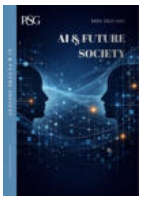
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AI-Mediated Public Decision-Making and Democratic Exclusion: Governance Risks and Accountability Frameworks

Salvatore Stanizzi[1*]

[1] *Università Magna Græcia di Catanzaro, Italy*
[*] *Corresponding author*

Corresponding author:
salvatore.stanizzi@studenti.unicz.it



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Abstract
This article examines how artificial intelligence (AI) systems are reshaping the institutional foundations of public administration and democratic participation. While existing scholarship has focused on bias, transparency, and system performance, it argues that such approaches remain incomplete. Democratic exclusion is conceptualised instead as an infrastructural phenomenon emerging from the integration of algorithmic systems into administrative processes. Exclusion arises not only from outputs but from how algorithmic infrastructures structure access, redistribute discretion, compress procedural interaction, and diffuse responsibility. The article develops an operational definition of infrastructural democratic exclusion and proposes a conceptual framework linking governance infrastructures to conditions of participation, justification, and accountability. Adopting a normative and comparative institutional approach, the analysis illustrates these dynamics through the Dutch childcare benefits case and evaluates regulatory frameworks in the European Union and the United Kingdom. It shows that both models rely primarily on compliance-oriented evaluation and do not fully address infrastructural transformations. The article proposes institutional safeguards centred on justification, human discretion, contestability, and inclusion monitoring, arguing for a shift from compliance-based regulation to democratic institutional design in AI governance.

Keywords: Algorithmic governance; democratic exclusion; public administration; accountability; algorithmic regulation; EU AI Act

1. Introduction

Artificial intelligence (AI) systems are increasingly embedded within the core functions of public administration, shaping welfare allocation, migration control, regulatory enforcement, and risk assessment across contemporary governance systems. Public authorities frequently justify these deployments in terms of efficiency, consistency, and data-driven rationality. Yet the integration of algorithmic systems into administrative decision-making raises a deeper institutional question: how does algorithmic governance reshape the conditions under which democratic participation and contestation occur?

Existing scholarship has extensively examined the risks associated with algorithmic decision-making, particularly bias, discrimination, and opacity (Barocas & Selbst, 2016; Eubanks, 2018; Pasquale, 2015). Regulatory and governance debates have consequently focused on transparency requirements, fairness metrics, and risk-based compliance frameworks designed to mitigate harmful outputs. While these approaches have significantly advanced oversight mechanisms, they remain primarily oriented toward evaluating system performance rather than transformations in governance architecture. As a result, the institutional implications of algorithmic embedding within administrative processes remain only partially explored.

By contrast, comparatively less attention has been devoted to how algorithmic systems reorganise administrative structures prior to individual decision outcomes. AI systems do not merely generate decisions; they structure access pathways, prioritise cases, and recalibrate discretionary practices embedded within public authority. In doing so, they intervene in the institutional conditions under which administrative power is exercised. The central problem addressed in this article is therefore institutional rather than purely technical: algorithmic governance may reshape the procedural and justificatory conditions through which individuals encounter the state.

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This article advances a central claim: democratic exclusion in AI-mediated public decision-making should be understood as an infrastructural phenomenon. Exclusion arises not only from biased outputs but from the architectural embedding of optimisation logics within administrative processes. Algorithmic systems can pre-structure participation, redistribute justificatory responsibility, and channel discretionary judgement before formal adjudication occurs. In this sense, algorithmic governance transforms the institutional terrain on which democratic inclusion is realised, relocating sites of decision-making from visible acts of adjudication to less visible layers of system design and data processing.

The analysis builds upon and extends research on algorithmic regulation and accountability (Bovens, 2007; Kroll et al., 2017; Yeung, 2018) by shifting the analytical focus from outcome fairness to governance architecture. Rather than asking only whether algorithmic decisions are correct, the article conceptualises democratic inclusion as a property of institutional design and examines whether algorithmic embedding remains compatible with traditions of reason-giving, contestability, and reviewable discretion characteristic of democratic administrative systems (Ananny & Crawford, 2018; Mendes, 2021).

Methodologically, the article adopts a qualitative, normative, and comparative institutional approach grounded in constitutional theory and administrative governance scholarship. It develops an operational definition of infrastructural democratic exclusion, illustrates its dynamics through an analytical public-sector case, and evaluates the adequacy of emerging regulatory approaches in the European Union and the United Kingdom. The comparative analysis examines whether contemporary governance models assess algorithmic systems primarily through compliance metrics or through their broader institutional consequences.

The article proceeds in four steps. First, it conceptualises AI systems as governance infrastructures rather than neutral decision-support tools. Second, it operationalises democratic exclusion by identifying structural indicators related to access filtering, discretion restructuring, and responsibility diffusion. Third, it analyses EU and UK regulatory trajectories to assess their capacity to address infrastructural risks. Finally, it proposes institutional safeguards aimed at preserving democratic inclusion within hybrid human-machine administrative environments. In doing so, the article offers an institutional framework for analysing democratic legitimacy in algorithmically mediated administration.

