

Artificial Intelligence (AI)-Based Public Policy: Challenges and Opportunities for State Administration in the Society 5.0 Era

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ABSTRACT

The development of Artificial Intelligence (AI) has brought significant changes to public administration and public policy in the era of Society 5.0. This study analyzes the opportunities and challenges of implementing AI in government using a qualitative approach through literature review and policy analysis. The study finds that AI has the potential to improve the efficiency of public services through automation, policy data analysis, and intelligent government systems. However, there are complex challenges to its adoption, such as regulatory gaps, data privacy concerns, bureaucratic resistance, and the digital divide. Key findings from this study identify three critical issues: (1) the urgency of AI ethics and data protection accountability, (2) a phased approach that prioritizes specific sectors (health, education), and (3) public education to build understanding and trust. This study also highlights the potential of AI to improve government accountability through fraud detection and public-private partnerships. Moreover, it advocates a human-centered AI governance model that balances technological innovation with public transparency, citizen engagement, and principles of social justice.

KEYWORDS



Artificial Intelligence, public policy, government management, Society 5.0, algorithmic governance, digital transformation.

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INTRODUCTION

The development of Artificial Intelligence (AI) technology has brought major changes in various sectors, including government administration and public policy. Zsazsa and Sitepu (2023) reveal that, in terms of government practices, AI advances have triggered deeper changes in the power of government and state administration. The existence of advanced machine learning technology and big data analytics has been used to improve public services, strengthen the republic, and create a more evidence-based government. These changes occur not only in the automation of routine administrative tasks but also at a more strategic policy level, including development planning, national budgeting, and forecasting for the prevention of social crises (Kettl, 2015; Liu & Zhang, 2024; Newman, Mintrom, & O'Neill, 2022; Wilensky, 2015).

According to the Organisation for Economic Co-operation and Development (OECD, 2023), approximately 60% of member countries have developed national AI strategies, with public sector adoption rates increasing by 35% annually. The World Bank (2024) reports that AI implementation in developing countries has shown potential efficiency gains of up to 40% in selected public services, although adoption remains uneven across regions.

As with the development of new innovations, the penetration of AI technology into the administrative aspects of government is difficult to ignore (Agba, Agba, & Obeten, 2023; Alhosani & Alhashmi, 2024; Marzdar, 2025). These changes occur so rapidly that they are often not matched by adequate organizational and regulatory infrastructure readiness. Many

governments and regional organizations remain entrenched in conventional thinking patterns far removed from technological innovation. Organizational cultures, closely related to rigid hierarchically structured bureaucracies, often inhibit the fluid and experimental innovation that characterizes AI (Yasa et al., 2021). Beyond bureaucratic structures, there are deep concerns over how to apply this technology within the principles of good governance, which emphasize accountability, transparency, and community participation. The claim that AI can participate in decision-making, which was originally manual, raises fundamental ethical and humanitarian conflicts in public policymaking (Beduschi, 2022; Kuziemski & Misuraca, 2020; Pizzi, Romanoff, & Engelhardt, 2020; Sandal, 2025; Vohra, 2023).

Recent developments show that AI has evolved from being merely an administrative assistant to a strategic player in the government ecosystem. In some pioneering countries, AI systems are already used to predict crime, optimize routes for public transportation, and identify recipients of social assistance. However, as AI's role in governance frameworks becomes increasingly complex, new challenges arise (Ghosh, Saini, & Barad, 2025; Wirtz, Weyerer, & Sturm, 2020; Zaidan & Ibrahim, 2024). Issues such as algorithmic bias become a serious concern when AI systems reinforce social discrimination through their recommendations. Another significant problem is transparency. Many advanced AI models operate as "black boxes," generating recommendations and decisions without clear explanations, making it difficult even for developers to detail how those decisions are made. This violates the core principles of Open Government, which require clarity and accountability for every public decision.

As time progresses, the use of AI in national administration and public policy will intensify, driven by evolving technological advances aimed at creating more efficient governance. However, aspects of smart governance that benefit society at large require a multidisciplinary and holistic approach. Adopting technology alone is not enough; building organizational capacity, regulatory frameworks, and a supportive cultural environment is also necessary. Most importantly, the entire digital transformation of government must be human-centric, with technology serving as a tool to strengthen democracy and public order, rather than hinder participatory political processes. The greatest challenge lies in striking the right balance between maximizing AI's potential and safeguarding human rights in national governance practices (Tahar et al., 2022).

