# An ambitious artificial intelligence policy in a decentralised governance system: Evidence from Indonesia

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Original Article

# An Ambitious Artificial Intelligence Policy in a Decentralised Governance System: Evidence From Indonesia

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## Abstract

This study investigates Indonesia's ambitious artificial intelligence (AI) policy within the context of its decentralised governance structure. Through in-depth case studies in Jakarta, Central Java, and East Java, we analyse emerging AI-based policy responses and their challenges in a rapidly evolving technological landscape. Drawing from elite interviews conducted with central and local government officials and documentary research, this study offers rare insights into the local perspective on the struggle to accommodate the central government's ambitious plan with limited resources. This article finds that the divergence in the views and visions of AI between central and local governments has complicated the formulation and implementation of AI-based policies. Central authorities wield a dominant role, evident through regulatory mandates and a centralised decision-making approach that can potentially constrain local autonomy. This power asymmetry, coupled with the lack of specific AI-focused regulations, challenges local governments' capacity to independently design and manage AI initiatives

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aligned with their unique contexts. Interestingly, instead of showing their resistance towards the ambitious national plan, local leaders have embraced AI policies, positioning them as innovative tools to enhance popularity in the lead-up to the 2024 general election.

## Introduction

In recent years, the use of advanced technology and artificial intelligence (AI) in governance has generated a multitude of prospects for political entities across the globe. Scholars have extensively examined the usage, benefits, and positive impact of AI in government operations, ranging from improved public services to enhanced decision-making processes. Several studies have shown that governments from many countries have used new technology and AI to enhance their public services (Li and Piachaud, 2019; Ojo et al., 2019; Toll et al., 2019) and demonstrated AI's influential position in fostering citizens' trust (Dwivedi et al., 2021).

Indonesia's forward march in AI prowess marks a notable chapter. Poised strategically in the Indo-Pacific, Indonesia's prime positioning on crucial maritime conduits has drawn the attention of major economies. The United States, Japan, China, and South Korea are among those making substantial investments in Indonesia's technology start-ups, cybersecurity, and other infrastructure through both governmental and private sector channels (Medina, 2020; Parama, 2020). The latest insights from the Organisation for Economic Co-operation and Development (OECD) reveal Indonesia's ascent as a titan in AI investment within Southeast Asia. As per the third quarter (Q3) report of 2023, Indonesia triumphs with an unrivalled average venture capital influx, clocking in at US$23 million for AI ventures, dwarfing the investments of regional counterparts – the Philippines ($11 million), Singapore ($10 million), Thailand ($6.4 million), Malaysia ($4 million), and Vietnam ($3.9 million) (OECD, 2023).

The AI development within Indonesia's government began in the wake of the G20 meeting in 2019, where the focus on AI-based technology was highlighted. On 10 August 2020 – publicly commemorated as the National Technology Awakening Day – Indonesia unveiled its National Strategy for Artificial Intelligence (NSAI). The NSAI earmarks four pillars of advancement: nurturing talent, expanding data infrastructure, invigorating industrial research, and fostering ethical frameworks in innovation and policy. The gap between Indonesia's commitment to AI development during the G20 meeting in 2019 and the unveiling of the NSAI in 2020 may not solely be attributed to administrative hurdles. While administrative processes can indeed introduce delays, the development of a comprehensive national strategy, as stated in the NSAI document,

involves academic consultation with numerous stakeholders, experts, and policymakers (Bappenas, 2020).

However, Indonesia faces unique challenges in its quest for AI development due to its decentralised political system and archipelagic nature decentralisation, though designed to enhance local governance and decision-making across the diverse island chain, poses inherent challenges to enacting a unified strategy for AI advancement. Notably, NSAI emphasised the pivotal role of local governments in assuming responsibility for the implementation of AI initiatives (Bappenas, 2020). Yet, this devolution of power may accentuate resource imbalances, creating a mosaic of AI proficiency where some regions advance rapidly while others struggle, potentially intensifying regional disparities.

Alarmingly, the most worrying trend by far that has become apparent is the government's lack of competence. The Indonesian government has lagged in its efforts to utilise advanced information and computation technology, despite its potential for refining government policies and services. Flagship policies that heavily rely on advanced digital technology frequently encounter setbacks and difficulties, such as the electronic ID (E-KTP) initiative, which attracted significant criticism due to data breaches and corruption (Retaduari, 2022), and the Algorithm Valley, a project resembling Silicon Valley, which has stalled with no significant progress since 2021 (Iman, 2023).

Considering the complex nature of AI development, this article aims to explore the potential challenges Indonesia may face in introducing AI into its vast, subnational government with massive local data records. The focus of this study is to investigate the following research question: what are the challenges arising from decentralisation that prevent Indonesia from realising its ambitious AI plan?

While numerous studies have explored the development and implementation of AI strategies on a national level (Foffano et al., 2023; Gao et al., 2019; Gherhes et al., 2023; Papyshev and Yarime, 2023), there is a paucity of research focusing specifically on how countries with decentralised governance structures, such as Indonesia, navigate the complexities of integrating AI into their government systems. Additionally, there is a lack of consensus on how to effectively address the challenges of AI specifically in the public sector (Wang and Siau, 2018; Wirtz et al., 2019). Wirtz et al. (2019, p. 826) assert that AI governance must receive more comprehensive attention within political and public administration research.

During intensive fieldwork, this article investigated the AI development landscape in Indonesia, with a specific focus on the three largest provincial governments – Jakarta, Central Java, and East Java. Based on the framework developed by Van Buren et al. (2020) focusing on the early phase of AI development in governance, we focused on the following areas to analyse: the existing regulation and documented government strategy on AI, availability of data infrastructure and resources, and leaders' awareness of the importance of AI. In the governance context, AI readiness in the early phase is critical because it is directly linked to a supportive political ecosystem for further AI development. The outcomes of this research highlight the centralisation of Indonesia's AI development, prompted by the obscure AI regulations,

issues related to fragmented data management between central and local authorities, resource disparities, and the political motivations of local leaders. These challenges arising from decentralisation significantly obstruct the realisation of Indonesia's ambitious AI plan, representing a critical aspect of the AI implementation conundrum in this diverse and decentralised nation.

Following the introduction, this article proceeds by explaining the theoretical framework and methodology. We then assess Indonesia's current political context, the development of AI, and local–central government dynamics. We also analyse the prevailing regulations and the national strategy document for AI, followed by an exploration of resource limitations and leaders' awareness of AI development at the local level. Moreover, the pattern of centralisation is also discussed. In the policy implications section, we recommend the coherent regulation and government restructuration to manage AI development. This study concludes that integrating AI into Indonesia's local governments is a complex task, affected by regulatory gaps, resource constraints, and leadership commitment. The absence of specific AI-focused regulations hampers local governments' capacity to independently manage AI initiatives, thus hindering the uniformity of AI readiness across the archipelago.

## Theoretical Framework

### Assessing AI Readiness in Government

The rush towards ambitious AI integration might be accelerated by the increasing and aggressive investments (Deloitte, 2021), yet it can introduce a multitude of complexities and challenges that need to be meticulously addressed. This transition, often marked by high expectations, underscores the critical importance of a thoughtful and strategic approach to AI adoption. As Indonesia embarks on its own AI journey, assessing the readiness of the decentralised government, often grappling with resource imbalances and power distribution, becomes an imperative task.

