ISSN

Journal of Institutional Policy and Governance
Vol 1, No 1, 2026 pp. 48-65

Governing Artificial Intelligence in the Public Sector: Institutional Challenges and Regulatory Responses in Emerging Economies

[1]Gayatri Sunkad, [2]Fitri Melawati, [3]Muhammad Amar Muhtadi

[1]Post Graduate in Political Science Independent Researcher, [2]Sekolah Tinggi Ilmu Administrasi Cimahi, [3]Universitas Nusa Putra

ARTICLE INFO

Article history:
Received: June, 2026
Revised: June, 2026
Accepted: June, 2026
Available Online: June 30, 2026

Keywords:
Artificial Intelligence Governance; Public Sector Innovation; Digital Government; Institutional Capacity; Regulatory Governance; Emerging Economies; Adaptive Governance.

DOI: -

ABSTRACT

The rapid adoption of artificial intelligence (AI) in the public sector offers significant opportunities to improve public service delivery, administrative efficiency, and evidence-based policymaking. At the same time, it raises complex governance challenges concerning regulation, accountability, transparency, and institutional readiness, particularly in emerging economies where regulatory frameworks continue to evolve. This study examines AI governance in the public sector through a comparative policy analysis of Indonesia and India. Guided by Institutional Theory and Regulatory Governance Theory, the research employs qualitative comparative policy analysis of national AI strategies, digital governance policies, data protection regulations, and government policy documents. The findings identify four key institutional challenges: regulatory fragmentation, limited institutional capacity, weaknesses in data governance, and ethical accountability issues. Despite differences in governance capacity and digital development, both countries have introduced important regulatory and policy initiatives to strengthen AI governance. The study argues that effective public-sector AI governance depends on the interaction between institutional capacity, regulatory readiness, ethical governance, and public trust rather than technological advancement alone. Based on these findings, the study proposes an Adaptive Public AI Governance Framework (APAIGF) as a conceptual model for strengthening adaptive, accountable, and sustainable AI governance in emerging economies. The proposed framework contributes to the literature by offering context-sensitive policy insights for governments seeking to balance technological innovation with institutional legitimacy and public accountability.

* Corresponding Author: gayatri.sunkad@gmail.com

A. INTRODUCTION

Artificial Intelligence (AI) has emerged as one of the most transformative technologies shaping contemporary governance systems (Ilcic et al., 2025). Over the past decade, governments worldwide have increasingly integrated AI into public administration, service delivery, policy formulation, regulatory oversight, and decision-making processes (Zhu, 2026). From predictive analytics for public health management and automated welfare eligibility assessments to intelligent traffic management systems and digital public service platforms, AI technologies are reshaping how governments interact with citizens and manage public resources (Zhu, 2026). The growing adoption of AI in the public sector reflects broader trends of digital transformation, data-driven governance, and the pursuit of more efficient, responsive, and evidence-based public administration.

The appeal of AI for public sector organizations lies in its capacity to process vast amounts of information, identify patterns, automate routine tasks, and support complex decision-making processes (Caiza et al., 2024; Mishra et al., 2024). Governments facing increasing public expectations, budgetary constraints, and administrative complexity view AI as a strategic tool for enhancing efficiency and improving public service outcomes (Aldemir & Uçma Uysal, 2025). International organizations such as the Organisation for Economic Co-operation and Development (OECD), the United Nations (UN), and the World Bank have repeatedly emphasized the potential of AI to contribute to sustainable development, institutional modernization, and public sector innovation. Consequently, AI has become a central component of many national digital transformation agendas and smart government initiatives (Srivastava et al., 2025).

Despite these promising opportunities, the rapid deployment of AI in the public sector has generated significant governance concerns (Vatamanu & Tofan, 2025). The integration of algorithmic systems into public decision-making processes raises complex questions regarding transparency, accountability, fairness, privacy, and democratic legitimacy. Unlike traditional administrative tools, AI systems often operate through sophisticated computational models that may be difficult for public officials and citizens to understand (Busuioc, 2021). This opacity creates challenges for ensuring accountability when AI-assisted decisions affect individuals' rights, access to services, or socioeconomic opportunities (Satyo et al., 2026). Moreover, concerns regarding algorithmic bias, discrimination, data misuse, and unintended social consequences have intensified debates about the appropriate governance of AI in public institutions.

The governance challenges associated with AI are particularly pronounced in emerging economies (Maghsoudi et al., 2025). While many developing and middle-income countries have actively embraced digital transformation strategies, their institutional and regulatory capacities often struggle to keep pace with technological advancements (Khan et al., 2024). Emerging economies face a unique combination of opportunities and constraints in governing AI adoption. On the one hand, AI offers potential solutions to persistent governance challenges, including limited administrative capacity, service delivery inefficiencies, and resource constraints (Alhosani & Alhashmi, 2024). On the other hand, weak regulatory frameworks, fragmented institutional arrangements, limited technical expertise, and insufficient data governance mechanisms may undermine the effective and responsible deployment of AI technologies.

Countries such as Indonesia and India, emerging economies have introduced national AI strategies and digital government initiatives aimed at leveraging technological innovation for economic development and public sector modernization. However, the implementation of these initiatives often occurs within institutional environments characterized by regulatory uncertainty, uneven digital infrastructure, limited public sector readiness, and evolving governance structures. In many cases, governments are adopting AI technologies faster than they are developing the institutional mechanisms necessary to govern them effectively. This imbalance creates risks associated with regulatory gaps, ethical oversight deficiencies, and reduced public trust in government-led AI systems.

Recent global developments further highlight the importance of establishing effective AI governance frameworks. The emergence of international regulatory initiatives, such as the European Union's AI Act, UNESCO's Recommendation on the Ethics of Artificial Intelligence, and the OECD AI Principles, reflects growing recognition that AI governance requires coordinated institutional responses. These initiatives emphasize principles such as transparency, accountability, human oversight, fairness, and respect for fundamental rights. While such frameworks provide valuable guidance, their direct applicability to emerging economies remains uncertain. Differences in administrative traditions, institutional capacity, regulatory maturity, and socioeconomic conditions necessitate context-specific approaches to AI governance that account for local realities and developmental priorities.

