People's Sovereignty in SPBE and One Data Indonesia: Algorithmic Constitutional Perspectives

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Abstract

The rapid expansion of digital governance has transformed public administration worldwide, yet most studies continue to evaluate digital government initiatives primarily through administrative efficiency, interoperability, cybersecurity, and technological performance. Limited attention has been devoted to the constitutional implications of algorithmic governance and its consequences for popular sovereignty. This study addresses that gap by examining how Indonesia's Electronic-Based Government System (SPBE) and One Data Indonesia (SDI) reshape the constitutional principle of people's sovereignty as enshrined in Article 1(2) of the 1945 Constitution. Unlike previous research that treats SPBE and SDI as administrative modernization instruments, this study analyzes them as constitutional infrastructures that influence governance legitimacy, legal recognition, and citizen participation. Employing a qualitative socio-legal approach, the research integrates doctrinal legal analysis with interpretive empirical inquiry. Data were collected through constitutional and regulatory documents, international governance frameworks, and semi-structured interviews with constitutional scholars, government officials, digital governance experts, civil society representatives, and digital rights advocates. Thematic analysis identified six dominant patterns: algorithmic authority, sovereignty displacement, opacity and accountability, automated legitimacy, participatory deficit, and posthuman subjectivity. The findings reveal that SPBE and SDI increasingly mediate public decision-making through algorithmic processes that redistribute authority, reshape legal subjectivity, and weaken conventional mechanisms of democratic oversight. This study contributes to constitutional scholarship by introducing algorithmic constitutionalism, a novel theoretical framework that recognizes algorithmic infrastructures as constitutionally significant actors subject to transparency, accountability, participatory safeguards, and judicial scrutiny. The framework provides a normative foundation for protecting sovereignty and constitutional rights within increasingly automated governance systems.

I. Introduction

In the contemporary digital transformation era, state governance is witnessing a paradigm shift from human-centric and procedurally democratic structures to those influenced by algorithmic systems (Bernardus et al., 2024). This transition is most evident in the growing reliance on algorithmic governance, the delegation of evaluative, predictive, and decision-making capacities to automated systems. These technologies are now embedded within public administration and legal systems, claiming increased efficiency, objectivity, and scalability (Gritsenko & Wood, 2020; Latzer & Festic, 2019). However, they simultaneously introduce opaque power mechanisms that are not fully accountable to democratic institutions, thus unsettling the principle of popular sovereignty, which has been the cornerstone of modern constitutional democracies (Hummel et al., 2021; Tretter, 2022).

Indonesia's regulatory response to this trend has been formalized through Presidential Regulation Number 95 of 2018 on the Electronic-Based Government System (EBGS) (Pemerintah Republik Indonesia, 2018) and Presidential Regulation Number 39 Year 2019 on One Data Indonesia (Pemerintah Republik Indonesia, 2019). The Electronic-Based Government System (SPBE) has a strategic function for Indonesia in supporting national digital transformation, improving the quality of public services, strengthening bureaucratic efficiency, and enhancing human resource capacity in facing the digital economy (Soekiman et al., 2025).

SPBE aims to implement an integrated and sustainable electronic-based government system, focusing on interoperability, efficiency, and public service transparency. SDI, on the other hand, establishes a national data governance policy to ensure that data is accurate, up-to-date, and interoperable across

central and regional government institutions through mechanisms such as metadata standards, data prioritization, and the use of reference codes and master data (Perpres No. 39/2019, Pasal 1-4). These efforts underscore the rise of algorithmic rationality in bureaucratic decision-making, with limited legal and constitutional evaluation of how such transformations affect the normative foundation of governance.

At the international level, critical frameworks such as algorithmic governmentality (Waldman & Martin, 2022), digital constitutionalism (Wimmer & Moraes, 2022), and technocratic legitimacy (Bertsou & Caramani, 2020) have begun theorizing this shift. These frameworks acknowledge the erosion of traditional forms of legal subjectivity and accountability under digital governance. Yet in Indonesia, judicial and doctrinal responses remain underdeveloped, raising the question of how algorithmically mediated systems such as SPBE and SDI may subvert the constitutional ideals of people's sovereignty (*kedaulatan rakyat*), particularly as codified in Article 1(2) of the 1945 Constitution. This study addresses this gap by interrogating the algorithmic reshaping of sovereignty within the evolving digital governance architecture.

The increasing institutionalization of algorithmic systems in governance has not been matched by proportional doctrinal development within constitutional law. In Indonesia, programs like SPBE and SDI function as normative frameworks that regulate public data infrastructures and decision-making channels but do so without reconciling these functions with existing constitutional principles. The SPBE policy, as stated in Perpres No. 95/2018, seeks to integrate information systems across agencies for effective governance but lacks mechanisms for participatory oversight, judicial review, or civic

consultation. Similarly, SDI, through Perpres No. 39/2019, operationalizes interoperability and standardization of data without fully incorporating safeguards against data bias, algorithmic opacity, or technocratic centralization. This creates a democratic deficit, as automated decisions often bypass deliberative processes and legal scrutiny (Firdaus et al., 2023; Hartati et al., 2022).

This study proposes a multidisciplinary solution anchored in critical constitutionalism, posthuman legal theory, and digital rights frameworks, aiming to analyze SPBE and SDI not only as technical systems but as juridical architectures with deep implications for sovereignty. By interpreting the 1945 Constitution alongside emerging legal obligations under international frameworks (such as the GDPR, OECD AI Principles, and digital sovereignty declarations), this research constructs a normative model for algorithmic constitutionalism, a lens through which algorithmic infrastructures are treated as actors in constitutional discourse. The study thus offers doctrinal and policy tools to reinstate democratic accountability and reaffirm the principle of sovereignty in digital governance.