2. Literature Review: Algorithmic Governance and Democratic Inclusion

The increasing integration of artificial intelligence into public administration has generated a substantial body of interdisciplinary scholarship examining its implications for governance, accountability, and democratic legitimacy. Existing literature has predominantly approached algorithmic decision-making through concerns related to bias, discrimination, and opacity, focusing on risks embedded in data-driven systems and their potential to reproduce structural inequalities (Barocas & Selbst, 2016; Eubanks, 2018; Pasquale, 2015). These contributions have been central in establishing that algorithmic systems are not neutral tools but socio-technical arrangements capable of amplifying existing asymmetries in administrative decision-making.

In response to these concerns, regulatory and governance debates have prioritised transparency, fairness, and accountability as key mechanisms for mitigating algorithmic harms. Transparency has been advanced as a means of rendering automated systems intelligible, while fairness metrics have sought to formalise non-discrimination within computational models (Kroll et al., 2017; Selbst et al., 2019). However, critical scholarship has increasingly questioned the effectiveness of these approaches. Transparency, in particular, has been shown to have limited practical impact in complex socio-technical systems, where technical opacity, institutional constraints, and asymmetries of expertise restrict the capacity of individuals and public authorities to meaningfully interpret or contest algorithmic outputs (Burrell, 2016; Ananny & Crawford, 2018).

A growing strand of research has therefore shifted attention toward broader governance frameworks capable of addressing the systemic implications of algorithmic decision-making. Within this literature, algorithmic regulation has been conceptualised as a mode of governance in which computational systems shape behaviour and decision-making processes through continuous data processing, feedback loops, and adaptive optimisation (Yeung, 2018; Coglianese & Lehr, 2017). This perspective highlights a transformation in regulatory temporality, moving from retrospective forms of oversight toward anticipatory and data-driven modes of intervention.

At the same time, legal and administrative scholarship has explored how algorithmic systems affect core principles of administrative law, including discretion, due process, and accountability. Studies on digital discretion have shown that the integration of automated systems can reshape the decision-making environment, constraining or reconfiguring the role of human judgement within administrative processes (Busch & Henriksen, 2018; Ranchordás, 2022). Earlier contributions on technological due process had already identified the risks associated with delegating decision-making authority to opaque computational systems, particularly in contexts where procedural safeguards are weakened or rendered less accessible (Citron, 2008).

Complementing these approaches, insights from infrastructure studies provide an additional analytical perspective for understanding algorithmic governance. Foundational work in this field has demonstrated that infrastructures are not neutral technical systems but socio-technical arrangements that structure access, classification, and interaction within institutional environments (Star & Ruhleder, 1996; Bowker & Star, 1999). More recent applications to digital platforms suggest that infrastructural configurations play a central role in shaping governance outcomes by organising how information flows, how categories are constructed, and how decision-making processes are structured (Plantin et al., 2018).

Despite these important contributions, existing scholarship has largely remained oriented toward either the performance of algorithmic systems or the adequacy of regulatory compliance mechanisms. Less attention has been devoted to how algorithmic systems transform the institutional conditions under which democratic participation, justification, and contestation occur. In particular, democratic exclusion has often been conceptualised as an outcome of biased or erroneous decisions rather than as a structural effect embedded within governance infrastructures.

This article addresses this gap by developing the concept of infrastructural democratic exclusion. Building on the strands of literature outlined above, it shifts the analytical focus from decision outputs to institutional architecture and argues that algorithmic systems may reshape access pathways, redistribute discretion, and alter the conditions of participation prior to individual decisions. By situating democratic inclusion within the design of governance infrastructures, the article contributes to a broader reorientation of debates on AI governance toward questions of institutional legitimacy.

3. Theoretical and Methodological Framework

This section develops the theoretical and methodological foundations of the article. It conceptualises artificial intelligence as a form of governance infrastructure, defines the notion of infrastructural democratic exclusion, and outlines the analytical framework guiding the

illustrative case and comparative analysis. The objective is to provide a structured account of how algorithmic systems reshape the institutional conditions of public decision-making and democratic participation, moving the analysis beyond output-oriented evaluations toward institutional design.

3.1. AI as Algorithmic Governance Infrastructure

Artificial intelligence systems deployed in public administration are often presented as decision-support tools designed to enhance efficiency and consistency. However, a growing body of scholarship suggests that these systems should instead be understood as components of governance infrastructure, shaping how decisions are structured, processed, and implemented (Yeung, 2018; Coglianese & Lehr, 2017). From this perspective, algorithmic systems do not merely produce outputs but organise administrative processes by structuring information flows, prioritising cases, and embedding optimisation logics into decision-making environments.

