

Cybercratic Representation and Algorationality: Rethinking Democratic Legitimacy in the Age of Algorithmic Governance

Siberokratik Temsil ve Algorasyonalite: Algoritmik Yönetişim Çağında Demokratik Meşruiyeti Yeniden Düşünmek

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ÖZET

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Bu makale, yapay zekâ destekli karar alma sistemlerinin kamu yönetimine entegrasyonunu, yalnızca teknolojik bir yenilik olarak değil, temsili demokrasi, vatandaşlık ve meşruiyet ilkelerini kökten dönüştüren paradigmatik bir kırılma olarak ele almaktadır. Bu dönüşüm, klasik temsil kuramlarının açıklama kapasitesini aşan yapısal bir meşruiyet krizinin belirtisi olarak yorumlanmaktadır. Bu bağlamda literatüre iki özgün kavramsal katkı sunulmaktadır: Siberokratik Temsil ve Algorasyonalite. Siberokratik temsil, demokratik meşruiyetin temel dayanakları olan seçim, rıza ve hesap verebilirlikten yoksun algoritmik sistemlerin kamusal karar alma yetkisiyle donatılmasını ifade eder. Algorasyonalite ise karar süreçlerinin etik, politik ve toplumsal bağlamlardan kopararak, tamamen veriye dayalı teknik bir rasyonaliteye tabi kılınmasını tanımlar. Çalışma, bu kavramsal çerçeveyi uluslararası örnekler üzerinden temellendirerek, algoritmik yönetişimin temsil, denetim ve hesap verebilirlik normlarını nasıl aşındırdığını göstermektedir. Dijital kamu yönetiminin doğurduğu meşruiyet krizine kavramsal ve normatif düzeyde ışık tutmayı amaçlayan makale, dijital çağda demokratik hesap verebilirlik ilkelerinin yeniden düşünülmesi gerektiğini ileri sürmektedir.

ABSTRACT

Keywords:

Artificial Intelligence,
Public Administration,
Algorithmic Governance,
Cybercratic
Representation,

This article frames the integration of AI-assisted decision-making systems into public administration not merely as technological advancement, but as a paradigmatic shift that reconfigures core principles of democratic legitimacy, political representation, and citizenship. It interprets the rising influence of algorithmic governance as indicative of a structural legitimacy crisis that exceeds the explanatory scope of classical theories of representation. To analyze this transformation, the study introduces two original conceptual contributions: Cybercratic Representation and Algorationality. Cybercratic representation refers to the delegation of decision-making authority to algorithmic systems that are unelected and unaccountable, detached from foundational democratic mechanisms such as elections, consent, and public oversight. Algorationality denotes the displacement of ethical, political, and social considerations in favor of a purely technical rationality governed by quantifiable, data-driven logic. Drawing on international case studies, the article demonstrates how algorithmic governance undermines democratic norms and fosters the emergence of a technocratic regime devoid of representational legitimacy and accountability. By addressing the normative implications of these developments, the study contributes to the conceptual understanding of the legitimacy crisis in digital public administration and calls for a fundamental rethinking of democratic accountability in the context of the algorithmic state.

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1. INTRODUCTION

In the twenty-first century, public administration is no longer confined to traditional models based on human-centered bureaucratic structures. Increasingly, administrative processes are being reshaped under the guidance of algorithmic systems (Roehl and Cromptvoets, 2023; Matteucci, 2021; Williams, 2022). From welfare benefit applications and employment policies to urban planning and security risk assessments, decision-making processes are increasingly executed through AI-based technologies. These systems are frequently legitimized through narratives of technical efficiency, neutrality, and objectivity (Nofriani, 2020; Kaun, 2022; Saxena et al., 2021; Braunsman et al., 2022; Scott et al., 2022; Zejnilovic et al., 2020; Cheng et al., 2023; Salih et al., 2020; Hadiyana and Ji-Hoon, 2024; Miao, 2023; Zhao, 2023).

This transformation should not be regarded merely as an administrative modernization process. Rather, it constitutes a comprehensive reconstruction of the structural and normative foundations of political representation, state–citizen relations, and democratic legitimacy (Katzenbach and Ulbricht, 2019). Algorithmic decision systems, which are largely detached from traditional mechanisms of political oversight and transparency, signal a shift toward a new technocratic governance regime (Binns, 2018; Hughes, 2017; Chauhan, 2020).

In the Turkish context, this transformation has been institutionalized primarily through the expansion of the e-Devlet (e-Government) system. This infrastructure increasingly integrates automated and AI-assisted decision-making mechanisms into public service delivery. While e-Devlet has significantly improved administrative efficiency, accessibility, and procedural speed, it has also introduced new legitimacy challenges related to transparency, accountability, and citizen consent. Particularly in areas such as social assistance eligibility, identity verification, public service prioritization, and risk-based administrative assessments, algorithmic infrastructures operate as de facto decision-making authorities, reshaping citizen–state relations. This development raises critical questions regarding how democratic legitimacy is reconfigured when public authority is exercised through opaque and technically mediated systems rather than deliberative political processes. Recent studies conducted in Turkey further indicate that the ethical and legitimacy challenges associated with AI-assisted public decision-making are no longer merely theoretical concerns but have become concrete governance issues, particularly in relation to transparency, data protection, and citizen trust (Bozdoğanoglu, 2025; Karabulut, 2025).

This article conceptualizes algorithmic governance not only as a technical advancement but as a transformation with profound political and normative dimensions. In this respect, the study moves beyond functional or efficiency-based accounts of digital governance. While concepts central to both public administration and democratic theory—such as representation, consent, and accountability—appear to be formally maintained within AI-based decision mechanisms, they are undergoing substantial substantive transformation. Thus, what emerges is a new form of legitimacy that superficially adheres to democratic procedures but is in essence technocratic, datafied, and abstracted from civic oversight.