The literature across constitutional theory, legal informatics, and political science provides robust frameworks for interrogating algorithmic governance. Critical constitutionalism, as articulated by scholars like Balkin (2013), offers the interpretive flexibility required to address evolving configurations of power. It proposes that constitutional principles should be responsive to socio-technological transformations and should accommodate new forms of governance including those mediated by algorithms.

Simultaneously, algorithmic governmentality a term developed by Waldman & Martin (2022), conceptualizes algorithmic systems not as passive

tools but as active actors that predict, regulate, and pre-empt human behavior. These systems shape subjectivity and normativity, creating a *technological Leviathan* that governs without transparency or appeal. In the context of SPBE and SDI, the establishment of interoperable platforms and reference codes effectively shifts evaluative authority to automated systems that are difficult to interrogate from a constitutional perspective as it is stated in Perpres No. 39/2019 (Pemerintah Republik Indonesia, 2019).

Moreover, posthuman legal theory (Grear, 2020; Braidotti, 2019) disrupts the anthropocentric assumptions of constitutional frameworks, asserting that algorithms, data infrastructures, and digital platforms should be viewed as agents within legal assemblages. In this model, legal subjectivity is not exclusively human but shared with technological artifacts that co-produce social and legal realities. Applied to the Indonesian context, this theory elucidates how systems like SPBE and SDI embody a posthuman legal order that demands new constitutional interpretations and governance ethics.

While existing literature recognizes the expanding role of data and automation in governance, it rarely addresses the constitutional restructuring of power that accompanies such shifts. Most discussions on SDI and SPBE are confined to technocratic evaluations focusing on efficiency, digital readiness, or cybersecurity (Ssenyonga, 2021) and fail to critically analyze how these systems affect democratic control, public accountability, and citizen agency. The constitutional silence surrounding these systems is particularly problematic given the top-down configuration of the SPBE ecosystem, in which institutions such as the Dewan Pengarah and Walidata operate without formal public participation mechanisms as it is stated in Perpres No. 95/2018 (Pemerintah Republik Indonesia, 2018), and Pasal 14–16; Perpres No. 39/2019

(Pemerintah Republik Indonesia, 2019).

A gap in previous research exists, regulatory instruments such as, regulatory instruments such as the EU's GDPR and the OECD's AI Principles begin to acknowledge the normative risks of automated governance including bias, opacity, and data exploitation, but they do not comprehensively address the foundational impact on sovereignty and legal legitimacy (Menéndez, 2021; Xu, 2024). In Indonesia, neither the Mahkamah Konstitusi (*Constitutional Court*) nor the national legislation (*Law on Electronic Information and Transactions* or UU ITE) has incorporated algorithmic systems as subjects of constitutional inquiry. This gap has profound implications, as it leaves the redistribution of evaluative authority unchecked and effectively displaces citizens as the primary holders of democratic power.

Lastly, while interdisciplinary scholars argue for data justice and Indigenous data sovereignty (Carroll et al., 2020; Gopalani et al., 2021), such frameworks are yet to be translated into constitutional doctrines or administrative laws in Indonesia. The absence of legal codification for algorithmic accountability or participatory data governance mechanisms exposes a lacuna in the legal architecture. This study responds to that void by proposing a constitutional model that re-centers sovereignty within digitally mediated governance.

The doctrine of popular sovereignty (*kedaulatan rakyat*) enshrined in Article 1(2) of the 1945 Constitution of Indonesia establishes that all state power derives from the will of the people. In classical constitutionalism, this principle functions as both a normative foundation and a democratic guarantee. However, in the context of algorithmic governance, the mechanisms of state decision-making are increasingly disintermediated from

public will, creating a rift between constitutional ideals and administrative practice. As Ginsburg and Huq (2019) observe, the algorithmic turn in governance often coincides with a "dilution of public deliberation" and a rise in technocratic insulation from democratic inputs. In Indonesia, the implementation of Perpres No. 95 Tahun 2018 on *Sistem Pemerintahan Berbasis Elektronik* (Pemerintah Republik Indonesia, 2018) mandates the integration of electronic systems to streamline government functions. While aimed at efficiency and transparency, the policy's architecture centralizes decision-making through interoperable platforms governed by non-elected digital steering bodies (Pasal 14-16), implicitly shifting the locus of authority away from the citizenry. This warrants a re-examination of how sovereignty is operationalized and to whom it is ultimately accountable.

Waldman & Martin (2022) conceptualize algorithmic governmentality as a mode of governance where algorithms preemptively guide behavior through data-driven predictions, bypassing traditional legal reasoning and deliberation. These algorithmic regimes reframe human subjects as *data doubles* statistical entities to be managed, predicted, and optimized. In Indonesia's Satu Data Indonesia (SDI) policy under Perpres No. 39 Tahun 2019 (Pemerintah Republik Indonesia, 2019), this transformation is visible in the requirement for standardized metadata, master data codes, and automated interoperability across state agencies (Pasal 3-10). These systems reduce citizens to data points, thereby challenging the anthropocentric core of constitutional subjectivity. Legal scholars such as Grear (2020) and Braidotti (2019) call for posthuman legal theory, which acknowledges the distributed agency of both human and non-human actors (including algorithms, platforms, and data infrastructures) in legal systems. This theoretical turn enables constitutional law to critically

account for how algorithmic systems not only support but enact normative decisions traditionally reserved for elected institutions. The lack of judicial visibility over such systems signals an urgent need for constitutional mechanisms capable of interrogating the embedded biases, design logics, and exclusions within algorithmic regimes.