Insights from infrastructure studies further support this view by demonstrating that infrastructures are socio-technical arrangements that condition access, classification, and interaction within institutional settings (Star & Ruhleder, 1996; Bowker & Star, 1999). Applied to public administration, this implies that algorithmic systems play a constitutive role in shaping how individuals encounter administrative authority. They influence not only outcomes but also the pathways through which cases emerge, are processed, and are rendered visible within institutional decision-making. Conceptualising AI as governance infrastructure therefore shifts the analytical focus from individual decisions to the institutional environments in which decisions are produced. This perspective highlights how algorithmic systems may reconfigure administrative reasoning, not only by influencing outcomes but by structuring the conditions under which decisions are generated.

3.2. Infrastructural Democratic Exclusion: Definition, Criteria and Typology

Building on this infrastructural perspective, this article defines infrastructural democratic exclusion as a structural form of exclusion arising from the design and operation of algorithmic governance systems. Rather than being limited to biased or erroneous outputs, exclusion may emerge through transformations in the institutional conditions that shape access, participation, and justification.

To operationalise this concept, the analysis identifies four diagnostic criteria through which infrastructural exclusion may be observed. First, upstream access filtering refers to the capacity of algorithmic systems to structure access to administrative processes by pre-selecting or prioritising cases. Second, redistribution of discretion captures the relocation of decision-making authority from frontline administrative actors to system design and data infrastructures, thereby embedding judgement within technical architectures rather than within visible administrative practices (Busch & Henriksen, 2018). Third, procedural compression describes the reduction of opportunities for interaction, explanation, and contestation within administrative workflows, potentially limiting the practical accessibility of procedural safeguards. Fourth, responsibility diffusion refers to the fragmentation of accountability across socio-technical arrangements, making it more difficult to identify, attribute, and contest decision-making authority (Bovens, 2007).

These criteria enable the development of an analytical typology of infrastructural exclusion, distinguishing between different mechanisms through which algorithmic systems may alter democratic participation. Rather than treating exclusion as a single outcome, this approach conceptualises it as a set of structural processes embedded within governance infrastructures.

3.3. Distinguishing Infrastructural from Procedural Exclusion

The concept of infrastructural democratic exclusion differs from traditional notions of procedural exclusion and systemic bias in administrative law. Procedural exclusion typically concerns fairness at the point of decision, focusing on whether individuals are treated equally, whether relevant information is considered, and whether due process guarantees are respected within specific administrative acts. Similarly, discussions of systemic bias in algorithmic decision-making have largely focused on discriminatory outcomes produced by data-driven systems, examining whether particular groups are disproportionately affected by erroneous or unfair decisions (Barocas & Selbst, 2016; Selbst et al., 2019). In both cases, the analytical focus remains centred on the properties of individual decisions or their aggregate effects.

By contrast, infrastructural exclusion operates upstream of individual decisions. It concerns the prior structuring of access, interaction, and justification within administrative systems. Algorithmic governance may shape who enters decision-making processes, which cases become visible, and how discretion is exercised before formal adjudication takes place. As a result, exclusion may occur even in the absence of identifiable bias at the level of final decisions. While procedural safeguards such as rights of appeal and reason-giving remain essential, they may be insufficient where exclusion is embedded within the architecture of decision-making processes themselves (Citron, 2008; Ranchordás, 2022). Infrastructural exclusion therefore complements rather than replaces existing categories, highlighting structural transformations that remain insufficiently visible within outcome-oriented analyses of bias and procedural fairness.

3.4. Normative Institutional Approach and Analytical Design

Methodologically, the article adopts a qualitative, normative, and comparative institutional approach grounded in constitutional theory and administrative governance scholarship (Bovens, 2007; Mendes, 2021). Rather than providing empirical measurement or statistical validation, the analysis focuses on conceptual clarification and institutional evaluation. This approach reflects established traditions in legal scholarship, where legitimacy is assessed through principles of justification, accountability, and procedural fairness rather than through performance metrics alone.

The framework developed in this article therefore operates as an analytical lens for identifying structural risks associated with algorithmic governance. The analytical design proceeds in three steps. First, it develops a conceptual framework capable of identifying infrastructural mechanisms of exclusion. Second, it applies this framework to an illustrative public-sector case in order to demonstrate how these mechanisms operate in practice. Third, it evaluates existing regulatory approaches through a comparative analysis of EU and UK governance models. This combination of conceptual, illustrative, and comparative analysis allows the article to bridge normative theory and institutional practice without claiming empirical generalisation.

3.5. Case Selection and EU/UK Comparative Scope

The empirical component of the analysis is based on an illustrative case study of the Dutch childcare benefits scandal, which has become a prominent example of algorithmic governance failure in the public

sector. The case is selected for its analytical relevance rather than its representativeness, as it provides a concrete instance in which infrastructural mechanisms of exclusion can be observed.