Within the public sector, AI governance extends beyond technical regulation and encompasses broader questions of institutional design, administrative capacity, and policy coordination. Effective governance requires not only legal frameworks but also capable institutions, skilled personnel, ethical oversight mechanisms, interagency collaboration, and public engagement processes. Consequently, understanding AI governance in emerging economies requires an institutional perspective that examines how formal rules, organizational structures, and governance capacities shape the adoption and regulation of AI technologies. Institutional theory provides a useful analytical lens for exploring these dynamics because it emphasizes the role of regulatory, normative, and cognitive structures in shaping organizational behavior and policy outcomes.

Existing scholarship on AI governance has expanded rapidly in recent years. Researchers have explored topics such as algorithmic accountability, ethical AI, data governance, digital government, and regulatory innovation. However, much of the current literature remains concentrated on advanced economies, particularly the United States, the European Union, Canada, and China. Studies examining AI governance in emerging economies are comparatively limited and often focus on technological adoption rather than governance capacity. As a result, important questions remain regarding how developing countries navigate institutional challenges associated with AI implementation and what regulatory strategies they employ to manage emerging risks.

Furthermore, many studies treat AI governance primarily as a technological or ethical issue while paying insufficient attention to the institutional foundations necessary for effective governance. Regulatory frameworks alone cannot guarantee responsible AI deployment if public institutions lack the organizational capacity, expertise, and coordination mechanisms required for implementation. Similarly, ethical principles may have limited practical impact without institutional arrangements capable of monitoring compliance and enforcing accountability. Therefore, there is a need for research that bridges technological governance debates with broader institutional and public administration perspectives.

B. LITERATURE REVIEW

Artificial Intelligence Governance

Artificial Intelligence (AI) governance has emerged as a critical area of inquiry as governments, businesses, and societies increasingly rely on algorithmic systems to support decision-making processes (Camilleri, 2024). The concept broadly refers to the frameworks, institutions, rules, norms, and mechanisms established to guide the development, deployment, and oversight of AI technologies (De Almeida et al., 2021; Walter, 2024). Unlike traditional information technologies, AI systems possess adaptive and predictive capabilities that may significantly influence economic, social, and political outcomes (He et al., 2025). Consequently, governing AI requires a multidimensional approach that extends beyond technical regulation to encompass ethical, legal, organizational, and societal considerations.

The rapid advancement of machine learning, natural language processing, computer vision, and generative AI has intensified concerns regarding accountability, transparency, privacy, discrimination, and

human rights (Al-Kfairy et al., 2024). Governments are increasingly confronted with questions regarding who is responsible for AI-driven decisions, how algorithmic outcomes can be explained, and what safeguards should be implemented to prevent harmful consequences (Truby, 2020). These concerns have stimulated a growing body of literature on AI governance, emphasizing the need for institutional mechanisms capable of balancing technological innovation with public interest protection.

One of the most influential developments in AI governance has been the emergence of international principles and regulatory frameworks. The OECD AI Principles established in 2019 promote human-centered values, transparency, robustness, accountability, and inclusive growth. Similarly, UNESCO's Recommendation on the Ethics of Artificial Intelligence provides guidance for ensuring that AI development respects human dignity, diversity, and fundamental rights. More recently, the European Union has introduced the AI Act, representing one of the world's most comprehensive regulatory approaches to AI governance. The Act adopts a risk-based framework that categorizes AI applications according to their potential societal impacts and imposes corresponding regulatory requirements.

Despite increasing international consensus regarding key governance principles, significant variations remain in how countries interpret and implement AI governance frameworks. Different political systems, administrative traditions, levels of technological development, and regulatory capacities produce diverse governance approaches. Consequently, scholars increasingly argue that AI governance should not be viewed as a universal model but rather as a context-dependent process shaped by institutional and socio-political environments.

Within the public sector, AI governance assumes additional importance because government decisions directly affect citizens' rights, welfare, and access to public services. Public agencies must therefore ensure that AI systems adhere to principles of fairness, transparency, legality, and democratic accountability. Unlike private organizations, governments face heightened expectations regarding legitimacy and public trust. As a result, AI governance in the public sector involves not only managing technological risks but also safeguarding democratic values and maintaining citizen confidence in public institutions.

Digital Government and Public Sector Innovation

The growing adoption of AI in government is closely associated with broader processes of digital transformation within the public sector (Alamäki, 2026). Digital government refers to the use of digital technologies to improve public administration, service delivery, policy implementation, and citizen engagement. Over the past two decades, governments worldwide have increasingly embraced digital tools to enhance efficiency, reduce administrative costs, and improve responsiveness to societal needs.

The evolution of digital government can be understood through several stages. Early initiatives focused primarily on e-government, emphasizing the digitization of administrative procedures and online service provision. Subsequently, governments adopted more integrated approaches involving data sharing, interoperability, and citizen-centered service design (Andrian et al., n.d.). Contemporary digital government strategies increasingly incorporate advanced technologies such as artificial intelligence, big data analytics, blockchain, cloud computing, and the Internet of Things (IoT).

Public sector innovation literature highlights the transformative potential of these technologies (Janssen et al., 2017). AI systems can support predictive policy analysis, automate routine administrative tasks, improve resource allocation, detect fraud, optimize public transportation systems, and enhance healthcare delivery. Such applications have led policymakers to view AI as a strategic resource for addressing complex governance challenges and improving public value creation.

The concept of public value is particularly relevant in understanding AI adoption within government institutions. Public value theory suggests that public sector initiatives should generate outcomes that are socially beneficial, democratically legitimate, and operationally feasible. From this

perspective, the success of AI implementation cannot be measured solely through efficiency gains but must also consider broader societal impacts, including equity, transparency, accountability, and citizen trust.

However, public sector innovation is often constrained by organizational complexity, bureaucratic inertia, and institutional resistance to change. Government agencies frequently operate within hierarchical structures characterized by rigid procedures and fragmented responsibilities. These characteristics may hinder the adoption of innovative technologies and complicate efforts to coordinate AI governance across multiple institutions.

Institutional Theory and AI Governance

Institutional theory provides a valuable framework for understanding how governance structures influence the adoption and regulation of AI technologies in the public sector (Rodriguez Müller et al., 2025). The theory emphasizes the role of formal rules, organizational norms, cultural expectations, and cognitive frameworks in shaping behavior within institutions (Kondra & Hurst, 2009; Thoenig, 2012). Rather than viewing organizations as purely rational actors, institutional scholars argue that organizational actions are heavily influenced by their broader institutional environments.

