contestable within administrative processes. By foregrounding transparency and accountability, open government frameworks transform algorithmic governance from a purely technical issue into an explicitly political and administrative domain. This visibility constitutes a significant outcome in itself, as it enables democratic scrutiny and reduces the likelihood that unaccountable algorithmic power becomes entrenched within public administration (Pasquale, 2015).

DISCUSSION

1. Governing Algorithms as a Transformation of Administrative Power

The findings of this study demonstrate that governing algorithms under open government frameworks constitutes a qualitative transformation in the nature, execution, and institutional logic of administrative power. Automated decision-making systems do not merely automate or accelerate existing bureaucratic routines; they fundamentally restructure the modalities through which state authority, discretionary power, and institutional responsibility are exercised within the contemporary administrative state.

To theoretically contextualize this transformation, it is essential to contrast it with classical public administration theory. The traditional Weberian model of bureaucracy conceptualizes administrative discretion as an idiosyncratic attribute exercised exclusively by identifiable, human officials who operate within strict hierarchical chains of command, bound by dense legal-procedural norms (Hood, 1991). In this classical paradigm, administrative legitimacy is inherently linear and derived from traceability: every decision can be mapped back to a specific human actor, reviewed against written regulations, and subjected to legal or political sanctions through established institutional channels (Bovens, 2007).

The empirical findings of this study suggest that the rise of algorithmic systems fundamentally disrupts and splinters this traditional configuration. Discretion is no longer localized within human judgment or bounded by the physical walls of an agency; instead, it is increasingly encoded into socio-technical arrangements (Busuioc, 2021). These arrangements synthesize data infrastructures, automated computational models, and rigid software code with organizational routines and variable human oversight in complex, highly opaque ways (Pasquale, 2015). Consequently, the classical locus of administrative power shifts from the bureaucrat to the system architecture. This diffusion of discretion severely challenges the traditional administrative imaginary of absolute control and linear responsibility, introducing what can be theorized as an "institutional opacity" that raises acute questions about who truly governs, who decides, and how a distributed technical network can be held publicly accountable in an algorithmically mediated state (Busuioc, 2021; Kettl, 2015).

Furthermore, this transformation highlights an evolutionary tension across major public administration paradigms. Under the wave of New Public Management, administrative reform prioritized marketized efficiency, performance measurement, cost-effectiveness, and wide managerial discretion, frequently sidelining democratic oversight and procedural safeguards (Hood, 1991; Pollitt & Bouckaert, 2017). The rapid adoption of ADM systems can be seen as an intensification of this NPM logic, wherein computational algorithms are deployed as ultimate tools for optimization, swift resource distribution, and cost reduction. However, by operating as *de facto* policy instruments without the historical checks of bureaucratic authority, these systems generate "black-box governance" and severe due process deficits (Pasquale, 2015; Pollitt & Bouckaert, 2017).

Open government frameworks directly intervene in this pathology by asserting a counter-logic rooted in Digital-Era Governance (DEG) and Public Value Governance. DEG emphasizes reintegration, holistic whole-of-government coordination, and citizen-centered digital processes (Dunleavy et al., 2006), while Public Value models position public trust, democratic legitimacy, and institutional transparency as core prerequisites of state action (Ansell & Torfing, 2021). By reframing algorithms not as neutral tools of managerial efficiency, but as explicit objects of governance, open government frameworks re-embed these systems into the democratic and legal architecture of the state (Kettl, 2015).

Instead of treating technical optimization as an absolute end, open government subjects ADM to rigorous standards of public justification, external review, and civic contestability. In doing so, the governance of algorithms emerges as a contemporary manifestation of the enduring, historical struggle in public administration theory: the dialectical tension between an efficiency-driven administrative apparatus and a legitimacy-oriented democratic governance structure (Pollitt & Bouckaert, 2017). Open government acts as a crucial institutional architecture that prevents algorithmic power from becoming a tool of technocratic insulation, ensuring instead that digital government reform remains bound to constitutional and democratic values.

2. Reinterpreting Transparency: From Openness to Democratic Contestability

A key theoretical contribution of this study lies in its reconceptualization of transparency in the context of algorithmic governance. The findings indicate that transparency under open government frameworks is no longer primarily understood as maximal disclosure or procedural openness, but increasingly as democratic contestability that is, the capacity of affected individuals and institutions to understand, question, and challenge administrative decisions produced or informed by algorithms (A. J. Meijer et al., 2012; Roberts, 2010).

