MASTER THESIS

IMAGINARIES BECOME POLITICAL: HOW INDONESIA'S AI IMAGINARIES ARE SHAPING STATE TECHNOPOLITICS

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ABSTRACT

This thesis investigates the interplay between technology and politics in Indonesia, specifically examining how government-led imaginaries of Artificial Intelligence (AI) are shaping state technopolitics. By mobilizing discourse analysis to examine official documents, public policies, and governmental discourse, I identify how AI is envisioned as a tool to achieve a "world-class bureaucracy," namely, a highly professional and high-integrity government that is capable of providing high-quality services to the public and democratic governance to better face the challenges of the 21st century through effective governance, and as a key element in the nation's "Vision Indonesia 2045," a vision of an ideal Indonesia in the future, aiming to become a developed country on par with other developed countries, specifically as the fifth-largest economy in the world by 2045, coinciding with the 100th anniversary of Indonesian independence. Additionally, I also employ discourse analysis to trace the genealogy of these sociotechnical imaginaries, revealing their origins in previous government initiatives, such as the e-government and Making Indonesia 4.0 projects. Furthermore, this thesis underlines the role of techno-nationalism in justifying the government's concern regarding AI as a strategy for fostering economic development and asserting national sovereignty. The thesis argues that these sociotechnical imaginaries are not merely passive manifestations of technological aspirations but rather active instruments in the pursuit of political power, thereby contributing to a particular form of technopolitics in Indonesia. This thesis contributes to the broader comprehension of the ways in which sociotechnical imaginaries influence policy and governance, particularly in Indonesia, which is navigating rapid technological change.

Keywords: *Artificial Intelligence (AI), sociotechnical imaginaries, technopolitics, discourse analysis.*

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INTRODUCTION

Artificial Intelligence (AI) technology has seen rapid and extensive advances in recent years, coming to penetrate or permeate almost every aspect of human life. AI can be used to automate farming processes, streamline manufacturing production, and—in the governance sector—it can even assist the government in operating more efficiently and effectively. For example, several city councils have begun mobilizing AI to help predict instances of child abuse and intervene before they occur, while another city is using AI-powered satellite images to help located and fix potholes (Partridge et al., 2023). However, besides its potential, AI development has also been accompanied by a concerning number of misuses and risks. According to the AI, Algorithmic, and Automation Incidents and Controversies (AIAAC) database—an independent UK based public interest initiative that examines and makes the case for real AI, algorithmic, and automation transparency and openness—incidents and controversies[1] related to the use of AI have increased 26-fold since 2016.

A clear and highly prominent example of the misuse of AI in Indonesia was a deepfake video that circulated in 2023; this widely circulated video depicts President Joko Widodo delivering a speech in Mandarin (AFP Indonesia, 2023a). Another example is a video on TikTok depicting the Minister of Defense Prabowo Subianto, who is currently the president-elect, delivering a speech in Arabic. Within three days of its posting (on Nov.7, 2023) the video had been watched by more than 1.7 million people, before later being debunked as a fake video by a fact-checker (AFP Indonesia, 2023b). Nevertheless, the video persisted on the platform, and despite being disproven, current comments on the video suggest that certain segments of Indonesian TikTok users remain convinced that the video is authentic. This rapid proliferation illustrates the convincing nature of such artificial content and its capability to impact and influence public perception (Jalli, 2023).

Hence, there is an urgency to regulate the development and utilization of AI in order to optimize its potential while minimizing its drawbacks. Based on this, AI is important given it has the power and potential to significantly transform various sectors, not only in Indonesia. However, it also presents a number of challenges, such as ethical concerns and privacy issues. Recognizing these implications, governments worldwide have increasingly begun to prioritize AI regulation. For instance, the European Parliament passed the EU AI Act on 13 March 2024, which was later approved by the EU Council on 21 May 2024 (Brownie, 2024). The EU AI Act is the first legally binding regulation on AI in the world, and involves risk-based AI regulation (European Parliament, 2023).

In Indonesia, the implementation of legislation pertaining to AI commenced with the release of Presidential Regulation Number 95 of 2018. This regulation primarily focuses on the Electronic-Based Government System

[1] According to the AIAAC's website, an incident is defined as *"a sudden known or unknown event (or 'trigger') that becomes public and takes the form of a disruption, loss, emergency, or crisis. Most entries in the AIAAIC Repository are classified as incidents."* Examples include AI system or robot malfunction, actual or perceived inappropriate or unethical behaviour by a system operator or developer, and data privacy or information confidentiality leaks that expose system vulnerability.

(SPBE) or e-government. Additionally, the Agency for the Assessment and Application of Technology (BPPT) introduced the National AI Strategy (Stranas KA) in 2020, which establishes clear standards and a strategic framework for AI. The main objective of this national strategy is to expedite the advancement of the Indonesian economy by leading in the field of AI until the year 2045. The National Strategy encompasses four key areas of emphasis, which include 1) ethics and policy, 2) talent development, 3) infrastructure and data, and 4) industrial research and innovation. The document explicitly states that one of Indonesia's key objectives in the realm of AI is to cultivate ethically-driven AI systems that align with the principles of Pancasila, the nation's five fundamental principles. In doing so, Indonesia aims to ensure that AI technologies are not only innovative and effective but also aligned with the nation's core values.

To implement the guidelines in the Stranas KA, the Government of Indonesia (GoI) also established an AI innovation center called PIKA. One of PIKA's main activities is to form an orchestrator institution known as 'collaboration to accelerate Indonesian AI innovation' (KORIKA), which plays a role in creating and realizing a collaborative ecosystem to accelerate the implementation of the national AI strategy (Stranas KA, 2020, p. 18). In this sense, KORIKA will be responsible for orchestrating the development and utilization of research and AI innovation in both public and private sectors. KORIKA, as explicitly highlighted in the official document, is expected to become the driving force behind the quad-helix-based innovation involving the government, industry, academia, and community. This strategy was conceived as a comprehensive national policy that outlines the key areas of concentration and priority domains for AI. This document serves as a guide for ministries, institutions, local governments, and other stakeholders involved in implementing AI-related activities in Indonesia (Wadipalapa et al., 2024, p. 73).

In addition to that, in December 2023 the Ministry of Communication and Informatics issued a circular letter (SE) pertaining to the utilization of AI. This circular letter was developed to address the ethical considerations surrounding the utilization of AI by those involved in business sector. This instrument is considered to be crucial for providing guidelines to address the regulatory compliance and accountability requirements of AI developers and providers. These documents, particularly the Stranas KA and e-government, can serve as initial foundations for constructing the sociotechnical imaginaries of AI in Indonesia.

Although there has been a growing trend and increasing attention focused on the development and utilization of AI in Indonesia, several studies have limited themselves to solely examining the implementation, promise, and shortcomings of AI in the country. Examples of previous studies include Herdhiyanto et al. (2023), who evaluated the current AI readiness level in the ministries of Indonesia; Wadipalapa et al. (2024), who investigated Indonesia's ambitious AI policy within the context of decentralized governance structures; Goode & Kim (2021), who assessed the potential and shortcomings of Indonesia's AI sector; and Herawati et al. (2022), who studied the implementation of AI in the public services sector in Indonesia. However, there has been no study specifically addressing how the Government of Indonesia imagines AI in and for the country.

This study seeks to bridge the research gap by studying the government-led imaginaries of AI in Indonesia, their genealogy, and how such imaginaries have materialized into a particular form of technopolitics. Here, the term technopolitics denotes the integration of political practices and technical systems, which leads to the development of new forms of power and agency (Edwards & Hecht, 2010). Technopolitics is *"the pursuit of political ends that is facilitated by technological means"* (Amir, 2013, p. 7). Hence, put differently, this thesis investigates the following research question: ***"How do the government-led imaginaries of AI materialize a particular form of technopolitics in Indonesia?"*** By conceptualizing the government-led imaginaries as sociotechnical imaginaries, this thesis studies and highlights the public aspects of shared views about the future, with these views being motivated by the government's understanding of the role of AI—as evinced in official documents—in influencing and bringing about their desired future. Such socio-technical imaginaries play an essential role in influencing (and being influenced by) public policy, guiding (and being guided by) AI development and utilization, and are also shaping the path of social progress (Bareis & Katzenbach, 2022, pp. 856-857). In other words, identifying and analyzing government-led imaginaries in Indonesia as sociotechnical imaginaries of AI in the country will allow us to discern how AI will be developed and utilized in Indonesia, along with the technopolitical consequences that can arise from said imaginaries.

To further explain, government-led imaginaries encompass the visions, narratives, and conceptual frameworks that government institutions establish and promote in order to exert influence over public perception and guide societal progress. These imaginaries encompass purposeful strategies, policies, and persuasive communication that envision an ideal future, highlighting specific beliefs, priorities, and objectives (Bareis & Katzenbach, 2022, p. 859). By creating and disseminating these imaginaries, governments aim to foster a collective national identity, align public support with policy agendas, and shape the shared perception of progress and modernity. In Indonesia, as in many other nations, imaginaries play a vital role in legitimizing government actions and mobilizing citizens to collaborate towards shared objectives. The term "government" in this context refers to the central or national government of Indonesia, including the presidential office and the president of the Republic of Indonesia, as well as related national-level institutions such as the Ministry of Communication and Informatics, Ministry of Administrative and Bureaucratic Reform (ABR), Ministry of Industry, Ministry/National Planning and Development Agency (Bappenas), and BPPT, which operates under the coordination of the National Research and Innovation Agency (BRIN). In essence, these government-led imaginaries of AI are inherently intertwined with political considerations.

I will use discourse analysis as my methodology in order to study the GoI-led sociotechnical imaginaries of AI. This is because, as Cavanaugh (2015) explained, language is performative, meaning that language has the power to influence change in reality, and it does not merely describe the world as it is but also functions as a form of social action. Moreover, Hajer & Versteeg (2005, p. 175) define discourse as a system of ideas, categories, and concepts employed to generate and understand social and physical occurrences. A distinct set of actions accomplishes this;

thus, discourse encompasses more than mere word utilization to construct a comprehensive world perception. Additionally, it encompasses language usage techniques and the interconnections between language, individuals, and the societal environment. This means that language can function as a form of social action and has the capability to effect change. As such, it is important to note that in discourse analysis, when one suggests taking action on a particular issue, it means there is a problem that needs to be fixed in that particular condition (Bacchi, 2021).

STRUCTURE OF THE THESIS

In Chapter 1, I will use discourse analysis to scrutinize government documents such as Stranas KA, Grand Design Bureaucratic Reform, Vision Indonesia 2045 document, Presidential Regulation No. 95 of 2018, and Making Indonesia 4.0 document. I will also analyze government speeches and news from mass media outlets such as CNN Indonesia, CNBC Indonesia, Databoks, Good News From Indonesia, Antara News, Repubika Online, and Liputan 6. Additionally, I will also analyze government statements on their official websites, including the website of the Cabinet Secretariat of the Republic of Indonesia, Ministry of Communication and Informatics, and Ministry of Foreign Affairs. These analyses aim to describe how the GoI perceives AI from the perspective of techno-solutionist logic for the vision of creating a world-class bureaucracy.[2] This notion emphasizes the importance of efficiency in public service and government bureaucracy, arguing that AI technology can help achieve a highly professional and integrity-driven government. Furthermore, the government explicitly mentions that AI could serve as a means of a catch-up strategy for Vision Indonesia 2045. It is important to note that 2045 has been chosen as it coincides with the 100th year of Indonesia's independence. This idea aligns with the notion of techno-nationalism as a specific form of technopolitics, in which nationalist rhetoric justifies the process of high-technology development (Amir, 2013, p. 77). In this sense, the sociotechnical imaginaries of AI within the governmental discourse are associated with the glory of the nation and its progress, which can be achieved through the use and development of AI.

Techno-nationalism refers to the effort to advance a country in terms of technological mastery and its related dynamics. It is a nationalistic and ideological movement that examines the social and cultural impacts of technology on a particular country's society, while also promoting a sense of national pride and identity (Gopikrishna et al., 2024, p. 30). Furthermore, techno-nationalism often refers to public policies that specifically target high-tech industries and provide them with governmental support (Yamada, 2000). The goal of this techno-nationalism is to strengthen domestic industries' technological development and increase their competitiveness against global rivals in a growing market. With respect to this, it can be said that techno-nationalism is seen as a form of technopolitics.

Moreover, in this context, techno-nationalism is not only seen as an ideology that believes in the importance of self-sufficiency in technology mastery and development, but also it cannot be separated from rhetoric that justifies technology projects in the name of national interests. It is materialized within the governmental discourse of AI in

[2] Translated from Indonesian language. Original term: *"Pemerintahan Kelas Dunia."*

Indonesia, in which AI use and development are described as essential aspects that need to be implemented through governmental policy to bring societal progress and prosperity to the people in the country. In this sense, as stated by Amir (2004, p. 107), techno-nationalism can be seen as a rhetorical strategy used to legitimize high-technology policy and absorb considerable economic and political resources.

In Chapter 2, after assessing the actual form of government-led imaginaries of AI, I deeply delve into the genealogy of these specific imaginaries that have emerged and how previous policies or programs influenced their emergence and stability. By analyzing the complexity and contested origins, changes, and development of government-led imaginaries of AI, I aim to understand how previous and diverse ideas evolved over time and the factors that influenced their transformation. Additionally, it will be helpful to comprehend the forms of knowledge and underlying assumptions about technology implementation in Indonesia, specifically in relation to the sociotechnical imaginaries found within the governmental discourse of AI use and development projects.

To accomplish this task, a historical analysis will be employed, wherein the government's past programs, policies, and statements, as well as other relevant sources, such as previous research on innovation and technological development and government documents, will serve as the foundation for this analysis. In pursuit of this objective, several documents and sources pertaining to prior programs and policies will be closely examined. These include a) the Electronic-based governmental system (e-government) implemented in 2018 and b) the Making Indonesia 4.0 initiative, also from that same year. Furthermore, I will assess these programs by utilizing the policy dance framework proposed by Kuhlmann et al. (2010) in order to examine the potential alignment or gaps between policy and reality. The significance of this policy framework in aiding the exploration of the sociotechnical imaginaries of AI in Indonesia, encompassing the what, how, and why, will be further discussed in the **Conceptual Lenses and Method – Sociotechnical Imaginaries section.**

Finally, in Chapter 3, I will analyze the rationale behind the creation of these sociotechnical imaginaries in the governmental discourse on the use and development of AI by the GoI. This chapter will thus analyze the relationship between technology and politics in the pursuit of public legitimacy, as the previous chapter will have illustrated the historical path of techno-solutionist logic and the catch-up strategy in the governmental discourse of AI in Indonesia, I will specifically analyze how government-led imaginaries can materialize and impact the real world as a form of technopolitics. This analysis will focus on the use of technology, particularly in the context of AI development and utilization in present-day Indonesia, to achieve political objectives. To comprehend the actual form of technopolitics of AI in Indonesia, I will employ the multi-layered power framework proposed by Arts & Tatenhove (2004). Further details about this framework will also be explained in the section on **Conceptual Lenses and Method – Technopolitics.**

CONCEPTUAL LENSES AND METHODOLOGY

In this section, I will define and discuss the main conceptual lenses and method that are central to this thesis, namely technopolitics, sociotechnical imaginaries and discourse analysis. These concepts will assist in contextualizing and understanding the AI imaginaries and politics surrounding AI in Indonesia, with discourse analysis serving as the method by which these imaginaries will be constructed. First, I will briefly explain these key terms one by one, starting with technopolitics, followed by sociotechnical imaginaries, and then discourse analysis. Following that, I will examine how sociotechnical imaginaries and discourse analysis as conceptual lenses and a method, respectively, have been intricately woven in this thesis.

TECHNOPOLITICS

To fully grasp the government-led sociotechnical imaginaries of AI in Indonesia, it is essential to incorporate the concept of technopolitics. Technopolitics refers to the combination of technical systems and political practices that result in the emergence of new forms of power and agency (Edwards & Hecht, 2010). Engaging in technopolitics, according to Edwards (2010, p. 215), involves strategically designing or utilizing technology to accomplish political objectives. Likewise, it also encompasses the strategic utilization of political power to achieve technological or scientific goals. Technopolitics typically involves the formation of coalitions between different actors and communities with the aim of aligning their interests.

The intersection of technology and politics invariably yields diverse reactions, assuming a range of perspectives regarding the utilization of technology for political ends. Therefore, Hecht prioritizes power as the focal point of analysis while comprehending technopolitics, and acknowledges that technology plays a crucial role in shaping political power. However, she does not believe that technology is more important than politics (Kurban et al., 2017, p. 502).

In sum, technopolitics can be defined as "*the pursuit of political ends that is facilitated by technological means"* (Amir, 2013, p. 7). Thus, I will adopt this definition of technopolitics in this thesis. In light of this, power is formed at the intersection of cultural and political forces, and it is through power that technology gains the necessary structure and essence by which to establish connections with individuals. This viewpoint enables one to examine the political aspects of technology at its fundamental level, where power is generated and exerted within socio-technical domains (Amir, 2013, p. 7). To understand technopolitics in its entirety, I will also mobilize a complementary framework from policy studies termed **multi-layered power**. Multi-layered power is a conceptual framework in policy studies introduced by Arts & Tatenhove (2004). According to this framework there are three layers of power; the first layer is relational power, which refers to the agent's capability to achieve outcomes in their interactions. This layer is also referred to as agent power or power as capacity (Arts & Tatenhove, 2004, p. 349). The second layer is dispositional power, which shapes the actor's capacity to act by mobilizing resources, and the third layer is structural power. This references the regimes of signification, legitimization, and domination, which imply that certain actors possess the authority to legitimize their resources (knowledge and rationality) while others do not

(Tatenhove, 2004. p. 351). As such, I will utilize this framework as a tool to analyze the technopolitics of AI in Indonesia, which I will discuss in Chapter 3. By scrutinizing these three layers of power I intend to reveal how the GoI in exercising its power in implementing AI policy in Indonesia.

SOCIOTECHNICAL IMAGINARIES

One of the key terms or concepts used in this thesis is sociotechnical imaginaries. This is an emerging concept in the field of science and technology studies (STS). Before defining sociotechnical imaginaries, I will briefly explain how this concept emerged. Although many do not always explicitly use the term sociotechnical imaginaries, a number of social theorists and philosophers have been exploring the imagination of states, nations, and ruling classes for decades.