Scott's institutional framework identifies three interconnected pillars that sustain institutions: the regulative pillar, the normative pillar, and the cultural-cognitive pillar. The regulative pillar refers to laws, regulations, policies, and enforcement mechanisms that establish formal expectations for behavior (Abbott & Snidal, 2021). In the context of AI governance, this includes legislation on data protection, algorithmic accountability, cybersecurity, and ethical standards. Strong regulatory institutions can provide clear guidance regarding acceptable AI practices and reduce uncertainty surrounding technological adoption.

The normative pillar encompasses professional standards, ethical values, and social expectations that influence organizational behavior. Public sector organizations often operate within normative environments that emphasize transparency, accountability, fairness, and public service values. These norms shape how government agencies evaluate AI technologies and determine appropriate governance practices. For example, ethical concerns regarding algorithmic bias or discrimination may influence decisions regarding AI deployment even in the absence of formal legal requirements.

The cultural-cognitive pillar refers to shared beliefs, assumptions, and knowledge systems that shape how individuals interpret and respond to their environments. Public officials' understanding of AI technologies, perceptions of risk, and attitudes toward innovation can significantly influence governance outcomes. Where knowledge gaps and technological uncertainty are prevalent, organizations may encounter difficulties implementing effective AI governance strategies.

Institutional theory is particularly relevant for emerging economies because governance challenges often arise from institutional weaknesses rather than technological limitations. Many developing countries face fragmented regulatory environments, overlapping bureaucratic mandates, limited enforcement capacity, and insufficient technical expertise. These institutional constraints may undermine efforts to establish effective AI governance systems even when governments demonstrate strong political commitment to digital transformation.

Regulatory Governance Theory

Regulatory governance theory examines how societies design and implement mechanisms to control risks, coordinate behavior, and achieve public objectives (Levi-Faur, 2011). Traditionally associated with economic regulation, the theory has evolved to encompass broader questions regarding governance capacity, policy coordination, and institutional accountability in increasingly complex environments.

The emergence of AI technologies presents unique regulatory challenges because innovation often advances more rapidly than regulatory systems can respond (Kashefi et al., 2024). Traditional command-

and-control approaches may struggle to address rapidly evolving technological applications characterized by uncertainty, complexity, and cross-sectoral impacts (He et al., 2025). Consequently, scholars have advocated more adaptive and flexible regulatory approaches capable of responding to technological change while maintaining accountability and public protection.

Adaptive regulation emphasizes continuous learning, stakeholder engagement, and iterative policy development. Rather than relying on static regulatory frameworks, adaptive governance systems encourage experimentation, monitoring, and policy adjustment as new information becomes available. Such approaches are particularly relevant to AI governance because technological capabilities and societal risks continue to evolve. Risk-based regulation represents another influential approach within AI governance. Under this model, regulatory requirements vary according to the level of risk associated with specific AI applications. High-risk systems affecting public safety, human rights, or critical infrastructure are subject to stricter oversight than low-risk applications. The European Union's AI Act exemplifies this approach and has influenced policy discussions globally.

For emerging economies, regulatory governance involves balancing multiple objectives simultaneously. Governments must encourage technological innovation and economic competitiveness while ensuring that AI systems remain accountable, transparent, and aligned with societal values. Achieving this balance requires regulatory institutions capable of coordinating across sectors, engaging stakeholders, and adapting to changing technological conditions.

C. RESEARCH METHOD

Research Design

This study employs a qualitative comparative policy analysis to examine the institutional challenges and regulatory responses associated with artificial intelligence (AI) governance in the public sector of emerging economies. Comparative policy analysis is particularly appropriate for investigating governance phenomena because it enables researchers to identify similarities, differences, and contextual factors that influence policy development and implementation across multiple jurisdictions. Given the evolving nature of AI governance and the diversity of institutional arrangements among developing countries, a comparative approach provides a valuable framework for understanding how governments respond to emerging technological challenges within different regulatory and administrative contexts.

The study adopts an interpretive and institutional perspective, emphasizing how governance structures, regulatory frameworks, and organizational capacities shape the implementation of AI in public administration. Rather than evaluating the technical performance of AI systems, the analysis focuses on governance mechanisms, institutional readiness, and policy responses that influence the responsible adoption of AI technologies. This approach is consistent with previous governance research that views technological transformation as an institutional process embedded within broader political, administrative, and regulatory environments.

The research is guided by two complementary theoretical perspectives. First, Institutional Theory provides a framework for understanding how regulatory structures, organizational norms, and cognitive capacities influence AI governance. Second, Regulatory Governance Theory offers insights into how governments design and implement regulatory mechanisms to manage technological risks while encouraging innovation. The integration of these perspectives enables a comprehensive examination of both institutional capacities and regulatory responses within emerging economies.

Case Selection

This study focuses on two emerging economies, namely Indonesia and India. The selection of these countries is based on purposive case sampling and follows a Most Similar Systems Design (MSSD) approach commonly applied in comparative public policy and governance research. Both countries are among the largest democracies in Asia, possess rapidly growing digital economies, and have actively promoted artificial intelligence (AI) as a strategic component of national development and public sector modernization.

Despite sharing similar developmental characteristics, Indonesia and India exhibit important differences in institutional capacity, regulatory maturity, digital infrastructure, and governance arrangements. These differences provide valuable opportunities for comparative analysis, allowing the study to explore how varying institutional contexts influence AI governance outcomes.

Indonesia has positioned AI as a key element of its digital transformation agenda through the National Strategy for Artificial Intelligence (Stranas KA) 2020–2045 and the implementation of the Electronic-Based Government System (SPBE). The government has also strengthened its regulatory framework through the enactment of the Personal Data Protection Law and various digital governance initiatives. However, challenges remain regarding institutional coordination, regulatory integration, and public sector readiness for AI adoption.

India represents one of the most advanced AI ecosystems among emerging economies. Through initiatives such as the National Strategy for Artificial Intelligence and the IndiaAI Mission, the country has sought to leverage AI for economic development, public service innovation, and digital governance. India has also introduced significant reforms in digital public infrastructure and data governance. Nevertheless, the rapid expansion of AI applications has generated concerns regarding accountability, ethical oversight, and regulatory effectiveness.