In addition, the article conducts a comparative analysis of European Union and United Kingdom approaches to AI governance. The EU is characterised by a risk-based regulatory framework centred on the Artificial Intelligence Act, while the UK adopts a principle-based and decentralised governance model (UK Government, 2023; Veale & Zuiderveen Borgesius, 2021). The comparison is structured around the extent to which these frameworks evaluate algorithmic systems as technical risks or as components of governance infrastructure. This allows the analysis to assess whether current regulatory approaches adequately address the institutional transformations identified in this article.

4. Conceptual Framework: From Algorithmic Infrastructure to Democratic Exclusion

This section develops the conceptual framework that links algorithmic governance infrastructures to forms of democratic exclusion. Building on the analytical criteria introduced in the previous section, it presents a model illustrating how infrastructural arrangements shape participation, discretion, and accountability within administrative systems. In doing so, it operationalises the infrastructural perspective by translating abstract mechanisms into observable institutional pathways (Star & Ruhleder, 1996; Bowker & Star, 1999).

4.1. Conceptual Model and Figure

The central premise of this article is that algorithmic systems operate as governance infrastructures that structure administrative processes prior to individual decisions. Rather than acting solely at the level of outputs, these systems embed optimisation logics into institutional arrangements, shaping how cases are selected, processed, and resolved (Yeung, 2018; Coglianese & Lehr, 2017). The conceptual model developed here captures this transformation as a sequential process linking infrastructural design to democratic outcomes.

Algorithmic governance systems structure administrative environments through specific mechanisms – such as filtering, prioritisation, and classification – which in turn generate distinct forms of exclusion affecting democratic participation. As infrastructure studies have shown, such arrangements operate by organising visibility, access, and categorisation within institutional settings, thereby conditioning how actors interact with governance systems (Star & Ruhleder, 1996; Bowker & Star, 1999).

The figure illustrates this relationship by mapping how algorithmic infrastructures translate into institutional effects and, ultimately, into forms of democratic exclusion. The model emphasises that exclusion does not arise only from incorrect or biased decisions but from the structuring of decision-making environments themselves.

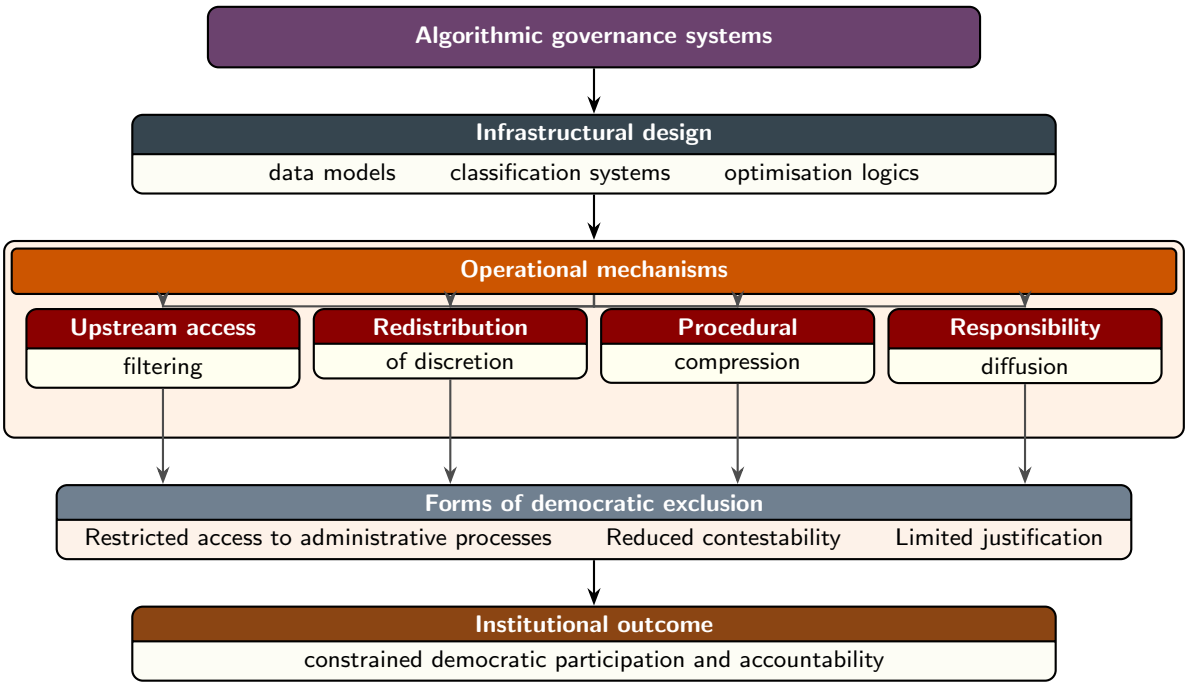


Figure 1. Infrastructural pathways to democratic exclusion.