For example, Benedict Anderson (1983), in his book entitled Imagined Communities, made significant theoretical contributions to understanding nationalism and the birth of a nation as a political entity. He argues that a nation is born as a result of the collective imagination of citizens who consider themselves part of, or members of, that nation. This work is an important precedent to scholarship on sociotechnical imaginaries, providing an entry point for STS to connect to broader questions in political and social theory (STS Harvard, n.d.).

Besides that, in relation to ideas about the nature, aims, and societal importance of science and technology, scientists and engineers are primary actors in proliferating these ideas. These collective visions refer to the concept of technoscientific imaginaries. S&T professionals possess both implicit and explicit imaginations regarding the factors that contribute to the moral and epistemic authority of science, as well as the reasons why science is valuable (STS Harvard, n.d.).

On that basis, I seek to better position myself in an attempt to explore what certain imaginaries concerning technology, particularly AI, can do for a nation like Indonesia. This involves how AI shapes society and the future of the nation, and how the proliferation of such imaginaries resonates among the people of the country.

To proceed, I will immediately delve into the examination of sociotechnical imaginaries to gain a fuller understanding of them. While there are multiple definitions of this term, they all share certain common aspects. *Firstly,* sociotechnical imaginaries refer to forward-looking views and potential scenarios related to envisioned social and technological systems (Sismondo, 2020, p. 505) (Richter et al., 2023, p. 211). *Secondly,* for sociotechnical imagination to be effectively translated into decisions and actions that align with the intended social and technological order, it must remain stable and steadfast (Sismondo, 2020, p. 505). *Thirdly*, the stability of this phenomenon is attributed to the consistent and collaborative enactment of sociotechnical imaginaries. These impacts on the development and governance of the desired social and technological structure are not solely achieved through discourses and policies, but also through the actions and processes that shape them (Konrad & Böhle, 2019, p. 101). *Fourthly,* sociotechnical imaginaries should not be regarded solely as technical concerns.

Technological progress, along with socio-cultural norms, political beliefs, and historical ties, contribute to the formation of sociotechnical imaginaries (Felt, 2015). These two factors, technical and non-technical, create a pathway for the development and dissemination of the technology.

It is worth mentioning that I have drawn upon Raka Wicaksana's master thesis (2023) entitled "*City & Citizenship: Socio-technical Imaginaries on the Governmental Discourse of Indonesia's Future (Smart) Capital City.*" to elaborate on the definition of sociotechnical imaginaries. While the case study in my thesis differs from the one used in Raka's thesis, I find the concept of sociotechnical imaginaries he employed to be highly valuable for incorporating into my own thesis.

Furthermore, while sociotechnical imaginaries can arise from sources other than state actors, the concept undoubtedly emphasizes the state's role at the intersection of politics, discourse, and technology. Imaginaries that are sustained are consistently tied to the active exertion of state authority. The reason is that state actors have the legitimate authority and power to outline future societal directions and simultaneously create influential institutions that determine the benefits and drawbacks enabled by contemporary technology and culture (Bareis & Katzenbach, 2022, p. 259). This aligns with the findings of Richter et al. (2023, p. 211), who stated that sociotechnical imaginaries are connected to the activities and allocation of resources by the state or other influential stakeholders, with the aim of achieving (or hindering) this potential.

In this thesis, to gain a more comprehensive understanding of and trace the sociotechnical imaginaries of AI in Indonesia, I will utilize a conceptual framework from policy studies, namely **the innovation policy dance frameworks**. This analytical framework will assist me in tracing sociotechnical imaginaries within the governmental discourse of AI in Indonesia. The broader socio-political implications of AI development in the country will be revealed through the integration of these complementary approaches, which will shed light on the interrelations between language, power, and technology.

Innovation policy dance is a heuristic used to gain a deeper understanding of the patterns and interactions among innovation practice (I), policy (P), and theory (T) trajectories. As suggested by Kuhlmann et al. (2010), the development of ideas, rationales, and instruments for innovation policy arises from the collaborative learning process among actors engaged in innovation practice, public intervention techniques related to innovation, and innovation research and theory. The ongoing interaction among these three parties results in the development and modification of configurations in innovation policy and theory. In Chapter 2, I will utilize this framework to examine government programs that are associated with and underpin AI imaginaries in Indonesia, specifically e-government and the Making Indonesia 4.0 programs.

DISCOURSE ANALYSIS

As previously discussed, discourses are systems of ideas, categories, and concepts employed to generate and understand social and physical occurrences. This is achieved through a distinct set of actions; therefore, discourse encompasses more than the mere utilization of words to construct a comprehensive world view. Additionally, it incorporates the techniques of language usage and the interconnections between language, individuals, and the social environment (Hajer & Versteeg, 2005, p. 175).

Words, as a form of language, play a crucial role in constructing phenomena. In relation to this, discourse analysis is the study of the use and interpretation of language, emphasizing the significance of language in interpreting phenomena. The fundamental assumption in discourse analysis is that a phenomenon does not have a single reality, but is instead likely to be diverse, depending on the underlying social construction. As a result, discourse analysis is often referred to as the anti-essentialist ontological paradigm (Hajer & Versteeg, 2005, p. 176).

The approach of examining problems within discourse analysis originates from John Dewey's book, the Public and Its Problems (Dewey, 1927). Subsequently, scholars such as Noortje Marres have incorporated this approach into STS. For example, Marres (2007, pp. 761-763) highlighted the significance of problems and issues in public involvement and democratic engagement, arguing that knowledge of problems and issues are essential to understanding public participation in controversies. This perspective is central to explaining how discourse shapes the perception and construction of problems in society.

Building on a similar line of thought, Bacchi (2012, p. 21) introduces an approach known as 'What's the Problem Represented to be? (WPR)' to elucidate this matter, using this approach to critically scrutinize governmental policies. The essential concept of WPR is that when someone suggests taking action on a certain matter, it implies the existence of a problem that requires an alteration in or to that specific thing or phenomenon. In other words, policy proposals always contain implicit representations of what is perceived as the problem. For instance, if the GoI intends to enforce particular views or imaginaries of AI on the country, which problems would be solved by these specific imaginaries? What makes these imaginaries superior to others? Hence, the fundamental inquiry that must be examined is the rationale behind a suggested policy that encompasses such imaginaries. Consequently, this strategy does not seek to identify the actual problem and then determine the optimal solution; instead, its purpose is to assess or analyze implicit problem representations in a certain public policy.

Furthermore, it is important to emphasize that discourse analysis goes beyond studying just words or language in use. It also explores how language is used, as well as the interactions that occur between language, individuals (who use language), and the social context. The interconnectedness of these components contributes to the complexity of discourse. Essentially, discourse involves using words to achieve specific objectives. Therefore, as highlighted by Hajer & Versteeg (2005, p. 176), it can be argued that words or language do not merely reflect reality, but instead, they have the ability to shape meanings and realities through their usage.

Discourse analysis has three main strengths. First, it can uncover the influence of language on politics. Second, it demonstrates how language is intertwined with actions. And third, it provides answers to "how" questions by shedding light on underlying mechanisms (Hajer & Versteeg, 2005, pp. 176-177). As such, it is important to note that actors engaged in a contest to attribute meaning or interpretation to certain phenomena would have a significant impact, given the value or meaning of these phenomena would greatly depend on their interpretation. Moreover, discourses are essential in societies because they not only communicate meanings but also include identifiable narratives that are widely discussed in public debates, with a primary emphasis on particular topics (Gutierrez, 2024, p. 9).

In addition, Keller (2011) emphasizes the connection between discourse and power. He investigates how discourses are constructed and integrated into power dynamics (Keller, 2011, pp. 48-49). This approach highlights that discourses are not neutral but influenced by power dynamics that both shape and are shaped by social structures and institutions. Within the context of government-led imaginaries of AI in Indonesia, it offers a significant perspective for examining how these imaginaries are conveyed, reinforced, and legitimized through systems of authority. By understanding the power dynamics inherent in these discourses, we can better grasp how specific imaginaries become prominent and influence policy decisions, ultimately manifesting as a distinct form of technopolitics. To achieve this, I will also employ the framework of **policy framing**, as it provides a productive way to gain insights from ideas and understand policies by integrating facts, values, theories, and interests (Ulnicane et al., 2022, p. 41). This framework will offer a viewpoint that facilitates comprehension and response to initially perplexing circumstances.

MOBILIZING DISCOURSE ANALYSIS AS A METHOD IN EXAMINING SOCIOTECHNICAL IMAGINARIES

The correlation between sociotechnical imaginaries and discourse analysis lies in their shared emphasis on the influence of language and communication in shaping societal perceptions of technology. In the context of this thesis, sociotechnical imaginaries specifically refer to how the GoI envisions and communicates the role of AI in shaping the future of its bureaucracy and broader society (further discussed in Chapters 1 and 2). These sociotechnical imaginaries are commonly expressed and disseminated through communication. Political speeches, media representations, scientific publications, and policy documents—tools that the GoI uses to shape public understanding and expectations of AI technology—all contribute to the creation and dissemination of these ideas. Discourse analysis helps to unravel these processes by explaining how the GoI's ideas about AI are formed, debated, and challenged in different contexts. This method can reveal the underlying assumptions, values, and ideologies that exist within sociotechnical imaginaries that support the promotion of AI as a solution to various issues in Indonesia, such as in bureaucracy and the economy. As Matthews (2020, p. 206) argues, studying the discourses related to technology is crucial for understanding the accepted and disputed ideas and beliefs that shape

specific sociotechnical imaginaries. By closely analyzing these narratives, I can identify whose interests are being served, which perspectives are prioritized, and which are marginalized within the GoI's ideas about AI.

In this framework, it is crucial to understand the power dynamics that are involved in creating and promoting these government-led sociotechnical imaginaries. The focus on power and authority is central to both sociotechnical imaginaries and discourse analysis, especially in how these forces impact the development of societal and technological futures. For example, the GoI's perception of AI as a tool for achieving a world-class bureaucracy and enhancing national competitiveness reflects a wider agenda where technology is harnessed to consolidate state power and guide societal change.

While sociotechnical imaginaries provide a theoretical framework for understanding the government's shared visions and aspirations for AI, discourse analysis serves as a methodological tool to examine the language used in practice. By analyzing policy documents, official speeches, and media coverage, my goal is to reveal how the GoI uses language to maintain its power, affirm its beliefs, and influence public sentiment/sentiment and policy on AI. This approach demonstrates how the GoI's portrayal of AI is closely connected to broader societal values and technological advancements, both shaping and being shaped by one another. Therefore, sociotechnical imaginaries can be explored and understood by analyzing the language of power evident in official state-policy discourses, statements, and practices related to the legal system. Policy documents are considered appropriate empirical materials (Kuchler & Stigson, 2024, p. 11).

For instance, policy documents such as the Stranas KA and the Vision Indonesia 2045 provide empirical material that can be analyzed to reveal the GoI's strategic use of language in constructing and promoting its sociotechnical imaginaries of AI. As Bareis & Katzenbach (2022) suggest, discourses have had a significant impact on how we comprehend and perceive socially constructed reality, including the GoI's AI initiatives, which are presented as both a national priority and a path to future prosperity.

In summary, sociotechnical imaginaries and discourse analysis are closely connected in their investigation of how language and communication influence societal perceptions of technology. By combining these two frameworks, I aim to understand how the GoI's imaginaries of AI are created and manifested through discourse, thereby revealing the connection between these sociotechnical imaginaries and the language of power. This approach provides valuable insights into how the GoI's vision for AI not only mirrors, but also shapes Indonesia's sociopolitical landscape.

1. CHAPTER 1: GOVERNMENT-LED IMAGINARIES OF AI IN INDONESIA

The sociotechnical imaginaries of AI in numerous countries already commonly address technological competitiveness (Bareis & Katzenbach, 2022, p. 875), economic benefits, and serve as a tool for overcoming societal challenges (Richter et al., 2023, pp. 212-215) (Ulnicane, 2024, p. 67) (Ulnicane et al., 2022, pp. 47-48). Indonesia is one of those many countries to have imagined AI's capability to address these challenges through what I have termed the *catch-up strategy for Vision Indonesia 2045*. Interestingly, the GoI also views AI within a *techno-solutionist logic for World-Class Bureaucracy*, namely a highly professional and high-integrity government that is capable of providing high-quality services to the public and democratic governance to better face the challenges of the 21st century through effective governance (Grand Design Bureaucratic Reform 2010-2025, 2010, pp. 13-14). In this chapter, I will explore what I mean by this techno-solutionist logic for World-Class Bureaucracy and catch-up strategy for Vision Indonesia 2045 being two intertwined forms of sociotechnical imaginaries within the governmental discourse concerning AI in Indonesia.

Prior to delving into the discourse on the government-led imaginaries of AI in Indonesia, it is first crucial to establish a clear understanding of what the definition of AI is, along with its context (as used in this thesis), which will be briefly examined below.

1.1 ARTIFICIAL INTELLIGENCE (AI)

Instead of providing a strict definition of AI, for this thesis, the term AI refers to the definition stated in the official document of Stranas KA (2020, pp. 86-90). This document employs the term AI as an "umbrella" term that encompasses various definitions related to both tangible and intangible technologies, as well as a concept or framework for thought. Moreover, AI is situated within a context that can be associated with other technologies. For instance, this document establishes a connection between AI, Big Data, Internet of Things (IoT), and Cyber-Physical Systems. Big Data is a concept used to describe data in terms of its variety, volume, and velocity of flow, whether structured (e.g., tabular data in a database) or unstructured (e.g., conversation data on social media platforms, video, and audio). Big Data is considered a fundamental requirement in the development of AI technology. Additionally, the development of IoT has a significant impact on Big Data in various fields such as agriculture, environment, infrastructure, disaster management, transportation, and others. The data generated from these sectors can be utilized to produce Big Data. Furthermore, IoT plays a critical role in the advancement of Cyber-Physical Systems (CPS) that integrate the physical and cyber worlds through sensors and actuators. In this given context, IoT enables communication between objects via networks such as the internet. According to the International Telecommunication Union Telecommunication Standardization Sector (ITU-T Y.2060), IoT is a global infrastructure that facilitates interconnection services between objects based on interoperable information and communication technology (Ministry of Communication and Informatics, 2024).

In the Stranas KA document (2020, pp. 86-90), AI definitions are explicitly mentioned in diverse categories. *The first* definition of AI is the technology of machine and deep learning. Machine learning is a subfield of AI that involves generating mathematical models or AI agents through learning from data. These models are then used for prediction or inference. Meanwhile, deep learning refers to an artificial neural network consisting of many layers, which has been proven to produce models with better performance, particularly for classification and regression problems, as data increases.

The second definition of AI is as a Probabilistic Model and Reasoning (PMR) technology, which can be defined as one of the machine learning paradigms that focuses on a probabilistic approach and incorporates uncertainty into its reasoning. This paradigm is beneficial and more robust compared to non-probabilistic methods when data contains high levels of ambiguity and noise, which often occur in the real world. PMR also has the potential to better address issues where the availability of data is limited.

For the third definition, the term AI is also employed to describe AI hardware, AI on edge, and software tools. AI hardware refers to specialized hardware devices designed for deep learning computations. On the other hand, AI on edge refers to a computing paradigm where AI is not hosted on a server/cloud but rather on small-sized and lightweight computers, typically in the form of embedded systems. These computers generally have lower computational capabilities compared to those used on server/cloud.

The fourth definition explained that the AI in question must also be a trustworthy AI, which refers to a framework aimed at producing AI that can be trusted. This means that an AI product, service, or solution must meet criteria such as explainability, fairness, accountability, security, privacy, and robustness.

Moving on, *the fifth* definition discussed that AI is a Multi-Agent System, which are often known as Swarm Intelligence, a field of AI inspired by the intelligence exhibited by groups of insects/animals. This principle states that the coordination of a group of agents, a group which does not necessarily have to be intelligent, working together will result in exceptional intelligence capabilities (emergence behavior). In a broader sense, this field is regarded as Distributed AI, wherein a large number of independent software agents collaborate to achieve certain goals rather than being centralized.

Lastly, there are those AI that are a form of Artificial General Intelligence (AGI), which is a field of study that examines how a machine can possess the capacity to learn and comprehend intellectual activities similar to humans. AGI is considered to be the ultimate goal of AI technology, which still remains in its conceptual and hypothetical form, and thus has not yet become a tangible asset.

In relation to this, Indonesians display a significant level of confidence in understanding AI, with 86% of the population claiming to comprehend it (Ipsos, 2024, p. 7). They also display great enthusiasm towards AI and view

it as having more benefits than drawbacks. Given the current hype surrounding AI and its broad definitions as an advanced technology, its associations with other cutting-edge technologies like Big Data, IoT, and Cyber-physical systems, along with the technical and new terms that come with it, it could potentially be used in the government's discourse on AI for political purposes. In other words, the association of AI with other sophisticated technologies may go beyond technical and contextual categorization and potentially be utilized to attract public attention for political gain. However, before delving into the intertwining of AI and politics, which will be explained in Chapter 3, I will first discuss the different forms of AI imaginaries in Indonesia, as mentioned earlier in this chapter.

1.2 TECHNO-SOLUTIONIST LOGIC FOR WORLD-CLASS BUREAUCRACY

President Joko Widodo of Indonesia expressed his desire to utilize AI in government bureaucracy on 28 November 2019 at the opening of the 2019 Kompas100 CEO Forum (Supriatin, 2019). On this occasion, he explicitly stated, as follows [JW 1]:

"The echelon system should be simplified. Echelon I, echelon II, echelon III, echelon IV, isn't it too many? I request it to be simplified into just two levels."[3]

Regarding statement [JW 1], echelon or echelonization refers to the formation within the organizational structure or positional level in Indonesia's governmental bureaucracy. According to Government Regulation No. 13 of 2002, echelon is a structural position level in a government agency unit for civil servants. Hence, echelon officials are civil servants who hold structural positions in government agency units. There are four to five levels of echelon in Indonesian bureaucracy, with Echelon I as the highest level and Echelon IV to V as the lowest levels. Characteristically, civil servants in echelon III, IV, and V are responsible for carrying out repetitive and more administrative tasks.