The selection of Indonesia and India is justified for three reasons. First, both countries have formally adopted national AI strategies and public sector digital transformation programs. Second, both face common governance challenges associated with institutional capacity, regulatory adaptation, and technological change. Third, their differing levels of AI ecosystem maturity enable the identification of governance practices and policy lessons that may be relevant to other emerging economies. Consequently, the comparison between Indonesia and India provides a suitable basis for examining how institutional arrangements and regulatory responses shape the governance of AI within public sector organizations.

Data Sources

The study relies exclusively on secondary qualitative data obtained from authoritative policy and governance sources. Documentary analysis was selected because AI governance remains a rapidly evolving policy domain in which official strategies, regulatory frameworks, and institutional reports constitute primary sources of evidence regarding government responses and governance arrangements.

National Policy Documents

The first category includes official national strategies, policy frameworks, regulations, and legislative documents related to artificial intelligence, digital governance, and data protection.

Indonesia

- National Strategy for Artificial Intelligence 2020–2045
- Electronic-Based Government System (SPBE) Framework
- Personal Data Protection Law

India

- National Strategy for Artificial Intelligence
- IndiaAI Mission

- Digital Personal Data Protection Act

International Governance Frameworks

The second category consists of international policy frameworks and guidelines that influence national AI governance approaches, including:

- OECD AI Principles
- UNESCO Recommendation on the Ethics of Artificial Intelligence
- United Nations Digital Governance Reports
- World Bank Digital Development Reports

These documents provide normative benchmarks against which national governance arrangements can be assessed.

Academic Literature

The fourth category consists of peer-reviewed journal articles and scholarly publications addressing AI governance, public sector innovation, institutional capacity, digital government, and regulatory governance. Academic sources were used to support the interpretation of policy developments and contextualize findings within broader theoretical debates.

Data Collection Procedure

Data collection was conducted through a systematic document identification process. Relevant documents were selected based on three criteria. First, documents had to be directly related to artificial intelligence governance, digital government, data governance, or public sector innovation. Second, documents had to originate from official government institutions, international organizations, or peer-reviewed academic sources to ensure credibility and reliability. Third, documents had to be published between 2019 and 2025, reflecting the period during which AI governance emerged as a major policy priority globally. All collected documents were organized according to country, policy domain, and governance dimension. The resulting dataset enabled structured comparisons across institutional arrangements and regulatory responses.

Data Analysis

The study employs thematic comparative analysis to identify recurring patterns, similarities, and differences across the selected countries. Thematic analysis is widely used in governance and policy research because it enables the systematic interpretation of qualitative data while preserving contextual richness.

Stage 1: Open Coding

Policy documents and reports were reviewed to identify governance-related themes concerning AI adoption, regulation, institutional capacity, and public sector transformation.

Stage 2: Theme Development

Codes were grouped into broader categories reflecting major governance dimensions. Preliminary themes included:

- Regulatory Fragmentation
- Institutional Capacity Constraints
- Data Governance Challenges
- Ethical and Accountability Concerns
- Interagency Coordination Issues
- Public Sector AI Readiness

Stage 3: Cross-Country Comparison

Themes were compared between Indonesia and India to identify similarities and differences in AI governance approaches.

The comparison focused on:

- Institutional capacity
- Regulatory readiness
- Data governance mechanisms
- Ethical oversight arrangements
- Public sector AI implementation strategies

Stage 4: Framework Development

Findings from the comparative analysis were synthesized to develop an Adaptive Public AI Governance Framework for Emerging Economies. The framework seeks to explain how institutional capacity and regulatory readiness interact to influence AI governance effectiveness within public sector organizations.

Research Trustworthiness

To enhance the credibility and trustworthiness of the findings, the study employed source triangulation by drawing evidence from multiple categories of documents, including government publications, international reports, and academic literature. Cross-referencing among sources helped reduce the risk of relying on a single perspective or policy narrative. In addition, transparency was maintained throughout the analytical process by clearly documenting data sources, coding procedures, and thematic categories. Such practices contribute to the reliability and replicability of qualitative comparative policy research.

D. RESULTS AND DISCUSSION

Institutional Challenges in AI Governance

The comparative analysis reveals that both Indonesia and India have demonstrated strong political commitment toward the adoption of artificial intelligence (AI) within public sector governance. National AI strategies, digital transformation programs, and data governance reforms indicate that both governments increasingly view AI as a strategic instrument for improving public service delivery, enhancing administrative efficiency, and accelerating national development objectives. Nevertheless, despite these policy advancements, the findings suggest that institutional governance capacity has not developed at the same pace as technological adoption. As a result, both countries continue to face significant governance challenges concerning regulatory coherence, institutional readiness, data governance, and accountability mechanisms.

Regulatory Fragmentation and Policy Coordination Challenges

One of the most significant institutional challenges identified in both Indonesia and India is regulatory fragmentation. Although governments have introduced various policies related to AI, digital governance, cybersecurity, and data protection, these regulatory initiatives often operate within separate institutional frameworks and are administered by different agencies.

In Indonesia, AI governance remains characterized by a fragmented regulatory structure. The National Strategy for Artificial Intelligence (Stranas KA) 2020–2045 provides a long-term vision for AI development, emphasizing sectors such as health, education, food security, mobility, and bureaucratic reform. However, the strategy itself does not possess legally binding authority and primarily functions as a

policy guideline rather than a comprehensive regulatory framework. Consequently, AI governance responsibilities remain distributed across multiple institutions, including the Ministry of Communication and Digital Affairs, the National Development Planning Agency (Bappenas), the National Research and Innovation Agency (BRIN), and various sectoral ministries.

This fragmented arrangement creates coordination challenges, particularly regarding policy implementation and oversight. Several government reports and policy assessments indicate that Indonesia continues to rely on a combination of sectoral regulations, electronic information laws, and data protection provisions rather than a dedicated AI governance framework. While such an approach provides flexibility during the early stages of AI adoption, it also increases the risk of regulatory inconsistencies and overlapping institutional mandates.