The figure represents a sequence running from algorithmic governance systems, through infrastructural design (including data models, classification systems, and optimisation logics), to a set of operational mechanisms (upstream filtering, redistribution of discretion, procedural compression, and responsibility diffusion). These mechanisms give rise to forms of democratic exclusion – such as restricted access to administrative processes, reduced contestability, and limited justification – which ultimately result in constrained democratic participation and accountability (Bovens, 2007; Busch & Henriksen, 2018). This framework shifts analytical attention from isolated decision points to the institutional pathways through which algorithmic systems shape governance outcomes. It provides a structured basis for identifying where and how exclusionary dynamics may emerge within administrative infrastructures.

4.2. Pathways and Diagnostic Dimensions

To operationalise the conceptual model, the article identifies a set of diagnostic dimensions corresponding to the mechanisms outlined above. These dimensions allow for the systematic analysis of infrastructural exclusion across different administrative contexts and provide criteria through which institutional effects can be observed.

Upstream filtering captures how algorithmic systems pre-select or prioritise cases, thereby structuring access to administrative processes. Individuals or cases that are not selected may effectively remain invisible within governance systems, reflecting the capacity of infrastructures to organise inclusion and exclusion through classification practices (Bowker & Star, 1999).

Redistribution of discretion refers to the relocation of decision-making authority from frontline administrative actors to system design and data infrastructures. This may reduce the capacity of public officials to exercise contextual judgement, as discretion becomes embedded within model architecture rather than exercised at the point of decision (Busch & Henriksen, 2018).

Procedural compression describes the reduction of opportunities for interaction, explanation, and contestation within administrative workflows. Automated systems may streamline decision-making processes in ways that limit individuals' ability to engage with administrative reasoning, thereby affecting the practical accessibility of procedural safeguards (Citron, 2008; Ranchordás, 2022).

Responsibility diffusion captures the fragmentation of accountability across socio-technical arrangements. Decision-making authority becomes distributed among developers, data providers, and administrative actors, complicating the attribution of responsibility and weakening mechanisms of justification (Bovens, 2007).

Taken together, the conceptual model and diagnostic dimensions provide a framework for analysing how algorithmic governance infrastructures may generate democratic exclusion independently of individual decision outcomes. By focusing on institutional pathways rather than isolated outputs, the framework enables a shift from outcome-oriented evaluation toward an assessment of governance architecture. This framework is applied in the following section to an illustrative public-sector case.

Mechanism	Institutional effect	Democratic risk
Upstream access filtering	Restricts access to administrative processes by pre-selecting or prioritising cases	Exclusion prior to any formally recognisable decision point
Redistribution of discretion	Shifts decision-relevant judgement into system design and data infrastructures	Reduced visibility of human accountability and contextual reasoning
Procedural compression	Streamlines workflows by limiting opportunities for interaction, explanation, and adjustment	Reduced contestability and diminished opportunities to present reasons
Responsibility diffusion	Fragments decision influence across developers, data providers, vendors, and administrators	Weak justification and difficulties in attributing responsibility or seeking redress

Table 1. Diagnostic criteria of infrastructural democratic exclusion.

5. Infrastructural Exclusion in Practice: The Dutch Childcare Benefits Case

The Dutch childcare benefits scandal provides a paradigmatic illustration of how infrastructural democratic exclusion can emerge within AI-mediated public decision-making. The case does not serve as a statistically representative example but as an analytical instance that makes visible the mechanisms identified in the conceptual framework. It demonstrates how exclusionary effects can arise through the structuring of administrative processes rather than solely through individual decision errors, thereby illustrating how governance infrastructures condition participation prior to adjudication (Parliamentary Interrogation Committee Childcare Allowance, 2020).

First, upstream filtering operated through risk-classification models that systematically prioritised certain applicants for scrutiny. Individuals were flagged on the basis of data correlations – such as dual nationality or income patterns – before any substantive administrative assessment occurred. This pre-selection mechanism effectively determined which citizens would enter intensive enforcement pathways, thereby structuring access to administrative processes in advance. Infrastructural classification thus functioned as a gatekeeping mechanism, shaping which cases became visible within administrative systems (Bowker & Star, 1999).

Second, redistribution of discretion occurred as decision-making authority shifted from frontline administrative actors to automated risk systems. Caseworkers were expected to follow algorithmic risk scores and standardised enforcement protocols, significantly limiting their ability to exercise contextual judgement or to depart from system-generated classifications. Discretion was thus embedded within system design rather than exercised at the point of decision, reflecting broader transformations in digital administrative environments (Busch & Henriksen, 2018).

Third, procedural compression manifested in the reduction of meaningful interaction between affected individuals and administrative authorities. Decisions were implemented rapidly and often automatically, with limited opportunities for explanation, dialogue, or timely contestation. Individuals frequently faced substantial barriers in understanding the basis of decisions and in accessing effective remedies. This compression of procedural space limited the practical effectiveness of due process guarantees, even where formal safeguards remained in place (Citron, 2008; Ranchordás, 2022).