Recent scholarship on algorithmic governance has primarily focused on the technical, administrative, and functional dimensions of data-driven decision-making. However, the normative implications of this transformation for democratic values, political representation, and citizenship have often remained peripheral. This study addresses this theoretical gap by proposing two original concepts—Cybercratic Representation and Algorationality—to analyze and explain the democratic erosion associated with algorithmic governance.

These concepts aim to provide a critical framework for examining the tensions between algorithmic governance and democratic normative values. Cybercratic representation refers to the construction of a new “*regime of representation*” whereby algorithmic systems, which lack a foundation in popular sovereignty and are exempt from mechanisms of democratic responsibility, assume public decision-making authority. This form of representation is disconnected from the core principles of classical democratic theory—namely consent, participation, and accountability. In contrast, algorationality describes the structuring of decision-making processes solely around data-centric, quantifiable, and technical rationality, stripped of ethical, political, and social contexts.

While conceptually engaging with approaches such as algorithmic authority (Murray et al., 2021), automated bureaucracy (Peeters and Schuilenburg, 2018), and datafied decision-making, this framework invites a reconsideration of the concepts of representation and rationality through the lens of democratic theory. It thus shifts the analytical focus from the functional capacities of algorithmic systems to their transformative effects on political representation and civic mechanisms.

Accordingly, this study explores the impact of algorithmic governance on democratic institutions and illustrates how such tendencies manifest in practice through international case studies. The article is structured as follows: the first section outlines Weberian bureaucratic rationality and classical theories of democratic legitimacy, situating them within the historical evolution of public administration. The second section examines the rise of AI-driven governance practices within historical, socio-technical, and political contexts. The third section introduces and analyzes the concepts of cybercratic representation and algorithmonality, both theoretically and empirically, evaluating their normative tensions with democratic principles. The final section offers a comprehensive analysis of the legitimacy crisis confronting public administration in the digital age and develops normative proposals for rethinking democratic accountability.

2. METHODOLOGY: CONCEPTUAL CONSTRUCTION AND EMPIRICALLY INFORMED THEORIZING

This study aims to analyze the effects of AI-supported decision-making systems on democratic legitimacy in a multidimensional manner. It proceeds from the assumption that such systems are not merely technical tools but exert transformative effects on fundamental normative categories such as political representation, citizenship, and rationality in decision-making. Accordingly, the research adopts a theoretically oriented framework and is methodologically grounded in a two-stage strategy: (1) conceptual construction, and (2) theorization informed by empirical cases. This methodological approach seeks both to reinterpret critical gaps in the literature and to contribute by developing new conceptual tools.

Methodologically, the study is positioned within the tradition of theory-driven and concept-oriented research in political science and public administration. Rather than testing predefined hypotheses, it seeks to construct analytically robust concepts capable of capturing emerging transformations in governance structures. The conceptual development is therefore not an abstract exercise, but is grounded in observable institutional practices and empirical cases that exemplify broader structural shifts. In this sense, conceptual construction and empirical illustration are treated as mutually reinforcing components of the research design.

2.1. Conceptual Construction

In the first stage of the research, two original concepts—previously under-theorized in the literature—are introduced to better understand the growing influence of algorithmic decision-making in contemporary public administration;

Cybercratic representation refers to the de facto delegation of public decision-making authority to algorithmic systems, without adherence to the traditional foundations of political legitimacy such as popular sovereignty, electoral accountability, and democratic oversight. This concept theoretically captures the shift from classical modes of political representation to a regime characterized by technicization, automation, and insulation from democratic control.

Algorithmonality, on the other hand, describes the structuring of decision-making processes under the dominance of calculable criteria such as technical accuracy, data reliability, and procedural efficiency, abstracted from ethical, political, and social contexts. This concept enables an analysis of how algorithmic governance marginalizes political reasoning in favor of performative optimization.

Both concepts are constructed at a theoretical level on the basis of Max Weber's distinction between instrumental and value-rationality, and are supported by Michel Foucault's analyses of governmentality and micro-powers. In addition, they are discussed in comparison with contemporary approaches such as algorithmic governance (Margetts and Dorobantu, 2019) and automated bureaucracy (Peeters and Schuilenburg, 2018), emphasizing their conceptual distinctiveness.

The process of conceptual construction followed an abductive logic, moving iteratively between theoretical reflection and empirical observation. Initial conceptual tensions observed in algorithmic governance practices—such as the weakening of accountability and the displacement of political judgment—were analytically refined through engagement with classical theories of legitimacy and rationality. This iterative process enabled the formulation of cybercratic representation and algorithmonality as mid-level analytical concepts, designed to bridge empirical phenomena and normative democratic theory. In order to enhance conceptual clarity and analytical transparency, key theoretical distinctions developed in this study are also presented through summary tables.

2.2. Empirically Informed Theorizing

In the second stage, the empirical relevance of the proposed conceptual framework is examined through five international cases, each implemented under different political regimes and administrative contexts. These case studies serve as concrete manifestations of algorithmic governance practices;

- SyRI (The Netherlands)
- Robodebt (Australia)
- COMPAS (United States)
- A-Levels Algorithm (United Kingdom)
- Social Credit System (China)

The selected cases were chosen according to three comparative criteria: (1) the delegation of decision-making authority to algorithmic systems in high-stakes public policy domains; (2) the visibility of legitimacy, accountability, or rights-related controversies triggered by these systems; and (3) variation in political regimes and administrative traditions. This case selection strategy enables a comparative assessment of how cybercratic representation and algorationality manifest across liberal-democratic, hybrid, and authoritarian governance contexts.

These cases were selected for comparative analysis to test the analytical power of the proposed concepts. Each exemplifies different dimensions of cybercratic representation and algorationality in practice.

Although the study does not rely on traditional quantitative or qualitative data analysis, it adopts an empirically informed theorizing approach—an increasingly accepted methodology in the social sciences, particularly in the analysis of complex institutional structures. This approach draws on case-based reasoning and process tracing, aiming not to establish causal explanations, but to uncover meaningful patterns within specific normative and contextual structures (Ragin, 1987; George and Bennett, 2004).