Recent studies have examined various dimensions of AI governance. The OECD (2022) analyzed AI adoption patterns across 42 countries, focusing on regulatory frameworks and institutional readiness. The United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP, 2023) explored AI governance challenges in developing Asian economies, emphasizing infrastructure gaps and capacity constraints. Empirical research by Wirtz et al. (2023) documented AI implementation in Singapore's public sector, highlighting successful e-government initiatives. However, these studies primarily focus on either developed nations or technical implementation aspects. This study distinguishes itself by providing a comprehensive normative analysis that integrates good governance principles, ethical considerations, and Society 5.0's human-centered philosophy, specifically examining how AI can be responsibly integrated into public administration while maintaining democratic values and social equity.

In the era of Society 5.0, based on digital technology and a human-centered society, the use of AI is one way to increase the efficiency, accuracy, and innovation of public services. Governments in various countries are starting to use AI for policy analysis, predicting public needs, automating ministry services, and developing data-driven decisions. However, complex issues such as ethics, data security, digital security, and ministerial resistance have emerged. In the Indonesian context, these global phenomena appear in specific initiatives such as the Sistem Pemerintahan Berbasis Elektronik (SPBE) mandated by Presidential Regulation No. 95/2018, which aims to create integrated digital governance. Several Indonesian government agencies have begun experimenting with AI applications: chatbots for administrative services in Mal Pelayanan Publik, AI-powered health data analytics in the Ministry of Health's disease surveillance systems, and machine learning algorithms for social assistance recipient verification. Implementation, however, faces significant obstacles, including inconsistent digital infrastructure across regions, limited AI literacy among civil servants, and concerns about data protection due to the absence of comprehensive personal data protection legislation.

In the context of national administration, AI integration supports structural compliance, responsible regulation, and the expansion of government apparatus capabilities. AI-based public policy should concentrate not only on technology utilization but also on transparency, accountability, and social progress. This research makes a distinctive contribution to the literature by combining three analytical dimensions rarely integrated in previous studies: (1) a normative analysis of good governance principles—transparency, accountability, and participation—in AI implementation; (2) an ethical framework grounded in Society 5.0's human-centered philosophy that prioritizes social equity over mere technological efficiency; and (3) practical policy recommendations contextualized to developing countries' institutional capacities and socio-economic realities. Unlike technical studies focused on AI system performance or regulatory analyses emphasizing legal frameworks, this research offers a holistic examination of how AI governance must balance technological innovation with democratic values, public trust, and inclusive development in the Society 5.0 era.

Therefore, the aim of this study is to analyze how AI can be used as a strategic tool in public policy and its implementation, and to identify the challenges and opportunities facing governments in the Society 5.0 era. The benefits of this research are threefold: (1) theoretical contribution by advancing scholarly understanding of AI governance through a Society 5.0 lens that integrates technological, ethical, and social dimensions; (2) practical contribution by providing evidence-based policy recommendations for government agencies implementing AI in public administration, particularly in developing country contexts; and (3) societal contribution by promoting a human-centered approach to digital transformation that safeguards democratic principles, protects vulnerable populations, and ensures equitable access to AI-enhanced public services.

METHOD

This study used a qualitative approach to analyze public perception of public policies based on Artificial Intelligence (AI) in the context of national administration in the era of Society 5.0. This qualitative approach aimed to examine the understanding related to the complexity of the socio-technological aspects of AI implementation in the government sector.

The data collection technique was carried out through research and literature analysis, involving the collection of various secondary sources such as academic journals, books, government documents, research papers, and case studies from various countries that had applied AI in public life. These sources were critically examined to identify patterns, flows, and key factors related to the integration of AI in public policy.

Thematic data analysis was conducted by grouping the data into main categories, such as the use of AI in national administration, regulatory and technical challenges, and innovation opportunities in the Society 5.0 era. The analysis process also included the interpretation of social, ethical, and organizational factors related to the use of AI in governance.

The aim of this exploratory and descriptive study was to provide a comprehensive understanding of how AI could improve public policy by proactively addressing issues that needed to be resolved. It was expected that all the findings of this study would form the basis for recommendations outlining the use of AI in a clear and comprehensive manner in governance.

RESULT AND DISCUSSION

Utilization of AI in Public Policy and State Administration

The findings of the study show that artificial intelligence (AI) has begun to be used in various aspects of national governance, especially in the era of Society 5.0. The development of AI technology has resulted in significant changes in the way governments manage, implement, and assess public policies. In the context of Society 5.0, where the digital and physical worlds are increasingly integrated, AI is not only a useful tool, but also a means to improve efficiency, accuracy, and innovation in public services. For example, some governments have used AI to analyze large amounts of data (big data) to determine the needs of the general public, optimize daily resources, or even identify potential problems in social programs.