This shift represents a significant departure from earlier transparency paradigms that equated openness with access to documents, visibility of procedures, or publication of performance indicators. In algorithmic governance, such forms of openness are often insufficient, as the complexity and opacity of computational systems can render formally disclosed information practically unintelligible. Instead, transparency is operationalized through mechanisms of explainability, reviewability, and access to meaningful information that enables individuals to contest decisions with legal or similarly significant effects (Grimmelikhuijsen & Meijer, 2014).

From a theoretical perspective, this finding reinforces arguments that transparency should be evaluated based on its functional contribution to accountability and legitimacy, rather than its formal scope or volume (Bannister & Connolly, 2020). Open government frameworks facilitate this functional shift by embedding transparency obligations within broader governance arrangements, rather than treating them as isolated disclosure requirements. Transparency thus becomes substantively valuable only insofar as it enables scrutiny, redress, and democratic oversight. In this sense, open government contributes to a transformation from symbolic transparency toward substantive transparency, tailored to the governance challenges posed by algorithmic decision-making.

3. Accountability Beyond Individuals: Toward Systemic and Distributed Responsibility

The study's findings significantly advance theoretical debates on accountability in public administration by highlighting the limitations of individual-centric accountability models in algorithmic contexts. Traditional accountability frameworks presuppose identifiable decision-makers who can be held responsible through hierarchical supervision, legal review, or political oversight (Bovens, 2007). However, ADM systems distribute decision-making authority across heterogeneous components, including data sources, algorithmic models, organizational procedures, and multiple public actors, making singular attribution of responsibility increasingly untenable (Busuioc, 2021; Power, 1997).

Open government frameworks address this challenge by promoting systemic and distributed accountability, in which responsibility is embedded in governance arrangements, institutional safeguards, and procedural mechanisms rather than attributed solely to individual officials. The findings show that accountability is conceptualized as both *ex ante* through standards, guidance, risk assessments, and design constraints and *ex post* through review pathways, transparency obligations, and rights to explanation and appeal. This dual orientation reflects an emerging understanding of accountability as a continuous and lifecycle-based process, rather than a reactive mechanism triggered only after administrative failure (Kettl, 2015; Pollitt & Bouckaert, 2017).

This reconceptualization has important implications for public administration theory. It suggests that accountability in the digital state must be understood as an institutional property of governance systems, rather than as a personal attribute of decision-makers. Governing algorithms thus requires a shift from blame-oriented accountability toward design-oriented accountability, where institutional arrangements are deliberately constructed to anticipate, prevent, and correct harms arising from algorithmic decision-making.

4. Open Government as an Institutional Architecture for Digital Government Reform

Beyond its implications for transparency and accountability, the study highlights open government as an institutional architecture that structures digital government reform. Rather than functioning merely as a normative agenda or symbolic commitment, open government frameworks organize reform processes by defining priorities, coordinating actors, and legitimizing regulatory intervention in technologically complex and politically sensitive policy domains (Ansell & Gash, 2008; Emerson & Nabatchi, 2015).

From a governance perspective, open government operates as a form of meta-governance, aligning digital innovation with democratic values without prescribing rigid technical solutions. By requiring explicit commitments, milestones, and independent evaluation through mechanisms such as the Independent Reporting Mechanism, open government introduces reflexivity into digital reform processes. This reflexive dimension is particularly important in algorithmic governance, where uncertainty, rapid technological change, and evolving societal expectations limit the effectiveness of static regulatory approaches (Gil-Garcia et al., 2018).

Importantly, this institutional architecture enables governments to engage in iterative learning and adaptation, rather than one-off regulatory interventions. Open government thus functions as a governance infrastructure that supports experimentation while maintaining democratic accountability a balance that is increasingly difficult to achieve in data-driven public administration.

5. Participation, Administrative Learning, and the Limits of Co-Creation

While participation is a foundational principle of open government, the findings reveal that its role in algorithmic governance is more constrained than normative accounts of co-creation might suggest. Participation mechanisms primarily function as tools for agenda-setting, risk identification, and legitimacy-building, rather than as channels for direct co-decision over algorithmic design and deployment (Fung, 2015). This reflects structural constraints inherent in public administration, including technical complexity, legal accountability, and asymmetries in expertise and resources between state and non-state actors.