In line with Ragin's (1987) comparative method, the study adopts a case-oriented and configurational approach rather than a variable-centered one. Instead of isolating single causal factors, the analysis focuses on how specific combinations of institutional settings, technological infrastructures, and normative frameworks produce comparable legitimacy tensions. This approach allows for analytical generalization through patterned comparison, rather than statistical inference, and strengthens the comparative dimension of the study.

Thus, the study seeks to analyze the normative and structural tensions between the foundational principles of democratic governance—representation, accountability, and legitimacy—and the emerging algorithmic decision systems that are increasingly technocratic, unrepresentative, and politically unaccountable. Ultimately, it builds a theoretical and critical foundation for interrogating the legitimacy crisis induced by the transformation of public administration in the digital age.

While the cases differ in regime type and policy domain, their comparison reveals converging patterns of legitimacy erosion driven by algorithmic decision-making, thus supporting the analytical utility of the proposed conceptual framework.

3. THEORETICAL BACKGROUND: THE TENSE ARTICULATION OF BUREAUCRATIC RATIONALITY AND DEMOCRATIC LEGITIMACY

One of the foundational theoretical pillars of modern public administration is bureaucratic rationality, conceptualized by Max Weber within his framework of legal-rational authority (*legale Herrschaft*) (Weber, 1978). According to Weber, bureaucracy is a rational institutional apparatus structured around impersonal rules, hierarchical organization, and merit-based functioning. These principles enhance the technical capacity and administrative efficiency of the modern state. Bureaucratic rationality operates on the basis of predictability, neutrality, and accountability. However, Weber also warns that excessive formalization of bureaucratic rationality can lead to a “steel-hard cage” (*stahlhartes Gehäuse*), one that restricts individual autonomy, mechanizes human action, and suppresses ethical sensibilities (Weber, 2004).

The relationship between bureaucratic mechanisms and political legitimacy is constructed through institutional structures that enable representative democracy and civic oversight (Riggs, 1997; Urbinati, 2006). The indirect reflection of popular will in decision-making via elected representatives, and the role of bureaucracy as a technical executor of those decisions, together constitute the foundation of legitimacy. Within this framework, democratic legitimacy is built on two interrelated dimensions: input legitimacy, based on citizen participation and consent, and output legitimacy, grounded in the effectiveness and accountability of public decisions.

Another key theoretical framework that normatively underpins this dual legitimacy model is Jürgen Habermas's theory of communicative action. Habermas argues that democratic legitimacy cannot rely solely on legal-institutional arrangements but must also be rooted in consent generated through public deliberation among free and equal citizens (Habermas, 2004; 2009). For Habermas, normative consent produced in rational public discourse legitimizes political decisions not only legally but also ethically and socially (Habermas, 2009).

However, contemporary public administration practices increasingly diverge from this normative framework. The integration of AI-supported algorithmic systems into public governance processes is not only transforming the technical capacities of administrative operations but also driving a substantial reconfiguration of democratic norms such as representation, participation, and accountability (Datta, 2024; Kreps and Kriner, 2023). The delegation of public decisions to self-learning, adaptive algorithms that operate with minimal human intervention is giving rise to a new governance form—one characterized by limited transparency, weakened accountability, and insulation from democratic oversight (Hwang, 2024).

This article conceptualizes this transformation as a disruption of the historical normative equilibrium between Weberian instrumental rationality and Habermasian communicative rationality. To explain this rupture, it introduces two original concepts: cybercratic representation and algorationality. Cybercratic representation refers to the assumption of public decision-making authority by algorithmic systems based on technical data, divorced from classical principles of political legitimacy. In this mode, popular consent-based representation is replaced by a new regime of representation grounded in technical competence. Algorationality, meanwhile, denotes the reduction of decision-making processes to data-driven, quantifiable, and technical rationality, stripped of ethical, political, and social contexts.

These conceptualizations are not limited to the theoretical legacies of Weber and Habermas. They also engage with Michel Foucault's notion of governmentality, particularly his analyses of micro-operations of power (Foucault, 2007). According to Foucault, modes of governing individuals are not solely constructed through legal or political authorities, but also through knowledge, norms, expertise, and technical instruments (Foucault, 2008). In this context, algorithmic systems are not merely technical devices that automate decisions, but also novel forms of power that define normative frameworks and act as active subjects within governance processes.

Therefore, the practices of public administration in the digital age should not be understood simply as the digital evolution of bureaucratic rationality. Rather, they should be considered a profound transformation—both structurally and normatively—that demands a critical rethinking of the theoretical foundations of democratic legitimacy.

4. ALGORITHMIC GOVERNANCE AND AI-ASSISTED DECISION-MAKING PROCESSES

The integration of artificial intelligence (AI) and algorithmic systems into public decision-making mechanisms signals the emergence of a distinct administrative paradigm—one that transcends classical Weberian bureaucratic rationality and transforms human-centered models of governance. This paradigmatic shift is increasingly conceptualized within the framework of *algorithmic governance*, a notion that has attracted growing attention in public administration literature (Katzenbach and Ulbricht, 2019; Yeung, 2018; Margetts and Dorobantu, 2019). Algorithmic governance refers to the partial or complete replacement of human decision-makers with automated, data-driven systems in the formulation, implementation, and evaluation of public policy. In this context, specific functions of public authority are delegated to algorithmic infrastructures, and political will is replaced by technically optimized decision-making based on statistical modeling and computational logic.

This new mode of governance is predominantly legitimized through technical and instrumental values such as neutrality, efficiency, speed, and cost-effectiveness (Hwang, 2024; Robles and Mallinson, 2023; Hughes, 2017). Big data analytics and machine learning technologies process vast and complex datasets at speeds unattainable by human decision-makers. As a result, algorithms are increasingly positioned as “*superior*” and “*objective*” actors within decision-making processes. The transformation described by Peeters and Schuilenburg (2018) as

automated bureaucracy captures this shift, emphasizing the substitution of human bureaucratic functions with AI-based automation systems and their potential to enhance technical capacity.