This research leverages Van Buren et al.'s (2020) theoretical framework to probe a nascent stage of AI development within government systems (see Figure 1). The choice of this framework is driven by its ability to offer a structured approach, particularly suited for dissecting AI development in a complex and fragmented political landscape, such as Indonesia's decentralised government.

During this initial stage, the critical milestone is on how far the government understand the AI's potential through their development's plan. Therefore, in their framework, Van Buren et al. (2020) suggest the first and foremost component is to assess the roadmap and legal dimension of government strategy. As AI represents a revolutionary force, achieving alignment in terms of direction and ambition is of paramount importance. It necessitates the establishment of a well-defined AI road map and a set of goals that seamlessly resonate with the nation's overarching objectives. This strategic bedrock serves as the cornerstone for the effective management of AI capabilities across the entire government, emphasising the need for coherent and comprehensive regulations that underpin the government's AI development journey. In the context of complex decentralised politics,
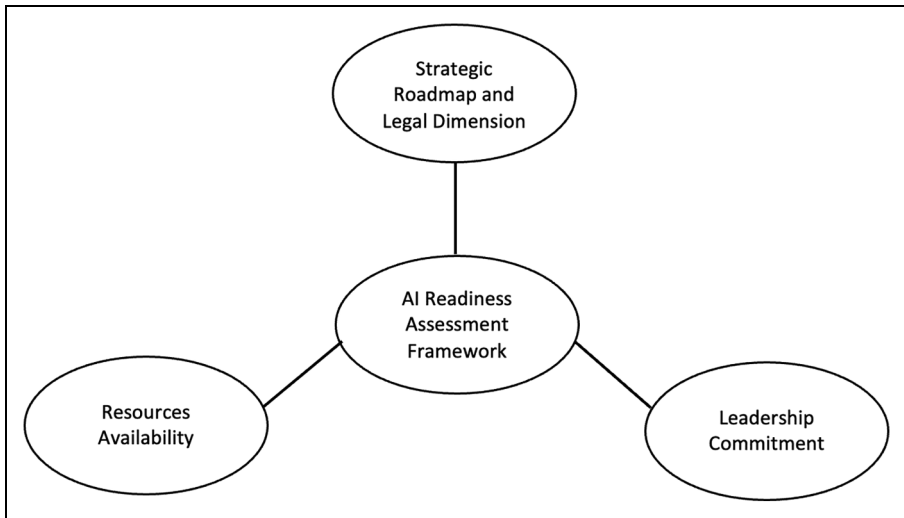
**Figure 1.** Assessing AI Readiness in Government. AI: artificial intelligence. Source: Van Buren et al. (2020).

particularly relevant in nations like Indonesia, this dimension serves the crucial purpose of scrutinising both the presence and efficacy of the laws and specific provisions enacted for the realisation of the initiatives regarding AI development. Therefore, examining the presence of clear and precise regulations and policies specifically tailored to AI at the local level was considered fundamental.

The second element on Van Buren et al.'s framework suggests on the assessment on fundamental resources, which in particular involves the availability of data infrastructure and skilled individuals or experts as basic resources. This technical and infrastructural facet highlights the imperative for robust infrastructure as a foundation for the nationwide implementation of AI technologies. The extent to which local authorities have prepared their data infrastructure and the quality and variety of accessible data sources are crucial issues.

Finally, an assessment to government leaders is crucial stage within this framework. Most importantly, a basis data of 2021 shows that the bullish government spending on AI development incited more analysis to assess the government's leaders' commitment to budget execution (Deloitte, 2021). In this sense, we identified the need to analyse the commitment and awareness of local leaders in championing AI endeavours within Indonesia's decentralised milieu, recognising them as pivotal in this transformative process. Evaluating AI progression through the lens of leadership initiatives provides a window into their dedication and the prospects for AI's integration into local administrative operations.

The assessment of government readiness for AI development emerges as a linchpin for effective and responsible implementation. With analysis on regulatory

frameworks, data infrastructure, and leadership commitment, we expect to gain a comprehensive insight into the complex dynamics that decentralisation introduces into Indonesia's AI plan.

## AI in Government and a Decentralised Political System

Indonesia transitioned to a decentralised system following the end of Suharto's authoritarian rule in the late 1990s. This move aimed to empower local governments, foster regional development, and enhance citizen participation in decision-making. It was one of the most ambitious decentralisation endeavours, involving the implementation of political, administrative, and fiscal decentralisation within a context characterised by a diverse range of regional socio-economic attributes, cultural and ethnic diversity, and notably, limited prior experience with decentralisation (Brodjonegoro, 2003; Diprose et al., 2019). The powers transferred encompassed a wide spectrum of responsibilities, spanning health, primary and secondary education, public works, environmental management, communication, transportation, agriculture, manufacturing, and various other economic sectors (Nasution, 2016).

In the aftermath of authoritarian rule, Indonesia embarked on a path towards democratic governance with decentralisation as a cornerstone of its political system. However, the distribution of power in a decentralised democracy can be complex, particularly when addressing issues that transcend regional boundaries, such as AI development. AI policy is thereby expected to face challenges from the complex and decentralised government structure. The potential power imbalances between central and local government have become a salient feature in Indonesia's current politics (Mufid, 2022; Sakai et al., 2009). Further, decentralisation also has the effect of drawing local governments closer to elite groups, potentially granting the latter a significant portion of the benefits (Martinez-Vazquez and Vaillancourt, 2011).

AI, on the other hand, has long been discussed and is reshaping government services. McCarthy et al. (2006) were the pioneers in initiating AI, aiming to explore the utilisation of language by machines to solve problems that were traditionally performed by humans. AI system are equipped it with the ability to process data and information in a manner that involves intelligent conduct.

The rising of AI development, nevertheless, introduces complex dilemmas. Buchanan and Imbrie (2022) underscore that AI drives global competition and cooperation in numerous fields, often serving as a double-edged sword for national security. Autocratic nations, unburdened by stringent privacy regulations, frequently exploit AI for extensive data access, leading to potential surveillance, oppression, and centralisation of power. The most evident illustration at the moment can be found in China and Russia, where expansive data collection and AI applications underpin governmental control and fortify authoritarian regimes (Ding et al., 2020; Flonk, 2021). Conversely, democratic countries uphold privacy, civil liberties, and ethical considerations (Jungherr, 2023).

However, many governments are still far from fully realising the potential of AI due to various technical and organisational challenges (Ransbotham et al., 2020), a shortage

of skilled staff (Brock and Von Wangenheim, 2019), leaders' lack of knowledge about AI (Fountaine et al., 2019), or a strategy that does not adequately incorporate technology (Dwivedi et al., 2021; Sadiq et al., 2021). Additionally, issues such as lack of trust and fear of being replaced are also mentioned as hindrances to AI adoption (Dwivedi et al., 2021; Mikalef et al., 2018, 2019; Sadiq et al., 2021). Moreover, the adoption of AI in the public sector has been comparatively slower than in the private sector over the past few decades (Desouza et al., 2020). In practice, many governments have a limited understanding of the multi-faceted implications that arise from the use of AI in government.