India demonstrates a comparatively more centralized governance approach through initiatives such as the National Strategy for Artificial Intelligence developed by NITI Aayog and the IndiaAI Mission. Nevertheless, regulatory fragmentation remains evident due to the involvement of multiple institutions responsible for digital governance, data protection, cybersecurity, telecommunications, and AI innovation. The coexistence of several governance authorities creates challenges concerning policy harmonization and regulatory coordination, particularly as AI applications increasingly span multiple sectors and administrative domains. The findings suggest that both countries face a common governance dilemma: technological innovation is advancing more rapidly than institutional adaptation. While governments actively promote AI adoption, regulatory structures remain in a transitional phase characterized by evolving responsibilities, emerging oversight mechanisms, and ongoing institutional restructuring. This condition reflects broader governance challenges frequently observed within emerging economies, where policy innovation often precedes institutional consolidation.

Institutional Capacity Constraints

A second major challenge concerns institutional capacity. Effective AI governance requires more than legal frameworks; it also depends on the availability of skilled personnel, organizational capabilities, digital infrastructure, and administrative readiness. The findings indicate that institutional capacity remains uneven across both countries, although the nature and scale of these challenges differ.

In Indonesia, public sector AI implementation is frequently constrained by disparities in digital readiness across governmental institutions and regions. While major ministries and urban governments have increasingly adopted digital governance systems, significant differences remain between central and local administrative capacities. Several digital transformation initiatives, including the Electronic-Based Government System (SPBE), have sought to improve public sector integration and interoperability. However, implementation challenges persist due to variations in technological infrastructure, budgetary resources, and digital competencies among public institutions.

Human resource capacity also represents a significant concern. The implementation of AI systems requires expertise in data science, machine learning, cybersecurity, digital ethics, and algorithmic governance. Yet many public institutions continue to face shortages of personnel with advanced technological skills. Consequently, governments often depend on external vendors, private technology firms, or temporary project-based collaborations for AI development and implementation. Such dependence may reduce long-term institutional learning and create challenges regarding accountability and technological sovereignty.

India exhibits stronger institutional capacity in several dimensions, particularly regarding technological talent and digital infrastructure. The country possesses one of the world's largest pools of information technology professionals and has invested extensively in digital public infrastructure through initiatives such as Digital India. Nevertheless, institutional capacity challenges remain evident, especially regarding uneven administrative capabilities across states and local governments. While national agencies may possess

substantial expertise, governance effectiveness often depends on implementation capacity at subnational levels. The findings indicate that institutional capacity should be understood not merely as a technical issue but as a governance issue. Public sector organizations require organizational structures, leadership support, training systems, and interagency coordination mechanisms capable of sustaining responsible AI implementation over time. Without these institutional foundations, regulatory reforms alone are unlikely to ensure effective AI governance.

Data Governance and Digital Infrastructure Challenges

The analysis further reveals that data governance constitutes one of the most critical challenges affecting AI governance in both countries. Since AI systems depend heavily on data availability, quality, interoperability, and security, weaknesses in data governance directly influence governance effectiveness. Indonesia has made important progress through the enactment of the Personal Data Protection Law and the implementation of the Satu Data Indonesia initiative. These reforms aim to strengthen data management standards, improve interoperability, and enhance personal data protection. However, several challenges remain concerning data integration across government agencies, data quality management, and institutional coordination. Public sector databases often operate within separate administrative systems, limiting the ability of government institutions to develop integrated AI applications.

Moreover, concerns regarding data security and privacy have become increasingly significant as governments expand digital public services. The growing use of AI in administrative processes raises questions regarding consent mechanisms, data ownership, algorithmic decision-making, and the protection of sensitive personal information. India has achieved notable progress in digital public infrastructure through platforms such as Aadhaar and various digital governance ecosystems. These initiatives provide valuable foundations for AI-driven public service innovation. However, the scale of data collection and processing has also generated debates regarding privacy, surveillance, and data governance accountability. The introduction of the Digital Personal Data Protection Act represents an important step toward strengthening governance mechanisms, yet implementation challenges remain regarding institutional oversight, enforcement capacity, and public awareness. The findings suggest that data governance is increasingly becoming a central component of AI governance. As governments expand the use of predictive analytics, automated decision systems, and data-driven policy tools, the ability to establish secure, transparent, and interoperable data ecosystems becomes essential for maintaining public trust and governance legitimacy.

Ethical Governance and Accountability Challenges

A fourth challenge concerns ethical governance and public accountability. The increasing integration of AI into public administration raises concerns regarding transparency, explainability, fairness, and democratic oversight. Unlike traditional administrative systems, AI-driven decision-making processes often rely on complex algorithms that may not be easily understood by public officials or affected citizens. In Indonesia, ethical governance mechanisms remain in an emerging stage. The National AI Strategy acknowledges the importance of responsible AI development and proposes ethical principles for future implementation. However, formal oversight institutions specifically dedicated to AI ethics remain limited. As a result, questions concerning accountability, algorithmic transparency, and risk assessment continue to depend largely on broader digital governance regulations.

India has demonstrated stronger progress in developing responsible AI frameworks, including discussions surrounding "Responsible AI for All." Nevertheless, governance concerns remain regarding bias, automated decision-making, and accountability in large-scale digital systems. The increasing deployment of AI within public services has intensified debates regarding explainability and citizen rights, particularly when algorithmic decisions affect access to government programs and public resources.

Across both countries, the findings indicate that ethical governance remains one of the least institutionalized dimensions of AI governance. While governments increasingly recognize the importance of fairness, accountability, and transparency, operational mechanisms for implementing these principles remain underdeveloped. This gap creates risks not only for governance effectiveness but also for public trust in AI-enabled public institutions.

Regulatory Responses to AI Governance Challenges

The findings presented in the previous section demonstrate that both Indonesia and India face substantial institutional challenges in governing artificial intelligence within the public sector. In response, both governments have introduced a range of policy initiatives, regulatory reforms, and institutional arrangements designed to strengthen governance capacity while supporting technological innovation. Although the two countries differ in terms of digital maturity, administrative capacity, and policy implementation experience, their regulatory responses reveal a common objective: balancing AI-driven innovation with accountability, public trust, and sustainable governance.

Indonesia: Building Foundations for Public Sector AI Governance

Indonesia's approach to AI governance remains largely developmental and capacity-oriented. Rather than pursuing a comprehensive AI-specific regulatory regime, the government has prioritized the establishment of strategic frameworks, digital transformation programs, and data governance reforms that collectively support the gradual integration of AI into public administration.