It is important to note that President Joko Widodo shared his plans to streamline bureaucracy at a CEO Forum. This is because one of Indonesia's main challenges in bureaucracy and public services is excessive red tape, which hampers investment and restricts economic growth in the country (Darmansyah, 2011) (Indonesian Investments, 2019). For example, a study conducted by Darmansyah (2011) found that starting a new business in Indonesia requires a wait of 60 days and completion of 9 procedures, which is the most complex and time-consuming compared to other Southeast Asian countries. Moreover, corruption and illegal levies in bureaucracy further compound the problem. Therefore, addressing this issue by utilizing AI and presenting the plan to business leaders can be seen as a persuasive effort to encourage the business community to embrace the idea of AI in bureaucracy. Furthermore, it implies that the use of AI in bureaucracy will not only benefit the government in carrying out tasks efficiently but also the public at large.

[3] [JW 1] Translated from the Indonesian language. Original quotation: *"Eselonisasi harus disederhanakan. Eselon I, eselon II, eselon III, eselon IV, apa tidak kebanyakan? Saya minta disederhanakan menjadi 2 level saja."*

In addition, President Joko Widodo also instructed the ministries to replace echelons III and IV with AI (Supriatin, 2019), as communicated through his statement below [JW 2]:

"I have also ordered the Ministry of Administration and Bureaucratic Reform (ABR) to replace (echelon III and IV civil servants) with AI. If replaced with artificial intelligence, our bureaucracy will be faster, I believe that. But again, this will also depend on the omnibus law going to the DPR [parliament]."[4]

In his statement above [JW 2], President Joko Widodo referred to a draft bill—which has now officially become law—that would harmonize more than 70 overlapping laws and regulations. This emphasizes the president's techno-solutionist logic and ambition, which highlights the role of AI in resolving bureaucratic issues. Specifically, President Joko Widodo also addressed the speed problem in bureaucracy and public services in this statement. Consistent with the context of his first statement above [JW 1], President Joko Widodo reaffirmed that the use of AI in bureaucracy is not merely for the sake of improving bureaucracy, but also for gaining public trust in the government by efficiently and effectively accommodating public needs.

President Joko Widodo first announced the plan to simplify the state bureaucracy by cutting echelon III and IV positions during his second-term inauguration speech at the Parliament Building on 20 October 2019 (Supriatin, 2019). He emphasized the complexity and slow performance of bureaucracy and public services.

On another occasion, at the 2020-2024 National Development Plan Deliberation (Musrenbangnas) for the National Medium Term Development Plan (RPJMN), President Joko Widodo also suggested cutting two levels of positions in the government bureaucracy (Arifa, 2021). During the meeting regarding the use of AI in bureaucracy, President Joko Widodo expressed [JW 3]:

"This is not a difficult matter. It's an easy thing and it makes it easier for us to decide as leaders at the local or national level."[5]

There are three key terms used in the statement [JW 3] above are linked to each other, which are 1) easy/easier/not a difficult matter, 2) decide, and 3) local or national level. I will analyze each of them one by one, starting with the words 'easy/easier/not a difficult…'. In general, these three words express the imagined ease that can be achieved in the context of using AI technology in bureaucracy. Implicitly, this also explains that there are difficulties in implementing bureaucracy conventionally. AI technology is considered to contribute to the improvement of formalizing rules and procedures in the public sector, which can result in fairer services and the minimization of

[4] [JW 2] Translated from the Indonesian language. Original quotation: *"Saya sudah perintahkan juga ke Kementerian PANRB diganti dengan AI, kalau diganti aritificial inteligence birokrasi kita lebih cepat, saya yakin itu. Tapi sekali lagi, ini juga akan tergantung omnibus law ke DPR."*

[5] [JW 3] Translated from the Indonesian language. Original quotation: *"Ini bukan barang yang sulit. Barang yang mudah dan memudahkan kita untuk memutuskan sebagai pimpinan di daerah maupun nasional."*

inequitable outcomes such as systematic corruption or legitimized queue-jumping for services. In this context, the fundamental issues in public sector service delivery are considered to be easily solvable (Newman et al., 2021, p. 9).

Secondly, I will address the vision of AI as a means for decision-making or AI-based decision-making. For example, President Joko Widodo's statement [JW 3] above indicates that AI would not completely replace humans in decision-making in the public sector. The decision will ultimately rest with the leaders, as the word *'us'* in the quote above refers to humans. While a wide array of tasks and decisions will still be addressed and made through policies and politics, AI will serve in a supporting role (Giest & Klievink, 2022, p. 394). On the other hand, in line with President Joko Widodo's other statements [JW 1 & JW 2], there is also a vision of replacing the role of bureaucrats or civil officials—particularly those in echelons III and IV positions—with automated decision-making AI. In this context, Giest & Klievink (2022, p. 394) emphasize the ambition tied to the implementation of an AI that plays a part in defining bureaucratic roles. Furthermore, they also emphasize that AI-based digital systems have been proven to capably meet the demands of complex organizational structures by enabling automatic decision-making that cuts across numerous horizontal and vertical bureaucratic relationships.

Lastly, the statement [JW 3] suggests that AI technology will facilitate decision-making for leaders at both the national and local levels. This implies a comprehensive transformation in the public sector, where AI will play a role across all layers of public services and in all government sectors.

In short, based on the statement [JW 3] above, President Joko Widodo considers the use of AI in government bureaucracy to facilitate the government's operations by assisting government decision-making from the local to national levels. In other words, there is a strong nuance of techno-solutionist logic, as President Joko Widodo considers AI a solution to bureaucratic issues, such as the slowness and inefficiency of government bureaucracy. However, this perspective does not sufficiently anticipate potential backlash, risks, or other problems, as if AI technologies could be commanded to work as planned.

1.2.1 A Glimpse of Indonesia's Bureaucratic Problems

During the 2020-2024 National Development Plan Deliberation (Musrenbangnas) for the National Medium Term Development Plan (RPJMN), President Joko Widodo also emphasized several criteria for simplifying bureaucracy, including speed, straightforwardness, and simplification. He reiterated that the aim of using AI in government bureaucracy is to improve the efficiency and effectiveness of government operations (Arifa, 2021), which is illustrated through this claim [JW 4]:

"Later with the big data we have, the network we have, deciding will be very fast if we use AI. Not beating around the bush, not going around in circles."[6]

In line with his previous [JW 3] statements, President Joko Widodo asserts that AI technology is envisioned as the solution to bureaucratic challenges, including excessive complexity, inefficiency, and concerns about the speed of the bureaucratic process. As a result, in 2020, the GoI established the Stranas KA. The objective of this Stranas KA is to accelerate Indonesia's transformation into a country based on innovation, and this includes four key areas of development: 1) developing AI research and industrial innovation, 2) creating data and data-related infrastructure, 3) establishing ethical and relevant policies, and 4) nurturing AI talent within the country's population. Moreover, the Stranas KA document vividly mentioned five priority areas for AI development, including bureaucratic reform, along with four other priorities: education and research, health services, mobility and smart cities, and food security (Stranas KA, 2020, p. 29).

According to Bareis & Katzenbach (2022) and Richter et al. (2023, p. 218), who studied national AI imaginaries present in policy papers, national AI strategies heavily rely on narratives of functional progress that emphasize technological solutionism. In the Indonesian context, this also means that AI is envisioned as a solution that can solve bureaucratic challenges. As previously discussed, the complexity of bureaucracy is one of Indonesia's biggest challenges, which has received significant criticism from the people and even the business sector as it hinders investment and business processes.

In response to the president's statements, the Cabinet Secretariat of the Republic of Indonesia (2019) mentioned that the bureaucracy will be streamlined in three stages, namely: short-term, mid-term, and long-term. In the short term, this includes issuing a circular letter from the Minister of Administrative and Bureaucratic Reform (ABR), identifying and analyzing government institutions, mapping positions, and making policies. In the mid-term, this includes aligning functional position policies to assess performance, adjusting Functional Position (Jabatan Fungsional–JF) policies and the LAN (State Administrative Agency) leadership training curriculum, as well as implementing the appointment/transfer of administrative to functional positions in government agencies. Meanwhile, in the long-term stage, Smart Office Bureaucracy will be implemented through an Electronic-Based Government System or SPBE (e-government) nationally, as well as monitoring and evaluating its implementation (Cabinet Secretariat of the Republic of Indonesia, 2019).

The GoI's plan to digitize or 'technisize' bureaucratic processes was motivated by the awareness of the overdevelopment of bureaucracy, with the number of civil servants reaching over 4 million. This overdevelopment is caused by the excessive numbers and positions within the state bureaucracy, which often lead to inefficiency

[6] [JW 4] Translated from the Indonesian language. Original quotation: *"Nanti dengan big data yang kita miliki, jaringan yang kita miliki, memutuskan akan cepat sekali kalau kita pakai AI. Tidak bertele-tele, tidak muter-muter."*

and slow decision-making processes. Challenges like this are not only recent problems but are also deeply entrenched in Indonesia's history of public administration.

Historically, Indonesia's bureaucracy has been influenced by two prominent administrative traditions: the patronage system, originating from the pre-colonial Javanese era, was further solidified during the authoritarian New Order rule. This system places a high value on loyalty to superiors and personal relationships when conducting bureaucratic tasks (Turner et al., 2022, pp. 334-335). The enduring impact of this system is evident in the present government, resulting in bureaucratic inefficiency and excessive development.

Another significant influence is the Old Public Administration, which was inherited from the Dutch Colonial period. This type of public administration prioritizes impartiality rather than personal relationships and is based on rules or procedures rather than loyalty to superiors. Even though it is considered to be more advanced and based on rationality, this type of public administration is considered too rigid regarding hierarchical structures, thus contributing to slow decision-making, risk aversion, and prioritizing processes over results (Turner et al., 2022, p. 336).

These dual influences—patronage and Old Public Administration—have made Indonesia's bureaucracy prone to maladministration, such as abuse of power, inefficiency, and perpetuating a culture of KKN–corruption, collusion, and nepotism. Maladministration in Indonesia has been a significant problem ever since the colonial era of the Dutch East Indies, where bureaucrats considered themselves to be upper-class and refused to work together with people from lower social strata (Wibawa et al., 2020, p. 725). This mindset is a significant factor hindering the effectiveness and efficiency of the Indonesian state bureaucracy, according to reformers who advocate for public administration prioritizing serving citizens' needs to the fullest extent.

In light of this, the GoI intends to implement bureaucratic reform to address these issues. The GoI is implementing a new approach to administration called New Public Management (NPM). This approach, as described by Vogl et al. (2020, p. 947) and Hood (1995), emphasizes managerialism and the use of market mechanisms such as outsourcing to address challenges in modern bureaucracy, particularly those related to complexity and efficiency. Another emerging model is the New Public Service (NPS), which emphasizes service delivery, effectiveness, efficiency, responsiveness, and inclusion (Turner et al., 2022, p. 336).

Hence, the GoI formulated the Grand Design for Bureaucratic Reform as a concrete follow-up to this issue. The Grand Design document states that its purpose is to achieve a World-Class Bureaucracy in Indonesia. This policy also emphasizes the importance of technology, including AI, in efforts to enhance the quality of public services and government bureaucracy. I will provide a more detailed explanation of this matter in the following presentation.

1.2.2 The Vision of World-Class Bureaucracy Through AI Use as Panacea

The GoI has given significant consideration to this bureaucratic reform since the downfall of the New Order dictatorship and the beginning of the democratic era in 1998. The pinnacle of this reform occurred during the tenures of President Susilo Bambang Yudhoyono (2004-2014) and President Joko Widodo (2014-2024). Within this context, the role of technology, manifested in e-government policy, is considered to enhance the standard of public services offered by the government. This includes improvements in effectiveness, efficiency, and especially streamlining the bureaucratic structure.

In this regard, the Minister of ABR issued circular letters Numbers 384, 390, and 391 of 2019 concerning "Strategic and Concrete Steps to Simplify Bureaucracy," which were aimed at all levels of government from the national to local levels, including ministers, governors, mayors, regents, and their subordinate agencies. In his presentation during the bureaucratic simplification meeting held at the Ministry of ABR in December 2019, Bima Haria Wibisana, the Head of the National Civil Service Agency (NCSA), made the following claims (Cabinet Secretariat of the Republic of Indonesia, 2019) [BHW 1][BHW 2]:

"Streamlining will result in downsizing in the organization, but it's not just about being lean; it's also about being able to perform the tasks assigned"[7]

"Simplification of bureaucracy demands dynamic bureaucracy, agile organizational design, focus on functional work, acceleration of work systems, optimal performance, and professionalism of civil servants."[8]

Within these circumstances, the GoI repeatedly emphasized the importance of efficiency to the bureaucracy's operations and is concerned about how AI as technology shapes organizational structures. This indicates nuance regarding the technological deterministic views of the GoI.

According to Winner (1977, p. 76), society's technical base is a fundamental aspect that can influence all other aspects of social existence, and technological change is the primary source of change in society. Wyatt (2008, p. 168) argues that technological determinists assume that technological progress inherently leads to social progress. This view oversimplifies the complex nature of society and sees societal issues as mere technical problems. In this context, the use of digital technology in government bureaucracy is believed to promote improvements in government performance and services by speeding up and improving the accuracy of policymaking from the national to the local level, ultimately leading to changes in society. Furthermore, at a more detailed level of analysis,

[7] [BHW 1] Translated from Indonesian language. Original quotation: *"Pemangkasan akan mengakibatkan perampingan dalam organisasi, tetapi tidak hanya ramping saja tetapi harus mampu melakukan pekerjaan-pekerjaan yang diemban."*

[8] [BHW 2] Translated from Indonesian language. Original quotation: *"Penyederhanaan birokrasi menuntut adanya birokrasi yang dinamis, desain organisasi agile, fokus pada pekerjaan fungsional, percepatan sistem kerja, kinerja optimal serta profesionalitas aparatur sipil negara."*

Burns & Stalker (1961) emphasize the role of technology in shaping organizational structure. The so-called contingency theory, which asserts that there is no one optimal method for structuring a corporation, managing a company, or making decisions, but rather the best approach depends on specific circumstances both within and outside of the organization, has faced numerous challenges to its underlying technological determinism view.

STS scholars have criticized the phenomenon associated with technological determinism for years. For example, according to Wyatt (2008, p. 169), technological determinism suggests that technological development progresses without room for any human intervention, thus relieving human actors of responsibility for the technologies they create and use. As a result, technology often serves the interests of the developer or initiator of the technology. Meanwhile, other stakeholders, like citizens and workers, have limited options in steering the direction of technology and its impacts. This situation contradicts democratic values, which seek to accommodate diverse voices and interests in public life. While technological determinism as a concept can explain the influence of technology on societal change, the phenomena it describes raise normative concerns about the inclusivity and fairness of technological decision-making processes.

In this context, the techno-solutionist logic for improving bureaucratic efficiency in Indonesia through AI is mainly a form of justificatory technological determinism. This type of technological determinism is primarily implemented by actors and used by employers–government in this context—to justify restructuration and streamlining in government bodies such as ministries (Wyatt, 2008, p. 174). This type of determinism can be found in policy documents; for example, the Stranas KA document (2020, p. 80) mentions [SKA 1]:

"The use of Artificial Intelligence technology is aimed at accelerating bureaucratic reform as stipulated in the 2020-2024 Bureaucratic Reform Road Map (Ministerial Regulation Number 25 of 2020) as well as the direction of the President of the Republic of Indonesia, namely structural reform so that institutions are simpler, more agile, have a new mindset, are faster in service, faster in granting permits, and more efficient…"[9]

Further, the manifestation of justificatory technological determinism can also be identified in statements made by the government. As mentioned previously in [JW 2], President Joko Widodo had ordered his ministers to replace echelon III and IV civil servants with AI in order to streamline the government bureaucracy in order to improve its efficiency and effectiveness, as well as to make it faster and more productive. Accordingly, these are all in line with the notion of the ideology of technological determinism, which is the belief that increased productivity and social transformation will be automatically result from computerization and digitization (Edwards, 1995, p. 268).

[9] [SKA 1] Translated from Indonesian language. Original quotation: *"Pemanfaatan teknologi Kecerdasan Artifisial ditujukan untuk mengakselerasi reformasi birokrasi sebagaimana yang ditetapkan dalam Road Map Reformasi Birokrasi 2020-2024 (Peraturan Menteri Nomor 25 Tahun 2020) serta arahan Presiden RI yakni reformasi struktural agar lembaga semakin sederhana, semakin lincah, memiliki pola pikir baru, cepat dalam melayani, cepat dalammemberikan izin, dan semakin efisien."*

In relation to this, GoI has begun streamlining the state bureaucracy by hiring fewer civil servants, whose number has declined quite drastically between 2015 and 2021. Based on data from the Civil Servant Statistics Book, there was a decrease of approximately 500,000 civil servants, from 4.5 million in 2015 to around 4 million civil servants in mid-2021. The latest data for 2023 reveals that the number of civil servants has continued to decrease to 3.8 million (Annur, 2023).

Furthermore, in confronting the dominance of outdated Public Management and Patronage models, which have been deeply entrenched since previous eras, during President Susilo Bambang Yudhoyono's administration, the GoI issued Presidential Decree Number 81 of 2010 concerning the Grand Design for Bureaucracy. The objective was to achieve world-class public service by 2025. This vision serves as the foundation for various measures and initiatives implemented by the GoI to streamline bureaucracy and enhance its quality up to the present day. These efforts include reducing the number of civil servants (especially echelon III and IV positions), implementing standardization and performance evaluations based on good governance principles, promoting a mental revolution to foster professional, politically neutral, and integrity-driven civil servants with high productivity, revising the legal framework to enhance efficiency and effectiveness; efforts to eradicate KKN; strengthening the capacity and accountability of public services, as well as cultivating a performance-oriented culture (Turner et al., 2022, pp. 339-340).

Technically, this grand design has been translated into a five-year plan called the Bureaucratic Reform Road Map, which includes the Road Maps for the periods of 2010-2014, 2015-2019, and 2020-2024. Below are the five-year achievement targets that can also be seen as imaginaries related to a world-class bureaucracy: Road Maps for the periods.

Table 1[10]

Stages of Achieving Five-Year Targets

WORLD-CLASS BUREAUCRACY		
First Five-Year Goals (2010-2014)	Second Five-Year Goals (2015-2019)	Third Five-Year Goals (2020-2024)

[10] Table originally in Indonesian language. See appendix.