Digital constitutionalism refers to a body of emerging thought that reimagines constitutional safeguards in the face of digital transformation. As Wimmer and Moraes (2022) explain, it seeks to reassert values such as transparency, participation, and rights within digital environments governed by platforms and algorithms. However, in Indonesia, the SPBE and SDI frameworks operate without comprehensive normative frameworks that establish democratic oversight or avenues for legal contestation. For instance, the SDI supervisory structure, involving *Wali Data* and *Pembina Data*, lacks mechanisms for citizen engagement or rights-based challenge (Pemerintah Republik Indonesia, 2019). Judicial developments in the global North, such as the Schrems II ruling by the CJEU have begun to address the tension between data infrastructures and fundamental rights, but such jurisprudence remains absent in Indonesian constitutional courts. This study positions itself within the tradition of digital constitutionalism to develop a normative framework for algorithmic accountability, urging for doctrines that recognize automated systems as legally significant actors capable of infringing upon sovereignty and democratic participation.

The convergence of the literatures on popular sovereignty, algorithmic governmentality, posthuman legal theory, and digital constitutionalism reveals a foundational transformation in how constitutional power operates in algorithmically mediated governance regimes. In Indonesia, the SPBE and SDI

policies enshrined respectively in Perpres No. 95 Tahun 2018 (Pemerintah Republik Indonesia, 2018) and Perpres No. 39 Tahun 2019 (Pemerintah Republik Indonesia, 2019) must be understood not merely as instruments of administrative modernization but as constitutional events. These systems deploy algorithmic infrastructures that mediate, and often automate, public decision-making, thereby reconfiguring the conditions under which sovereignty is exercised and contested. As Ginsburg and Huq (2022) have argued, such digitization efforts often coincide with the insulation of decision-making from democratic deliberation, weakening the normative foundations of constitutional governance.

The theoretical model proposed in this study algorithmic constitutionalism is designed to critically respond to this reconfiguration. It integrates the normative imperative of popular sovereignty, rooted in Article 1(2) of the 1945 Constitution, with the diagnostic power of algorithmic governmentality as articulated by Waldman & Martin (2022), which exposes the anticipatory and regulatory logic of data-driven governance. In tandem, it draws from posthuman legal theory (Gilani, 2020), which challenges the anthropocentric bias of traditional constitutional thought and acknowledges that non-human agents, algorithms, platforms, metadata protocols actively shape legal and political relations. This theoretical foundation is further expanded through the lens of digital constitutionalism (Wimmer & Moraes, 2022), which argues for the reassertion of rights, participation, and transparency within the algorithmically governed public sphere.

Together, these theoretical interventions construct a framework through which algorithmic infrastructures like SPBE and SDI can be understood as redistributing sovereignty, transforming legal subjectivity, and producing

new normative orders outside traditional democratic institutions. The lack of participatory mechanisms in SDI's data governance structure, such as the limited oversight over data steward (*Wali Data)* and data manager (*Pembina Data)* as it is stated in Perpres No. 39/2019, Article 12–14 (Pemerintah Republik Indonesia, 2019) exemplifies this displacement. By treating these regimes as legally significant actors, rather than neutral tools, this study restores analytical and normative attention to the constitutional consequences of digital transformation. In doing so, it provides a critical and doctrinal foundation for addressing the silent yet profound legal shifts taking place in the algorithmic age.

The main objective of this research is to analyze how the implementation of algorithmic governance systems, specifically through Indonesia's SPBE and SDI, reconfigures the constitutional principle of popular sovereignty. It seeks to determine whether and how these systems undermine or transform the foundational legal doctrine of people's sovereignty (*kedaulatan rakyat*) as articulated in the UUD 1945, by examining the procedural, structural, and doctrinal shifts introduced by algorithmic infrastructures.

The novelty of this study lies in its introduction of the concept of "algorithmic constitutionalism" a framework that synthesizes critical constitutional thought, algorithmic governmentality, and posthuman legal theory. Unlike existing analyses that treat SPBE and SDI as policy tools, this study treats them as constitutional events that reallocate power, subjectivity, and legitimacy. It also contributes a doctrinal roadmap for integrating algorithmic systems into the Indonesian constitutional framework, thereby addressing the pressing need for normative and judicial adaptation in the digital era. This work is thus positioned at the intersection of constitutional

law, legal theory, and digital governance, offering a scholarly intervention with both national relevance and global resonance.

2. Research Method

This study employed a qualitative socio-legal research design that integrated doctrinal legal analysis and interpretive empirical inquiry to examine how the implementation of Indonesia's Electronic-Based Government System (SPBE) and One Data Indonesia (SDI) reconfigures the constitutional principle of popular sovereignty. The doctrinal component focused on the systematic examination of primary legal sources, including Article 1(2) of the 1945 Constitution, Presidential Regulation No. 95 of 2018 concerning SPBE, Presidential Regulation No. 39 of 2019 concerning SDI, relevant statutory regulations, judicial developments, and international normative frameworks such as the GDPR and OECD AI Principles. These legal materials were analyzed to identify constitutional assumptions regarding sovereignty, democratic accountability, transparency, legal subjectivity, and public participation. The research follows five stages: legal document analysis, normative interpretation, purposive participant selection, expert interviews, and synthesis into a framework of algorithmic constitutionalism. This design follows Creswell's (2018) emphasis on contextual interpretation and Miles, Huberman, and Saldaña's (2014) model of qualitative rigor through data condensation and display.