To mitigate the disparities between local and central authorities, the Indonesian government established The National E-government Coordination Team in 2022. In a survey conducted by the United Nations, Indonesia's Minister of Home Affairs, Tjahjo Kumolo, stated that this team reports directly to the President and is entrusted with the responsibility of coordinating and executing e-government policies across both central and local governments. The team collaborates with relevant ministers and heads of institutions, ensuring their involvement aligns with their respective authority and role in the implementation process. Tjahjo also mentioned the existence of an E-Government Collaboration Forum platform that serves as a connection between the central and local government, as well as between the public and private sectors and citizens (UN, 2022).

Despite this task force and forum platform serving a broader purpose related to e-government implementation rather than being specifically designed to guide AI development across regions, it reflects the government's awareness of the potential competing interests between local and central government. The implementation of integrated e-government aims to establish a seamless government business process between the central government and local government, resulting in a cohesive and comprehensive government structure.

## Data and Method

The research took place from June to September 2023 and focused on three areas in Indonesia, Jakarta, Central Java, and East Java, which served as a comparative area due to its perceived AI implementation opportunities. The primary objective was to gain insights from a range of local government officials, experts, and stakeholders deeply engaged in AI initiatives.

As Indonesia's capital city, Jakarta was chosen not only because it serves as the epicentre of government policy but also due to its long-standing reputation as the most advanced city in the country, which has garnered international recognition and acclaim (Gov Insider, 2022; SAS, 2023). Jakarta holds the distinction of being the first to embark on building a smart city and implementing digital services through the Jakarta Smart City (JSC) project in 2014. Consequently, the interviews conducted in Jakarta included discussions with officials and senior analysts associated with the JSC project, extending to the special staff of the Jakarta governor, officials from the Department of

Transportation of DKI Jakarta Province – which also one of the departments with advanced AI-based technology – and representatives from the Planning and Development Agency of DKI Jakarta Province. These interviews facilitated a comprehensive understanding of AI initiatives in this vibrant and bustling capital city (Table 1).

Central Java Province was selected because it has gained recognition for pioneering an ambitious AI-based project with provincial scale known as the Smart Province – the first in Indonesia (Jatengprov, 2022). In Central Java, interviews were conducted with key officials who represented the Department of Communication and Information of Central Java Province and individuals from the Planning and Development Agency of Central Java Province. East Java was another focal point for interviews, gaining recognition and accolades as the best in implementing digital government in 2022 (Detik, 2022). We engaged with various stakeholders in this region, including the officials from the Department of Communication and Information of East Java Province, representatives from the Planning and Development Agency of East Java Province, and governor's special staff. In total, we interviewed 25 informants.

Simultaneously, secondary data were obtained by reviewing documents related to AI implementation in Indonesia, including Presidential Regulation Number 95 of 2018 on Electronic-Based Government System (SPBE), Presidential Regulation Number 39 of 2019 on One Data Indonesia (SDI), and the NSAI documents introduced by the National Development Planning Agency (Bappenas) in 2020.

Data from interviews were transcribed verbatim and carefully examined to understand the nuances, extract key themes, and identify patterns. These patterns were coded and

**Table 1.** List of Interviewees.

| Institution | Number of individuals |
|---|---|
| Officials from the Department of Information Technology and Applications, Ministry of Communications and Informatics | 3 |
| Officials from the Ministry of Home Affairs | 3 |
| Officials and Project Analysts for the Jakarta Smart City initiative, Provincial Government of Jakarta | 4 |
| Officials of the Transportation Department, Provincial Government of Jakarta | 3 |
| Provincial Planning and Development Agency, Provincial Government of Jakarta | 2 |
| Officials of Communications and Informatics Office, Provincial Government of Central Java | 2 |
| Planning and Development Agency, Provincial Government of Central Java | 2 |
| Officials from the Communications and Informatics Service, Provincial Government of East Java | 2 |
| Officials from the Planning and Development Agency, Provincial Government of East Java | 2 |
| Expert staff to the Governor of East Java | 2 |

organised into overarching themes. This qualitative analysis provided insights into the perceptions and experiences of stakeholders involved in AI development in the respective regions. The secondary data, gathered from relevant documents, were reviewed to enrich the contextual understanding of AI implementation in Indonesia. This holistic approach to data collection and analysis aimed to provide a comprehensive view of the AI landscape in the chosen regions and the national context.

## Findings

### The Politics of AI: Indonesia's Trajectory

The nexus between AI and politics in Indonesia is intricately woven into the fabric of the e-government agenda. However, prior to 2018, the legal and political terminology in Indonesia lacked a clear explanation of what AI truly entailed. The initiation of regulations pertaining to AI within the Indonesian government commenced with the issuance of Presidential Regulation Number 95/2018 concerning the Electronic-Based Government System (SPBE), followed by Presidential Regulation 39/2019 concerning One Data Indonesia (SDI). The precise guidelines and strategic framework for AI were firmly established when the National Development Planning Agency (Bappenas) introduced the NSAI in 2020. This strategy was envisioned as a comprehensive national policy that delineates the specific areas of focus and priority domains for AI technology. It serves as a reference for ministries, institutions, local governments, and other stakeholders involved in implementing activities related to AI technology in Indonesia.

In the forthcoming sub-section, we embark on an in-depth analysis of these three pivotal regulations, each serving as a cornerstone for our exploration. This analytical endeavour holds immense significance, as it not only unravels the intricate content of these regulations but also charts a course for the trajectory of future AI development within the context of local government in Indonesia. By meticulously dissecting the intricacies and implications encapsulated within these regulations, we aim to pave a well-informed path that can inform the harmonious integration of AI technologies within the decentralised political landscape of the country.

### The Electronic Government System

Presidential Regulation 95/2018 stipulates that all government institutions are required to adopt the Electronic Government System (*Sistem Pemerintahan Berbasis Elektronik – SPBE*) as a means of integrating e-government. The regulation encompasses the formulation of an e-government system masterplan that centres on various domains such as budget planning, business processes, data management, e-government infrastructure, applications, security protocols, and service provisions. In this Presidential Regulation, AI is mentioned as "the technology [that] can be applied to government administrative services to reduce administrative workload and to public services to address complex

issues." In essence, SPBE aims to achieve clean, effective, and efficient governance, committing to a bureaucratic reform agenda. As outlined by President Joko "Jokowi" Widodo, e-government is one of the critical pathways to eradicate fraud, bureaucracy-based corruption, and collusive behaviour in the intragovernmental system (Zulfikar, 2023). In response to this, both provincial and regency or city regional governments are actively striving to implement e-government initiatives, aligning with the principles outlined in those regulations (Muzaqqi and Fitrianto, 2023).

A noteworthy aspect emphasised by this regulation is the imperative alignment of all subnational e-government development strategies with the national e-government strategy. This policy seeks to weave a tapestry of coherence across the digital initiatives of separate governmental branches, ensuring they echo the comprehensive objectives of the national e-government agenda. This strategic alignment, in theory, fosters a unified framework that promotes synergy and collective progress.