Strengthening of government bureaucracy to achieve a clean and corruption-free government, enhance the capacity and accountability of bureaucratic performance, and improve the quality of public services to the community.	Implementation of the results achieved in the first five years and continuing efforts that have not been achieved in the first five years in various strategic components of government bureaucracy.	The continuous improvement of bureaucratic capacity as a continuation of bureaucratic reform in the second five-year period, in order to achieve world-class bureaucracy/governance.

Source: *Grand Design Bureaucratic Reform 2010-2025* (2010, p. 19)

While it began during the presidency of Susilo Bambang Yudhoyono, discussions concerning the state's aspiration for a world-class bureaucracy have persisted until relatively recently, under the administration of President Joko Widodo who placed increasing emphasis on the integration of technology in bureaucratic reform. In 2025, the GoI aims to achieve a state of good governance with a highly professional and high-integrity government bureaucracy that serves the public and is dedicated to the nation. This can be demonstrated through actual contributions to the performance of national and regional governments and development (Grand Design Bureaucratic Reform, 2010, p. 8).

In order to achieve the aforementioned vision, the current GoI, through the Minister of ABR, Abdullah Azwar Anas, stated its commitment to realizing this vision by encouraging the digital transformation of public services. He stated that in the future, civil servants will collaborate with digital technology. In his presentation at the Public Consultation Forum 'Reflections on Building a Merit System,' which was held in November 2022, he stated the following (Sopiah, 2022) [AZA 1]:

"Bureaucratic administration reform, the government must prepare for technological disruption and the digital climate by continuously improving and building a digital bureaucracy with a focus on improvement as digitizing structure, culture, and competency."[11]

Strengthening this [AZA 1] statement, the Deputy for Institutional and Administrative Affairs of the Ministry of ABR, Nanik Murwati Ningsih, also made a statement that digitalization is one of the government's vehicles for achieving its vision of a world-class bureaucracy. As follows is her statement, as quoted from CNBC Indonesia (Sopiah, 2022) [NMN 1]:

[11] [AZA 1] Translated from Indonesian language. Original quotation: *"Reformasi birokrasi administrasi pemerintahan, pemerintah harus bersiap disrupsi teknologi dan iklim digital dengan terus berbenah dan membangun birokrasi digital dengan fokus perbaikan sebagai digitalisasi struktur, kultur, maupun kompetensi."*

"We want to move forward in the 2024 vision, which aims for a world-class bureaucracy characterized by higher-quality public services and a more effective and efficient government... how important is the improvement of public service transformation that is more digitized so that people can manage or seek services from anywhere, without having to come to the place."[12]

Despite the GoI's ongoing efforts to enhance the quality of its bureaucracy and achieve a world-class standard, it is highly unlikely that this vision will be realized by 2025. This is primarily due to factors such as a lack of commitment and political will from both political and bureaucratic leaders, resistance to change among bureaucrats who are comfortable with the current system, the persistence of the Old Public Administration and Patronage models, insufficient attention given to the necessary steps for achieving the objective of a world-class bureaucracy, and a weak coalition among stakeholders working towards this shared vision, as noted by Turner et al. (2022, pp. 347-348).

Nonetheless, the efforts of the GoI to improve the quality of the state bureaucracy and achieve the vision of a world-class bureaucracy continue, with some progress having already been made. Furthermore, the governmental imaginaries towards the use of AI in bureaucracy, which is believed to enhance the quality of bureaucracy, are gaining strength in the discourse conveyed by the government itself.

The statements from the two high-ranking state officials from the Ministry of ABR above ([AZA 1] & [NMN 1]) clearly and convincingly emphasize the inseparable relationship between the vision of a world-class bureaucracy and digitalization. They are not only seen as a unit that cannot be separated but also as something that cannot be avoided. In particular, the Minister of ABR's statement [AZA 1], as quoted above, regarding the disruption caused by digital technology, can be interpreted as something that will inevitably happen. Therefore, the government must prepare and improve its ability to deal with it. His statement also indicates that the government will focus on improving bureaucratic governance by utilizing digital technology or AI itself. This sociotechnical imaginaries of AI aligns with the statement of Richter et al. (2023, p. 218), which emphasizes the importance of a vision of the future related to a technology that can be integrated into different societal realms. These visions can shape political choices, popular culture, and news media, ultimately influencing how the public, stakeholders, and decision-makers perceive and engage with these technologies.

As a result, policies regarding the digitalization of bureaucracy are of concern to the government from the national to local levels, ranging from technical matters—such as the readiness of technological infrastructure—to more

[12] [NMN 1] Translated from Indonesian language. Original quotation: *"Kita ingin ke depan di visi 2024, yang kita tuju world class bureaucracy yang cirinya birokrasi pelayanan publik yang lebih berkualitas dan pemerintah yang lebih efektif efisien... bagaimana pentingnya perbaikan transformasi pelayanan publik yang lebih terdigitalisasi sehingga orang bisa mengurus atau mencari pelayanan bisa dari mana saja, tidak harus datang ke tempatnya."*

sociological matters—such as the readiness of civil servants to accept the changes brought about by the technology.

The discourse regarding bureaucratic reform, which utilizes digital technology—especially AI—is also clearly stated in the KA National Strategy document. Bureaucratic reform is one of five priority areas for AI development in Indonesia. In the Stranas KA document, it is clearly stated that (2020, p. 80) [SKA 2]:

> *"The utilization of Artificial Intelligence technology is aimed at accelerating bureaucratic reform as stipulated in the Bureaucratic Reform Road Map 2020-2024 (Ministerial Regulation Number 25 of 2020) and the directive from the President of the Republic of Indonesia for structural reform so that institutions become increasingly simple, agile, have a new mindset, fast in service, fast in granting permits, and increasingly efficient."*[13]

This [SKA 2] quotation vividly puts forward AI as an important component in efforts to improve government bureaucracy. To strengthen the efforts made to achieve their vision of a world-class bureaucracy, the GoI also issued Presidential Regulation Number 25 of 2018 concerning Electronic-Based Government Systems (SPBE/e-government), which has the vision of *"the realization of an integrated and comprehensive electronic-based government system to achieve high-performing bureaucracy and public services."* This is in line with one of the pillars of Vision Indonesia 2045, namely, Strengthening National Resilience and Government Governance (Stranas KA, 2020, p. 122), which will be explained in greater detail in the next section.

Overall, what was interesting about this discussion on the government-led imaginaries of AI is that one of their conceptions about AI is that AI, as a technology, can be one of the most critical factors in shaping society or changing organizational structures, as discussed in the bureaucratic setting above. Paradoxically, sociotechnical imaginaries presume that social factors play an essential role in determining the use and development of technology, as they provide context to a particular technology. On the other hand, technological determinism emphasizes technology's role as the main factor that shapes society and, in a more micro-context, organizational structure.

Furthermore, as previously mentioned, the World-Class Bureaucracy vision does not exist in isolation. Instead, it also correlates with efforts to enhance investment and the economy. Below, I will explain the expectations, visions, and imaginaries regarding the role of AI in improving the Indonesian economy in further depth.

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[13] [SKA 2] Translated from Indonesian language. Original quotation: *"Pemanfaatan teknologi Kecerdasan Artifisial ditujukan untuk mengakselerasi reformasi birokrasi sebagaimana yang ditetapkan dalam Road Map Reformasi Birokrasi 2020-2024 (Peraturan Menteri Nomor 25 Tahun 2020) serta arahan Presiden RI yakni reformasi struktural agar lembaga semakin sederhana, semakin lincah, memiliki pola pikir baru, cepat dalam melayani, cepat dalam memberikan izin, dan semakin efisien."*

1.3 CATCH-UP STRATEGY FOR VISION INDONESIA 2045

As discussed above, the GoI views efficiency and effectiveness as fundamental values underlying the techno-solutionist logic for world-class bureaucracy, in which the use of advanced technology is seen as a symbol of success. This suggests that the government regards these values as essential requirements for achieving a technologically advanced Indonesia, particularly by the year 2045. In the Stranas KA document, it is stated that the vision of AI development must align with Vision Indonesia 2045 (2020, p. 31), namely [SKA 3]:

"A sovereign, advanced, just and prosperous Indonesia, which protects the entire Indonesian nation and all of Indonesia's blood, promotes the general welfare, makes the nation's life intelligent, and contributes to implementing world order based on independence, eternal peace, and social justice."[14]

In essence, Vision Indonesia 2045 is the idea of an ideal Indonesia in the future, specifically in 2045, which coincides with the 100th anniversary of Indonesian independence. Vision Indonesia 2045 was devised by the Ministry/National Planning and Development Agency (Bappenas) and was launched by President Joko Widodo in 2019. He is optimistic that by 2045, Indonesia will succeed in becoming a developed country on par with other developed countries, particularly as the fifth-largest economy in the world.

Based on the Indonesia Vision 2045 document (2019, p. 2), there are four pillars that will support this vision, namely:

1. Human Development and Mastery of Science & Technology
2. Sustainable Economy Development
3. Equitable Development
4. Strengthening National Resilience and Governance

In this context, AI is considered capable of assisting with the implementation of these objectives to achieve Vision Indonesia 2045, as stated in the Stranas KA document (2020, p. 17), which can be seen below [SKA 4]:

"... Thus, the development and use of artificial intelligence technology must prioritize these four pillars. Specifically, food security and governance are priority areas that must be highlighted in order to receive support from artificial intelligence."[15]

The term development referred to here heavily relies on and adheres to the development paradigm introduced by Western societies. This paradigm emphasizes the imperative for Third World countries to embrace modern

[14] [SKA 3] Translated from Indonesian language. Original quotation: *"Indonesia yang Berdaulat, Maju, Adil dan Makmur, yang melindungi segenap bangsa Indonesia dan seluruh tumpah darah Indonesia, memajukan kesejahteraan umum, mencerdaskan kehidupan bangsa, dan ikut melaksanakan ketertiban dunia berdasarkan kemerdekaan, perdamaian abadi, dan keadilan sosial."*

[15] [SKA 4] Translated from Indonesian language. Original quotation: *"Dengan demikian pengembangan dan pemanfaatan teknologi kecerdasan artifisial harus memprioritaskan pada empat pilar tersebut. Secara spesifik, ketahanan pangan dan tata kelola pemerintahan adalah bidang-bidang prioritas yang harus ditonjolkan untuk mendapat dukungan kecerdasan artifisial."*

technology in their efforts to alleviate long-term suffering resulting from colonial exploitation (Amir, 2013, p. 4). In other words, Indonesia desires to rise and catch up with developed countries in the West. However, both implicitly and explicitly, the development standards they aim to achieve not only refer to Western models but also draw inspiration from the development in other Asian countries, particularly East Asia. China and South Korea, for example, are repeatedly mentioned in the Stranas KA and Vision Indonesia 2045 documents as countries with high levels of development, economy, and technological advancement. In these two nations, their governments prioritize industrial policy, which focuses on organizing domestic industry and supporting a framework that improves the nation's global competitiveness (Johnson, 1982, p. 19). In line with this, the Vision of Indonesia 2045 document (2019, p. 2) mentions Indonesia's aspiration to become a self-reliant and influential country in Asia. However, it is important to note that this goal has not yet been achieved and hence must be pursued to attain that status.

In line with the centennial of Indonesia's independence in 2045, the GoI has set a goal of achieving national progress where AI is regarded as one of the instruments that will aid the government in accomplishing this objective, and as it is a symbol of progress in its own right.

In particular, President Joko Widodo has conveyed the Golden Vision of Indonesia 2045, which aims to transform the country into a developed nation through the development of Industry 4.0, which relies on the utilization of advanced technology. During the opening of the Hannover Messe 2021 on April 12, 2021, he made the following statement (CNN Indonesia, 2021) [JW 5]:

"2045, the centenary of Indonesia's independence, will be a golden year for Indonesia, Golden Indonesia. This is Indonesia's grand vision, Golden Indonesia realized through Industry 4.0."[16]

In the statement [JW 5] above, he repeatedly spoke about Golden Indonesia or Vision Indonesia 2045 not merely as a goal for Indonesia in the future, but as something that appeared to have already occurred and would definitely take place as he used the expression *"...will be a golden year for Indonesia"* rather *than "expected to be"…".* The word *'will'* in this context carries the power of determination and performativity, indicating that a statement can be one of the manifestations of action, highlighting the interdependent relationship between words and actions (Cavanaugh, 2015). Thus, Golden Indonesia 2045 not only signifies a distant future vision, one that is decades ahead, but also serves as an imaginary or even perceived reality of Indonesia from the present time.

What makes this [JW 5] statement more intriguing is President Joko Widodo's explicit expression that Vision Indonesia 2045 will be realized through Industry 4.0, and referring to the rapid technological advancements that have taken place since the onset of the 21st century. The term was first popularized by Klaus Schwab, the founder

[16] [JW 5] Translated from Indonesian language. Original quotation: *"Di 2045, satu abad kemerdekaan Indonesia, akan menjadi tahun emas untuk Indonesia, Indonesia emas. Ini adalah visi besar Indonesia, Indonesia emas yang diwujudkan melalui industri 4.0."*

and executive chairman of the World Economic Forum, in 2016 (Marr, 2016). AI and IoT are cutting-edge technologies believed to have the potential to spur significant changes in the 21st century, in the era of Industry 4.0.

Regarding that, President Joko Widodo mentioned in his speech at the event that Indonesia has over 2000 technology start-up companies and is the fastest country in Southeast Asia in terms of digital economic acceleration and Industry 4.0. He also highlighted Indonesia's potential industry, which includes five unicorns (start-ups valued at $1 billion) and one decacorn (start-up valued at $10 billion), stating that they could contribute approximately $133 billion to the country's GDP by 2025. Additionally, President Widodo shared that Indonesia ranks fourth globally in terms of internet access, with over 185 million users (CNN Indonesia, 2021). This statement emphasizes how the Government of Indonesia views technology, particularly AI, as a crucial component in their efforts to catch up with advanced countries, not only in terms of the economy but also in mastering the technology itself. In other words, technology is perceived as a catch-up strategy for Vision Indonesia 2045.

This ambition is reinforced by another statement from made by the President at the same event, where he conveyed (CNN Indonesia, 2021) [JW 6]:

"The advancement of Industry 4.0 will make Indonesia a top 10 global economy in the world by 2030."[17]

In this [JW6] statement, besides President Joko Widodo's emphasis on the importance of the 4.0 industry in creating economic benefits, it is also noteworthy how he has positioned Indonesia in relation to the global competition. The objective of being a 'Top 10 global economy in 2030' can be seen as Indonesia's strong aspiration of becoming one of the countries recognized for its achievements worldwide. This statement goes beyond the commonly echoed narrative about Indonesia, for example, being a beautiful country lying on the equator that is the largest archipelagic nation in the world, possessing a high degree of biodiversity and abundant natural resources which are among the largest in the world (comparative advantage narrative). However, President Joko Widodo's [JW 6] statement above can be considered to strongly signal Indonesia's readiness to compete with other developed nations (competitive advantage narrative). To achieve this condition, he also outlined three main points in the Roadmap for implementing Industry 4.0 in Indonesia. In addition to emphasizing the importance of creating a conducive investment climate for Industry 4.0 and investment in green development, another point emphasized is preparing human resources to be able to face the future of big data, AI, and IoT (CNN Indonesia, 2021).

Furthermore, the context in which the statement was delivered further reinforces Indonesia's vision of being able to compete with advanced countries. According to its official website, the Hannover Messe is the most significant

[17] [JW 6] Translated from Indonesian language. Original quotation: *"Kemajuan industri 4.0 akan menjadikan Indonesia top 10 ekonomi global di dunia di 2030."*

international platform and center for industrial transformation. Moreover, according to the International Trade Administration (ITA) (2024), the Hannover Messe is a leading industrial event that showcases the latest solutions for the entire manufacturing value chain, from industrial production to logistics and industrial energy systems, with a focus on Industry 4.0. The event, organized by the Germany-based company Deutsche Messe AG, regularly attracts over 200,000 visitors from various industries. As a highly prominent global platform, the Hannover Messe serves as a venue to reaffirm Vision Indonesia 2045, which envisions Indonesia's progress and ability to compete with other developed nations through the mastery of advanced technologies such as AI.

This signifies that the GoI's target of Indonesia becoming the tenth-largest economy globally by 2030 or the fifth-largest economy in the world by 2045, as stated by President Joko Widodo in the Vision Indonesia 2045 and Stranas KA documents, can be realized through the government-led AI development project. This notion aligns with what Scott (1999, p. 90) called 'high modernism,' namely a grand vision of how the benefit of scientific and technical advancement can be implemented in every field of human activity through government initiatives.

1.4 CONCLUSION

In this chapter, I presented a detailed examination of sociotechnical imaginaries, particularly government-driven imaginaries of AI use and development in Indonesia. Through discourse analysis, I argued that there are two interconnected prevailing imaginaries regarding AI in the Indonesian context. These imaginaries consist of the techno-solutionist logic for establishing a world-class bureaucracy and the vision of AI as a catch-up strategy for Vision Indonesia 2045. The link between these two visions demonstrates the implicit belief that advanced technology, particularly the utilization and mastery of AI, is not only a crucial means of achieving progress but also a symbol of national advancement.

These sociotechnical imaginaries assert the techno-solutionist logic, which views AI technology as a solution to various bureaucratic issues within the country. The GoI also considers AI to be a symbol of progress and success. In this context, the nuanced claim of technological determinism is accompanied by nationalist narratives – which will be further explained in the forthcoming chapter – that justify all its development and use in the national interest. This encompasses resolving fundamental problems within the country, such as the inefficiency and ineffectiveness of government bureaucracy, as well as enhancing national competitiveness on a global scale.

In Chapter 3, I will further address the underlying reasons behind these sociotechnical imaginaries concerning the use and development of AI in Indonesia as a form of technopolitics. Additionally, I will analyze the underlying notion and present the genealogy of such imaginaries, as I have already elucidated in this chapter. By employing historical analysis and an innovation policy perspective, I will examine government programs and policies in Indonesia that pertain to technology use and development. Specifically, to gain a better understanding of government-led imaginaries of AI as reflections of the ongoing, complex processes by which national technology projects are

implemented and enacted to create and uphold national technopolitical identities (Felt, 2015, p. 104), I will provide a historical analysis of several national technology-related projects from the past.