Data were collected through document analysis and semi-structured interviews with legal scholars, government officials, and civil society actors. Interview transcripts and legal texts were thematically coded, following the pattern coding techniques proposed by Miles et al. (2014). Analytical themes such as legal subjectivity, algorithmic opacity, and sovereignty displacement

were identified and cross-compared between doctrinal texts and field data.

The empirical component utilized purposive sampling to select participants possessing direct expertise and institutional experience related to constitutional law, digital governance, public administration, algorithmic systems, and digital rights advocacy. Participants consisted of constitutional scholars, legal academics, government officials involved in SPBE and SDI implementation, oversight practitioners, civil society representatives, and digital rights experts. Data were collected through semi-structured interviews guided by themes concerning constitutional legitimacy, algorithmic governance, democratic participation, accountability mechanisms, and legal oversight. All interviews were recorded, transcribed verbatim, anonymized, and supplemented with field notes to enhance contextual understanding. Data analysis followed the interactive model of Miles et al. (2014), consisting of data condensation, data display, and conclusion drawing. Open coding was first applied to identify recurring concepts such as constitutional authority, algorithmic transparency, legal accountability, administrative legitimacy, digital citizenship, and sovereignty transformation. Subsequently, pattern coding was employed to organize related codes into broader thematic categories. This process generated six dominant themes: displacement of constitutional actors, opacity and accountability, automated legitimacy, jurisdictional blind spot, participatory deficit, and posthuman subjectivity.

The analytical framework was further informed by critical constitutionalism, algorithmic governmentality, posthuman legal theory, and digital constitutionalism, allowing both normative and empirical dimensions to be interpreted simultaneously. Integration of doctrinal and empirical findings was conducted through methodological triangulation, whereby

constitutional norms identified within legal texts were systematically compared with participants' experiences and institutional observations. Doctrinal analysis established the normative expectations of sovereignty, participation, and accountability, while empirical findings revealed how algorithmic infrastructures operationalize, transform, or potentially undermine these constitutional principles in practice. This iterative comparison enabled the development of a comprehensive explanation of algorithmic governance as a constitutional phenomenon and provided the conceptual foundation for the study's proposed framework of algorithmic constitutionalism.

3. Results and Discussion

A. Documentary Evidence of Algorithmic Restructuring

The analysis of key legal instruments, Perpres No. 95/2018 (SPBE) and Perpres No. 39/2019 (SDI) reveals that algorithmic systems do not merely support governance; they actively reorganize it. These documents institute a framework where evaluative power and administrative discretion are transferred to digital platforms. For example, interoperability mandates, metadata standardization, and hierarchical reference codes reassign state legitimacy to technical protocols rather than democratic deliberation. This creates an epistemological shift in the source of authority. One official from Kominfo highlighted: *"All policy instructions now go through SPBE dashboards. Ministers are informed by system-generated evaluations, not public reports."* This reflects the theme of centralized decision-making, signifying a form of algorithmic authority that operates autonomously from civic influence.

Within the SDI framework, data interoperability is enforced through

master reference codes and metadata structures (Pasal 3–10), effectively turning citizen records into governance tokens. These systems sort, authorize, or silence data subjects based on automated logic. The field findings consistently point toward an infrastructural realignment of power that reconfigures constitutional meaning, shifting it away from the normative principles of participatory governance to automated regulation.

B. The Displacement of Popular Sovereignty

Interview data reveals an undercurrent of constitutional erosion associated with the institutionalization of algorithmic systems. Several experts expressed concern that the state's growing reliance on data infrastructures has blurred the locus of democratic legitimacy. A constitutional law scholar stated: *"It is no longer clear whether the rakyat has any role in governance when everything is standardized by metadata and automated processes."* This indicates the erosion of participatory rights, a core category in this study's thematic analysis.

Algorithmic governance, while designed for efficiency, introduces layers of abstraction that elude traditional legal accountability. This opacity is reflected in the remarks of a government oversight auditor: *"I cannot even tell you what algorithm determines which public report gets escalated to policy action."* This exemplifies the theme of opacity and accountability, a condition where automation outpaces public transparency and disrupts normative checks on executive discretion.

To illustrate the qualitative findings underpinning the constitutional implications of SPBE and SDI, the table below synthesizes the key themes, codes, and representative interview excerpts generated through the thematic analysis:

Table 1. Thematic Categories, Codes, and Direct Excerpts from Expert Interviews

Theme	Code	Excerpt
Algorithmic Authority	centralized decision-making	All policy instructions now go through SPBE dashboards. Ministers are informed by system-generated evaluations, not public reports. (Senior Kominfo Official)
Sovereignty Displacement	erosion of participatory rights	It is no longer clear whether the rakyat has any role in governance when everything is standardized by metadata and automated processes. (Constitutional Law Scholar)
Opacity and Accountability	lack of transparency	I cannot even tell you what algorithm determines which public report gets escalated to policy action. (Government Oversight Auditor)
Legal Subjectivity	human-data dualism	Once you become a dataset, your identity as a citizen becomes almost secondary in legal processes. (Digital Rights Advocate)
Participatory Deficit	absence of challenge mechanisms	There is no complaint system to question algorithmic decisions made in SDI workflows. (Civil Society Organization Representative)