However, this functionalist discourse also raises significant democratic concerns. As human decision-makers are marginalized, core democratic norms such as representation, accountability, and consent risk becoming obsolete. Algorithmic systems are not grounded in the direct or indirect will of the people; their decisions are not legitimized through democratic delegation but instead rely on technical design. Often, the rationale behind such decisions lacks transparency. Algorithms increasingly operate as “*black boxes*”—opaque, inaccessible to external scrutiny, and impervious to contestation (Pasquale, 2015). This undermines traditional administrative oversight and reduces public accountability to a matter of technical engineering.

The penetration of algorithmic decision systems into public administration now spans a broad range of applications—from risk scoring in welfare programs and algorithmic filtering in civil service recruitment to predictive systems in criminal justice and AI-guided traffic management and policing. What unites these practices is the growing ambiguity regarding who decisions are made for, what normative grounds justify them, and what reasoning processes underpin them. Thus, algorithmic governance is not merely a technical transformation of administrative procedures but signals a structural rupture in the formal architecture of political representation and the substantive content of democratic legitimacy.

In Turkey, practices of algorithmic governance have been largely institutionalized through the e-Devlet (e-Government) infrastructure. Through centralized data integration, multi-layered datasets concerning citizens—such as population records, social security information, education, health, and judicial data—are processed in an integrated manner by public authorities. This development has led to a gradual reduction of human intervention in decision-making processes and to the increasing prioritization of technical criteria. Particularly in the fields of social policy, public assistance, and administrative oversight, algorithmic assessment mechanisms effectively exercise representational and discretionary authority. In this respect, the Turkish case demonstrates that cybercratic representation is not a deviation confined to Western democracies, but rather a structural transformation that also emerges within different administrative traditions.

Particularly problematic are cases in which decisions are made not by human agents, but by systems. These cases expose theoretical blind spots in both traditional public law and democratic theory. Key questions remain unresolved: Who bears political responsibility for algorithmic decisions? The state, the software company, or the algorithm itself? How and on what legal basis can such decisions be challenged? Within which normative frameworks can citizens seek redress?

Within this framework, algorithmic governance must be understood not simply as a technical evolution, but as the construction of a new administrative regime grounded in a crisis of representation. The concept of *cybercratic representation*, proposed to theorize this shift, refers to the assumption of public decision-making authority by algorithmic systems that are neither grounded in popular sovereignty nor subject to mechanisms of political accountability. This signals the emergence of a new regime of representation legitimized by technical efficacy, not democratic consent.

Closely related to this is the concept of *algorationality*, which captures the abstraction of decision-making processes from their ethical, political, and social contexts. Decisions are reduced to calculable, data-driven, and technical rationalities. This conceptualization critiques a governance logic in which decisions are evaluated solely on the basis of “data accuracy”, while human, historical, and normative consequences are externalized and rendered irrelevant.

Both concepts aim to go beyond the existing literature on *algorithmic governance* (Margetts and Dorobantu, 2020) and *automated bureaucracy* (Peeters and Schuilenburg, 2018), offering a more holistic analysis of algorithmic systems that not only considers their instrumental and functional dimensions but also their political, ethical, and normative implications. The subsequent sections of this article will elaborate on the theoretical foundations of these concepts and discuss how they illuminate the emerging legitimacy crisis of public administration in the digital age.

5. CONCEPTUAL FRAMEWORK: CYBERCRATIC REPRESENTATION AND ALGORATIONALITY

This section introduces two theoretical concepts developed as original contributions to the literature. Both cybercratic representation and alborationality are designed to analyze the tensions between algorithmic governance and the core principles of democratic legitimacy. These concepts contend that algorithmic decision systems should not be regarded merely as technical instruments, but rather as normative actors that reshape political representation and public reasoning.

5.1. Cybercratic Representation

Cybercratic representation signals a radical departure from classical understandings of political representation. It denotes the de facto assumption of public decision-making authority by algorithmic systems without being grounded in the political will of citizens. Despite not being elected, algorithms increasingly play decisive roles in political decision-making processes—indicating a significant deviation from the legitimacy principles upon which democratic representation is founded. The core characteristics of cybercratic representation include;

- Decisions are based not on the collective will of the people but on statistical patterns derived from large datasets;
- It lacks a direct connection to the principle of political responsibility;
- It prioritizes instrumental criteria such as performance and functionality over public deliberation and consent-based processes.

In this sense, cybercratic representation is devoid of electoral legitimacy and is disconnected from the public spheres of open democratic debate. Nonetheless, these algorithmic structures possess the capacity to directly shape social life by influencing the formulation and implementation of public policy. This technical and automated form of representation extends beyond Weberian bureaucratic rationality and evolves into a data-driven logic of representation.

In this transformation, the citizen is replaced by the data subject, and political demands are translated into predictive models through algorithmic analysis. Representation ceases to function as the expression of the popular will and is reduced to the reflection of statistical averages and correlational trends. As a result, one of the foundational elements of representative democracy—namely, the transmission of political will—is eroded. Representation is no longer substantive, but becomes a functional simulation.

Hence, cybercratic representation should not be viewed as an intermediary form between representative democracy and technocratic administration, but rather as a distinct mode of governance in which the formal and normative dimensions of representation are fundamentally reconfigured.

5.2. Alborationality

Alborationality refers to a new form of rationality in which decision-making processes are entirely abstracted from ethical, political, and social contexts, and are instead defined solely through quantifiable outputs such as statistical accuracy, technical validity, and performance efficiency. In this rationality framework;

- The focus is not on the justification or normative value of a decision, but on the correctness of its output;
- The goal of the decision is secondary to its predictive capacity and measurable success;
- Moral responsibility is replaced by technical optimization and system-level efficiency.