2. CHAPTER 2: THE GENEALOGY OF THE GOVERNMENTAL IMAGINARIES OF AI

On the 10th of August 1995, seven days prior to the National Independence Day commemoration, all eyes were focused on the event being held at Husein Sastranegara Airfield in Bandung. There, President Soeharto, along with Minister of Research and Technology B.J. Habibie who had led the National Aircraft Industry (IPTN) project, prepared to witness the first test flight of Indonesia's first domestically-produced aircraft. The public trial was broadcast live on national TV, attracting nationwide attention and creating a sense of tension over the ultimate success or failure of the trial and with it, this national aircraft industry project. As a large-scale, nationally-important high-tech project, billions of dollars had been spent on the plane's development, and technological bureaucratization had been realized through the establishment of state institutions dealing with the development and utilization of science and technology. In this sense, it had not only been hoped that this domestically-produced aircraft would successfully take flight, but that like the plane the country too would ascend and become a developed nation on par with Western countries through its high-tech industry. B.J. Habibie, the architect behind the project, was obsessed with a technologically deterministic vision called *accelerated transformation*. This vision was based on the notion that high technology could effectively speed up industrialization. Habibie's developmental paradigm was based on the belief that the introduction of new technology is the primary driver of social change and developmental transformation (Amir, 2013, p. 105).

The test flight proceeded smoothly, thereby enhancing the legitimacy of the New Order government in the eyes of the public. The face of the New Order government under the leadership of President Soeharto, which has long been known for its autocratic nature, was transformed into a technocratic one. Furthermore, this success softened the opposition group known as *Petition 50* (the group's name being derived from the 50 figures who led the group). According to historical records, several leaders of Petition 50 even shed tears due to their experiencing of deep emotion upon witnessing the nation's impressive display of innovative prowess in producing such high technology (Amir, 2013, pp. 111-112).

Unforeseen by anyone, two years later, during the Asian economic crisis, the highly praised project that was intended to propel Indonesia into its future of becoming an advanced nation came to a screeching halt. Concurrent with the skyrocketing unemployment rate, the massive inflation that led to significant chaos and unrest in several cities instantly dimmed the dream of high-tech industries transforming Indonesia into an advanced nation. In addition to economic factors, Amir (2013, p. 165) also identified political factors in the New Order government as having contributed to the failure of the National Aircraft Industry project.

However, as a historical fact, this story can provide valuable lessons for a nation's future development, particularly regarding the fundamental (political and social) principles that underpin the development of a technological innovation project and how these foundational perspectives subsequently impact the development of the

technology project. Therefore, in an effort to understand how AI projects are developed in present-day Indonesia and the underlying factors, I will discuss the genealogy of AI imaginaries in Indonesia in this chapter.

On that basis, after scrutinizing the actual form of governmental imaginaries of AI, I will trace the genealogy of such imaginaries by examining and analyzing other government projects that relate to the current governmental imaginaries of AI. Put differently, I will investigate how previous policies or programs influence present-day governmental imaginaries of AI. Through an examination of the intricate nature and (contested) origins, changes, and development of the governmental imaginaries of AI, I aim to understand how previous and different ideas evolved over time and the factors influencing their transformation. In this context, previous projects or programs serve as frames of reference for the governmental imaginaries of AI.

To achieve this objective, I will deploy historical analysis and critically analyze the innovation policy framework of policy dancing as a conceptual tool to examine the government's previous projects (i.e., e-government program and the Making Indonesia 4.0) that have a close connection to the emergence of AI imaginaries in present-day Indonesia. Moreover, I will also scrutinize the government's relevant statements in various sources such as news media, previous research on innovation and technological development, and government documents.

2.1 E-GOVERNMENT: MOBILIZING TECHNO-DETERMINISM VIEWS IN GOVERNMENT BUREAUCRACY

"...Electronic-Based Government System (SPBE) or e-government refers to the utilization of Information and Communication Technology (ICT) in the administration of government to provide services to government agencies, civil servants, businesses, society, and other parties. SPBE aims to promote and establish a transparent, participatory, innovative, and accountable governance system. It seeks to enhance collaboration among government agencies in carrying out administrative tasks and responsibilities to achieve common goals. SPBE also aims to improve the quality and accessibility of public services to the general public, while reducing instances of abuse of power such as collusion, corruption, and nepotism through the implementation of an electronic-based public monitoring and complaint system."[18]

The quote [SPBE 1] above comes from the Background section of the official document Presidential Regulation Number 95 of 2018 on the Electronic-Based Service System (SPBE) or e-government, which serves as the foundation for the use of ICT technology in government bureaucracy in Indonesia. This document presents a comprehensive overview of what, how, and why ICT technology is intended to be used in governance. I will use

[18] [SPBE 1] Translated from Indonesian language. Original quotation: *"Sistem Pemerintahan Berbasis Elektronik (SPBE) atau e-government, yaitu penyelenggaraan pemerintahan yang memanfaatkan TIK untuk memberikan layanan kepada instansi pemerintah, aparatur sipil negara, pelaku bisnis, masyarakat dan pihak-pihak lainnya. SPBE memberi peluang untuk mendorong dan mewujudkan penyelenggaraan pemerintahan yang terbuka, partisipatif, inovatif, dan akuntabel, meningkatkan kolaborasi antar instansi pemerintah dalam melaksanakan urusan dan tugas pemerintahan untuk mencapai tujuan bersama, meningkatkan kualitas dan jangkauan pelayanan publik kepada masyarakat luas, dan menekan tingkat penyalahgunaan kewenangan dalam bentuk kolusi, korupsi, dan nepotisme melalui penerapan sistem pengawasan dan pengaduan masyarakat berbasis elektronik."*

this document to analyze the vision of technological implementation as a solution to address issues and enhance the quality of bureaucracy in Indonesia, which was previously discussed in the first chapter (1.2. Techno-solutionist Logic for World-Class Bureaucracy). Specifically, this document elucidates the fundamental paradigm of e-government programs by delineating their features, rationalizing the formulation of problems, and explaining why technological integration is crucial for Indonesian bureaucracy. Within the conceptualization of e-government in the [SPBE 1] aforementioned quote, I also identify the governmental imaginaries that have elements of technological determinism within the bureaucracy, which will be further explained below.

In this document, the term Artificial Intelligence is used several times to describe a type of technology that can assist in addressing problems and improving the quality of governance. The document explicitly outlines the purpose of using AI to achieve desired conditions within the government bureaucracy in Indonesia, as follows (2018, pp. 11-12) [SPBE 2]:

> *"Artificial Intelligence (AI) is a technology of artificial intelligence in machines that has cognitive functions to learn and solve problems just like humans do. The use of AI in SPBE has the potential to assist the government in reducing administrative burdens such as answering questions, filling out documents, searching for documents, translating voice/writing, and drafting documents. In terms of public services, AI can help solve complex issues such as social problems, health, and financial transactions."*[19]

Apart from that, President Regulation Number 95 of 2018 concerning e-government also mentions two stages of program development. The first stage is the foundation development stage, which will be carried out from 2018 to 2022. This stage includes all the necessary elements to start the project, such as human resources and infrastructure availability. The next stage is the development stage, scheduled for 2023 to 2025. In this stage, several goals need to be achieved, primarily focused on improving the quality and capability of e-government services that were established during the first stage. One notable distinction in this stage is the utilization of e-government service portals based on AI and big data (Yulianto et al., 2023, p. 420). This indicates how the GoI perceives AI as a means to solve problems in bureaucracies and public services.

In this sense, there is a nuance of technological determinism that informs government policy to include technology systems as the aim of bureaucracy. Technology determinism, as discussed by Amir (2013, p. 38), *"is a modern ideology that rests on the belief that technology constitutes the main force driving social change in society."* It is a presumption that the utilization of such technology within governmental bureaucracy can drive social change and

[19] [SPBE 2] Translated from Indonesian language. Original quotation: *"Artificial Intelligence (AI) merupakan teknologi kecerdasan buatan pada mesin yang memiliki fungsi kognitif untuk melakukan pembelajaran dan pemecahan masalah sebagaimana halnya dilakukan oleh manusia. Pemanfaatan AI dalam SPBE berpotensi membantu pemerintah dalam mengurangi beban administrasi seperti menjawab pertanyaan, mengisi dokumen, mencari dokumen, menerjemahkan suara/tulisan, dan membuat draf dokumen. Dalam hal pelayanan publik, AI dapat membantu memecahkan permasalahan yang kompleks seperti permasalahan sosial, kesehatan, dan transaksi keuangan."*

developmental transformation. This notion emphasizes the logic of efficiency and aligns with the ambition to achieve a world-class bureaucracy, as discussed in Chapter 1.

Furthermore, in addition to using AI as a solution for bureaucratic issues, the GoI also views AI as a goal. Specifically, the use of AI in bureaucracy is seen as an accomplishment that must be attained. This perspective is evident in public policy documents issued by the government. For instance, to establish more binding regulations, the government issued Minister of ABR of the Republic of Indonesia Regulation No. 7 of 2022 in 2022. This regulation pertains to work systems in government agencies with the aim of simplifying bureaucracy. Article 6 of this regulation states that the objectives of adjusting work systems include the following: a) achieving effective and efficient work processes, b) ensuring the accomplishment of strategic goals and organizational performance, c) optimizing the utilization of human resources, and d) maximizing the utilization of information and communication technology.

It is worth noting that in this context, ICT technology is not merely seen as a tool to create effectiveness and efficiency in bureaucratic processes but also as an end to the bureaucratic process (point d). In this setting, once again, there is also an emphasis on technological determinism, which asserts that technology is a driving force behind society. It suggests that technical progress follows a one-way trajectory and shapes human social and cultural progress.

However, besides the GoI's imaginaries about AI in bureaucracy, which include the technological determinism view discussed above, the current and real implementation of e-government in Indonesia faces several challenges. This is because the e-government project, which is part of bureaucratic reform, has a big and ambitious target, namely to create a high-performing government bureaucracy and public services within a relatively short period of time.
In addition to the explanation of how this e-government project is progressing and is unlikely to achieve the target of a world-class bureaucracy by 2025, as discussed in Chapter 1, Yulianto et al. (2023, p. 419) argue that the success rate of e-government implementation in national and local governments is highly diverse. The success rate is strongly determined by the readiness of human resources and the availability of infrastructure.

One of the most interesting findings about e-government implementation, according to studies by Yulianto et al. (2023, p. 419), is the non-existence of e-government governance, which regulates the application and infrastructure development nationally in order to ensure the alignment of e-government practices between the central and local levels. Thus, this problem leads to overlapping program implementations and inefficiency. This irony arises as the actual implementation contradicts its aim of promoting bureaucratic efficiency. Therefore, according to Utama (2020, p. 192), it is no wonder that, along with many other issues, only 9 percent of the population in Indonesia will benefit from this e-government program by 2020.

2.1.1 Scrutinizing Gap Between Declared Policy (Policy as Rhetoric) and Enacted Policy (Policy as Practice)

In order to thoroughly evaluate the execution of e-government policy and address any gaps between imaginaries, discourse, and/or rhetoric and reality, I will utilize the innovation policy dance metaphor framework developed by Kuhlmann et al. (2010). Kuhlmann et al. (2010) used a heuristic called the 'innovation policy dance metaphor' to gain a deeper understanding of the patterns and interactions among innovation practice, policy, and theory (IPT) trajectories. They specifically analyzed the correlation (or lack thereof) among the three main constituents of IPT. According to them, the formation of ideas, rationales, and instruments for innovation policy is a direct result of interaction learning between actors involved in innovation practice, public intervention techniques connected to innovation, and innovation research and theory. The ongoing interaction between these three parties results in the development and alteration of configurations in innovation policy and theory. This heuristic enables the recognition of situations where innovation practice, theory, public policy, or private policy might act as the main driving factor in a particular arrangement (Kuhlmann & Ordóñez-Matamoros, 2017, p. 7). More precisely, in this particular case, I will utilize this framework to analyze the reasons for shortcomings in the implementation process of e-government programs by carefully examining each component (namely, innovation practice, policy, and theory) systematically.

First, failures in innovation practice can be attributed to a weak entrepreneurial and innovation culture. This is characterized by a lack of effective planning skills, a tendency to avoid risks and exert effort, a lack of enthusiasm or trust in collaborative projects, and a low level of private investment in the development and implementation of knowledge and technology (Kuhlmann & Ordóñez-Matamoros, 2017, p. 7). Looking at the case of e-government programs in Indonesia, the culture of innovation tends to be weak, and one reason for this weakness is that innovation development and S&T infrastructure are predominantly funded by the public sector (Damuri et al., 2018, p. 109). According to Damuri et al. (2018, p. 100), the primary focus of research and development (R&D) expenditure in Indonesia has been on the government sector, with government agencies and public institutions accounting for 80% of the investment. This creates a condition where actors outside the government are unable to make meaningful contributions.

The second aspect is the policy aspect. Referring to the case of e-government program implementation in Indonesia, a study found that civil servants lacked competency in the field of IT and the necessary computer skills to run the program (Yulianto et al., 2023, p. 419). This issue is further compounded by instances of abuse of authority in government bureaucracy, such as corruption, collusion, and nepotism (*KKN*). Moreover, government routines primarily focus on promoting extractive economic activities and exploiting natural resources, with little emphasis on developing high-value products (Kuhlmann & Ordóñez-Matamoros, 2017, pp. 15-16). Additionally, the availability of infrastructure to support the implementation of this program is unevenly distributed, especially in the eastern regions of Indonesia, which lag significantly behind.

The third aspect is the theoretical aspect, which is crucial in public policy and innovation practice as it provides the foundation for both. However, theories can also lead to failures or theoretical failures that occur due to their

incompatibility with the application scenario, leading to a disregard for reality (Kuhlmann & Ordóñez-Matamoros, 2017, p. 10). In the context of implementing an e-government program and its relationship with AI policies, as discussed earlier, the government's perspective is based on the paradigm of technological determinism. This perspective has inherent weaknesses and tends to oversimplify issues as purely technical. Additionally, as mentioned previously in this thesis, the government adopts the quadruple-helix model as the basis for implementation, involving various stakeholders such as government, academia, industries, and civil society organizations. Nevertheless, despite the presence of several actors, the government's role appears significantly more dominant in terms of policy implementation. This is referred to as the National Innovation System (NIS) model. NIS is an innovation policy theory that aims to achieve long-term economic growth and national competitive advantage (Kochetkov, 2023, p. 266). One weakness of this theory is its disregard for the importance of building innovation capacity at different levels (i.e., local and national) and across various sectors (Kuhlmann & Ordóñez-Matamoros, 2017, p. 12). However, ensuring equal capacity building is essential to promote sustainable innovation. In the case of AI utilization in public services and bureaucracy in Indonesia, there exists an infrastructure and human resource gap between the national and local levels, as explained by Yulianto et al. (2023) above.

The three aspects mentioned above are not independent, but rather are interconnected, as if they are 'dancing partners.' Typically—although not always—each of these aspects represents the respective interests of the actors involved in the policy. The innovation practice aspect is the manifestation of the interests and actions of entrepreneurs, innovators, or industries, With the theoretical aspects representing the involvement of researchers and academia. Lastly, the policy aspect lies within the government's domain (Kuhlmann & Ordóñez-Matamoros, 2017, p. 9).

Within the context explained above, the government plays a dominant role in every aspect. In addition to policies, the paradigm of technological determinism arises from the government's desire to immediately harness technology and address problems. Similarly, in terms of practice, R&D and technological development efforts are still concentrated within the government sector. This condition creates an asymmetrical power dynamic (or 'balance') between the government and other actors, resulting in so-called 'bumpy dancing' due to the lack of alignment between the three dance partners.

Assessment of this program is crucial because e-government is a government initiative that serves as the foundation for policies related to the use of AI in bureaucracy. The aim is to create a vision of World-Class Bureaucracy. Therefore, whatever happens in the implementation of this program will inevitably impact how the utilization of AI can be achieved. Furthermore, it is crucial to understand and provide an overview of the discrepancy between *declared policy* (policy as rhetoric: frames, imaginaries) and *enacted policy* (policy as practice), which is particularly relevant in the context of AI-related policies. This matter will be discussed in further detail in Chapter 3.

Nonetheless, this e-government program, launched in 2018, serves as a foundational component for conducting government operations using digital platforms. Efficiency and effectiveness are the two main keywords emphasized in the government's official policy document. Within the e-government program, the GoI explicitly recognizes that digital technology is a crucial tool for making bureaucratic tasks and public services more efficient and effective. The main objective of e-government is subsequently adopted and refined in the Stranas KA, where bureaucratic reform through the utilization of AI is one of the priority areas for AI development in Indonesia. Ultimately, the government has set a goal to have a world-class bureaucracy. However, this viewpoint is a technological determinist one that believes AI technology has a major or significant role in determining changes in the quality of bureaucracy in Indonesia.

2.2 MAKING INDONESIA 4.0. AND TECHNO-NATIONALIST VIEWS

In the previous section, I examined how sociotechnical imaginaries within the governmental discourse of AI manifest in the bureaucratic realm. Additionally, it was discussed that this vision of AI implementation in bureaucracy is not merely for the sake of bureaucracy itself but, more importantly, to facilitate the better quality of public service provision, including business licensing. This indicates that one of Indonesia's primary concerns regarding AI use is cultivating economic benefits.

In that regard, the GoI established a project named Making Indonesia 4.0, with the project's campaign launched in 2018 by the Ministry of Industry (MoI) of Indonesia. This project was launched in response to the new era of Industry 4.0, which is marked by increasing interaction, connectivity, and convergence of people, machines, and other resources as a result of advancements in ICT technology. These rapid changes have impacted all industry value chains and created new business models based on digital technology to achieve greater efficiency and improve product quality (Making Indonesia 4.0, 2018, p. 1). In the official document Making Indonesia 4.0, the GoI asserts how they perceive the Industry 4.0 era as an opportunity to revitalize the manufacturing sector and accelerate the achievement of the vision of becoming one of the top 10 biggest economies in the world by 2030. Thus, the GoI, through the MoI, is developing Making Indonesia 4.0 projects to deploy Indonesia's Industry 4.0 strategy and roadmap. In this sense, several advanced technologies such as robotics and sensor technology, 3D printing, the Internet of Things (IoT), Human-Machine Interface, and AI are considered the key drivers of this new industrial revolution.

From this perspective, it can be observed that the policy framing associates AI with significant and comprehensive change and considers it an essential element in Industrial Revolution 4.0 (Ulnicane et al., 2022, p. 43). The government emphasizes the utilization of advanced technology, such as AI, in a positive context, with the expectation that it can provide solutions to societal problems and stimulate economic growth.