Fourth, responsibility diffusion characterised the institutional response to the system's failures. Accountability was fragmented across multiple actors, including system designers, data infrastructures, and administrative bodies. This fragmentation complicated the attribution of responsibility and weakened mechanisms of justification and redress, reflecting well-documented challenges in complex governance arrangements (Bovens, 2007).

Taken together, these mechanisms demonstrate how infrastructural democratic exclusion can arise independently of individual decision accuracy. Even where formal legal procedures and appeal mechanisms formally remained in place, the configuration of administrative infrastructure constrained participation, limited contestability, and obscured responsibility. The case thus illustrates the central claim of this article: that algorithmic governance systems may transform the institutional conditions of democratic inclusion through their embedded design rather than solely through their outputs.

6. AI Governance Frameworks in the EU and the UK

This section evaluates how contemporary regulatory approaches in the European Union and the United Kingdom address the institutional risks associated with algorithmic governance. Building on the infrastructural framework developed in earlier sections, the analysis examines whether existing governance models assess AI systems primarily through compliance-oriented criteria or through their broader institutional effects on democratic participation, discretion, and accountability.

6.1. EU AI Act, High-Risk Systems and Infrastructural Evaluation

The European Union's approach to AI governance is structured around a risk-based regulatory model, as articulated in the Artificial Intelligence Act (European Commission, 2021). The regulation identifies specific categories of "high-risk" systems, particularly those used in sensitive public-sector domains such as welfare allocation, law enforcement, migration, and access to essential services, which are listed in Annex III. These high-risk classifications recognise that certain applications of AI have significant implications for fundamental rights and administrative decision-making. Requirements imposed on such systems – including risk management, data governance, documentation, transparency, and human oversight – represent an important step toward mitigating harmful outcomes (Veale & Zuiderveen Borgesius, 2021).

However, while the AI Act introduces a sophisticated compliance framework, its evaluative logic remains predominantly oriented toward system performance and procedural safeguards. The regulation focuses on ensuring that systems operate reliably, transparently, and in accordance with predefined standards, rather than systematically assessing how algorithmic infrastructures reshape institutional conditions of participation and contestation. As a result, the regulatory framework tends to conceptualise risk at the level of system outputs rather than at the level of governance architecture (Yeung, 2018).

From an infrastructural perspective, this creates a potential gap. Although high-risk classifications partially overlap with the concerns addressed in this article – particularly in domains where algorithmic systems structure access to public services – the regulatory framework does not explicitly evaluate how optimisation logics embedded in administrative infrastructures may pre-structure participation, redistribute discretion, or diffuse responsibility. In this sense, architectural evaluation remains implicit rather than fully operationalised within the EU approach.

6.2. UK Principle-Based Approach, Discretion and Contestability

The United Kingdom adopts a principle-based approach to AI governance, emphasising flexibility, innovation, and sector-specific regulatory adaptation (UK Government, 2023). Rather than imposing a unified statutory framework, the UK model relies on high-level principles – such as safety, transparency, fairness, accountability, and contestability – to guide regulatory practice across different domains. This approach allows regulators to tailor governance mechanisms to specific institutional contexts, potentially enabling more adaptive responses to technological change.

In principle, such flexibility could support attention to infrastructural dynamics, including how algorithmic systems reshape administrative discretion and citizen interaction. In practice, however, the UK framework similarly prioritises system-level characteristics and organisational compliance over structural evaluation of governance architectures. While contestability is explicitly recognised as a regulatory principle, the framework provides limited guidance on how contestability should be operationalised within algorithmically mediated administrative processes.

This raises important questions concerning the "costs of contestability." Ensuring meaningful opportunities for challenge and review may require significant administrative resources, procedural redesign, and institutional capacity. Without clear implementation standards, contestability risks remaining a formal principle rather than an effective institutional safeguard, thereby reproducing the gap between formal accountability and practical accessibility identified in the literature (Bovens, 2007).

6.3. Comparative Assessment Through an Infrastructural Lens

Despite their differences in design, the EU and UK approaches exhibit a shared orientation toward compliance-based evaluation. Both frameworks emphasise system performance, documentation, and oversight mechanisms, while giving comparatively less attention to how algorithmic infrastructures reshape institutional conditions of democratic participation.

This comparison highlights that both regulatory models, while addressing important aspects of AI governance, do not fully capture the infrastructural dynamics through which democratic exclusion may arise. By focusing on system outputs and procedural compliance, they risk overlooking transformations in administrative reasoning, access pathways, and accountability structures produced by algorithmic systems. An infrastructural perspective therefore complements existing regulatory approaches by introducing an additional evaluative layer focused on institutional design. Rather than replacing compliance-based frameworks, it extends them by foregrounding how algorithmic governance reshapes the conditions under which participation, discretion, and accountability are exercised within public administration.