To clarify this transformation visually, Table 1 presents a schematic comparison between ethical–political rationality and data-driven alborationality.

Table 1. Ethical Rationality vs. Algorationality in Public Decision-Making

Ethical–Political Rationality	Algorationality
Normative justification	Technical correctness
Democratic deliberation	Automated optimization
Context-sensitive judgment	Context abstraction
Accountability to citizens	System-level accountability
Moral responsibility	Performance efficiency

Note: The Table was developed by the author to illustrate the conceptual distinction between ethical–political rationality and algorationality.

Table 1 illustrates the conceptual distinction between ethical–political rationality and algorationality in public decision-making processes. While ethical–political rationality emphasizes normative justification, democratic deliberation, and moral responsibility, algorationality prioritizes technical correctness, automated optimization, and performance efficiency. This comparison highlights how algorithmic governance reconfigures the rational foundations of public authority by abstracting decisions from their ethical, political, and social contexts.

Algorationality goes beyond Max Weber’s notion of instrumental rationality (*Zweckrationalität*) by representing a hyper-technical rationality that excludes political and ethical dimensions altogether. Even Weber’s bureaucratic rationality retained at least some reference to legal norms and societal contexts. Under algorationality, however, decisions are defined purely by the internal logic of the system, with no room for external normative judgments. Decision-making is removed from the realm of public reasoning or democratic deliberation and reduced to a sequence of automated operations. As a result, a decision considered “*technically correct*” may still be politically unjust or ethically problematic but is nonetheless regarded as optimal within the system.

Algorationality structures decision-making not through cause-effect reasoning but through input-output mechanisms. The specific circumstances, historical context, or ethical demands of individuals are disregarded; decisions are instead based on the algorithm’s analysis of patterns within data sets. For instance, an algorithm prioritizing a particular neighborhood for infrastructure investment may be technically accurate. However, if the decision is detached from the historical marginalization, lack of political representation, or public demands of that neighborhood’s residents, it may result in outcomes that are problematic in terms of political justice. In such cases, decision-making is confined to what is computationally measurable, and public values are excluded from the system.

Beyond altering the procedures of decision-making, algorationality also transforms the ontological nature of the decision itself. Ethical dilemmas are reduced to technical problems, societal context is treated as systemic “*noise*,” and human intuition, political deliberation, and normative reasoning are excluded from the mechanism of governance. The political consequences of this transformation are significant: the influence of citizens over public decisions diminishes, oversight mechanisms become ineffective, and political accountability is displaced onto technical systems and software protocols. As governance becomes increasingly technical, it simultaneously becomes less democratic and less public. Thus, algorationality should not be seen merely as a type of technical rationality, but rather as a form of normative erosion that hollows out the substantive core of democratic governance.

The concepts of cybercratic representation and algorationality engage in critical dialogue with prevailing approaches in the contemporary literature such as algorithmic governance (Margetts and Dorobantu, 2019) and automated bureaucracy (Peeters and Schuilenburg, 2018). While algorithmic governance tends to emphasize the instrumental capacity of algorithms to enhance administrative performance, it often treats the resulting crises of representation as secondary or external issues. Similarly, automated bureaucracy highlights efficiency gains in bureaucratic processes but pays insufficient attention to the normative erosion of democratic legitimacy.

In contrast, this study problematizes the disconnection between algorithmic structures and democratic legitimacy by theorizing cybercratic representation as the *de facto* assumption of political representation by algorithmic systems, absent the will of the people or accountability mechanisms, and algorationality as the reduction of decision-making to technical correctness, devoid of ethical and deliberative reasoning. This conceptual framework moves beyond technically focused perspectives and offers a critical theoretical platform for analyzing the transformative effects of algorithmic governance on political representation, citizenship, and legitimacy. Table 2

summarizes the analytical distinctions between cybercratic representation and algorationality in terms of legitimacy, rationality, and accountability.

Table 2. Analytical Dimensions of Cybercratic Representation and Algorationality

Dimension	Cybercratic Representation	Algorationality
Core function	Representation	Decision-making logic
Source of authority	Algorithmic systems	Data-driven optimization
Link to democracy	Weak / indirect	Detached
Accountability	Diffuse / opaque	Technically displaced
Normative grounding	Absent	Marginalized

Note: The table is based on the author’s own conceptual framework.

Table 2 synthesizes the analytical distinction between cybercratic representation and algorationality by highlighting their differing roles in the transformation of democratic governance. While cybercratic representation captures the displacement of democratic representation by algorithmic authority, algorationality refers to the reconfiguration of decision-making processes around technical optimization rather than normative justification. Read together, these dimensions illustrate how algorithmic governance simultaneously erodes both the representative and rational foundations of democratic legitimacy.

6. FINDINGS: INTERNATIONAL CASES OF CYBERCRATIC REPRESENTATION AND ALGORATIONALITY

The normative implications of algorithmic governance for democratic structures can be more concretely assessed through empirical cases implemented in varying political contexts. In this regard, the concepts of cybercratic representation and algorationality, developed in this study, are critically analyzed and conceptually validated through national-level applications presented below.

To complement the case-based analysis with a broader empirical context, this section first situates the national-level cases within global patterns of responsible AI governance. In this regard, selected findings from the Global Index on Responsible AI (Adams et al., 2024) are used to illustrate structural gaps between AI governance capacity and democratic legitimacy.

Table 3. Gaps Between AI Governance Capacity and Democratic Legitimacy

GIRAI Dimension / Thematic Area	Empirical Finding	Implication for This Study
National AI Policy & Governance	39% of countries have national AI strategies, but most lack enforceability	Formal AI strategies do not translate into democratic accountability
Human Oversight & Determination	Limited evidence of human-in-the-loop mechanisms in public AI use	Algorithmic decisions displace human judgment and political responsibility
Transparency & Explainability	Low scores across regions, especially outside Europe	Algorationality prioritizes technical opacity over public justification
Access to Remedy and Redress	Only 35 countries have frameworks for redress	Citizens lack effective channels to contest algorithmic decisions
Public Participation & Awareness	Among the lowest-scoring thematic areas globally	Algorithmic governance operates with weak democratic consent

Note: The table is based on thematic findings reported in the Global Index on Responsible AI 2024 (Adams et al., 2024). It does not reproduce country rankings or composite scores.