However, a discernible trend emerges from our analysis – one where the central government wields a dominant influence, sometimes at the expense of local initiatives. This inclination is particularly evident in instances where the central authorities, notably within the Ministry of Communication and Information, employ the mandate of alignment as a rationale to unilaterally evaluate and potentially disregard local AI-based innovation agendas that might not entirely align with the national plan. An official from the Informatics and Application Department of the Ministry of Communication and Information revealed that their ministry has rejected numerous AI innovation proposals from local governments. This rejection stems from the central government's scepticism regarding the local governments' capacity to effectively implement AI-based policies.[1] Our informants reaffirmed this. For instance, a local AI-based initiative, such as Central Java Province's digital application for automating salary payments through cashless methods, also faced rejection by the central government when it sought further development.[2]

Remarkably, this reluctance to embrace AI initiatives at the local level is accentuated by the absence of firm data or comprehensive analysis from the central government or its respective ministry departments. This situation reflects a disconnect between the central government's apprehension and the actual state of readiness demonstrated by local governments. From the perspective of local authorities, they stand ready and determined to initiate AI-based programmes, viewing these initiatives as valuable assets to enhance governance, optimise services, and address local challenges more effectively.[3]

This top-down approach, while intended to ensure uniformity and coherence, does raise questions about the extent to which it allows for the integration of diverse regional perspectives and innovative endeavours. It is also worth noting that the central government, particularly the Ministry of Communication and Information, also faces its own challenges in terms of resources and expertise. While it may wield a significant role in guiding and regulating AI initiatives, it may not possess an abundance of resources and specialised expertise to provide extensive support to local governments in their AI endeavours.[4] This shortage of resources and expertise within the central government

can inadvertently hinder its ability to effectively assist local governments in AI-related matters.

Despite a relatively enthusiastic local government response to the digital transformation initiative, scholars and previous research have indicated a weakness in the implementation of SPBE (Asianto and Firmansyah, 2022; Astuti et al., 2021; Muzaqqi and Fitrianto, 2023). Our fieldwork further unveiled that there were cases where local governments had struggled to provide proper e-government systems and were therefore not too optimistic about achieving SBPE targets. An expert member of staff of the East Java Governor who is also a member of the monitoring team for the SPBE implementation stated that more than 50 per cent of areas in East Java were still failing to implement SPBE, and therefore, there was a long way to go before moving into AI-based technologies.[5]

In our interview with an official from Jakarta who chaired the JSC project, he stated:

> Most of us (local governments) could not move to the AI stage due to our failure and incomplete work in implementing e-government. This is the very basic cornerstone and a decisive one, whether or not one local government can fully integrate its e-government system or not. Once they have failed to implement the mandate in the SPBE regulation (Presidential Regulation 95/2018), they cannot move into more advanced technology such as AI.[6]

Likewise, another official from the Provincial Development Planning Agency of East Java shared similar thoughts. Despite many "nicely crafted reports" on achievement in SPBE, he firmly believed that the gap between "rich areas and poor" is too obvious and directly linked to their lack of success in delivering e-government projects.[7] In Central Java, our fieldwork unveiled the overclaim of achievements on the Smart Province project – aimed at achieving well-developed provincial governance with integrated data and advanced information systems – as part of SPBE. Despite a claim being widely circulated that the local government had obtained some achievements and was well-prepared to operate as a Smart Province, a representative from the Provincial Development Planning Agency of Central Java shunned this claim, admitting that "we still lack resources and therefore it is very early to go there."[8]

## One Data Policy of Indonesia

Another derivative policy of SPBE was introduced in 2019, namely the Indonesian One Data Policy (*Satu Data Indonesia* – SDI). This is expected to be a significant regulation which ensures the data supply for further AI development, as AI heavily relies on the availability of reliable data.

SDI is a follow-up to implement the data-once-only principle, inaugurated by Presidential Regulation No. 39/2019 on 12 June 2019. This mandate obliges all national and local agencies to synchronise their data architectures, ensuring that entities – be they citizens, businesses, or institutions – submit certain information only once. This measure

enshrines data protection, predicates on explicit user consent, and facilitates the reciprocal exchange of data across public entities. It aims to streamline processes, mitigate unnecessary data collection, uphold data security, and honour privacy. Ultimately, the regulation is designed to cultivate a repository of precise, current, integrated, and accountable data, which enhances interagency accessibility and cooperation.

However, our fieldwork illuminated a critical oversight within this approach. While the SDI regulation aspires to harmonise data for streamlined governance, it does not inherently anticipate the challenge of incongruent data sets between the central and local governments. Our observations reveal instances where the central government has mandated local authorities to utilise their data in certain policies.[9] This imposition, while aiming for coherence, inadvertently triggers a potential dilemma of incomplete data. Consequently, the policies crafted on the basis of this data run the risk of inadequately addressing their intended targets due to the inherent inaccuracies arising from incomplete data. This challenge underscores the complexities inherent in reconciling centralised aspirations with the intricate realities of local data availability and accuracy.

Additional instances of this phenomenon have been highlighted in prior research. The Combine Resource Institution (2022), for instance, brings to light the issue of data inaccuracy originating from the central government. According to local officials, central government data can lack integrity and fail to accurately reflect the on-ground realities. This assertion underscores the critical concern that the data being compelled for use in policies might not authentically capture the multi-faceted local nuances, potentially leading to policy outcomes that are disconnected from the actual circumstances on the ground.

Furthermore, as of now, the implementation of the SDI policy is still primarily focused on data management and data production, and as a result, it has not been fully utilised for AI-based applications (Katharina et al., 2022). Further, the annual meeting of the Council of Directors (*Dewan Pengarah*) of the SDI project in 2022 admitted several weaknesses in the practice of SDI implementation: poor collaboration between central and regional levels during the implementation of SDI, lack of infrastructure resource availability, suboptimal utilisation of data for decision-making and policy formulation in local governance, and limited involvement of the central government, particularly the Ministry of Home Affairs, in supporting the implementation of SDI in regional governance (Bappenas, 2022).

These identified weaknesses highlight the areas that need improvement and further attention in order to enhance the effectiveness and efficiency of the implementation of the one-data policy in Indonesia.

## The NSAI

The exact guideline and strategy for AI was put in place when the National Development Planning Agency (Bappenas) introduced the NSAI in 2020. It is intended as a comprehensive national policy that outlines the focused areas and priority fields of AI technology

as a reference for ministries, institutions, local governments, and other stakeholders in implementing activities related to AI technology in Indonesia. This document was prepared by several experts representing the "quadruple helix," namely the government, higher education institutions, industry, and community in the field of AI. It encompasses the focus areas and priority fields in the development and implementation of AI technology carried out by various ministries, institutions, local governments, and other stakeholders in Indonesia.

As a comprehensive strategy, the NSAI identifies some key actors: the National Agency of Research and Innovation (BRIN), ministerial departments, and local governments. The NSAI had an immediate impact, as many of these actors swiftly issued regulations mentioning AI. For instance, the Ministry of Administrative and Bureaucratic Reform issued the Road Map of Bureaucracy Reform 25/2020 which prioritises AI-based technology to deliver more efficient, simpler bureaucracy.