Dimension	EU AI Act (risk-based)	UK approach (principle-based)	Infrastructural gap
Regulatory logic	Risk classification of high-risk systems with harmonised ex ante obligations	High-level principles and sector-specific guidance with decentralised oversight	Limited explicit focus on institutional architecture as an object of evaluation
Evaluation focus	Compliance, documentation and lifecycle risk-management procedures	Organisational adherence to principles and soft-law guidance	Limited assessment of participation, contestation and access conditions
Discretion	Human-oversight requirements, but redistribution of discretion remains largely implicit	Emphasis on accountability principles, but few tools to trace embedded discretion	Redistribution of discretion not systematically framed as an infrastructural issue
Contestability	Procedural safeguards, transparency and some ex post redress mechanisms	Explicit principle of contestability left to sectoral regulators to interpret	Operational mechanisms and resource implications of contestability underdeveloped
Accountability	Documentation, traceability, and oversight by notified bodies and supervisory authorities	Distributed regulatory responsibility across existing regulators	Responsibility diffusion in sociotechnical systems insufficiently addressed

Table 2. EU and UK AI governance approaches: an infrastructural comparison.

7. Institutional Safeguards and Implications for Democratic Inclusion

Building on the infrastructural analysis developed in this article, this section translates the conceptual framework into institutional implications for AI governance. It proposes a set of safeguards aimed at preserving democratic inclusion within algorithmically mediated public administration, while recognising the practical constraints and limitations associated with their implementation.

7.1. Institutional Safeguards for Infrastructural Inclusion

The analysis suggests that safeguarding democratic inclusion in AI-mediated governance requires moving beyond output-oriented evaluation toward institutional design. Four complementary safeguards are proposed.

First, domain-sensitive justification. Public authorities should ensure that algorithmic systems are embedded within justificatory practices that remain accessible and contextually grounded. This requires not only transparency of system logic but also the capacity to provide reasons that are meaningful within specific administrative domains. Justification must therefore be understood as an institutional practice rather than a purely technical feature, consistent with broader theories of public accountability and reason-giving (Bovens, 2007; Mendes, 2021).

Second, preservation of substantive human discretion. While automation can support administrative efficiency, institutional arrangements should maintain spaces for human judgement capable of contextual interpretation and deviation from system outputs where necessary. This does not imply rejecting automation, but ensuring that discretion is not fully displaced into system design, a concern highlighted in the literature on digital discretion and administrative governance (Busch & Henriksen, 2018; Ranchordás, 2022).

Third, institutionalised contestability. Administrative systems must provide effective mechanisms through which individuals can challenge decisions and engage with administrative reasoning. Contestability should be embedded within procedural design, ensuring timely access to review, explanation, and redress, in line with emerging debates on algorithmic accountability (Kroll et al., 2017). However, enhancing contestability entails significant institutional costs. Expanding opportunities for review may increase administrative burdens, require additional resources, and potentially reduce procedural efficiency. The challenge is therefore to calibrate contestability in a way that preserves democratic inclusion without rendering administrative systems unmanageable. This highlights a structural tension between efficiency and participation that cannot be resolved purely through technical design, but requires institutional balancing (Bovens, 2007).

Fourth, continuous inclusion monitoring. Public authorities should develop mechanisms for assessing how algorithmic systems affect participation, access, and accountability over time. This involves moving beyond static compliance checks toward ongoing evaluation of institutional effects, including the identification of exclusionary patterns that may emerge through system operation. Such an approach aligns with emerging discussions on algorithmic regulation and adaptive governance in data-driven regulatory environments (Lodge & Mennicken, 2017).

Taken together, these safeguards shift the focus of AI governance from system correctness to institutional adequacy. They aim to ensure that algorithmic infrastructures remain compatible with core democratic principles of justification, accountability, and participation.

7.2. From Compliance to Democratic Institutional Design

The safeguards outlined above reflect a broader conceptual shift from compliance-based regulation to democratic institutional design. Existing governance frameworks tend to evaluate AI systems through predefined criteria – such as accuracy, transparency, and risk classification – treating legitimacy as a function of system performance (Yeung, 2018). An infrastructural perspective, by contrast, understands legitimacy as emerging from the configuration of institutional arrangements within which algorithmic systems operate.

The key question is not only whether systems comply with regulatory requirements, but whether their integration preserves the conditions under which administrative authority remains visible, contestable, and accountable. This shift has important implications for regulatory practice. It suggests that governance frameworks should incorporate evaluative mechanisms capable of assessing institutional architecture, including how systems structure access pathways, redistribute discretion, and shape accountability relations. Rather than replacing compliance-based approaches, this perspective complements them by introducing an additional layer of institutional analysis grounded in administrative law and governance theory (Mendes, 2021).

7.3. Limitations and Future Research

The framework developed in this article is subject to important limitations. First, the analysis adopts a normative and institutional approach rather than an empirical evaluation of algorithmic systems. It does not assess model performance, predictive accuracy, or statistical fairness, but instead focuses on how governance infrastructures reshape institutional conditions of participation and accountability.