Nevertheless, the findings indicate that participation contributes meaningfully to administrative learning. Through consultation and engagement, public organizations are better able to identify governance gaps, anticipate societal concerns, and adapt regulatory approaches over time (Ansell & Torfing, 2021). From a theoretical standpoint, this positions participation not as a substitute for bureaucratic authority, but as a complementary mechanism that enhances reflexivity and adaptive capacity within the administrative state.

This learning-oriented perspective helps reconcile the apparent tension between democratic ideals of participation and the practical realities of algorithmic governance. Rather than democratizing every technical decision, open government enables administrations to remain responsive and accountable by institutionalizing feedback loops that inform ongoing governance adjustments.

6. Governing Algorithms and the Future of Administrative Legitimacy

The broader implication of this study concerns the future of administrative legitimacy in the digital state. Algorithmic governance amplifies legitimacy challenges by rendering administrative power less visible, less intuitive, and more difficult for citizens to contest (Pasquale, 2015). When decisions are mediated by algorithms, traditional cues of fairness, reason-giving, and accountability may be obscured, undermining public trust.

In this context, open government frameworks play a critical role in re-establishing legitimacy by subjecting algorithmic systems to public norms of transparency, accountability, and justification (Grimmelikhuijsen & Meijer, 2014). However, the findings caution against viewing open government as a comprehensive solution. Persistent tensions between transparency and privacy, innovation and regulation, and central coordination and agency autonomy suggest that governing algorithms will remain inherently contested (Bannister & Connolly, 2020). The value of open government lies not in resolving these tensions, but in institutionalizing mechanisms through which they can be publicly negotiated and administratively

managed. By doing so, open government transforms legitimacy from a static attribute into a dynamic process of justification and contestation.

7. Implications for Public Administration Theory

Taken together, the findings extend public administration theory in three important ways. First, they reconceptualize administrative discretion as increasingly mediated by algorithmic systems, requiring new frameworks for transparency and accountability that move beyond individual decision-makers (Busuioc, 2021). Second, they demonstrate that open government functions as a governance infrastructure capable of shaping digital reform beyond symbolic openness, embedding democratic values into the institutional design of algorithmic systems (A. J. Meijer et al., 2012). Third, they underscore the importance of reflexive, learning-oriented governance in managing technological complexity and uncertainty within public administration (Ansell & Torfing, 2021; Dunleavy et al., 2006).

These contributions suggest that future research must move beyond dichotomies between technology and governance, instead examining how digital systems are embedded within institutional arrangements that shape power, responsibility, and legitimacy. Governing algorithms, as demonstrated in this study, is therefore not a peripheral issue but a central challenge for contemporary public administration.

CONCLUSION AND SUGGESTIONS

This article demonstrates that governing algorithms under open government frameworks constitutes a fundamental transformation in contemporary public administration and digital government reform. Automated decision-making can no longer be treated as a neutral technical instrument, but must be understood as a form of administrative power that requires democratic legitimacy. The findings show that open government frameworks function as an institutional architecture that aligns digital innovation with core administrative values of transparency, accountability, and due process. In this context, transparency is redefined from procedural openness toward contestability-oriented transparency, emphasizing the ability of individuals and

institutions to understand, review, and challenge automated decisions. At the same time, accountability is reconceptualized from an individual-centric model toward systemic accountability embedded in policy design, institutional arrangements, and oversight mechanisms throughout the lifecycle of algorithmic systems.

At the same time, the study underscores that open government is not a comprehensive solution to the governance challenges posed by algorithmic decision-making. Persistent tensions between transparency and privacy, innovation and legal certainty, and centralized coordination and organizational autonomy remain inherent to digital government reform. The primary contribution of open government lies not in resolving these tensions, but in institutionalizing spaces for public scrutiny, administrative learning, and democratic negotiation over the exercise of algorithmic power. In this sense, the future legitimacy of the digital administrative state will depend less on the speed of technological adoption and more on the capacity of governments to govern algorithms in ways that sustain public trust, protect rights, and reinforce the normative foundations of democratic public administration.

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