A major milestone was the launch of the National Strategy for Artificial Intelligence (Strategi Nasional Kecerdasan Artifisial/Stranas KA) 2020–2045. Developed under the coordination of the Agency for the Assessment and Application of Technology (BPPT), and subsequently supported by the National Research and Innovation Agency (BRIN), the strategy provides a long-term roadmap for AI development across priority sectors including health, bureaucratic reform, education, food security, and smart mobility. The strategy emphasizes responsible innovation, human resource development, research collaboration, and ethical considerations while recognizing the importance of regulatory preparedness.

The introduction of Stranas KA represented an important institutional response to growing concerns regarding the absence of a national vision for AI governance. By identifying priority sectors and outlining strategic objectives, the framework created a common policy direction for government agencies, academic institutions, and private-sector stakeholders. Nevertheless, the strategy functions primarily as a policy guideline rather than a legally binding regulatory instrument. Consequently, implementation remains dependent upon the commitment and coordination of individual institutions.

Indonesia has simultaneously strengthened digital governance through the Electronic-Based Government System (SPBE). SPBE seeks to improve interoperability, data integration, and service coordination across public institutions. The initiative reflects recognition that AI adoption requires not only technological capabilities but also integrated governance systems capable of supporting data-driven decision-making. Through SPBE, government agencies are encouraged to standardize digital processes, improve information sharing, and reduce administrative fragmentation.

Another significant regulatory development is the enactment of Law No. 27 of 2022 concerning Personal Data Protection (PDP Law). The law establishes a legal foundation for data governance by defining principles related to data collection, processing, storage, and protection. Given that AI systems rely heavily on large-scale data processing, the PDP Law serves as a critical governance mechanism supporting responsible AI deployment. The legislation also strengthens citizens' rights concerning personal data while establishing obligations for public and private organizations engaged in data management activities.

The Satu Data Indonesia initiative further complements these reforms by promoting data standardization, interoperability, and evidence-based policymaking. The initiative aims to address longstanding challenges associated with fragmented government databases and inconsistent data management practices. By improving data quality and accessibility, Satu Data Indonesia contributes indirectly to the development of AI-ready governance infrastructure.

Despite these advancements, Indonesia's regulatory response remains characterized by a gradual and adaptive approach. The country has not yet introduced a dedicated AI law or specialized AI regulatory authority. Instead, governance relies on a combination of digital transformation policies, data protection regulations, and sector-specific initiatives. While this approach provides flexibility during the early stages of AI development, it also creates uncertainties regarding oversight responsibilities, ethical governance mechanisms, and accountability structures. From an institutional perspective, Indonesia's regulatory strategy reflects a governance model focused primarily on institutional preparation and capacity building. Regulatory reforms have concentrated on establishing foundational conditions necessary for future AI governance rather than imposing extensive regulatory controls at an early stage of technological adoption.

India: Advancing Toward Adaptive AI Governance

Compared with Indonesia, India has adopted a more comprehensive and proactive approach toward AI governance. The country's strategy reflects its ambition to become a global leader in AI innovation while simultaneously addressing governance, ethical, and developmental considerations. India's AI governance journey gained momentum following the publication of the National Strategy for Artificial Intelligence by NITI Aayog. The strategy identified AI as a transformative technology capable of contributing to economic growth, social inclusion, and public sector modernization. Unlike many technology-focused strategies, the Indian framework explicitly emphasized the use of AI for social good, particularly in sectors such as healthcare, agriculture, education, smart cities, and public administration.

Building upon this foundation, the government launched the IndiaAI Mission, a large-scale initiative designed to strengthen AI infrastructure, innovation ecosystems, research capabilities, and workforce development. The mission reflects an understanding that AI governance requires not only regulatory oversight but also sustained investment in institutional capacity and technological ecosystems. By supporting AI research, startup development, and public sector experimentation, the initiative seeks to position India as both a major AI producer and a responsible AI adopter.

India's regulatory response has also focused heavily on digital public infrastructure. Programs such as Digital India have transformed public service delivery through the integration of digital platforms, electronic identification systems, and data-driven governance mechanisms. These initiatives provide a robust institutional foundation for AI implementation by improving data availability, digital connectivity, and administrative efficiency.

A particularly significant development is the Digital Personal Data Protection Act (DPDP Act) of 2023. The legislation establishes comprehensive rules governing personal data processing, consent management, data security, and institutional accountability. Similar to Indonesia's PDP Law, the DPDP Act serves as a critical component of AI governance because it addresses fundamental issues concerning privacy, data ownership, and responsible data use.

In addition to legal reforms, India has increasingly emphasized ethical governance through initiatives promoting responsible AI. Policy discussions surrounding "Responsible AI for All" highlight concerns regarding fairness, transparency, explainability, and inclusiveness. These discussions reflect growing awareness that public trust in AI depends not only on technological performance but also on the perceived legitimacy of governance arrangements.

However, despite these achievements, India's regulatory approach also faces challenges. The rapid expansion of AI applications frequently outpaces regulatory adaptation. Questions regarding algorithmic accountability, automated decision-making, and oversight mechanisms remain subjects of ongoing debate. Furthermore, differences in administrative capacity across states create uneven implementation outcomes, highlighting the importance of institutional coordination and governance consistency.

Nevertheless, India's regulatory response demonstrates a transition from foundational digital transformation toward a more adaptive governance model. Rather than focusing exclusively on infrastructure development, recent reforms increasingly emphasize governance frameworks capable of responding to emerging technological risks and societal expectations.

Comparative Insights: Divergent Paths Toward Responsible AI Governance

The comparative analysis reveals both convergence and divergence in the regulatory responses adopted by Indonesia and India. At a strategic level, both countries recognize AI as a critical driver of public sector modernization and national competitiveness. Both have developed national AI strategies, implemented digital government programs, and introduced personal data protection regulations. These similarities suggest the emergence of a common governance trajectory among emerging economies seeking to harness AI while managing associated risks.

However, significant differences become apparent when examining institutional maturity and governance readiness. India demonstrates a more advanced AI ecosystem supported by stronger technological capabilities, larger pools of digital talent, and more extensive digital public infrastructure. As a result, regulatory discussions increasingly focus on adaptive governance, responsible innovation, and risk management. The governance agenda has expanded beyond digital transformation toward broader questions concerning ethical oversight and long-term regulatory sustainability. Indonesia, by contrast, remains focused on institutional preparation and governance consolidation. Current reforms emphasize interoperability, digital infrastructure, data governance, and public sector readiness. While responsible AI principles are acknowledged within policy frameworks, institutional mechanisms for operationalizing these principles remain relatively underdeveloped.