Second, the illustrative case analysis serves an analytical rather than generalisable function. The Dutch childcare benefits case demonstrates how infrastructural exclusion may emerge in a specific context, but does not establish that similar dynamics occur uniformly across jurisdictions or administrative domains.

Third, the proposed safeguards are conceptual and require further operationalisation. While they identify key dimensions of democratic inclusion, their practical implementation will depend on institutional capacity, legal frameworks, and policy priorities. Future research should therefore explore how these safeguards can be translated into concrete regulatory instruments, audit mechanisms, and administrative practices.

Further research may also examine how algorithmic governance transforms the temporal structure of public administration. As decision-making shifts toward anticipatory and predictive models, tensions may emerge between forward-looking governance and the retrospective logic of traditional legal accountability and judicial review (Coglianese & Lehr, 2017).

These limitations do not diminish the contribution of the framework but rather clarify its scope. The aim of this article is not to provide definitive empirical conclusions, but to offer a conceptual foundation for analysing democratic legitimacy in algorithmically mediated governance and to support future interdisciplinary research in this area.

8. Conclusion

Artificial intelligence is becoming increasingly embedded in the ordinary functioning of public administration, shaping how public authorities allocate resources, assess risk, and exercise regulatory power. While existing governance debates have made important progress in addressing issues of bias, transparency, and system reliability, they have largely approached algorithmic systems as discrete decision-making tools whose legitimacy depends on the quality of their outputs (Barocas & Selbst, 2016; Pasquale, 2015). This article has argued that such an approach remains incomplete.

The central contribution of this study has been to reconceptualise democratic exclusion in AI-mediated public decision-making as an infrastructural phenomenon. Rather than arising solely from erroneous or discriminatory outcomes, exclusion may emerge through transformations in the institutional environments within which administrative decisions are produced. Algorithmic governance systems restructure access pathways, redistribute discretion, compress procedural interaction, and diffuse responsibility across socio-technical arrangements. These transformations operate upstream of individual decisions, reshaping the conditions under which democratic participation, justification, and contestation become possible (Yeung, 2018).

By developing an operational definition of infrastructural democratic exclusion, the article has sought to move beyond abstract critique toward analytical clarity. The proposed diagnostic criteria and conceptual model provide tools for identifying structural risks that remain insufficiently visible within prevailing governance debates. The illustrative analysis of the Dutch childcare benefits case has shown how these mechanisms can generate exclusion even where formal legal procedures remain intact, highlighting the limits of evaluating algorithmic governance solely through compliance with procedural or technical standards.

The comparative analysis of European Union and United Kingdom governance frameworks has further demonstrated that distinct regulatory models converge in their emphasis on compliance-oriented evaluation. While risk-based regulation and principle-based governance differ in institutional design, both approaches prioritise system performance, documentation, and oversight mechanisms, while giving comparatively less attention to how algorithmic infrastructures reshape institutional conditions of participation and accountability (UK Government, 2023; Veale & Zuiderveen Borgesius, 2021).

Against this background, the article has proposed a shift from compliance to democratic institutional design as a guiding perspective for AI governance. Understanding algorithmic systems as components of governance infrastructure reframes legitimacy as a question of institutional configuration rather than technical optimisation alone. The institutional safeguards outlined in this article translate this perspective into governance practice by focusing on justification, discretion, contestability, and continuous inclusion monitoring (Bovens, 2007; Mendes, 2021).

These challenges are particularly salient in high-impact domains such as welfare administration, migration control, and regulatory enforcement, where algorithmic systems structure access to essential services and shape the distribution of public authority. In such contexts, infrastructural design choices may have far-reaching consequences for democratic inclusion. More broadly, algorithmic governance introduces a shift in the temporal structure of public administration. Decision-making increasingly operates through anticipatory and predictive logics, potentially in tension with the retrospective and case-based nature of traditional legal accountability and judicial review (Coglianese & Lehr, 2017). Addressing this tension requires expanding governance analysis beyond individual decisions toward the institutional architectures that shape administrative interaction over time.

The argument developed here does not imply that algorithmic systems are inherently incompatible with democratic governance. Under appropriate institutional conditions, automation may enhance consistency, expand administrative capacity, and support more equitable outcomes. The challenge is therefore one of institutional calibration: ensuring that the integration of computational systems remains aligned with core democratic principles of justification, accountability, and participation. By foregrounding infrastructural design as the central site of democratic risk and possibility, this article contributes to a broader reorientation of AI governance toward sustaining democratic legitimacy in algorithmically mediated societies.

Author Contribution

The author confirms that he is the sole author of this manuscript and that he is fully responsible for the conceptualization, research design, analysis, and writing of the work.

Compliance with Ethical Standards

This research does not involve human participants or animals. Therefore, no ethical approval was required.

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Competing Interest Declaration

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