Table 3 does not seek to introduce a new composite index or to rank countries according to democratic performance in AI governance. Rather, it synthesizes selected thematic findings from the Global Index on Responsible AI (Adams et al., 2024) in order to highlight structural patterns that are directly relevant to the analytical concepts developed in this study. In particular, the table illustrates how the existence of AI governance frameworks and technical capacity does not necessarily translate into democratic legitimacy, public accountability, or effective citizen consent.

These index-based patterns provide a global empirical backdrop against which the subsequent national-level cases can be interpreted. They suggest that the legitimacy deficits observed in specific algorithmic governance practices are not isolated anomalies, but rather manifestations of broader structural tensions between algorithmic rationality and democratic principles. This contextualization strengthens the conceptual relevance of cybercratic

representation and algorationality as analytical tools for understanding contemporary transformations in public governance.

6.1. The SyRI and Robodebt Cases: Cybercratic Representation and Algorationality in Social Policy

The System Risico Indicatie (SyRI), developed in the Netherlands, was an algorithmic system designed to detect fraud in the domains of social welfare and taxation by performing risk classifications using multiple datasets (Van Bekkum and Borgesius, 2021). The system analyzed a wide range of personal data—such as income levels, residential addresses, family structures, and ethnic backgrounds—disproportionately categorizing individuals from disadvantaged communities as “*high-risk*.” This categorization resulted in the systematic obstruction of access to social benefits (Van Bruxvoort and Van Keulen, 2021).

The delegation of decision-making authority to an algorithmic structure devoid of democratic accountability or popular sovereignty constitutes a clear empirical manifestation of cybercratic representation. Rather than elected officials, it was a technically empowered and politically unaccountable system that determined the allocation of public resources. Declared unlawful in 2020 by the District Court of The Hague for violating the European Convention on Human Rights, the SyRI case illustrates how algorithmic governance—under the guise of technical legitimacy—can facilitate severe human rights infringements (Rachovitsa and Johann, 2022).

Moreover, SyRI also embodies the notion of algorationality. The decision-making processes were entirely abstracted from ethical, social, and political contexts, reduced to data-driven scoring mechanisms. Functioning without any normative legitimacy, the system represents a governance model in which public decisions are rendered as contentless technical outputs.

A comparable case is Australia’s Robodebt system, an automated program designed to audit welfare recipients by cross-referencing income declarations and calculating debts through algorithmic assessments (Rinta-Kahila et al., 2023). The system falsely assigned debts to thousands of individuals and, following widespread public outrage, was eventually declared unlawful and dismantled. The Australian government subsequently reimbursed hundreds of millions of dollars to those affected (Clarke et al., 2024).

6.2. The COMPAS System in U.S. Criminal Justice: Algorationality and the Automation of Representation in the Judicial Domain

In the United States criminal justice system, the Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) algorithm is used to assess the likelihood of recidivism among defendants, thereby guiding judicial decisions regarding bail, sentencing, and pretrial detention (Brennan et al., 2008). However, independent investigations have revealed that the system disproportionately assigns higher risk scores to Black defendants and exhibits structural racial biases (Dressel and Farid, 2018).

In this context, COMPAS exemplifies a situation where algorithms assume not merely a supportive but a directive representational function within judicial decision-making. While judges remain the formal decision-makers, the actual production of decisions is shaped by algorithmic outputs, giving rise to *cybercratic representation* in the legal domain. Rather than focusing on the defendant’s individual circumstances, social background, or potential for rehabilitation, decisions are increasingly driven by statistical scores based on historical data. This marks a shift toward *algorationality* in a domain—criminal justice—that is inherently dense with ethical and normative considerations.

The COMPAS case also reveals a profound accountability gap. The injustices produced by the algorithm lack a clear locus of responsibility, and individuals seeking redress are often blocked by technical complexity and institutional ambiguity. This illustrates how algorithmic governance, far from being merely instrumental, poses a structural threat to democratic oversight mechanisms.

6.3. The A-Levels Algorithm in the UK: Algorationality and the Crisis of Representation in Education

During the COVID-19 pandemic, when A-Levels examinations were cancelled in the UK, a predictive algorithm developed by Ofqual was used to assign final grades to students (Kelly, 2021). Rather than relying on individual student performance, the algorithm based its evaluations on the historical performance averages of the schools

students attended. This resulted in the penalization of high-achieving students from underperforming schools and, conversely, in systemic advantage for students from elite private institutions (Heaton et al., 2023).

By disregarding individual merit and effort, the algorithm reduced students to statistical profiles. In this regard, the case represents a textbook example of algorithmonality in the domain of education. The decision was not grounded in pedagogical principles or norms of fair assessment, but in formal calculations based on data consistency and model outputs.

Furthermore, delegating authority to an algorithm in a policy domain so central to public legitimacy and citizenship rights—without any participatory or representative political process—manifests the phenomenon of cybercratic representation. Neither students nor parents were involved in the decision-making process; the algorithm’s technical output was implemented directly. In response to widespread public backlash, the system was ultimately revoked, and grades were reassigned based on teacher assessments (Porter, 2020). This development demonstrates that algorithmic decision-making, when devoid of democratic oversight, can provoke severe crises of social legitimacy.

6.4. The Social Credit System in China: The Authoritarian Form of Algorithmic Governance

China’s Social Credit System represents a centralized, comprehensive, and disciplinary form of algorithmic governance. The system aggregates data across multiple domains—from individuals’ digital interactions and financial records to social behaviors and public reputations—in order to produce an integrated “trustworthiness score” for each citizen (Langer, 2020; Engelmann et al., 2019).