The NSAI occupies a central position, primarily aiming to propel the advancement of AI legislation. However, despite its strategic significance in enhancing the incorporation of AI into the governance system, officials from the provincial departments of communication and information in Central Java and East Java claimed that they were not adequately informed about the existence and content of the NSAI.[10]

Moreover, a peculiar divergence has become apparent concerning the integration of applications spearheaded by local governments into a unified network, seamlessly connected with the central government. In this domain, a certain reluctance from the central government emerges, with numerous rejections of local government proposals for initiating AI-based technologies casting doubt upon its readiness to fully embrace integration.[11] This reluctance manifests as an enigma, prompting scrutiny of the underlying dynamics at play.

Central to this puzzle is the absence of a regulatory framework or established protocol within the NSAI on how the central government, particularly through the Ministry of Communication and Information, should evaluate and assess AI initiatives initiated by local governments. While the NSAI may outline grand visions and high-level aspirations, it omits the nitty-gritty details of how these aspirations should practically materialise, especially at the local level. This void in regulation can inadvertently foster ambiguity and uncertainty, giving rise to varying interpretations and approaches.

Comparative cases suggest a strict, binding, less abstract as well as more detailed regulation to make it effective. In some European nations, AI development lacks common purpose and fiduciary duty. Private sector–driven AI is often deployed for public use, yet the core objectives of developers, users, and stakeholders frequently misalign, creating an imbalance between public and private interests (Mittelstadt, 2019). Highly abstract AI principles provide little protection against potential AI-related risks when AI practitioners lack guidance on designing and using algorithms within ethical boundaries (Morley et al., 2021). Further, Birksted et al. (2023) underscore the limited understanding of AI and a disconnect between its theoretical potential and practical utilisation in government operations. As a result, there exists a gap between AI ethics theory and practice.

The consequences of this omission are problematic. The lack of a clear assessment protocol leaves the door open to discretionary decision-making. Local governments crafting AI-based policies and initiatives might find themselves in a position where their endeavours are subject to subjective evaluations, potentially leading to inconsistent outcomes. This lack of uniformity raises questions about fairness, transparency, and the equitable treatment of local innovations.

Furthermore, the hesitation on the part of the central government to wholeheartedly endorse integration underscores a potential lack of confidence or trust in the efficacy of such collaborative ventures, as blatantly admitted by several experts who were unconfident about the capacity of local governments.[12] This could be indicative of a broader apprehension about relinquishing control or the fear of potential risks associated with integrated systems. This hesitance can inadvertently impede the fluid exchange of ideas, innovations, and data across the different layers of governance.

An intriguing perspective emerges from one of the initiators and authors of the NSAI, who also served as an expert staff member at the Ministry of Communication and Information. This individual stated:

> We cannot wait any longer to build this national strategy. I am aware that we will certainly face challenges. Our data and infrastructure are still disorganised and uneven. I have also heard complaints from local governments about the complexity of SPBE. However, we must promptly propose the national AI strategy as soon as possible. The primary goal is to expedite the enactment of more binding laws and regulations at the national level, passing the bill about AI in our parliament. With these regulations in place, the development of AI-based policies will become much stronger and more legitimate.[13]

The central government's delayed formulation of comprehensive regulations can act as a stumbling block to the digital transformation efforts undertaken by local governments. When regulations are eventually established, there is a prevailing perception that they do not align with or support the dynamic developments occurring at the local level.[14] On the other hand, there is reluctance from the central government to integrate the applications initiated by the regions into a unified network that is integrated with the central government. This misalignment poses significant challenges to the harmonious integration of AI initiatives within the overall governance structure.

## Regulations and the Central–Local Issue

The observed dynamics between the central government and local governments reveal a noteworthy imbalance in decision-making authority, particularly concerning AI initiatives. Two salient points emerge from the aforementioned discussions.

Firstly, there is a conspicuous power asymmetry between the central government and local governments. The central government, backed by authoritative regulations, often exhibits a dominant role in shaping the AI landscape. This authoritative stance can potentially stifle local governments' autonomy in managing their localised data and tailoring

their own AI-based technologies. National directives, such as SDI, endow the central government with considerable control over data integration, often overshadowing local autonomy. This can lead to local governments having to adapt to national standards, which may not always align with local needs, and could hinder the development of AI solutions that are attuned to local contexts. As a result, local officials may feel pressured to conform rather than innovate, limiting the potential for localised AI innovation.

Secondly, a vital issue lies in the lack of specificity surrounding AI within these regulations. While there is a clear push for AI integration, the regulations do not offer granular guidance on how to place AI within the broader local context.[15] The absence of provincial AI regulations or planning documents coupled with the lack of AI mentions in their planning highlights the limited scope for local government to fully explore and engage with AI. The challenge here lies in navigating this gap between having AI as a transformative tool and having a detailed grasp of how AI can be effectively integrated into local contexts. Therefore, a dual challenge arises: local governments not only contend with centralised authority in their AI endeavours but also face the task of deciphering how to meaningfully and independently embed AI into their governance systems in a way that harmonises with their unique circumstances.

Adding to the aforementioned points, it is essential to recognise that while the NSAI does provide a comprehensive explanation of AI, it falls short of offering a robust regulatory framework. The absence of a solid regulatory foundation engenders an environment where AI implementation is driven more by intention than by clear, enforceable rules. This not only hinders the establishment of a structured approach to AI development but also contributes to the existing power asymmetry, where local governments are left to navigate their AI endeavours with limited guidance and protection. This gap in governance exposes local authorities to risks and uncertainties, especially concerning the impact of AI on civil liberties, data protection, and fair service delivery. A robust legal structure is essential not only to enable local innovation but also to pre-empt ethical and practical issues inherent to AI deployment.

## The Gap in Resources and Digital Talent

The second crucial checkpoint is the gap in resources. Over the past decade, Indonesia has experienced significant advancements in internet connectivity. However, despite this progress, approximately half of the adult population still lacks access to the internet (Statistics Indonesia, 2021; World Bank, 2021). Furthermore, the disparities in digital access reflect existing dimensions of inequality, spanning different groups, regions, and income classes. In comparison to its regional counterparts, Indonesia fares well in terms of mobile broadband penetration, albeit at slower speeds. However, it significantly lags behind in the rollout of 4G/LTE and fixed broadband services. The adoption of fixed broadband is hindered by issues of availability and affordability, while network congestion affects the quality of mobile broadband services (World Bank, 2021).

An internal assessment by the Ministry of Communication and Information confirmed these poor figures and noted that it is still struggling to overcome serious obstacles for local government.[16] Several challenges impede the universalisation of access to good-quality internet across Indonesia. A limited spectrum and the unavailability of specific bands, notably the 700 mHz digital dividend band, pose significant barriers. Additionally, regulatory uncertainty on infrastructure sharing and limited competition in fixed broadband services compound the difficulties in expanding internet access.