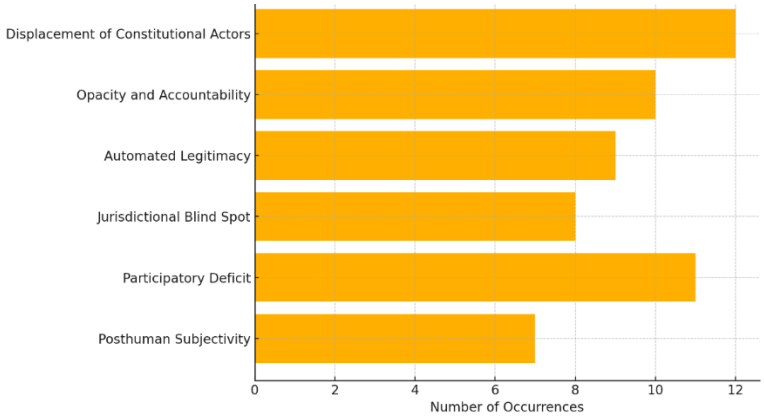
C. Interview Insights – Constitutional Displacement

The thematic code "displacement of constitutional actors" emerged consistently across multiple interviews. Experts from both civil society and academia voiced concern that the operational centrality of algorithmic systems in SPBE and SDI has subtly dislodged the constitutional role of the people (rakyat). One senior academic remarked, *"We have moved from kedaulatan rakyat to kedaulatan system, algorithmic sovereignty that is technically unaccountable."* This powerful phrase encapsulates how the normative source of state power enshrined in Article 1(2) of the 1945 Constitution has been symbolically and operationally rechanneled through automated infrastructures.

Thematic analysis of expert interviews revealed six dominant categories: Displacement of Constitutional Actors, Opacity and Accountability,

Automated Legitimacy, Jurisdictional Blind Spot, Participatory Deficit, and Posthuman Subjectivity. These themes were derived through iterative coding of transcribed interviews using NVivo, supported by Creswell's (2014) layered interpretation method and Miles et al.'s (2014) thematic condensation approach.

Picture 1. Frequency of Emergent Thematic Codes Identified from Expert Interviews



This displacement is not only symbolic but institutional. For example, in the SPBE architecture, policy execution is centralized through digital coordination dashboards, where officials receive system-generated evaluations and rankings. Participants from Kominfo confirmed that *"SPBE determines compliance metrics before any democratic discussion even occurs."* Such practices reduce room for public input and legitimize decision-making outside deliberative institutions, undermining the sovereignty principle through technical preemption. To illustrate the empirical richness of each theme, Table 1 presents exemplary excerpts from participants, showcasing how abstract categories like algorithmic authority and legal subjectivity are grounded in real

institutional experiences and perceptions.

In addition to structured coding and quotes, a word cloud was generated to visualize the most frequently occurring terms in the interview corpus, emphasizing the lexical density of constitutional disruption in participants' language.

Picture 2. Word cloud



D. Expert Reflections on Sovereignty and Data Governance

Interviewees revealed significant tension between sovereign legitimacy and technocratic efficiency. Experts from digital rights NGOs consistently warned that the "standardization logic" of SDI through metadata rules and master data codes, enables what one termed a *"silent privatization of judgment"*. Decision-making becomes a product of predefined algorithmic criteria rather than public deliberation or judicial interpretation. A member of *Wali Data* admitted, *"Once the algorithm validates the metadata, the system acts; there is no constitutional pause for contestation."* This excerpt illustrates the theme automated legitimacy, where procedural rights are implicitly bypassed.

Moreover, sovereignty is functionally fragmented. While Indonesia's Constitution centralizes authority in the people, SDI disperses control across interoperable infrastructures maintained by administrative units and platform

logic. One civil servant reflected: *"We no longer ask whether this is lawful; we ask whether this complies with the system."* This transition from legal reasoning to compliance logic embodies the bureaucratic capture by data systems, a subtheme tied to technocratic rationality and algorithmic governance.

E. Legal Blind Spots in SPBE and SDI Implementation

The findings reveal a fundamental tension between constitutional sovereignty and the growing technocratic rationality embedded within SPBE and SDI governance structures. Although these initiatives were formally designed to improve efficiency, interoperability, and evidence-based policymaking, interview participants consistently highlighted how algorithmic infrastructures increasingly function as independent loci of authority. This concern is reflected in the theme of Algorithmic Authority identified in Table 1, where a senior Kominfo official stated that *"All policy instructions now go through SPBE dashboards. Ministers are informed by system-generated evaluations, not public reports."* This statement illustrates how administrative discretion is increasingly mediated by digital systems rather than deliberative democratic processes. Concept of algorithmic governmentality, wherein algorithms operate not merely as technical instruments but as governance mechanisms that influence institutional priorities, policy evaluation, and administrative action (Wimmer & Moraes, 2022). The empirical evidence suggests that sovereign authority is gradually relocated from constitutional actors toward computational infrastructures, thereby altering the traditional relationship between citizens, state institutions, and decision-making processes.

The findings further demonstrate that sovereignty is not simply

weakened but functionally fragmented through data-driven governance arrangements. A constitutional law scholar interviewed in this study observed that *"It is no longer clear whether the rakyat has any role in governance when everything is standardized by metadata and automated processes."* This statement, categorized under Sovereignty Displacement in Table 1, illustrates how algorithmic standardization may erode participatory rights by replacing democratic negotiation with technical validation procedures. In practical terms, citizens become subjects of administrative classification rather than active participants in governance. This phenomenon aligns with Ginsburg and Huq's (2019) argument that contemporary digital governance often produces a gradual displacement of democratic deliberation through technocratic systems that appear neutral but carry significant normative consequences. Consequently, the constitutional principle of kedaulatan rakyat becomes increasingly mediated through algorithmic criteria that remain largely inaccessible to public scrutiny.