Table 1. Comparative Regulatory Responses to AI Governance Challenges

Governance Dimension	**Indonesia**	**India**
National AI Strategy	Stranas KA 2020–2045	National Strategy for AI
AI Development Initiative	Sector-based implementation	IndiaAI Mission
Digital Government Program	SPBE	Digital India
Data Protection Framework	PDP Law 2022	DPDP Act 2023
AI Governance Maturity	Emerging	Developing–Advanced
Institutional Capacity	Moderate	Relatively High
Digital Infrastructure	Expanding	Extensive
Ethical AI Framework	Emerging	Developing
Governance Orientation	Institutional Preparation	Adaptive Governance

The findings indicate that effective AI governance in emerging economies cannot be understood solely through the presence or absence of regulations. Rather, governance effectiveness depends on the interaction between regulatory frameworks, institutional capacities, organizational readiness, and governance culture. While India illustrates the advantages of stronger institutional capacity and digital maturity, Indonesia demonstrates the importance of establishing foundational governance structures before pursuing more sophisticated regulatory interventions.

These observations support the argument that AI governance is fundamentally an institutional process. Regulatory responses become effective only when supported by adequate administrative capacity, policy coordination mechanisms, data governance systems, and accountability arrangements. Consequently,

the next section develops a broader theoretical discussion regarding how institutional and regulatory factors interact to shape AI governance outcomes in emerging economies and proposes an Adaptive Public AI Governance Framework as a conceptual model for future policy development.

Discussion

The findings reveal that the governance of artificial intelligence in emerging economies cannot be adequately explained through technological readiness alone. Although technological infrastructure, computational capacity, and digital innovation are important enablers, the comparative evidence from Indonesia and India suggests that institutional factors ultimately determine whether AI adoption generates sustainable public value or produces new governance risks. This observation supports a growing body of scholarship arguing that AI governance is fundamentally an institutional challenge rather than merely a technological one.

Much of the early literature on AI governance focused on technical issues such as algorithmic performance, system accuracy, and data availability (Batool et al., 2025). More recent research has expanded the discussion toward ethical concerns, accountability mechanisms, and regulatory frameworks (Dhirani et al., 2023; Mansouri et al., 2025). However, the present findings indicate that these dimensions are themselves embedded within broader institutional structures that shape policy implementation, organizational behavior, and governance outcomes. Consequently, understanding AI governance requires moving beyond a technology-centered perspective toward an institution-centered approach.

Institutional Theory provides a useful framework for interpreting these dynamics. According to Scott's three-pillar model, institutions are sustained through regulative, normative, and cultural-cognitive mechanisms. The comparative findings demonstrate that both Indonesia and India are actively constructing these institutional pillars, albeit at different levels of maturity. At the regulative level, both countries have introduced national AI strategies, digital governance reforms, and personal data protection regulations. These initiatives represent attempts to establish formal rules governing AI deployment within public institutions. However, the findings suggest that regulatory development alone is insufficient. The existence of policies does not automatically translate into governance effectiveness when implementation capacity remains limited or institutional responsibilities remain fragmented.

The normative pillar is reflected in the increasing emphasis on ethical AI, transparency, fairness, and accountability. Both countries have adopted governance narratives that align with international principles promoted by organizations such as OECD and UNESCO. Nevertheless, normative commitments often exceed operational realities. While ethical principles are widely acknowledged in policy documents, formal mechanisms for monitoring compliance and evaluating algorithmic impacts remain underdeveloped. This gap highlights the challenge of translating normative aspirations into institutional practice.

The cultural-cognitive pillar appears to be the least developed yet arguably the most important component of AI governance. Effective governance depends on how policymakers, regulators, public administrators, and citizens understand AI technologies and their implications. The findings indicate that institutional knowledge, organizational learning, and AI literacy remain uneven across public sector organizations. As a result, governance challenges frequently arise not because regulations are absent but because institutions lack the cognitive capacity necessary to interpret and manage rapidly evolving technologies.

These observations suggest that successful AI governance requires simultaneous development across all three institutional pillars. Regulatory reforms without organizational learning produce compliance-oriented governance with limited adaptability. Ethical principles without enforcement mechanisms risk becoming symbolic commitments. Similarly, technological investments without institutional capacity may generate implementation failures despite strong political support. Therefore, AI

governance effectiveness emerges from the interaction between regulatory structures, normative commitments, and institutional learning processes.

E. CONCLUSION

This study examined the governance of artificial intelligence (AI) in the public sector through a comparative analysis of Indonesia and India by integrating Institutional Theory and Regulatory Governance Theory. The findings demonstrate that AI governance extends beyond technological adoption and regulatory compliance, representing a broader institutional process shaped by governance capacity, regulatory readiness, ethical oversight, and public accountability. Four major institutional challenges were identified, namely regulatory fragmentation, institutional capacity constraints, weaknesses in data governance, and limited ethical governance mechanisms. Although Indonesia and India differ in their levels of digital maturity and institutional development, both countries have implemented important policy initiatives to strengthen AI governance. The study further demonstrates that effective AI governance depends not only on technological capability or regulatory design but also on the interaction between institutional capacity, governance adaptability, ethical accountability, and public trust.

From a theoretical perspective, this research contributes to the growing literature on public-sector AI governance by proposing the Adaptive Public AI Governance Framework (APAIGF), which conceptualizes AI governance as a dynamic institutional process involving institutional capacity, regulatory readiness, ethical governance, public trust, and adaptive governance. The framework extends existing governance perspectives by emphasizing institutional learning and governance adaptability as essential conditions for responsible AI implementation in emerging economies. Practically, the findings suggest that governments should complement investments in AI technologies with stronger institutional coordination, human resource development, data governance, regulatory coherence, and ethical oversight. Such an integrated approach enables governments to balance technological innovation with accountability, transparency, and long-term public legitimacy.