As the aim of Making Indonesia 4.0 is to realize Indonesia as a Global Top 10 Economy by 2030, the GoI explicitly has three strategies to achieve the objective. These strategies include: 1) regaining the net export position by

increasing its contribution to GDP by 10 percent, which is the same level as in 2000 (re-industrialization), 2) enhancing output while managing production costs by improving productivity-to-cost by two times (similar to the improvement speed in India), and 3) building local innovation capabilities by increasing R&D spending share to 2 percent of GDP (similar to the level in China) (Making Indonesia 4.0, 2018, p. 2).

These strategies clearly express Indonesia's desire and need to catch up with the countries experiencing the most rapid economic development, such as China and India. Therefore, technological development, including AI, is considered a crucial aspect in achieving this goal. It is not only about improving the country's economy, but also about reaching the same level as other countries in the world. This national agenda signifies that Making Indonesia 4.0 is more than just a project to boost the country's economy. It also demonstrates Indonesia's readiness to compete with other countries through technological advancements. In other words, the Making Indonesia 4.0 project embodies nationalist rhetoric, which aligns with the views of techno-nationalism. This vision is in line with Vision Indonesia 2045, which envisions a prosperous future for Indonesia, and serves as the foundation for the formulation of Indonesia's National AI Strategy, as mentioned in the Stranas KA document.

In addition to the discourse on the development of advanced industries and technologies, Making Indonesia 4.0 also emphasizes the importance of fairness in terms of equal and mutually beneficial partnerships between Indonesia and other countries, especially those in the West. In this regard, the GoI is actively engaging in diplomacy to ensure the success of the Making Indonesia 4.0 program, which includes utilizing diplomats from the Ministry of Foreign Affairs, as stated on their official website below (Ministry of Foreign Affairs, 2023) [MFA 1]:

"Aside from the preparation of domestic instruments, Indonesia's diplomacy in actualising Industry 4.0 is also carried out by taking a multi-level approach to foreign partners, through more than 130 Indonesian Representatives abroad. These various industrial diplomacy efforts include intensive promotion in various bilateral, regional and global forums for the prospects of national investment cooperation which is currently focused on the downstream industrial sector based on equal and mutually beneficial partnerships. Various explorations of cooperation with world-leading investors and industrialists are carried out in order to advance the domestic industrial sector."

"As part of this effort, Indonesia also actively participates in global-scale technology, trade, investment, and tourism exhibitions."

Consistent with this [MFA 1] statement, the discourse developed by GoI regarding the use and development of AI to achieve Vision Indonesia 2045 is not only limited to mastering sophisticated AI technology equivalent to the AI technology that has been developed and employed in developed countries but also to a fairer approach to global AI governance in line with the interests of the Global South countries, including Indonesia. In this scenario, the field of AI policy has evolved into a global battleground, with nations and regions competing against one another in their quest to fully exploit its capabilities. Nevertheless, governments strive to gain competitive edges by adopting similar narratives and imaginaries related to AI, focusing more on economic and geopolitical issues rather than social and

ethical considerations. In doing so, they employ future-oriented narratives to manage uncertainties (Ulnicane & Erkkilä, 2023, p. 621).

Pertaining to this context, Nezar Patria, Deputy Minister of Communications and Informatics, at the UN Secretary General's High-level Advisory Body on Artificial Intelligence held in February 2024 in Slovenia, made the following statement (Kristianti, 2024) [NP 1]:

"The Global South should not be viewed as mere markets. We need equality in international AI governance."

This assertion indicates that the GoI has linked this AI project to the historical context of colonialism in Indonesia, which prevented the nation from achieving equality and advancement comparable to other developed countries in the Global North. The statement addresses global inequality and aims to make progress in this area. High-technology mastery and development, particularly in AI, are suggested as key factors in achieving national glory and a prosperous future for the country. This would serve as a means of modernizing and enhancing Indonesia's sovereignty and global reputation (Amir, 2007, p. 289). Additionally, according to the concept of techno-nationalism, in the context of technological development, Amir (2013, p. 11) also explains that the ideology of nationalism is manifested in three goals to be achieved, namely: 1) to construct a national identity, 2) assert national sovereignty, and 3) promote national integration, both culturally and geographically.

If we were to link this with the context of the development and use of AI in Indonesia, the manifestation of nationalist ideology to construct national identity is explicitly stated in the Stranas KA document as follows (2020, p. 14) [SKA 5]:

"A national strategy for artificial intelligence is needed so that the development and use of artificial intelligence technology can be in line with national interests and have ethical responsibilities whose values are based on Pancasila."[20]

Pancasila is a state philosophy containing five principles: 1) the belief in God, 2) humanity, 3) nationalism, 4) democracy, and 5) social justice, and is considered a set of guidelines that remain relevant, including concerning the challenges encountered in the competition surrounding the development of AI in accordance with Indonesia's national identity. In this regard, Gadjah Mada University (UGM), one of the leading universities in Indonesia, along with UNESCO, have developed ethical principles on the use of AI that are based on the values espoused by *Pancasila.* For example, in the webinar, *AI Ethics in Indonesia: Contextualizing UNESCO's Recommendation on Ethics of AI within Pancasila*, which is a continuation of the references and recommendations for basic research on

[20] [SKA 5] Translated from Indonesian language. Original quotation: *"Strategi nasional untuk kecerdasan artifisial ini dibutuhkan agar pengembangan dan pemanfaatan teknologi kecerdasanartifisial ini dapat selaras dengan kepentingan nasional dan memiliki tanggung jawab etika yang nilai-nilainya berlandaskan Pancasila."*

AI ethics based on Pancasila values, the UGM Faculty of Philosophy and UNESCO agreed to provide recommendations for AI ethics in the Indonesian context (Pradnya, 2023).

Regarding national sovereignty, in the Stranas KA document the concept of national sovereignty is emphasized in relation to AI in Indonesia. In fact, the term 'sovereignty' is mentioned 15 times, specifically referring to the sovereignty of the state in terms of data and network sovereignty. As an illustration, it is expressed in the following manner (2020, p. 26) [SKA 6]:

"To achieve Vision Indonesia 2045, the Indonesian government is reviewing effective strategies for artificial intelligence that can lead Indonesia to the four desired conditions:

1. Sovereign Indonesia: because Indonesian Data Sovereignty is for the benefit of Indonesia and is not controlled by foreign parties."[21]

In this context, sovereignty extends beyond the notion of territorial sovereignty and takes on the shape of digital sovereignty. The cross-border, multi-tiered governance of AI plays a crucial role in corporate governance as it involves managing and regulating AI systems across different jurisdictions. This governance structure also includes the collection and analysis of large amounts of classified data, which can have significant implications for individuals and governments (Baxi, 2024). This refers to the concept of sovereignty, which involves the ability to maintain and protect all aspects of data and technology to prevent harm to the state and the people. It is based on the GoI's perspective that views data as a new type of asset that is equal to or even more valuable than natural resources. In his state speech before the plenary session of the parliament, President Joko Widodo stated (Sembiring & Asmara, 2019) [JW 7]:

"Data is a new type of wealth for us. Now, data is more valuable than oil. Therefore, data sovereignty must be realized. Citizen' rights to personal data must be protected. Regulations must be prepared immediately without any compromise!"[22]

In addition, sovereignty in this context can also be seen as the country's ability to achieve self-sufficiency in the development of AI technology without relying on Western countries. There are three functions of this: firstly, the technology fulfills critical functions of the country (e.g., security and defense); secondly, it supports long-term economic competitiveness; and thirdly, it advocates for the advancement of societal preferences within the context

[21] [SKA 6] Translated from Indonesian language. Original quotation: *"Untuk mencapai Visi Indonesia 2045, maka pemerintah Indonesia mengkaji strategi-strategi efektif untuk kecerdasan artifisial yang dapat mengantarkan Indonesia ke dalam empat kondisi yang dicita-citakan: 1. Indonesia berdaulat karena adanya Kedaulatan Data Indonesia untuk kepentingan Indonesia dan tidak dikuasai oleh pihak asing."*

[22] [JW 7] Translated from Indonesian language. Original quotation: *"Data adalah jenis kekayaan baru bangsa kita, kini data lebih berharga dari minyak. Karena itu kedaulatan data harus diwujudkan. Karena itu kedaulatan data harus diwujudkan hak warga negara atas data pribadi harus dilindungi. Regulasinya harus segera disiapkan tidak boleh ada kompromi!"*

of focused sociotechnical progress (Edler et al., 2023, p. 6). This advanced technological progress is a component of the rhetoric of nationalism (Amir, 2013, p. 93).

Furthermore, techno-nationalism serves as a means of uniting socially and culturally diverse individuals by fostering a sense of national pride through the impressive nature of technological systems and artifacts. Techno-nationalism eliminates both the horizontal and vertical divisions between individuals, resulting in a harmonious fluidity of all national components. From this perspective, technology is not merely a tangible object but rather a fusion of shared symbols that encompass social and cultural elements such as language, histories, myths, and utopias. Technology acts as a conduit for an imagined community (Amir, 2007, p. 284). The storyline of AI development, with all its utopian promises for a better life and society in Indonesia's future, can be viewed as a demonstration of how the GoI is encouraging its citizens to embrace this emerging technology along with its potential to leverage national pride.

There is no convincing evidence yet that the AI technology under development in Indonesia can truly amaze all elements of society and leave them longing for how this technology can truly become a matter of national pride. The enthusiasm surrounding the development of the national aircraft industry in the New Order government era 'unifies' the excitement of people from all backgrounds and social strata, ranging from the general populace to the privileged class, in their desire to see Indonesia develop into a more superior nation, which might not be replicated concerning this AI technology. Nevertheless, this can be understood as one of the factors distinguishing between the two, which is the absence of a prominent and extensively validated national or domestic AI product that substantiates the claim of Indonesia being a dominant force in global AI development.

This raises the question of whether the proliferation of AI in Indonesia is indeed occurring on a large scale, rapidly, and with a significant impact, thus having the potential for a promising future through its use, or if it is primarily driven by utopian narratives without substantial evidence to support it. Although Deputy Minister of Communication and Information, Nezar Patria, has stated that Indonesia's citizens are highly optimistic about the use of AI (Livicansera, 2024), which suggests positive public acceptance of this technology, it does not address the specific ways in which AI contributes to national integration.

2.2.1 Scrutinizing the Gap Between Declared Policy (Policy as Rhetoric) and Enacted Policy (Policy as Practice)

In practice, there is the possibility of Making Indonesia 4.0 encountering various obstacles. By utilizing the innovation policy dance framework developed by Kuhlmann et al. (2010), I will now explain the many potential obstacles:

The first aspect to consider is innovation practice. The potential for failure in this aspect can be significant, as entrepreneurs and industry players have not yet had sufficient opportunities to contribute or perform their 'dance.'

As previously mentioned, innovation development and S&T infrastructure in Indonesia are primarily financed by the public sector (Damuri et al., 2018, p. 109). According to Damuri et al. (2018, p. 100), the main focus of research and development (R&D) spending in Indonesia has been on the government sector, with government agencies and public institutions accounting for 80% of the investment.

The second aspect is the policy aspect. Classic issues such as infrastructure availability, competence of human resources (Rezqianita & Ardi, 2020), and the presence of corruption, collusion, and nepotism (KKN) can pose serious obstacles to the development of Indonesia's industry and innovation.

The third aspect is the theoretical aspect. In line with the approach used in the e-government program, it appears evident in this project that the government plays a dominant role compared to other actors in achieving long-term economic growth and national competitive advantage (Kochetkov, 2023, p. 266). This approach is known as the National Innovation System (NIS). However, it is also apparent that there is an inherent rhetoric of nationalism in the narrative of this program, which can potentially lead to catastrophic failure if not properly controlled. As previously explained, in the narrative of techno-nationalism, the desire to achieve technological superiority often takes precedence over the primary goal of providing welfare to citizens through the use of technology. As stated by Amir (2004, p. 113), the ideology of techno-nationalism can exhibit distorted rationality, where the government prioritizes prestige over meeting basic needs. Within the context of the implementation of Making Indonesia 4.0, which aims to become one of the top 10 global economies by 2030 and gives the government significant power over other stakeholders, there is a high likelihood of a gap emerging between the declared and enacted policies, as it neglects the importance of equal capacity building for innovation at the national, regional, and local levels, as well as in various sectors (Kuhlmann & Ordóñez-Matamoros, 2017, p. 12).

Ultimately, it can be seen that the narrative of AI and other high technological advancements, as narrated in Making Indonesia 4.0, serve as a means of ‘catching up’ with developed countries. As mentioned by Amir (2013, p. 10), this narrative is closely tied to the belief that technological supremacy and economic prosperity—that lead to better living conditions of citizens—may occur when a country’s competitiveness in the global market improves through technical progress. Nevertheless, the implementation of this program has been confronted with numerous formidable challenges that have the potential to impede its effective implementation. This can result in a divergence between practice and rhetoric.

2.3 CONCLUSION

In this chapter, it has been explained how two government programs/projects are associated with the sociotechnical imaginaries of AI in Indonesia. Firstly, e-government is a program that relies on the use of information technology, particularly AI, to achieve the vision of a world-class bureaucracy. This program also highlights the origin of the technological determinism paradigm found in AI imaginaries. In this sense, AI technology is acknowledged as a

vital tool for enhancing efficiency and effectiveness, leading to substantial changes in Indonesia's governance and public service.

Secondly, the Making Indonesia 4.0 initiative was launched with the goal of establishing Indonesia as a global economy capable of competing with other nations. The utilization of advanced technologies, such as AI, serves as a key instrument by which to achieve these objectives. This aligns with the Vision of Indonesia 2045, which is based on the assumption that technology has the potential to transform Indonesia into a major economic power if properly harnessed, thereby benefiting its citizens. However, AI is not only used as a tool to achieve the goal but as the goal itself–this means that AI development and mastery are the goals in themselves, which serve to provide a sense of superiority in the technological aspect. Although there has never been an official technological development roadmap (e.g., from Industry 1.0 to 3.0), and it has only been two years since the Chairman of the World Economic Forum introduced the term Industrial Revolution 4.0, the government has employed techno-nationalist rhetoric to justify its actions in the implementation of the Making Indonesia 4.0 program.

From a public policy perspective, the two programs in Indonesia, which serve as the basis of AI imaginaries, face several challenges. These challenges include a lack of infrastructure, human resources, and a policy paradigm that fails to address the complexity of society. This suggests a discrepancy between discourse and reality, indicating that visions, imaginaries, and/or discourse may serve functions and purposes that extend beyond practical implementation. Furthermore, the government predominantly determines the forms of practice, policies, and paradigms used, in contrast to other actors.

An interesting aspect of this is the potential impact of sociotechnical imaginaries within the governmental discourse of AI on politics. In other words, what kind of impact can AI technology have on politics? I will elaborate on this further in Chapter 3.

3. CHAPTER 3: AI AS AN EMBODIMENT OF TECHNOPOLITICS IN INDONESIA

The two previous chapters present a description and critical review of government-led imaginaries of AI in Indonesia, along with their genealogy. This shows how the imaginaries of AI in Indonesia, such as world-class bureaucracy and Vision Indonesia 2045, align with GoI's previous technological programs. Moving forward, in this final chapter, I will scrutinize why these sociotechnical imaginaries within the governmental discourse of AI use and development are being crafted by the GoI. As the previous chapter illustrated the historical path of techno-solutionist logic and the catch-up strategy in the governmental discourse of AI in Indonesia, this chapter will present an analysis of technopolitics, which emphasizes the reciprocity betw¬een technology and politics in pursuing public legitimacy.

To start with, addressing technopolitics by mobilizing a power reasoning approach will allow us to understand how the GoI exercises its power to direct action related to AI-related programs and narratives. Technopolitics refers to the convergence of technical systems and political practices, which leads to the formation of novel forms of power and agency (Edwards & Hecht, 2010). Kurban et al. (2017, p. 502) argued that the integration of technology and politics takes place within a context of national and social identity narratives, resulting in distinct policy stances and tangible results. Additionally, power reasoning can be defined as the strategic utilization of resources, such as knowledge and rationality, by actors participating in policymaking to influence the decision-making process. It suggests that the individuals concerned should advocate for the desired outcomes by offering rational justification. Particularly, I will reflect on how these government-led imaginaries can materialize and have effects on the real world as a form of technopolitics, in which the pursuit of political ends is facilitated by technological means, specifically in the context of AI use and development in present-day Indonesia.

Furthermore, I will address the ideology that serves as the foundation for the practice of technopolitics in relation to the implementation and development of AI, as well as the governmental discourse surrounding it in Indonesia. Specifically, I will discuss the ideology and rhetoric of techno-nationalism, which aims to achieve technological superiority and pursue modernity in order to catch up with Western and developed countries in East Asia. Understanding this is crucial in recognizing that these government-led imaginaries are not just narratives and symbolic forms, but also powerful concepts that are continuously enacted and governed, with implications for sociotechnical orders.

By doing so, I hope to encourage readers to be critical of the government-led AI projects and narratives in Indonesia. Particularly, I hope this study can serve as a reminder for the public to be more aware and conscious of the political agenda accompanying the implementation of high-tech projects, specifically AI, which are narrated in a grandiloquent manner.

3.1 TECHNOPOLITICS AND AI IN INDONESIA

In this section, I will discuss the sociotechnical imaginaries of AI in the context of the governmental discourse in Indonesia. This involves examining how AI is utilized as a technological instrument for political purposes, thereby highlighting its role in technopolitics. I will further examine the close relationship between politics and [AI] technology, considering them to be interconnected entities that cannot be separated. This connection has led to the emergence of technopolitics, which is characterized by its dynamic nature, driven by technological advancement, shifting power dynamics and socio-economic transformations.

Certainly, technology is intertwined with nearly every aspect of life and has a significant impact on how nations and human civilization are shaped (Hjorth et al., 2008). Recognizing the importance of technology in life, every country strives to develop and advance science and technology, including Indonesia. Putera et al. (2022) categorizes Indonesia's efforts to advance science and technology into five periods since its independence in 1945: 1) The Era of Foundation Steps and Pioneers of S&T Systems and Innovation (1945-1966), 2) The Era of Development of National Strategic Industrial Projects (1966–1998), 3) The Era of Restructuring the National System of Research, Development, and Application of Science and Technology (1998–2004), 4) The Era of the Revival of the National Innovation System (2004–2014), and 5) The Era of Integration of the National Research and Innovation System (2015–2024), in which science and technology development is concentrated under the umbrella institution called BRIN. This marks the control and central role of the central government. Therefore, it can be said that technology is crucial in various aspects, including its relationship to politics. According to Bijker (2006, p. 2), technology matters and is relevant to people, the planet, profit, policymaking, and politics. He also emphasizes that *"technology mattered to politics because it helped to shape its very aims and means; at the same time it was also object of politics and technology policy"* (Bijker, 2006, p. 4).