F. Participatory Deficit and Doctrinal Silence

The participatory deficit identified in this study represents one of the clearest manifestations of democratic erosion within algorithmically mediated governance. Participants consistently reported that citizens are rarely involved in the design, implementation, or evaluation of metadata standards, interoperability frameworks, and algorithmic governance mechanisms. This concern is directly reflected in the Participatory Deficit theme in Table 1, where a civil society organization representative explained that *"There is no complaint system to question algorithmic decisions made in SDI workflows."* The absence of challenge mechanisms demonstrates that participation is limited not only

during policy formulation but also during policy implementation and enforcement. Consequently, citizens possess limited opportunities to contest decisions that directly affect their legal recognition, administrative status, or access to public services.

This finding is particularly significant when viewed through the lens of digital constitutionalism (Wimmer & Moraes, 2022), which emphasizes transparency, participation, and rights protection within digital governance environments. While Indonesia's constitutional framework formally recognizes popular sovereignty and democratic participation, SPBE and SDI have developed largely through administrative and technical rationales rather than participatory constitutional processes. As a result, digital infrastructures acquire substantial governance authority without corresponding mechanisms for democratic accountability. The study therefore identifies a form of doctrinal silence in which constitutional law has yet to fully recognize the democratic implications of algorithmic governance despite its increasing influence over public decision-making.

G. Algorithmic Actors and Legal Assemblages

Drawing from posthuman legal theory, this block interprets algorithmic systems as legal assemblages, entities that perform functions of legal consequence. SPBE dashboards, metadata protocols, and master data codes do not merely support law; they perform legal decisions in practice. One participant captured this dynamic aptly: *"The algorithm decides whose data is valid. That's not administration it's adjudication."*

Picture 3. Algorithmic Legal Agency and Accountability



This reframing challenges the anthropocentric assumption that only human officials are bearers of legal agency. The analysis reveals that algorithmic infrastructures have become de facto constitutional actors, reshaping subjectivity, access, and rights without going through traditional legal channels. The findings also support a posthuman interpretation of governance, wherein algorithmic systems function as legal assemblages capable of producing legally significant outcomes. Rather than merely facilitating administrative operations, SPBE dashboards, metadata protocols, and master data infrastructures actively determine access, classification, and recognition within governmental systems. This observation is reflected in multiple interview accounts describing algorithms as entities that effectively validate, prioritize, and adjudicate information before human officials intervene. Such findings correspond closely with posthuman legal theory advanced by Grear (2020) and Braidotti (2019), which challenges the assumption that legal agency is exclusively human.

The theme of Algorithmic Authority identified in Table 1 further reinforces this interpretation. When system-generated evaluations become

primary references for governmental action, algorithms assume a quasi-adjudicative role within administrative governance. This development blurs the distinction between technical administration and normative judgment. The findings therefore suggest that algorithms increasingly function as de facto constitutional actors whose influence extends beyond operational efficiency into the domain of governance legitimacy, legal recognition, and rights allocation. Consequently, constitutional theory must expand its analytical scope to address non-human actors that exercise meaningful governance authority.

H. Posthuman Subjectivity in Practice

The implementation of SPBE and SDI also reveals a significant transformation in legal subjectivity. Interview participants repeatedly emphasized that citizens are increasingly represented through datasets, metadata profiles, and algorithmic classifications. This concern is captured in the Legal Subjectivity theme presented in Table 1, where a digital rights advocate observed that *"Once you become a dataset, your identity as a citizen becomes almost secondary in legal processes."* This statement highlights a growing human-data dualism in which legal recognition depends less on individual personhood and more on compliance with digital classification systems.

These findings support posthuman legal theory's argument that subjectivity is increasingly distributed across technological infrastructures and data assemblages (Grear, 2020). Within SDI, individuals are transformed into data objects that must conform to predefined metadata standards and reference codes to be recognized by governmental systems. While such standardization may improve interoperability and administrative efficiency, it

simultaneously introduces risks of exclusion and misrecognition. Participants described instances where individuals or communities became effectively invisible within governance systems because their data did not correspond to established classifications. This demonstrates how algorithmic governance can reshape citizenship itself, producing new forms of inclusion and exclusion based on data conformity rather than legal personhood.

I. Toward a Normative Model of Algorithmic Constitutionalism

In response to these empirical and normative crises, the study proposes a new theoretical model: algorithmic constitutionalism. This model acknowledges algorithmic infrastructures as participants in constitutional life and demands their incorporation into constitutional scrutiny and legal doctrine. Several interviewees voiced support for such innovation. One legal reform expert remarked, *"We need a new constitutional article or jurisprudential doctrine, that treats code as a public actor."*

Taken together, the findings reveal that SPBE and SDI should not be understood solely as administrative modernization initiatives but as constitutional transformations that redistribute authority, reshape legal subjectivity, and alter democratic participation. The convergence of the themes identified in Table 1, namely Algorithmic Authority, Sovereignty Displacement, Opacity and Accountability, Legal Subjectivity, and Participatory Deficit, indicates a broader constitutional reconfiguration occurring through digital infrastructures. These findings provide strong empirical support for the concept of algorithmic constitutionalism proposed in this study.