Regarding the data infrastructure, a foundational resource to establish AI-based policy, the majority of government agencies are still in the process of learning about big data and are still determining the required data, while only a small portion has progressed to the stage of collecting internal and external data and then analysing it:

> We are still in the stage of data collection. We still need to ensure that all of the local governments are at the same stage and have the same knowledge of how to use big data. So, I would say that Indonesia is still in the learning stage about big data and AI itself. We have not reached the technical implementation stage yet. … Most local governments don't have a data warehouse, data cleansing, and other related processes. They directly extract raw data from the agencies and conduct analysis. Indonesia is still in the learning stage about big data and AI itself.[17]

Another provincial official in the Department of Transportation of Jakarta reaffirmed the lack of a so-called collaborative culture in an intragovernmental context, complicating the process of big data management.[18]

Moreover, Indonesian local governments have recognised the scarcity of specialised professionals and managers in their local settings as a significant obstacle to fostering innovation within their administrative structures. The Ministry of Tourism and Creative Economy presented data on the scarcity of Indonesia's digital talent, estimating that the country supposedly has nine million talents to fully operate and enhance the economy and bureaucracy (Rukmorini, 2023). The lack of qualified talent to develop new AI-based policies has resulted in limited ideas and innovation, hindering the potential for growth and progress within the local government context.

An official of the Provincial Development Planning Agency of Central Java revealed the exodus of digital talent from governmental bodies is indicative of a larger trend, wherein these professionals find the allure of more lucrative and well-compensated digital jobs in the private sector to be irresistible.[19] This issue compounds the challenge of fostering innovation within government structures and poses a significant impediment to realising the full potential of AI and digital technologies for public service improvement. Reflecting a dynamic entrepreneurial landscape, data from the Coordinating Ministry for Economic Affairs further highlight that Indonesia stands in the sixth position globally in terms of the highest number of start-ups, a notable achievement with a total count of 2,400 start-ups in the year 2023 (Shofa, 2023). This burgeoning start-up ecosystem not only demonstrates the country's potential for digital innovation but also

underscores the urgency of retaining and nurturing digital talent within governmental frameworks to drive these promising initiatives.

Nevertheless, this resource gap paints a more complex picture: how is it possible that local governments continue to propose various AI-based initiatives despite the evident shortage of local digital talent? This apparent contradiction arises from the various pressures and expectations placed on local governments, often instigated by local leaders. For instance, the Central Java government has set an annual basic standard for its Provincial Communication and Information Department staff, mandating them to design digital innovations using advanced AI technology.[20] Therefore, the apparent contradiction of how low-capacity contexts can produce AI initiatives becomes clearer when examining the cases of the three regions through the third checkpoint, the leaders, within our theoretical framework. In these instances, we found that the driving force behind AI initiatives often originates from ambitious leaders, who oversee the capacity gaps within their administrative structures. We will analyse this factor in the following section.

## Leaders' Awareness of AI: An Electoral Agenda?

While the central government might set the overall policy direction and framework, the local government, particularly in regions with significant autonomy, is tasked with translating these policies into practical initiatives. Therefore, understanding the leader's agenda at local level is essential.

Despite the lack of detailed regulatory frameworks and apparent resource limitations, it is intriguing to observe that numerous local leaders have boldly asserted their significant achievements in AI development for public policy. While this claim holds true in certain instances where tangible progress can be witnessed, it cannot be universally applied across the board. Our examination of AI initiatives undertaken by various local governments has revealed a complex reality.

The case of the Governor of Jakarta, Heru Budi Hartono, exemplifies the intricate interplay between AI achievements and political campaigns. The Governor has been fervently championing the strides made in AI implementation within his jurisdiction, presenting it as a remarkable advancement that showcases his commitment to modernising public services (Detik, 2023; Merdeka, 2023; Nurhaliza, 2023). This narrative has been propagated widely, often with the intention of highlighting the tangible benefits that AI-driven policies bring to the lives of Jakarta's residents. Such enthusiastic promotion of AI accomplishments indeed underscores the potential of technological progress to enhance governance.

However, conversations with individuals closely connected to the Governor's circle revealed a different dimension. It became evident that the widespread dissemination of AI achievements was not solely an objective reporting of progress but rather a calculated strategy intertwined with the broader context of political campaigns.[21] The narrative served a dual purpose: not only did it showcase effective governance through technological innovation, but it also sought to bolster the Governor's popularity and electability in the lead-up to the forthcoming general elections in 2024.

Mirroring the trend seen in Jakarta, Governor Ganjar Pranowo of Central Java has also harnessed the potential of AI achievements to amplify his popularity and enhance his political standing. His endorsement of the Smart Province initiative, touted as the pioneer of its kind in Indonesia, presents an interesting case study. Central Java's government proclaimed the establishment of a data centre, positioned to wield considerable influence in the formulation of policies, reflecting an eagerness to embrace AI-driven governance (Jatengprov, 2023). This was touted as a move to enhance decision-making precision by relying on AI and big data, a revolutionary leap from approximative methods.

Ganjar Pranowo further highlighted the upgraded version of the LaporGub application, a digital platform for citizen complaints enriched with AI analysis (Fitriani, 2023). However, our fieldwork unveiled that LaporGub still primarily relies on human operators who analyse and process the incoming data, rather than wholly automated AI mechanisms.[22] The Provincial Development Planning Agency of Central Java mentioned that Ganjar, a local leader, has not formally emphasised the importance of AI in local governance.[23]

Adding an intriguing dimension to this landscape is the stance of Khofifah Indar Parawansa, the Governor of East Java. Two special staff of the East Java Provincial Government and the former campaign manager of Khofifah in previous elections confirmed that the application of AI serves not only as a tool for enhancing the governance system but also as a strategic instrument to cater to the preferences and expectations of the modern electorate, particularly the millennial and educated segments that constitute a significant portion of the voting demographic.[24] This approach underscores an astute recognition of the evolving political landscape and the changing communication paradigms.

Khofifah's embrace of AI extends beyond the conventional realms of governance efficiency. Rather, she perceives AI as a vehicle to communicate with the tech-savvy, informed millennial populace – a demographic that has grown accustomed to the rapid advancements of the digital age. Recognising that traditional political rhetoric might not resonate as effectively with this demographic, Khofifah leverages AI as a form of "political grammar," a novel language that appeals to the sensibilities of modern voters.

Another example outside our three case studies is West Java province. Following a similar pattern of leveraging AI to amplify political narratives, Governor Ridwan Kamil of West Java stands out with his claims of pioneering AI as a central tool in bureaucratic reform within his jurisdiction. He prominently highlighted the utilisation of AI-based technology in shaping administrative processes and even touted a noteworthy accomplishment: the removal of 400 state officials from West Java province (Hidayat, 2022). Governor Ridwan Kamil's assertion that AI played a pivotal role in personnel selection and downsizing of state officials bears significance within the context of bureaucratic efficiency. An official within West Java province has provided insights that shed light on the potential underlying motivations behind Ridwan Kamil's emphasis on AI-driven personnel selection. Their observations suggest a dual narrative where the purported efficiency-enhancing endeavour also intersects with political considerations: competition in the 2024 election.[25]

The leaders' agenda presented by the leading individuals, while sounding ambitious and promising on the surface, was ultimately designed for electoral purposes. The duality of this situation prompts reflection on the nuanced nature of political communication. The ambitious proposals put forth by local leaders and governors regarding AI-based policy initiatives, we argue, have contributed to the far-reaching consequences on the coordination, communication, and the national AI strategy in Indonesia. While ambition is a driving force for innovation and development, when it lacks proper preparation and primarily serves as a tool to bolster electability, it can lead to a host of challenges that exacerbate the existing central–local coordination gap.