Individuals with high scores are granted privileged access to public services, while those with low scores may be excluded from essential civic entitlements such as transportation, credit, and education. In this way, the system functions not only as a scoring mechanism but also as a tool of behavioral conditioning and social norm production (Bach, 2020). The delegation of the regulatory role of state authority to algorithms exemplifies an authoritarian instantiation of cybercratic representation. In this context, algorithms have supplanted elected representatives as decision-making actors who shape normative structures.

The system operates solely on the logic of algorithmic scoring, absent any form of democratic deliberation, ethical evaluation, or public contestation. Individual differences, rights claims, and socio-cultural contexts are externalized. Decisions are taken strictly on the basis of algorithmonality, driven by metrics of technical accuracy and statistical validity (Zou, 2021; Gao, 2024). This not only transforms decision-making processes but also reconfigures the very notion of citizenship.

7. DISCUSSION

The empirical cases analyzed in the previous section suggest the presence of recurring patterns that extend beyond specific national, institutional, or regime-based contexts. Despite variations in administrative traditions and political systems, the findings indicate a converging transformation in public governance associated with the expanding role of algorithmic decision-making systems. As summarized in Table 2, the combined effects of cybercratic representation and algorithmonality appear to point toward a dual transformation in which democratic representation is increasingly displaced by algorithmic authority, while decision-making rationality becomes progressively oriented toward technical optimization. This configuration helps to account for why algorithmic governance tends to be associated with legitimacy deficits across different regime types.

Across the examined cases—SyRI in the Netherlands, Robodebt in Australia, COMPAS in the United States, the A-Levels algorithm in the United Kingdom, and the Social Credit System in China—algorithms can be observed to assume *de facto* public decision-making authority without being grounded in conventional mechanisms of democratic representation. In this respect, algorithmic systems often operate with limited connection to electoral accountability, public consent, or participatory oversight. Rather than functioning solely as neutral administrative instruments, they increasingly appear to act as authoritative actors within governance structures (Bovens and Zouridis, 2002; Yeung, 2018).

These observations reinforce the analytical usefulness of the concepts developed in this study. Cybercratic representation captures a mode of governance in which decision-making authority is exercised by algorithmic systems that lack a representative relationship with citizens. In all analyzed cases, public decisions affecting welfare access, criminal sentencing, educational outcomes, or civic rights were significantly shaped—if not

effectively determined—by algorithmic outputs. Representation, in this sense, appears to be less frequently mediated through elected officials or deliberative political processes and more frequently displaced by technically optimized systems (Danaher, 2016; Pasquale, 2015).

At the same time, the findings illustrate the growing dominance of algorationality as a form of decision-making rationality. In each case, decisions were primarily justified through technical criteria such as statistical accuracy, consistency, and efficiency, while ethical, political, and social considerations tended to be marginalized or excluded. Algorithmic reasoning often reduces complex human circumstances to quantifiable data points, thereby transforming normative judgments into technical calculations (Mittelstadt et al., 2016).

This transformation also intersects with a long-standing source of declining public trust in public administration: the perception that human decision-makers engage in discriminatory, biased, or favoritist practices. Historically, unequal treatment, nepotism, and discretionary bias have been identified as ethical failures attributable to human judgment in bureaucratic processes. However, algorithmic governance does not eliminate these ethical risks; rather, it often reproduces and amplifies them in a structurally depersonalized form. As discussed in the literature on algorithmic discrimination, AI systems have been shown to inherit, replicate, and operationalize existing social inequalities embedded in historical data, institutional practices, and policy design (Mittelstadt et al., 2016; Binns, 2018; Dressel and Farid, 2018).

In this sense, algorithmic systems do not replace human bias with neutrality, but translate discretionary injustice into automated form. What previously appeared as individual ethical misconduct is transformed into systemic, scalable, and less contestable patterns of exclusion. Discriminatory outcomes are no longer attributed to identifiable public officials but are instead obscured behind technical complexity, data-driven reasoning, and claims of objectivity. This shift further deepens the legitimacy crisis by displacing moral responsibility while preserving unequal outcomes, thereby reinforcing the dynamics of algorationality and cybercratic representation.

Taken together, these dynamics point to a structural tension between algorithmic governance and the foundational principles of democratic legitimacy. Public decisions are increasingly legitimized through claims of technical neutrality and performance efficiency, rather than through democratic consent, accountability, or public reasoning. As a result, the substantive content of democratic legitimacy may be gradually hollowed out, even as formal administrative structures remain intact (Rosanvallon, 2008).

Importantly, the cases also suggest that this transformation is not confined to liberal-democratic contexts. While the authoritarian configuration of algorithmic governance is most visible in China's Social Credit System, similar legitimacy concerns can be identified in democratic systems when algorithmic authority operates without transparency, explainability, and contestability. This observation supports the view that cybercratic representation and algorationality should be understood as structural tendencies of algorithmic governance rather than as regime-specific anomalies.

From an analytical perspective, these findings invite a reconsideration of algorithmic governance not merely as a technical evolution of public administration, but as a normative reconfiguration of political representation and rationality. The emergence of cybercratic representation appears to signal a gradual shift from consent-based legitimacy toward performance-based justification, while algorationality reflects a displacement of political judgment by computational logic. Together, these processes may contribute to a growing legitimacy gap that poses significant challenges for the democratic foundations of contemporary governance.

8. CONCLUSION AND NORMATIVE IMPLICATIONS

This study suggests that the increasing role of AI-assisted algorithmic decision-making systems in public administration does not merely represent a technical transformation, but also appears to initiate a restructuring of the foundational principles of democratic legitimacy. The concepts of cybercratic representation and algorationality were developed to capture the two core dimensions of this transformation.

Cybercratic representation describes how algorithms assume the function of political representation by making public decisions in place of democratically elected officials. Algorationality refers to the reduction of decision-making processes to technical correctness, detached from ethical, political, and social contexts. The analysis of international cases indicates that these concepts are not merely theoretical constructs but empirically observable dynamics in contemporary public policy practices.