Algorithmic constitutionalism offers a normative framework capable of

addressing the constitutional challenges emerging from digital governance. Drawing upon critical constitutionalism, digital constitutionalism, and posthuman legal theory, this model recognizes algorithmic infrastructures as actors whose decisions and classifications possess constitutional significance. Rather than treating algorithms as neutral technologies, the framework positions them as participants in constitutional life that must be subject to transparency requirements, accountability mechanisms, participatory safeguards, and judicial scrutiny. Such an approach responds directly to concerns expressed by interview participants regarding the invisibility of algorithmic authority and the absence of constitutional oversight. Ultimately, algorithmic constitutionalism seeks to restore democratic accountability within digitally mediated governance by ensuring that technological innovation remains consistent with the constitutional principles of sovereignty, participation, transparency, and the rule of law.

4. Conclusion

This study demonstrates that the implementation of the Electronic-Based Government System (SPBE) and One Data Indonesia (SDI) has initiated a profound constitutional transformation within Indonesia's governance architecture. Although policymakers introduced both initiatives to enhance administrative efficiency, data interoperability, and evidence-informed decision-making, the findings indicate that algorithmic infrastructures increasingly operate as independent centers of authority that shape policy priorities, determine legal recognition, and influence the provision of public services. The convergence of the identified themes, namely Algorithmic Authority, Sovereignty Displacement, Opacity and Accountability, Legal

Subjectivity, and Participatory Deficit, suggests that digital governance extends beyond administrative modernization and constitutes a broader constitutional development that redistributes authority, reconstructs legal subjectivity, and modifies the practical realization of popular sovereignty. The findings further indicate that government institutions increasingly regulate citizens through data classifications, metadata protocols, and automated validation processes that function outside conventional mechanisms of constitutional oversight, thereby generating new challenges for democratic accountability, transparency, and the protection of fundamental rights.

The findings underscore the urgent need for constitutional and legislative reform to address the governance risks associated with algorithmic decision-making. Existing regulatory instruments, particularly Presidential Regulation No. 95 of 2018 concerning SPBE and Presidential Regulation No. 39 of 2019 concerning SDI, require revision to incorporate explicit principles of algorithmic accountability, explainability, transparency, and procedural fairness. Future regulatory frameworks should obligate public institutions that employ automated decision-making systems to disclose the objectives, decision parameters, risk characteristics, and governance structures of algorithms that affect public rights and obligations. Such reforms should establish a legally enforceable right to explanation, enabling citizens to understand the logic, operation, and consequences of algorithmic decisions that influence access to public services, administrative status, and legal recognition.

The study also highlights the importance of strengthening judicial oversight in the context of algorithmic governance. Constitutional and administrative courts should possess explicit authority to review algorithmic

decisions that generate legal consequences for individuals and communities. Judicial review mechanisms should encompass automated administrative decisions, algorithmic classifications, and forms of exclusion resulting from data-driven governance practices. Furthermore, constitutional jurisprudence should recognize algorithmic infrastructures as legally relevant actors whose operations warrant constitutional scrutiny whenever they affect fundamental rights, equality before the law, procedural justice, and democratic participation.

The findings further reveal a substantial transparency deficit within the implementation of SPBE and SDI. To address this challenge, policymakers should establish a mandatory framework for algorithmic transparency across public-sector digital systems. Government institutions should conduct and publish algorithmic impact assessments, maintain comprehensive decision records, disclose data sources and validation procedures, and provide periodic reports concerning algorithmic performance, error rates, and potential discriminatory outcomes. Regulatory authorities should also require independent algorithmic audits before and after the deployment of high-impact government algorithms. These audits should evaluate transparency, fairness, accountability, explainability, cybersecurity resilience, and compliance with constitutional principles and human rights standards.

The study additionally advocates the development of participatory governance mechanisms that facilitate meaningful public involvement in the design, implementation, and evaluation of algorithmic systems. Public consultation processes, citizen review panels, multi-stakeholder oversight bodies, and accessible complaint and redress mechanisms should form integral components of SPBE and SDI governance structures. Such measures would

strengthen democratic legitimacy by ensuring that citizens actively participate in decisions affecting their rights, identities, and access to public services rather than serving solely as passive subjects of data-driven governance.

Several limitations constrain the scope of this study. The research relies primarily on qualitative interviews with experts, government officials, and civil society representatives, which provide valuable interpretive insights but may not fully reflect the experiences of citizens directly affected by algorithmic governance systems. The analysis also concentrates on SPBE and SDI as national governance frameworks and therefore does not examine variations in implementation across regional governments, local administrations, and sector-specific agencies. In addition, the rapid evolution of algorithmic technologies and digital governance infrastructures means that the findings capture a specific phase of Indonesia's digital transformation and may require reassessment as technological capabilities, regulatory frameworks, and governance practices continue to develop.

Future research should broaden the empirical scope of investigation by incorporating citizen-centered perspectives, comparative regional analyses, and longitudinal assessments of algorithmic governance implementation. Comparative legal studies examining the European Union AI Act, GDPR enforcement practices, and algorithmic accountability regimes in other jurisdictions may provide important insights for the development of Indonesia's regulatory framework. Interdisciplinary collaboration among constitutional scholars, data scientists, computer engineers, public policy specialists, and civil society organizations will also play a critical role in establishing practical standards for algorithmic auditing, constitutional compliance evaluation, and rights-based digital governance. Such efforts can

further refine the concept of algorithmic constitutionalism and strengthen its capacity to protect sovereignty, constitutional rights, transparency, accountability, and democratic participation within increasingly automated systems of governance.

References

Bernardus, D., Arisa, F., Sufa, S. A., & Oka, D. (2024). *Supporting Start-ups in Indonesia : Examining Government Policies , Incubator Business , and Sustainable Structure for Entrepreneurial Ecosystems and Capital*. *5*(1), 236–259.