Our interviews with informants across regions suggest that ambitious AI proposals driven solely by political motives have derailed the alignment with the basic requirements and national AI strategy. Furthermore, a lack of preparation and forethought in these ambitious AI proposals has resulted in misdirected efforts and the misallocation of resources. These actions prioritise short-term political gains over the long-term sustainable development of AI. This is further highlighted by the evident weaknesses in relatively low-level capacity gaps and unequal infrastructure across regions and districts, as acknowledged by officials and local government executives in this study.

In summary, the ambitions of local leaders to propose AI-based policies without due preparation can aggravate the coordination gap, communication cleavage, and the misdirection of the AI development strategy in Indonesia. It underscores the importance of aligning political ambitions with the broader national goals and ensuring that AI initiatives are well-prepared, transparent, and coherent to truly benefit the country as a whole.

## Discussion

### Solving the Gap: Bringing Back Centralisation?

The theoretical framework by Van Buren et al. (2020) has enabled a thorough interrogation on AI development within Indonesia's government systems, thanks to its structured approach to understanding the complex political landscape. The framework's focus on the roadmap and legal dimension is significant as it underscores the necessity for a coherent AI strategy that aligns with national objectives and provides a legal foundation for AI initiatives. As we have demonstrated in the previous section, these analytical tools are crucial for a decentralised government like Indonesia's, where ensuring consistency across various local governments is challenging.

The study of the regulatory environment, as suggested by the framework, is crucial as we found that specific AI-focused regulations at the local level are lacking. This gap limits local governments' ability to design and manage AI initiatives tailored to their unique challenges. The findings indicate that the national AI strategy may not fully address the varied readiness and needs of local governments, highlighting the importance of a bottom-up approach to complement the top-down strategy currently in place.

Moreover, the framework's emphasis on assessing fundamental resources aligns with our findings that data infrastructure and skilled individuals are vital for successful AI development. Local governments faced resource constraints that impede their ability to implement AI effectively. Lastly, the framework points to the importance of assessing government leaders' commitment, which we found to be a defining factor in AI integration within local governance. The study reveals the potential misuse of AI by local leaders for political gain, suggesting the need for greater transparency and accountability in the promotion and implementation of AI initiatives.

A key challenge within the AI resource dependency dynamic is striking a balance between local autonomy and dependence on the central government. While decentralisation aims to empower local decision-making, an overly dependent relationship could limit local governments' ability to shape AI strategies that address their specific regional needs. Our findings distinctly illuminate the centralisation pattern as the predominant approach favoured by the central government during the nascent stage of AI development. As we delve into later, this pattern emerged in response to concrete challenges.

The first obvious challenge lies in the disparity in data and resources between the central government and local administrations. This study also finds that in certain cases, the local initiatives were often perceived as opposing the national plan, and hence, the central government postponed or even rejected the initiatives.[26] Moreover, many digital policies and regulations lack coherence and are not adequately interconnected. This disjointed approach to digital governance created confusion and inefficiencies, making it difficult to establish a comprehensive framework for managing the digital landscape effectively:

> We encountered challenges in formulating regulations for a product that did not yet exist. Until now, the development of new AI has been primarily confined to institutions within the central government, such as the Ministry of Transportation or the Ministry of Finance. Moreover, much of this development has been limited to experimental phases, with data integration still lacking. Consequently, many AI innovations originate from the central government and are later implemented at the local government level. For instance, the telemedicine application developed by the Ministry of Health was subsequently adopted by the health department of the Central Java province.[27]

This central government's perspective suggests that the development of AI-based policies in Indonesia should follow a recentralised structure. This structure indicates that most AI development initiatives are primarily concentrated within the central government, which means that key institutions at the central level have the decisive role and primary responsibility for creating and deploying AI technologies. Several informants from the central government confirmed this trend, arguing that by centralising AI development within key government institutions, there is a potential for the concentration of specialised expertise and resources, which are expected to facilitate a more streamlined and coherent policy formulation process.[28]

This centralisation pattern, nevertheless, underscores a fundamental challenge that Indonesia faces in its quest to advance AI. This is of course a worrying trend, as the centralisation tends to bring back more authoritarian tendencies. Literatures suggest that while some of centralisation and top-down approach in AI development might offer effectiveness in certain context, it, in most cases, also brought human rights violation, unethical practices, and growing control over citizens and oppressed the civil society (Buchanan and Imbrie, 2022; Filgueiras, 2022; Zeng, 2022). In this sense, we reinforced Buchanan and Imbrie's argument that AI is anticipated to bolster autocracy more significantly than democracy (Buchanan and Imbrie, 2022, p. 17). Under this perspective, top-down, centralised policy would allow elites to be more adept and willing to harness AI for the control of individuals, information, and weaponry. These potential risks under centralised planning systems may contribute to the consolidation of state power, bolstering surveillance and repression, cyber operations, and disinformation campaigns.

While Indonesia may not be characterised by full authoritarianism, the development of AI within its decentralised governance structure has undeniably given rise to tensions between central and local authorities. Such concern from local perspective reinforces this growing tension, underlining the cleavage between local and central government:

> We are somewhat concerned about innovating in the field of AI. Up until now, the central government has not provided clear guidance or regulations regarding this matter. Furthermore, we are candidly facing financial constraints and a shortage of experts, as the pool of AI technology specialists remains limited and mostly concentrated within the Ministry of Communication and Information Technology at the central level. Our current capacity for innovation is restricted to administrative aspects, such as organising data within local institutions, and has not yet extended to directly incorporating AI technology in public service at the grassroots level.[29]

Relying heavily on central institutions for AI development might hinder the emergence of innovative solutions from other actors, including private companies, research institutions, or local governments. Further, limited data integration remains an obstacle. Centralised development might face difficulties in accessing diverse and comprehensive datasets from various regions, potentially leading to biased or incomplete AI models.

This has engendered a quandary: should the nation invest more resources, both in terms of finances and time, to enhance local infrastructure and resources, or should it opt for a more centralised approach, whereby the central government shoulders the majority of AI preparation responsibilities?

## Policy Implications

The centralisation efforts as abovementioned are clearly facing challenges from locals. A top-down, centralised approach to AI policy may be seen as a step away from decentralisation and the empowerment of local governments. This could raise concerns about the

erosion of regional autonomy and, in more extreme cases, give rise to authoritarian tendencies, which are counter to Indonesia's democratic aspirations. Moreover, it's important to recognise that local governments are often in the best position to understand the unique challenges and opportunities within their regions. Their close proximity to local communities provides valuable insights that can inform the design and implementation of AI projects that are more likely to succeed and meet local needs.

Instead of taking an option to bring more weight on centralisation for the sake of effectiveness and forcing harmony, we see that this option is too risky for democratic atmospheres. By consolidating power at the central level and reducing regional autonomy, there's a risk of diminishing the democratic principles that have been carefully nurtured since the country's shift towards democratic governance, considering the trend for AI which tend to lend strength for the return of authoritarianism.