This study is subject to several limitations, including its focus on two emerging economies and its reliance on policy documents and institutional reports as primary sources of analysis. Future research should expand comparative investigations across a broader range of emerging economies, incorporate empirical evidence from policymakers and practitioners, and examine sector-specific AI implementation within public administration. Longitudinal studies would also provide valuable insights into how institutional arrangements evolve alongside technological change. Ultimately, the experiences of Indonesia and India demonstrate that the success of AI governance depends less on technological sophistication than on the ability of public institutions to continuously adapt, coordinate, regulate, and sustain public trust, making institutional resilience the cornerstone of responsible and sustainable AI governance in the public sector.

REFERENCES

Abbott, K. W., & Snidal, D. (2021). The governance triangle: Regulatory standards institutions and the shadow of the state. In The spectrum of international institutions (pp. 52–91). Routledge.

Al-Kfairy, M., Mustafa, D., Kshetri, N., Insiew, M., & Alfandi, O. (2024). Ethical challenges and solutions of generative AI: An interdisciplinary perspective. Informatics, 11(3), 58.

Alamäki, A. (2026). Expanding AI adoption in public sector organizations: perspectives on management practices. Transforming Government: People, Process and Policy, 20(2), 165–187.

Aldemir, C., & Uçma Uysal, T. (2025). Artificial intelligence for financial accountability and governance in the public sector: Strategic opportunities and challenges. Administrative Sciences, 15(2), 58.

Alhosani, K., & Alhashmi, S. M. (2024). Opportunities, challenges, and benefits of AI innovation in

government services: a review. Discover Artificial Intelligence, 4(1), 18.

Andrian, R., Prihatmanto, A., Sunindyo, W. D., Sutriadi, R., Prasetyadi, A., & Sukoco, A. (n.d.). Designing People-Centric Smart Government Ecosystems for the Citiverse Era: A Conceptual Framework for Multi-Stakeholder Engagement and Public Value Creation. Digital Government: Research and Practice.

Batool, A., Zowghi, D., & Bano, M. (2025). AI governance: a systematic literature review. AI and Ethics, 5(3), 3265–3279.

Busuioc, M. (2021). Accountable artificial intelligence: Holding algorithms to account. Public Administration Review, 81(5), 825–836.

Caiza, G., Sanguña, V., Tusa, N., Masaquiza, V., Ortiz, A., & Garcia, M. V. (2024). Navigating governmental choices: a comprehensive review of artificial Intelligence's impact on decision-making. Informatics, 11(3), 64.

Camilleri, M. A. (2024). Artificial intelligence governance: Ethical considerations and implications for social responsibility. Expert Systems, 41(7), e13406.

De Almeida, P. G. R., Dos Santos, C. D., & Farias, J. S. (2021). Artificial intelligence regulation: a framework for governance. Ethics and Information Technology, 23(3), 505–525.

Dhirani, L. L., Mukhtiar, N., Chowdhry, B. S., & Newe, T. (2023). Ethical dilemmas and privacy issues in emerging technologies: A review. Sensors, 23(3), 1151.

He, J., He, Y., Hu, J., & Guo, Y. (2025). Intelligent governance: The AI-driven new paradigm of governmental adaptive governance. Journal of US China Public Administration, 22(1), 1–27.

Ilcic, A., Fuentes, M., & Lawler, D. (2025). Artificial intelligence, complexity, and systemic resilience in global governance. Frontiers in Artificial Intelligence, 8, 1562095.

Janssen, M., Konopnicki, D., Snowdon, J. L., & Ojo, A. (2017). Driving public sector innovation using big and open linked data (BOLD). Information Systems Frontiers, 19(2), 189–195.

Kashefi, P., Kashefi, Y., & Ghafouri Mirsaraei, A. (2024). Shaping the future of AI: balancing innovation and ethics in global regulation. Uniform Law Review, 29(3), 524–548.

Khan, M. S., Umer, H., & Faruqe, F. (2024). Artificial intelligence for low income countries. Humanities and Social Sciences Communications, 11(1), 1–13.

Kondra, A. Z., & Hurst, D. C. (2009). Institutional processes of organizational culture. Culture and Organization, 15(1), 39–58.

Levi-Faur, D. (2011). Regulation and regulatory governance. Handbook on the Politics of Regulation, 1(1), 1–25.

Maghsoudi, M., Mohammadi, N., & Bakhtiari, M. (2025). Artificial intelligence and sustainable development: Public concerns and governance in developed and developing nations. Cleaner Environmental Systems, 100340.

Mansouri, O., Yusuf, N., & Kooli, C. (2025). Ethical Frontiers and Legal Boundaries: Proposing a Unified Framework for AI Regulation and Accountability. Next Research, 101087.

Mishra, A. K., Tyagi, A. K., Dananjayan, S., Rajavat, A., Rawat, H., & Rawat, A. (2024). Revolutionizing government operations: The impact of artificial intelligence in public administration. Conversational Artificial Intelligence, 607–634.

Rodriguez Müller, A. P., Tangi, L., & Lerusse, A. (2025). Understanding the Adoption of Artificial

Intelligence in Local Government Decision-Making: The Influence of Institutional Pressures and Managerial Perceptions. Public Administration.

Satyo, B. K., SH, M. K., Prasetyo, B. A. Y., & SH, M. K. (2026). Artificial Intelligence and the Future of Human Rights: Legal Accountability for Algorithmic Decision-Making in Democratic Societies. International Journal of Law and Social Science (IJLSS), 2(1), 54–74.

Srivastava, A., Narang, A., Arora, S. V., Johri, M., Thakur, S. S., Sharma, K., Mathur, S., & Rathore, A. S. (2025). Digital Transformation In Public Administration: Policy, Governance, And Social Implications. Vascular and Endovascular Review, 8(14s), 104–112.

Thoenig, J. (2012). Institutional theories and public institutions: new agendas and appropriateness. The SAGE Handbook of Public Administration, 169–179.

Truby, J. (2020). Governing artificial intelligence to benefit the UN sustainable development goals. Sustainable Development, 28(4), 946–959.

Vatamanu, A. F., & Tofan, M. (2025). Integrating artificial intelligence into public administration: Challenges and vulnerabilities. Administrative Sciences, 15(4), 149.

Walter, Y. (2024). Managing the race to the moon: Global policy and governance in Artificial Intelligence regulation—A contemporary overview and an analysis of socioeconomic consequences. Discover Artificial Intelligence, 4(1), 14.

Zhu, X. (2026). Public administration with, of, and through AI: toward a new paradigm in the era of intelligence. Journal of Chinese Governance, 11(1), 30–57.