Bertsou, E., & Caramani, D. (2020). People Haven't Had Enough of Experts: Technocratic Attitudes Among Citizens in Nine European Democracies. *American Journal of Political Science*, *66*(1), 5–23. https://doi.org/10.1111/ajps.12554

Büschgens, T., Bausch, A., & Balkin, D. B. (2013). Organizational Culture and Innovation: A Meta-Analytic Review. *Journal of Product Innovation Management*, *30*(4), 763–781. https://doi.org/10.1111/jpim.12021

Carroll, S. R., Garba, I., Figueroa-Rodríguez, O. L., Holbrook, J., Lovett, R., Materechera, S. A., Parsons, M. A., Raseroka, K., Rodriguez-Lonebear, D., Rowe, R., Sara, R., Walker, J., Anderson, J., & Hudson, M. (2020). The CARE Principles for Indigenous Data Governance. *Data Science Journal*, *19*. https://doi.org/10.5334/dsj-2020-043

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th ed.). In *Research Defign: Qualitative, Quantitative, and Mixed M ethods Approaches*. Sage Publications.

Firdaus, R. A., Mahardhani, A. J., & Sunarto, S. (2023). Local Government Readiness in the Era of Society 5.0. *International Journal of Social Science*, *3*(1), 97–102. https://doi.org/10.53625/ijss.v3i1.6638

Gilani, S. (2020). Bionic Bodies, Posthuman Violence and the Disembodied Criminal Subject. *Law and Critique*, *32*(2), 171–193. https://doi.org/10.1007/s10978-020-09284-6

Gopalani, S. V, Janitz, A. E., Burkhart, M., Campbell, J. E., Martinez, S. A., White, A. H., Chen, S., Anderson, A., Pharr, S. F., Patrick, S., & Comiford, A. L. (2021). Development and Implementation of an HPV Vaccination Survey for American Indians in Cherokee Nation. *International Journal of Environmental Research and Public Health*, *18*(17), 9239. https://doi.org/10.3390/ijerph18179239

Gritsenko, D., & Wood, M. (2020). Algorithmic Governance: A Modes of

Governance Approach. *Regulation & Governance*, *16*(1), 45–62. https://doi.org/10.1111/rego.12367

Hartati, S., Karyono, H., & Sabowo, H. K. (2022). Implementation of the Law on Information and Electronic Transactions and Pancasila Law Enforcement Related to Cybercrimes in Indonesia. *International Journal of Educational Research & Social Sciences*, *3*(1), 425–436. https://doi.org/10.51601/ijersc.v3i1.290

Hummel, P., Braun, M., Tretter, M., & Dabrock, P. (2021). Data Sovereignty: A Review. *Big Data & Society*, *8*(1). https://doi.org/10.1177/2053951720982012

Latzer, M., & Festic, N. (2019). A Guideline for Understanding and Measuring Algorithmic Governance in Everyday Life. *Internet Policy Review*, *8*(2). https://doi.org/10.14763/2019.2.1415

Menéndez, I. V. (2021). Amending by Interpreting: The Constitutional Jurisdiction as Amendment Power. *International Journal of Human Rights and Constitutional Studies*, *8*(1/2), 65. https://doi.org/10.1504/ijhrcs.2021.113757

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebooks* (Helen Salmon, Ed.; 3rd ed.). SAGE Publications Ltd.

Pemerintah Republik Indonesia. (2018). *Peraturan Presiden Republik Indonesia Nomor 95 Tahun 2018 Tentang Sistem Pemerintahan Berbasis Elektronik*. *1*, 1–3.

Pemerintah Republik Indonesia. (2019). Peraturan Presiden Republik Indonesia No 39 Tahun 2019 tentang Satu Data Indonesia. *Perpres NOMOR 39 TAHUN 2OL9 Tentang Satu Data*, *004185*, 1–35. https://peraturan.bpk.go.id/Home/Details/108813/perpres-no-39-tahun-2019

Ramani, S., Könings, K. D., Ginsburg, S., & van der Vleuten, C. P. (2019). Feedback Redefined: Principles and Practice. *Journal of General Internal Medicine*, *34*(5), 744–749. https://doi.org/10.1007/s11606-019-04874-2

Soekiman, S., Brumadyadisty, G., Firdaus, M. Y., Suprayitno, D., & Lisdiantini, N. (2025). Facing Digital Transformation: The Role of the Prakerja Program in Enhancing Indonesian Workforce Competencies. *Pena Justisia*, *24*(1), 5963–5991.

Ssenyonga, M. (2021). Imperatives for Post COVID-19 Recovery of Indonesia's Education, Labor, and SME Sectors. *Cogent Economics & Finance*. https://doi.org/10.1080/23322039.2021.1911439

Tretter, M. (2022). Sovereignty in the Digital and Contact Tracing Apps. *Digital Society*, *2*(1). https://doi.org/10.1007/s44206-022-00030-2

Waldman, A. E., & Martin, K. (2022). Governing Algorithmic Decisions: The Role of Decision Importance and Governance on Perceived Legitimacy of Algorithmic Decisions. *Big Data & Society*, *9*(1). https://doi.org/10.1177/20539517221100449

Wimmer, M., & Moraes, T. G. (2022). Quantum Computing, Digital Constitutionalism, and the Right to Encryption: Perspectives From Brazil. *Digital Society*, *1*(2). https://doi.org/10.1007/s44206-022-00012-4

Xu, J. (2024). Supervision and Guarantee of Constitutional Normativity in a Legal System Aimed at Legal Regulation. *Applied Mathematics and Nonlinear Sciences*, *9*(1). https://doi.org/10.2478/amns-2024-0560