The particular relationship between politics and technology lies in the fact that technology has become highly politicized, making it difficult to disregard or dispute its influence on politics (Bijker, 2006, p.10). The current dynamics surrounding AI usage and development exemplify how technology influences the political landscape of a country and even extends across countries worldwide. This includes how AI can also pose a threat to the healthy democracies in numerous countries across the globe (Coeckelbergh, 2022). The well-known case of the Cambridge Analytica scandal in the 2016 US election is highly representative of this. In flawed democracies, which are characterized by weaker institutions and less robust checks and balances, AI can worsen pre-existing problems through its exploitation by governments to entrench power and influence public opinion (Arun, 2019) (Bradshaw & Howard, 2019). Contextually, in Indonesia—and in many other countries—AI policy frames its aims based on two well-known goals of tech-policy: economic competitiveness and societal challenges (Ulnicane, 2024, p.67). In the previous chapters, I have discussed that the GoI tries to push the economic growth of the country and has an ambitious target to become one of the ten largest global economies by 2030 and the 5th largest economy in the world by 2045 through the help of AI technology, which has been materialized in government policies. On the other

hand, AI has also been considered as an instrument that can improve public services. Therefore, it is apparent that AI is political.

AI has been deemed relevant to politics due to its association with the narrative of modernization. This perspective is characterized by technological determinism, which posits that societal progress is closely tied to technological advancement. In other words, it can be said that technology is seen as a tool that drives both modernization and modernization itself. This argument aligns with Bijker's discussion (2006, p. 23), as the main claim in the theory of modernization is that technological development, along with economic, social, and cultural change, go hand in hand in coherent ways. Moreover, technology can also play a significant role in shaping politics by providing the means for political discussion and development. For example, in Indonesia, the term 'AI' was mentioned several times during the presidential candidate debate earlier this year, which subsequently garnered public attention and sparked discussions following the official debate (Sheykal, 2024).

According to Bijker (2006, p.24), technology and politics (technopolitics) are seen as two sides of the same coin that develop simultaneously and influence each other, a concept known as co-production or co-evolution. This viewpoint aligns with the concept of sociotechnical imaginaries. In relation to this, Hecht (2001, pp. 257-259) introduced the concept of a technopolitical regime that connects relevant human and non-human actors, such as individuals, technological artifacts, engineering and institutional practices, political programs, and institutional ideologies, to govern technological development and pursue technopolitics collectively. In this sense, technopolitics can be described as the strategic practice of designing or implementing technology to shape or embody political aims.

Hiding political agendas and power relationships in technological artifacts, practices, or systems is most likely to occur in technopolitics because it involves the intertwining of various actors and practices. In this case, the paradigm of technological determinism is often used to justify technological choices as inevitable or the only path to catch up with modernity while simultaneously discrediting other technological choices made by other parties (Hecht & Allen, 2001, p. 18). Technopolitics eventually obscured the convergence between technology and politics, which gave way to the practice of hidden political agendas.

The GoI has repeatedly employed the term AI as a keyword for achieving a prosperous Indonesia in the future, arguing that it will lead to societal advancement, coupled with the progress made in the use and development of AI. A number of statements made by President Joko Widodo (see quotations JW 2, JW 4, JW 5, JW 6) and what has been written in official documents such as the e-government (see quotation SPBE 2) and Stranas KA (see quotations SKA 1, SKA 2, SKA 4, SKA 5, SKA 6) documents illustrate how the use and development of AI in various sectors is something that inevitably must be done immediately in order to catch up to and compete with other countries in achieving progress that leads to economic growth.

In line with this, in policy studies, *"perceptions of hype and high expectations towards AI help to mobilise policymakers and stakeholders, create a sense of urgency, and guide activities and decisions in policymaking"* (Ulnicane et al., 2022, p. 41). Nevertheless, these particular policy frames of AI-related policy can have both positive and negative effects as such policy influences resource allocation and political prioritization (Ulnicane et al,. pp. 47-48). In addition, fabricating an imaginary and unsettled future requires allocating resources and political attention. It involves acknowledging that we, as a nation, exist in a competitive world and must actively pursue leadership in comprehending, harnessing, and capitalizing on the potential offered by technology and science to achieve the desired societal order. In this context, the GoI works by establishing a certain presumption, which divides the division of labor between the government as technology promoters, enactors, and civil society organizations. The assumption allows the promoters (i.e., GoI) to work as promised without much interference from civil society. Then, customers and citizens can simply enjoy this social model in the end (Kuhlmann, 2020, p. 2). This means that narratives, assumptions, or policy frames are intentionally shaped to accommodate the interests of the government itself and deliberately emphasize the role of the government to a more significant degree compared to other actors. What is the objective here? To attract resources and political attention.

As explained at the very beginning of Chapter 1, AI-related technology has been depicted as directly leading to improvements in the quality of public services that benefit society, despite this idealized image contrasting with the reality of its implementation. Thus, it demonstrates a disjuncture between *policy as rhetoric* (declared policy) and *policy as practice* (enacted policy). For this reason, as Hecht & Allen (2001, p. 18) stated, an understanding of the actual technological practices is crucial in order to see the disjuncture vividly.

However, despite the discrepancy between claims and reality, the governmental discourse regarding AI and its accompanying policies continues to persist. To understand that phenomenon more comprehensively, I will deploy a conceptual framework from policy studies called multilayered power in policy arrangements by Arts & Tatenhove (2004) to examine the AI policy in Indonesia. In this concept, there are three layers of power, with this power model serving a framework that can help to analyze different dimensions of power in governance and policy processes. This is because the concept of power itself is complex, operating at multi-layered levels and through different albeit intertwined mechanisms (Arts & Tatenhove, 2004, pp. 346-349).

The first layer is relational power, which refers to the agent's capability to achieve outcomes in interactions. This layer is also referred to as agent power or power as capacity (Arts & Tatenhove, 2004, p. 349). Reflecting on the case of AI-related policy in Indonesia, as discussed in Chapters 1 and 2, it is evident that the GoI is a major actor or significant power holder in directing AI use and development within the country. The GoI has the authority to issue regulations and allocate resources to impose its vision of AI on other actors or compel other actors, such as academia, industry, and civil society organizations, to align with its direction of AI use and development. The formulation of the Stranas KA document exemplifies this. While the GoI acknowledges the contribution of other

actors in formulating the policy documents, it ultimately retains the main power to make decisions. In other words, the final decision is still entirely determined by the GoI as the legitimate holder of power.

The second layer is dispositional power, which shapes the actor's capacity to act by mobilizing resources. *"Rules and resources mediate this process of positioning. Organizational rules define and legitimize what position agents in an organization may occupy, and the division of allocative and authoritative resources determine the relative autonomy and dependency of an agent in a certain position"* (Arts & Tatenhove, 2004, p. 350). Reflecting on the case study of AI-related policy in Indonesia, the GoI has positioned itself as the legitimate power holder which rules the country. On that basis, the GoI possesses the resources and legitimacy to enact regulations and legislation related to AI use and development in the country. As such, the GoI is the main actor playing a central role in controlling this agenda. For example, the GoI published and developed the Stranas KA document, e-government program, and Making Indonesia 4.0 project. The GoI also established the working unit called 'collaboration to accelerate Indonesian AI innovation' (KORIKA), which integrates various stakeholders such as universities/academia, civil society organizations, and industry to work together to formulate policies related to AI use and development. These examples depict how the GoI mobilizes rules and resources to achieve their desirable ends.

Another instance is seen in the findings of a study carried out by Wadipalapa et al. (2024, p. 10), wherein the central government has substantial power over the utilization of AI in government in Indonesia, often at the expense of local government initiatives. This is evident in various instances where the central government, particularly the Ministry of Communication and Informatics, uses the alignment mandate as an excuse to independently assess and occasionally disregard local AI-based innovation agendas that may not fully align with national goals. A representative from the Department of Informatics and Applications of the Office of Communication and Informatics disclosed that their office had rejected numerous AI innovation requests from local governments. This denial is based on the central government's doubt regarding the ability of local governments to successfully implement AI-based plans.

The third layer is structural power, which refers to the regimes of signification, legitimization, and domination, implying that certain actors possess the authority to legitimize their resources (knowledge and rationality) while others do not (Tatenhove, 2004. p. 351). Reflecting on the context of AI-related policy in Indonesia, the GoI holds the power to mobilize its resources in order to legitimize its actions towards AI use and development. In this sense, government policy documents, such as the Stranas KA document, can be seen as exercises of the government's power to signify its actions through the use of knowledge and rationality to justify its actions. Notions such as techno-nationalism, modernism, and technological determinism, which are present in policy documents and government statements, serve as instruments to justify their desired outcomes, with the GoI constructing a discourse that perceives AI as crucial for national progress. In other words, the content within the Stranas KA

document and other related policies exemplifies the GoI's exercise of power through signification and justifies the government's actions regarding the use and development of AI in Indonesia.

In short, these three layers of power—relational, dispositional, and structural power—reflect how the GoI holds primary power over other stakeholders in policymaking related to AI. It creates asymmetrical relations among the stakeholders involved. In relation to other stakeholders such as academia, industry, and civil society organizations, the position of the GoI is higher (and stronger) as they possess legitimacy as the ruler of the state, possessing the authority to direct policies and actions. All of this can be done by establishing rules and mobilizing their resources. As a result of its superior position in policymaking, its resources (knowledge and rationality) are evident in the form of orders, legitimation, and domination, which other stakeholders are expected to comply with. Academia, industry, and civil society organizations might have different perspectives on how AI-related policy should be directed, but in these circumstances, the government will make the final decision. In other words, other stakeholders apart from the government lack power in relation, disposition, and structure. Hence, any resources (i.e., rationality, imaginaries, and framing) should align with the major power holder or more powerful actor (i.e., the GoI) in power reasoning. This means that reflecting on the concept of multilayered power in policy arrangement, the GoI holds the majority of power, which makes it asymmetrical to other actors in the policymaking process related to AI.

Nevertheless, this technological practice as a manifestation of anything political cannot be seen as something independent of its underlying ideology. This is in line with what Hecht & Allen (2001, p. 14) stated that *"technology cannot embody politics in a conceptual or ideological vacuum."* They also assert that the notion of technological development is of utmost importance in the ideology and policies of the state (Hecht & Allen, 2001, p. 5).

Therefore, a comprehensive understanding of the underlying ideology is necessary in order to grasp the nature of technopolitics of AI in Indonesia more profoundly, as it drives the actions and imaginaries of the government concerning those policies related to the development and utilization of AI. Based on this, the ideology that combines the concepts of technological progress and nationalism, known as techno-nationalism, as well as the modernist ideology that follows the Western development model, as briefly discussed in the previous chapters, will be further discussed in the following section.

3.2 THE DISCOURSE OF TECHNO-NATIONALISM TO JUSTIFY GOVERNMENTAL FOMO

As mentioned earlier in this thesis, techno-nationalism refers to the effort to advance a country in terms of technological mastery and its related dynamics. It can be defined as a nationalistic and ideological movement that examines the social and cultural impacts of technology on the society of a certain country while simultaneously promoting a sense of national pride and identity (Gopikrishna et al., 2024, p. 30). Furthermore, the concept of techno-nationalism is often used to describe public policies that target high-tech industries and provide them with governmental support (Yamada, 2000). The aim of this techno-nationalism is to strengthen domestic industries in

terms of technological development in order to increase their competitiveness against rivals in a growing global market.

In this context, techno-nationalism is seen not only as an ideology that believes in the importance of self-sufficiency in technology mastery and development but also as inseparable from rhetoric that justifies technology projects in the name of national interests. It is clearly manifested in the governmental discourse of AI in Indonesia, where AI use and development are described as important aspects that need to be implemented through governmental policy in order to bring societal progress and prosperity to the people of the country. In this sense, as Amir (2004, p. 107) stated, techno-nationalism can be seen as a rhetorical strategy used to legitimize high-technology policy and absorb considerable economic and political resources.

AI technologies are regarded as crucial tools for advancing the country's economic growth, as outlined in Vision Indonesia 2045 and the Stranas KA document, which aims to make Indonesia the world's fifth-largest economy by 2045. This might be interpreted as a cultural imagination narrated by GoI, as it is constructed in such a way that it represents what modern Indonesia is intended to be.

A technological breakthrough through the adoption and implementation of advanced technologies such as AI has been considered and declared to be the best strategy for catching up to other advanced countries, particularly in terms of technological mastery. In this context, the Indonesian government's programs or policies related to AI use and development are grounded in the view of technological determinism, which functions to justify this technological choice and project as the one true path to achieve modernization. This view simply considers that AI technologies will bring about positive changes to society while ignoring the fact that society and technology interact. Moreover, technological determinism refers to the ability of those who have control over technological systems to limit the options available to humans in terms of ideology, economy, and politics. This can have a significant impact on the choices that humans can make in the future (Williams, 1998).

Sociotechnical imaginaries of AI, led by the GoI, which view this AI technology as an essential tool to achieve World-Class Bureaucracy and Vision Indonesia 2045, which as discussed in Chapter 1, are manifestations of techno-nationalism. These imaginaries portray AI as a highly prestigious project that will shape national identity, evoke national pride, and assert national sovereignty.

While the implementation and development of AI are often portrayed as highly beneficial for national interests, there are facts that highlight a discrepancy between the narrative claimed by the government and the actual implementation. For example, a study conducted by Wadipalapa et al. (2024) found that the implementation of AI technology in Indonesia poses multi-faceted challenges. These challenges include a lack of talent, limitations in data infrastructure, and incongruent data between local and central government. In relation to this, Amir (2004, p. 111) explains that the discrepancy between the claims made in narratives and the actual implementation is due to

the fact that the social benefits of technological advancement are not inherently present in the technological systems that elites intend to construct.

However, it is precisely here that the function of techno-nationalism as rhetoric becomes important in serving as a tool for political purposes. As stated by Amir (2004, p. 112), techno-nationalism, as a rhetorical (and discourse) strategy, promotes a reliance on technical experts. In doing so, these experts acquire additional power to accomplish their objectives. As such, techno-nationalism manipulates the public's admiration and pride to make them unquestioning or ignorant of the technological choices and usage dictated by the technology elites.

In the current context of the use and development of AI in Indonesia, I am inclined to add that techno-nationalism not only encourages people to place their trust in technological elites but also in those political elites (i.e., the GoI) who hold the authority to issue policies regarding this matter. This is manifested in the National AI Strategy, Vision Indonesia 2045, World-Class Bureaucracy, e-government, Making Indonesia 4.0, and a number of other related policies.

By exploiting the public's lack of understanding of what technology entails, techno-nationalism as an ideology provides a pathway by which to captivate the public's minds through fascination with the technology in question (Amir, 2004, p. 113). Through this, political legitimacy can be obtained, as all government actions related to the implementation and development of AI are for the common good, even though the claims and realities may not always align. In this context, the ideology of techno-nationalism, with its grand rhetoric, serves as the foundation for the practice of technopolitics, as described by Amir (2013, p. 7), where "*the pursuit of political ends is facilitated by technological means".*

Besides the distorted rationality in the techno-nationalism ideology that prioritizes prestige over basic needs (Amir, 2004, p. 113), the government's obsession with their goal of catching up with developed countries and even competing with them in terms of technological capabilities also has the potential to generate unintended negative consequences. Such technological *"leapfrogging"* as a policy without a strong foundation, the problematic concept of technological determinism, and the numerous obstacles and real challenges in implementing AI are indications of potentially significant harm that should be taken into consideration.

Further, as demonstrated above, the discourse developed under the ideology of techno-nationalism aims to achieve modernization. Bhuyan (2020, p. 33) defines modernization as a process in which a society transitions from a 'pre-modern' or 'traditional' state to a 'modern' state. Theories of social evolutionism define modernization as a teleological pattern adopted by nations that have achieved modernity. While it is theoretically possible for certain cultures to undergo alternative transitions, no reliable sources have provided any counterexamples. The concept of modernization aligns with the notion of catching up with advanced countries by following a path of transformation towards progress similar to the Western model. Consequently, modernization is sometimes referred to as

Westernization. Hecht Allen (2001, p. 9) stated that modernity aimed to utilize Western technology to achieve economic progress in a manner that transcended emotions, divisions, and political disputes.

Within this context, the development model developed by the West is considered a universal paradigm that should be followed to achieve the desired development goals of a nation. This also refers to what Escobar (1995, p. 39) stated is a space for the creation of concepts that enable third-world countries to achieve social progress, with such a concept of development having been disseminated to third-world countries as a model for achieving progress, similar to the developmental process witnessed by Western countries, thereby ultimately leading to socio-economic prosperity in such nations. In this context, modern technology is considered a remedy for the dismal conditions experienced in third-world countries (Amir, 2013, pp. 4-5). As well, this is in line with what Kuhlmann (2020, p. 7) argued in stating that numerous developing nations are formulating their own development policy frameworks, with a significant number of them emulating the development models of Western industrialized nations. The idea that Western-style modernization is the only path to achieve socio-economic progress intersects with the concept of technological determinism, which, from a political and ideological perspective, holds serious implications as it imposes a universalization of technological institutional structures that represents the uniformity of modernity (Feenberg, 1999).

To uncover the intentions behind the following development paradigm and to catch up with the West in its promise of achieving modernization and prosperity, an approach in policy studies called policy frames can be used. Policy framing is an effective approach for gaining insights from ideas and comprehending policies, as it combines facts, principles, concepts, and interests within a structured framework (Ulnicane et al., 2022, p. 41). Building on this foundation, discourses about global leadership in AI have prompted comparisons between AI development and the new space race. Discourses on international competitiveness can effectively rally political support and resources. Nevertheless, this viewpoint, rooted in the value of 'competitiveness,' has faced significant criticism and may result in poor policies. Devoting resources to and paying attention solely to discourse that is considered attractive can distract from major and fundamental economic and social problems. Undoubtedly, this poses a significant risk that must be evaluated (Ulnicane et al., 2022, p. 44).