Rather, we contend the absence of comprehensive and coherent regulations for AI development as the critical factor. A one-size-fits-all approach such as reflected by NSAI may not consider the nuanced challenges and opportunities present in various local contexts, potentially leading to inefficiencies and missed opportunities for innovation. Consequently, there's a necessity to establish a regulatory framework that allocates responsibilities according to set principles. This framework should serve as an initial step in forging an intergovernmental consensus, outlining clear and context-specific responsibilities, and encompassing sub-functions and key tasks. Such a framework should be mutually agreeable and tailored to local conditions.

Furthermore, the prevalent sentiment that local areas are being neglected by the government's ambitious AI development agenda is another unresolved issue. Many of local government initiatives have been mostly rejected by the central government due to various factors, such as a lack of qualified personnel or limited local data resources. In light of this, there's a need for more stringent regulations that compel periodic joint reviews of the collaborative efforts between local and central governments, particularly focusing on coordination and service delivery performance. It should also outline precise procedures for reaching agreements and resolving conflicts, especially in the context of project approvals. Without this clarity, critical AI development projects could face unwarranted delays or, in extreme cases, abandonment.

On a practical note, it is imperative to reinforce institutions that play a central role in the direct development of AI initiatives. Our findings indicate that, while the National Development Agency's (Bappenas) role is evident in designing the NSAI, other government departments appear uncoordinated and lack awareness of the NSAI as their guiding framework.

One viable starting point for this reinforcement could be the Provincial Information and Communications Department, which has its network at local level across the country. These institutions, with more roles backed by regulations, can act as a bridge to link local interests, initiatives, or concerns to the central government, fostering collaboration and communication between different levels of governance. This approach creates a more coordinated and coherent framework for AI development that ensures the alignment of local initiatives with the national strategy.

The tension between local contexts and the central government, as discussed earlier, plays a pivotal role in this complex challenge. Indonesia must find a delicate equilibrium between promoting local autonomy and the overarching national AI strategy. The recommendations previously outlined, emphasising regulatory coherence and enhanced communication between local–national actors, form the foundational steps in reconciling these tensions and achieving a harmonious integration of AI at all government levels.

## Conclusion

In a dynamic landscape characterised by democratic governance and decentralisation, the integration of AI within the local governments of Indonesia represents a significant challenge and opportunity. This study delved into the complex interplay between central and local authorities in AI policy formulation and implementation, revealing a nuanced reality that demands careful consideration. By dissecting the regulatory environment, resource limitations, and leadership commitment, this research offers crucial insights into the readiness of local government for AI development.

The study underscores the paramount importance of a comprehensive regulatory framework tailored to AI at the local level. The lack of specific AI-focused regulations hampers the capacity of local governments to independently design and manage AI initiatives, constraining their ability to address unique local challenges. The ambitious national strategy crafted by the central government, while offering a grand vision for AI advancement, neglects the fact that many local governments are still in the early phases of AI development. This top-down approach fails to account for the diverse and varying stages of readiness across regions, hindering the effective implementation of AI initiatives.

Furthermore, the availability of data infrastructure and resources proves pivotal in driving successful AI implementation. Local governments, grappling with resource limitations, must invest in robust data infrastructure to harness the potential of AI-driven insights. Quality, diversity, and compliance with data privacy and security regulations remain crucial factors in ensuring responsible data-driven decision-making.

The commitment and awareness of local leaders emerged as a defining factor in this study. As local leaders champion AI initiatives, they play a pivotal role in driving the integration of AI into governance practices. However, the findings reveal a concerning trend where certain local elite figures exploit AI as a political tool to enhance their electability, underscoring the importance of transparent and accountable AI claims.

In conclusion, the readiness of local government in Indonesia to harness the potential of AI is a multi-faceted challenge. By addressing regulatory gaps, investing in data infrastructure, and fostering leadership commitment, local governments can embrace AI's transformative potential. The limitations of a top-down, centralised strategy must be recognised, and a more adaptable and inclusive approach is essential for successful AI integration at the local level.

### Declaration of Conflicting Interests

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## Notes

1. Author interview, official from the Informatics and Application Department of the Ministry of Communication and Information, 20 July 2023, Jakarta. A long list of rejections has been presented to us, encompassing numerous proposals for AI-based super-apps across various sectors of local government. These proposals span from applications in the transportation sector and AI-based budgeting apps to initiatives related to smart cities.
2. Author interview, Provincial Communication and Information Department of Central Java, 17 July 2023, Semarang.
3. Author interview, Provincial Communication and Information Department of Central Java, 17 July 2023, Semarang.
4. Author interview, official from the Informatics and Application Department of the Ministry of Communication and Information, 20 July 2023, Jakarta.
5. Author interview, expert staff of East Java Governor, 3 July 2023, Surabaya.
6. Author interview, official and analyst of the Jakarta Smart City project, 31 July 2023, Jakarta.
7. Author interview, Provincial Development Planning Agency of East Java, 4 June 2023, Surabaya.
8. Author interview, Provincial Development Planning Agency of Central Java, 24 July 2023.
9. Author interview, Provincial Development Planning Agency of East Java, 4 June 2023, Surabaya.
10. Author interview, Provincial Department of Communication and Information of Central Java, 17 July 2023; Author interview, Provincial Department of Communication and Information of East Java, 6 June 2023, Surabaya.
11. Author interview, official from the Informatics and Application Department of the Ministry of Communication and Information, 20 July 2023, Jakarta.
12. Author interview, expert staff of Ministry of Communication and Information, 20 July 2023, Jakarta; Author interview, expert staff of Jakarta Smart City project, 31 July 2023, Jakarta.
13. Author interview expert staff of Ministry of Communication and Information, 30 June 2023, Jakarta.
14. Author interview, expert staff of Ministry of Communication and Information, 30 June 2023, Jakarta.
15. Author interview, Provincial Development Planning of Central Java, 24 July 2023, Semarang.
16. Author interview, Ministry of Communication and Information, 20 July 2023, Jakarta.
17. Author interview, expert staff of Ministry of Communication and Information, 30 June 2023, Jakarta.
18. Author interview, Chief of the Department of Transportation of Jakarta, 31 July 2023.
19. Author interview, Provincial Development Planning of Central Java, 24 July 2023.

20. Author interview, Provincial Communication and Information of Central Java, 24 July 2023.
21. Author interview, expert staff of governor of Jakarta, 7 July 2023, Jakarta.
22. Author interview, Provincial Communication and Information of Central Java, 24 July 2023.
23. Author interview, Provincial Development Planning of Central Java, 24 July 2023.
24. Author interview special staff and former campaign managers of Khofifah Indar Parawansa in gubernatorial election 2018, 19 June 2023, Surabaya.
25. Author interview, expert staff of Governor Ridwan Kamil, 2 August 2023.
26. Author interview, Provincial Development Planning of Jakarta; Author interview, Department of Communication and Information of Central Java, 17 July 2023.
27. Author interview, official from the Informatics and Application Department of the Ministry of Communication and Information, 20 July 2023, Jakarta.
28. Author interview, Ministry of Home Affairs, 21 July 2023, Jakarta.
29. Author interview, Provincial Communication and Information of East Java, 2 July 2023, Surabaya.

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