To synthesize the conceptual contributions of this study and to clarify how cybercratic representation and algorithmonality empirically manifest across different policy domains, Table 4 provides a comparative overview. The table summarizes the core conceptual attributes introduced in this article and illustrates how these attributes materialize in the international cases analyzed.

Table 4. Conceptual Contributions and Their Empirical Manifestations

Concept	Core Conceptual Content	Empirical Manifestation in Cases
Cybercratic Representation	Delegation of public decision-making authority to algorithmic systems lacking electoral legitimacy and democratic accountability	SyRI (NL): Welfare access determined by algorithmic risk scores; Robodebt (AU): Automated debt decisions without political oversight; COMPAS (US): Algorithmic authority shaping judicial outcomes; A-Levels (UK): Educational outcomes determined by predictive models; Social Credit (CN): Algorithmic regulation replacing political representation
Algorithmonality	Reduction of decision-making to technical correctness, efficiency, and data-driven optimization detached from ethical and political reasoning	SyRI & Robodebt: Data-driven welfare decisions ignoring social context; COMPAS: Statistical risk prediction overriding individualized justice; A-Levels: Algorithmic grading detached from merit; Social Credit: Behavioral governance through scoring logic

Note: This table is developed by the author to synthesize the conceptual contributions of the study and their empirical validation across cases.

Table 4 visually consolidates the main analytical contribution of the article by linking the two original concepts to concrete governance practices. By doing so, it demonstrates that cybercratic representation and algorithmonality are not abstract theoretical constructs but recurring structural patterns observable across different regime types and policy domains. This synthesis reinforces the argument that algorithmic governance generates legitimacy deficits through both representational displacement and rationality transformation.

One significant consequence of this transformation appears to be the weakening of the three foundational principles of democratic legitimacy—representation, accountability, and consent—within practices of algorithmic governance. The delegation of decision-making authority to algorithmic systems that are unelected and politically unaccountable raises serious concerns not only in terms of technical efficiency but also in relation to citizens’ rights to participation, their sense of justice, and the mechanisms of public oversight. This legitimacy gap is also evident in Turkey, as reflected in the findings of the Personal Data Protection Authority’s (KVKK) 2024 Activity Report, which highlights increasing public concern regarding automated data processing, insufficient transparency in algorithmic decision-making, and limited citizen awareness of how personal data are utilized within digital public services. These findings suggest that efficiency-driven digitalization, when not accompanied by robust accountability and transparency mechanisms, risks undermining public trust and democratic legitimacy. The frequent opacity of algorithmic reasoning may undermine accountability and contribute to a technocratic model of governance that preserves formal structures while potentially hollowing out their substantive content. Accordingly, this study suggests the need to reconsider democratic accountability in response to the administrative realities of the digital age. Based on the findings of this study, three normative considerations can be outlined:

1. **Algorithmic Transparency:** The decision logic and data-driven models underlying algorithmic systems should be subject to public scrutiny and made accessible to independent oversight bodies.
2. **Democratic Feedback Mechanisms:** Citizens should have the right to challenge decisions made by algorithmic systems. These processes must be open not only to technical experts but also to public stakeholders.
3. **Alignment with Normative Values:** Beyond technical efficiency, justice, equality, and ethical responsibility must be integrated into decision-making processes. Algorithmic systems should not only optimize outputs but also be subject to normative evaluation.

Beyond these normative considerations, this study also contributes to the literature by repositioning algorithmic governance within the core debates of democratic theory rather than treating it as a merely administrative or technological issue. By conceptualizing cybercratic representation and algorithmonality as intertwined structural dynamics, the article offers an analytical framework capable of explaining legitimacy erosion across different regime types. This framework allows future research to move beyond case-specific critiques and to engage in comparative analyses of algorithmic governance in diverse political and institutional contexts.

In conclusion, the rise of digital public administration necessitates the reconstruction of the normative foundations on which legitimacy rests. This study has argued that without embedding algorithmic systems within frameworks of democratic accountability, transparency, and public contestation, digital governance risks consolidating a technocratic form of authority detached from popular sovereignty. The concepts developed here are not intended

as definitive diagnoses, but as analytical tools to facilitate further empirical and normative inquiry into the democratic futures of algorithmic states.

YAZAR BEYANI / AUTHORS' DECLARATION:

Bu makale Araştırma ve Yayın Etiğine uygundur. Beyan edilecek herhangi bir çıkar çatışması yoktur. Araştırmanın ortaya konulmasında herhangi bir mali destek alınmamıştır. Makale yazım ve intihal/benzerlik açısından kontrol edilmiştir. Makale, “*en az iki dış hakem*” ve “*çift taraflı körleme*” yöntemi ile değerlendirilmiştir. Makalede kullanılan ölçek için yazar(lar) tarafından ölçeğin orjinal sahibinden izin alındığı beyan edilmiştir. Yazar(lar), dergiye imzalı “*Telif Devir Formu*” belgesi göndermişlerdir. Mevcut çalışma için mevzuat gereği etik izni alınmaya ihtiyaç yoktur. Bu konuda yazarlar tarafından dergiye “*Etik İznine Gerek Olmadığına Dair Beyan Formu*” gönderilmiştir. Yazar, çalışmanın tüm bölümlerine ve aşamalarına tek başına katkıda bulunmuştur. / **This paper complies with Research and Publication Ethics, has no conflict of interest to declare, and has received no financial support. The article has been checked for spelling and plagiarism/similarity. The article was evaluated by "at least two external referees" and "double blinding" method. For the scale used in the article, it is declared by the authors that permission was obtained from the original owner of the scale. The author(s) sent a signed "Copyright Transfer Form" to the journal. There is no need to obtain ethical permission for the current study as per the legislation. The "Declaration Form Regarding No Ethics Permission Required" was sent to the journal by the authors on this subject. The author contributed to all sections and stages of the study alone.**

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