If not heeded, the interest in achieving technological superiority to maintain and strengthen political legitimacy beyond economic goals, Indonesia has the potential to repeat the failures of previous technology policies. Based on this, I describe the GoI's actions regarding AI and related policies as ‘Governmental FOMO’, rather than a catch-up strategy. FOMO, short for *Fear of Missing Out*, refers to the unease or anxiety that arises from the belief of being unaware or excluded from important information, events, experiences, or life choices that can enhance one's life (Przybylski, 2013, p. 1841). Coined in 2004, this term has been widely used since 2010 to describe a phenomenon observed on social networking platforms (Gupta & Sharma, 2021, p. 4882). In this context, Governmental FOMO refers to the GoI’s spontaneous reaction to cultivate a sense of participation in the global AI race, thereby avoiding

the undesirable feeling of being left behind. However, the actual circumstances do not always align with the narrative claimed by the government.

As an illustration, after the term Industry 4.0 had initially been introduced in 2016 by Klaus Schwab at the World Economic Forum (WEF), it took only two years for the GoI to adopt this concept through the Making Indonesia 4.0 program launched by the Ministry of Industry in 2018. However, previously there had been no technology/industry development roadmap (1.0, 2.0, and 3.0) in Indonesia. The GoI justifies this by arguing that such a technological leap will revitalize the domestic manufacturing sector and accelerate the achievement of its vision of becoming a major global economic power.

3.3 CONCLUSION

Using Tatenhove & Arts' (2004) multi-layered power model, this chapter has demonstrated how the GoI exerts power not only through its centralized control, but also by influencing the discourse surrounding AI, so as to present it as being crucial to the nation's advancement. A strong emphasis on techno-nationalism and technological determinism also characterizes the discourse on AI by the GoI, with these discourses serving as tools of structural power, thereby allowing the state to determine which forms of knowledge, values, and potential futures are considered valid. This enables the GoI to validate its activities and allocate resources while disregarding opposing viewpoints that may question or challenge the fundamental assumptions of these AI imaginaries.

Nevertheless, despite the robust centralized authority and meticulously constructed discourses, a notable discrepancy exists between the envisioned future and the current realities of AI implementation in Indonesia. The GoI's eagerness to swiftly bridge the gap with developed countries in advancing AI technology by committing significant resources runs the risk of disregarding underlying socio-economic challenges that need to be addressed. The GoI's pursuit of attractive initiatives with utopian narratives and discourses, which may be motivated more by a *fear of missing out* (FOMO) than by a well-thought-out strategy to catch up, reveals possible vulnerabilities in its structural power. Although the government can envision AI, there is a risk that the disparity between the discourse and the actual implementation could reveal weaknesses in its capacity to successfully achieve these goals.

Overall, although the GoI wields considerable influence in organizing and developing AI as a top priority for the nation, an analysis of the underlying power dynamics highlights both the advantages and possible constraints of this strategy.

4. CONCLUSION

This thesis sought to answer the research question: ***"How do the government-led imaginaries of AI materialize a particular form of technopolitics in Indonesia?"*** In order to do so, I divided this thesis into three chapters. The first chapter described the actual form of AI imaginaries in Indonesia, namely the imaginaries of: 1) techno-solutionist logic for World-Class Bureaucracy, which envisages AI as an essential instrument in achieving bureaucratic reform and improving public services. Uniquely in comparison to numerous other countries, the GoI views AI as an important tool for facilitating the state technocracy. Another form of the sociotechnical imaginaries of AI in Indonesia is rather similar to that in many other countries. These imaginaries commonly address technological competitiveness (Bareis & Katzenbach, 2022, p. 875), economic benefits, and serve as a tool to overcome societal challenges (Richter et al., 2023, pp. 212-215) (Ulnicane, 2024, p. 67) (Ulnicane et al., 2022, pp. 47-48). Indonesia is among the wide array of countries that imagine AI being able to address these challenges through 2) the catch-up strategy for Vision Indonesia 2045.

The view of technological determinism informs these sociotechnical imaginaries, in which AI is considered to be the main driving force for societal change. In other words, technological determinists presume that technological progress inherently leads to societal progress (Wyatt, 2008, p. 168). Furthermore, beyond concerns about economic competitiveness and societal challenges (Ulnicane, 2024, p. 67), it appears that the GoI clearly seeks to employ AI policy to promote the discourse of techno-nationalism, which encourages the nation to be prepared to compete with other nations in order to achieve technological supremacy. By applying discourse analysis, this chapter of the thesis aimed to present a nuanced reading of sociotechnical imaginaries of AI in Indonesia.

Departing from that, I presented the genealogy of such imaginaries by analyzing the underlying technology policy of the current AI imaginaries, namely 1) the e-government program, which aims to enhance the effectiveness and efficiency of bureaucracy and public services, and 2) Making Indonesia 4.0, which concerns the country's economic competitiveness on par with other nations. I also assessed these two programs using the innovation policy dance framework by Kuhlmann et al. (2010) in order to identify the gap between declared policy (policy as rhetoric) and enacted policy (policy as practice). Lack of infrastructure and human resources, as well as paradigms that tend to oversimplify societal complexity, are several problems that hinder the implementation of these programs. Moreover, it is a fact that 80% of the R&D program in Indonesia lies in the government sector (Damuri et al., 2018, p. 100). Consequently, actors outside the government are unable to make meaningful contributions, which in turn has an impact on the stagnation of the innovation climate. To a certain extent, all of these indicate failures in innovation practice, policy, and theory, specifically in AI policy in Indonesia. An interesting aspect of this is the potential impact of sociotechnical imaginaries within the governmental discourse on AI in politics. In relation to this, one question arises: If there are gaps between the sociotechnical imaginaries within the governmental discourse on AI and reality, or what Hecht & Allen (2001, p. 18) called declared policy and enacted policy, then 'why does the GoI continue to uphold these AI imaginaries within its discourse? What is the rationale behind it?'

To answer those specific questions, in Chapter 3 I examined AI as an embodiment of technopolitics, explaining the reciprocity between technology and politics in the pursuit of public legitimacy. In this sense, the pursuit of political ends is facilitated by technological means. The GoI uses the term AI as a promise to achieve a prosperous Indonesia in the future, asserting that it will bring progress to society through the use and development of AI itself. As Ulnicane et al. (2024, p. 41) stated, *"perceptions of hype and high expectations towards AI help to mobilize policymakers and stakeholders, create a sense of urgency, and guide activities and decisions in policymaking."* Based on this, sociotechnical imaginaries or fictitious narratives are needed to attract resources and public attention. Hence, the government presents a diagnosis that *'we,'* as a nation, exist in a competitive world and must actively pursue leadership in understanding, harnessing, and capitalizing on the potential offered by technology and science to realize *'our'* desired societal order. Reflecting on the case of AI policy in Indonesia, the government works by mobilizing a certain presumption, which divides the division of labor between the government as technology promoters, enactors, and NGOs. The assumption is that the promoters (i.e., GoI) should work as promised with minimal interference from civil society, and then customers and citizens can enjoy this social model in the end (Kuhlmann, 2020, p. 2). This means policy frames are intentionally shaped to accommodate the interests of the government itself and deliberately make the role of the government far more significant compared to other actors.

To accomplish this, the GoI exercises its power, through what I have explained is the three-layered power approach by Arts & Tatenhove (2004). This reveals how the GoI carries out this power exercise in greater detail. Reflecting on the Indonesian AI policy, it is clear that the GoI wields greater influence than other actors, resulting in an asymmetrical relationship among the various parties involved. Furthermore, the GoI holds a superior position compared to others, as it functions as the governing authority that determines the course of action for the state. This position is justified by the rules and resources it possesses. Due to its higher position in policymaking, the GoI possesses resources such as knowledge and rationality, which are expressed through issuing instructions, establishing legitimacy, and exerting dominance, requiring other involved actors to comply.

Thus, what is the basis for government actions and policies as they are? Hecht & Allen (2001, p. 14) stated that *"technology cannot embody politics in a conceptual or ideological vacuum."* It is the ideas or rhetoric of techno-nationalism that serve as the basic raw material. The government always raises rhetoric to cultivate national pride, build national identity, enhance the country's competitiveness, and create national independence. In this context, the discourse of techno-nationalism is employed as a means by which to justify the policies pertaining to the utilization and advancement of advanced technology, while also obtaining significant political and economic resources (Amir, 2004, p. 107). Furthermore, by exploiting the public's lack of understanding of what technology entails, techno-nationalism as an ideology provides a pathway to captivate the public's minds through fascination with the technology in question (Amir, 2004, p. 113). In doing so, political legitimacy can be obtained, as all government actions related to the implementation and development of AI are for the common good, even though the claims and realities of the situation may not always align.

However, the government's narratives concerning AI technology, which are rooted in the ideology of techno-nationalism, have received a great deal of criticism since devoting significant resources to this endeavor while paying attention solely to its related discourse that is considered attractive can distract the populace from major and fundamental economic and social problems. Undoubtedly, this poses a significant risk if it is not evaluated (Ulnicane et al., 2022, p. 44). The technological leapfrog, as a policy without a strong foundation, the problematic concept of technological determinism, and the numerous obstacles and challenges in implementing AI, indicate potential damage that should be considered. Therefore, instead of calling this GoI policy towards AI a "catch-up strategy," I prefer to call it "Governmental FOMO." This term refers to the GoI's spontaneous reaction to cultivate a sense of participation in the global AI race, thereby avoiding the undesirable feeling of being left behind. This is despite the fact that, once again, the actual circumstances do not always align with the narrative claimed by the government.

APPENDIX

1. According to AIAAC's website, incident is defined as *"a sudden known or unknown event (or 'trigger') that becomes public and which takes the form of a disruption, loss, emergency, or crisis. Most AIAAIC Repository entries are classified as incidents."* Examples: AI system or robot malfunction; Actual or perceived inappropriate or unethical behaviour by a system operator or developer; Data privacy or info confidentiality leak exposes system vulnerability.
2. Translated from Indonesian language. Original term: *"Pemerintahan Kelas Dunia."*
3. [JW 1] Translated from Indonesian language. Original quotation: *"Eselonisasi harus disederhanakan. Eselon I, eselon II, eselon III, eselon IV, apa tidak kebanyakan? Saya minta untuk disederhanakan menjadi 2 level saja."*
4. [JW 2] Translated from Indonesian language. Original quotation: *"Saya sudah perintahkan juga ke Kementerian PANRB diganti dengan AI, kalau diganti aritificial inteligence birokrasi kita lebih cepat, saya yakin itu. Tapi sekali lagi, ini juga akan tergantung omnibus law ke DPR."*
5. [JW 3] Translated from Indonesian language. Original quotation: *"Ini bukan barang yang sulit. Barang yang mudah dan memudahkan kita untuk memutuskan sebagai pimpinan di daerah maupun nasional."*
6. [JW 4] Translated from Indonesian language. Original quotation: *"Nanti dengan big data yang kita miliki, jaringan yang kita miliki, memutuskan akan cepat sekali kalau kita pakai AI. Tidak bertele-tele, tidak muter-muter."*
7. [BHW 1] Translated from Indonesian language. Original quotation: *"Pemangkasan akan mengakibatkan perampingan dalam organisasi, tetapi tidak hanya ramping saja tetapi harus mampu melakukan pekerjaan-pekerjaan yang diemban."*
8. [BHW 2] Translated from Indonesian language. Original quotation: *"Penyederhanaan birokrasi menuntut adanya birokrasi yang dinamis, desain organisasi agile, fokus pada pekerjaan fungsional, percepatan sistem kerja, kinerja optimal serta profesionalitas aparatur sipil negara."*
9. [SKA 1] Translated from Indonesian language. Original quotation: *"Pemanfaatan teknologi Kecerdasan Artifisial ditujukan untuk mengakselerasi reformasi birokrasi sebagaimana yang ditetapkan dalam Road Map Reformasi Birokrasi 2020-2024 (Peraturan Menteri Nomor 25 Tahun 2020) serta arahan Presiden RI yakni reformasi struktural agar lembaga semakin sederhana, semakin lincah, memiliki pola pikir baru, cepat dalam melayani, cepat dalammemberikan izin, dan semakin efisien."*

10.

Table 1

Stages of Achieving Five-Year Targets

WORLD-CLASS BUREAUCRACY

First Five-Year Goals (2010-2014)	Second Five-Year Goals (2015-2019)	Third Five-Year Goals (2020-2024)
Strengthening of government bureaucracy to achieve a clean and corruption-free government, enhance the capacity and accountability of bureaucratic performance, and improve the quality of public services to the community.	Implementation of the results achieved in the first five years and continuing efforts that have not been achieved in the first five years in various strategic components of government bureaucracy.	The continuous improvement of bureaucratic capacity as a continuation of bureaucratic reform in the second five-year period, in order to achieve world-class bureaucracy/governance.

11. [AZA 1] Translated from Indonesian language. Original quotation: *"Reformasi birokrasi administrasi pemerintahan, pemerintah harus bersiap disrupsi teknologi dan iklim digital dengan terus berbenah dan membangun birokrasi digital dengan fokus perbaikan sebagai digitalisasi struktur, kultur, maupun kompetensi."*
12. [NMN 1] Translated from Indonesian language. Original quotation: *"Kita ingin ke depan di visi 2024, yang kita tuju world class bureaucracy yang cirinya birokrasi pelayanan publik yang lebih berkualitas dan pemerintah yang lebih efektif efisien... bagaimana pentingnya perbaikan transformasi pelayanan publik yang lebih terdigitalisasi sehingga orang bisa mengurus atau mencari pelayanan bisa dari mana saja, tidak harus datang ke tempatnya."*
13. [SKA 2] Translated from Indonesian language. Original quotation: *"Pemanfaatan teknologi Kecerdasan Artifisial ditujukan untuk mengakselerasi reformasi birokrasi sebagaimana yang ditetapkan dalam Road Map Reformasi Birokrasi 2020-2024 (Peraturan Menteri Nomor 25 Tahun 2020) serta arahan Presiden RI yakni reformasi struktural agar lembaga semakin sederhana, semakin lincah, memiliki pola pikir baru, cepat dalam melayani, cepat dalammemberikan izin, dan semakin efisien."*
14. [SKA 3] Translated from Indonesian language. Original quotation: *"Indonesia yang Berdaulat, Maju, Adil dan Makmur, yang melindungi segenap bangsa Indonesia dan seluruh tumpah darah Indonesia, memajukan kesejahteraan umum, mencerdaskan kehidupan bangsa, dan ikut melaksanakan ketertiban dunia berdasarkan kemerdekaan, perdamaian abadi, dan keadilan sosial."*
15. [SKA 4] Translated from Indonesian language. Original quotation: *"Dengan demikian pengembangan dan pemanfaatan teknologi kecerdasan artifisial harus memprioritaskan pada empat pilar tersebut. Secara spesifik, ketahanan pangan dan tata kelola pemerintahan adalah bidang-bidang prioritas yang harus ditonjolkan untuk mendapat dukungan kecerdasan artifisial."*

16. [JW 5] Translated from Indonesian language. Original quotation: *"Di 2045, satu abad kemerdekaan Indonesia, akan menjadi tahun emas untuk Indonesia, Indonesia emas. Ini adalah visi besar Indonesia, Indonesia emas yang diwujudkan melalui industri 4.0."*
17. [JW 6] Translated from Indonesian language. Original quotation: *"Kemajuan industri 4.0 akan menjadikan Indonesia top 10 ekonomi global di dunia di 2030."*
18. [SPBE 1] Translated from Indonesian language. Original quotation: *"Sistem Pemerintahan Berbasis Elektronik (SPBE) atau e-government, yaitu penyelenggaraan pemerintahan yang memanfaatkan TIK untuk memberikan layanan kepada instansi pemerintah, aparatur sipil negara, pelaku bisnis, masyarakat dan pihak-pihak lainnya. SPBE memberi peluang untuk mendorong dan mewujudkan penyelenggaraan pemerintahan yang terbuka, partisipatif, inovatif, dan akuntabel, meningkatkan kolaborasi antar instansi pemerintah dalam melaksanakan urusan dan tugas pemerintahan untuk mencapai tujuan bersama, meningkatkan kualitas dan jangkauan pelayanan publik kepada masyarakat luas, dan menekan tingkat penyalahgunaan kewenangan dalam bentuk kolusi, korupsi, dan nepotisme melalui penerapan sistem pengawasan dan pengaduan masyarakat berbasis elektronik."*
19. [SPBE 2] Translated from Indonesian language. Original quotation: *"Artificial Intelligence (AI) merupakan teknologi kecerdasan buatan pada mesin yang memiliki fungsi kognitif untuk melakukan pembelajaran dan pemecahan masalah sebagaimana halnya dilakukan oleh manusia. Pemanfaatan AI dalam SPBE berpotensi membantu pemerintah dalam mengurangi beban administrasi seperti menjawab pertanyaan, mengisi dokumen, mencari dokumen, menerjemahkan suara/tulisan, dan membuat draf dokumen. Dalam hal pelayanan publik, AI dapat membantu memecahkan permasalahan yang kompleks seperti permasalahan sosial, kesehatan, dan transaksi keuangan."*
20. [SKA 5] Translated from Indonesian language. Original quotation: *"Strategi nasional untuk kecerdasan artifisial ini dibutuhkan agar pengembangan dan pemanfaatan teknologi kecerdasanartifisial ini dapat selaras dengan kepentingan nasional dan memiliki tanggung jawab etika yang nilai-nilainya berlandaskan Pancasila."*
21. [SKA 6] Translated from Indonesian language. Original quotation: *"Untuk mencapai Visi Indonesia 2045, maka pemerintah Indonesia mengkaji strategi-strategi efektif untuk kecerdasan artifisial yang dapat mengantarkan Indonesia ke dalam empat kondisi yang dicita-citakan: 1. Indonesia berdaulat karena adanya Kedaulatan Data Indonesia untuk kepentingan Indonesia dan tidak dikuasai oleh pihak asing."*
22. [JW 7] Translated from Indonesian language. Original quotation: *"Data adalah jenis kekayaan baru bangsa kita, kini data lebih berharga dari minyak. Karena itu kedaulatan data harus diwujudkan. Karena itu kedaulatan data harus diwujudkan hak warga negara atas data pribadi harus dilindungi. Regulasinya harus segera disiapkan tidak boleh ada kompromi!"*

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