In addition, AI is also used in automated bureaucratic processes, such as document reviews, timely responses to public needs, and real-time data-driven policy recommendation systems. This allows the government to be more responsive to social and economic dynamics. However, given its enormous potential, the use of AI in national administrations also presents a number of challenges, such as data privacy issues, algorithmic bias, and digital sensitivity that can improve the accessibility of public services.

Furthermore, there needs to be strong regulations to ensure that the use of AI in public affairs runs in a transparent, open, and inclusive manner. Collaboration between government, the private sector, and academia is critical to developing AI that is thoughtful and focused on the needs of the general public. Thus, AI is not only a tool of technological efficiency, but also a tool that helps governments and societies in the era of Society 5.0 act more responsibly. Some of the most interesting AI research findings include:

1. **Public Service Automation:** Governments are using chatbots (such as "Ask Jamie" in Singapore) and artificial intelligence (AI) to improve administrative service response times, reduce bureaucratic delays, and improve efficiency.
2. **Data-Driven Policy Analysis:** AI helps big data analysis to make more accurate predictions about budget needs, poverty analysis, or regulatory impact analysis.

3. Smart Governance & Smart Cities: Cities like Jakarta and Bandung are starting to integrate AI into traffic management, waste management, and machine learning-based public governance systems.

However, AI implementation doesn't always go smoothly. Some local governments are still facing digital infrastructure and human resource challenges.

Implementation of AI in Public Policy

The study identified several key findings:

1. Data Regulation and Privacy Issues: A clear legal explanation of artificial intelligence and data protection (as in the case of data corruption in some government agencies).
2. Digital Divide: It has not been proven that access to technology in remote sectors has the ability to improve the delivery of public services.
3. Resilient Bureaucracy: The adoption of AI by some government agencies is hampered by manual labor-intensive workplaces and human displacement.
4. Budget & Infrastructure: The implementation of AI requires significant investment in employee computers (cloud computing) and cybersecurity, which is still out of reach by all local governments.

Benefits of AI Development for Governance

Nonetheless, the study also identified strategic advantages:

1. Increase Transparency & Accountability: AI can be used to detect corruption through transaction pattern analysis (fraud detection). For example, an AI system in Korea that successfully detected budget irregularities.
2. Public-Private Collaboration: Working with technology companies (such as Google Cloud or IBM Watson) can accelerate the development of AI for governance without involving the state budget.
3. Apparatus Capacity Building: Improving the skills of government employees in AI literacy can improve implementation efficiency and reduce resistance.

Discussion: AI and the Evolution of National Administration in Society 5.0

All of this research is based on the idea of Society 5.0, which emphasizes the alignment between technology and humans. This concept not only focuses on the potential of technology, but also how technology can be used to improve human well-being comprehensively (Faedlulloh et al., 2020). In the context of national administration, this means that AI development must be done to enhance human capabilities, rather than weaken them. For example, the AI system used for policy analysis should serve as a tool for decision-makers, offering data-driven recommendations that can be critically evaluated by relevant stakeholders and experts.

However, it also shows that the use of AI in the public sector often returns to the technological paradigm, where technology is seen as a solution to a problem without affecting the social and humanitarian context. In short, Society 5.0 simply introduces a more humanist approach, where technological innovation should be guided by principles such as transparency, fairness, and public participation. For example, while AI can predict public needs through big

data analysis, the final proposal development process requires communication and interaction with the public that may not be fully represented in the data.

Further, the study shows that the successful integration of AI in public policy is encouraging for the government's ability to create a sustainable ecosystem. This includes not only technological infrastructure but also clear regulations, human capacity, and maintenance mechanisms that guarantee reliability. According to Suriyadi et al. (2024), the concept of Society 5.0 emphasizes the importance of collaboration between various stakeholders, including the government, the private sector, academia, and the general public, to jointly influence technological advances in equitable and sustainable fields.

Therefore, this research not only supports the idea that AI has great potential to revolutionize national administration, but also suggests that this transformation should be done carefully. Governments must ensure that the development of AI not only improves efficiency but also strengthens social cohesion and empathy. This means that AI-based public policy should be guided by human-centered design principles, where technology serves as a tool to empower society, rather than controlling or oppressing them (Simanjuntak et al., 2024).

In the Indonesian context, this is becoming increasingly complex, both geographically and socially. Therefore, the human-focused Society 5.0 movement is very relevant to ensure the benefits of AI can be felt fairly by all members of society without affecting any group that may be threatened. In other words, national administration in the age of AI is not only about technological advancements, but also about how these technologies can be used to create a smarter, collaborative, and goal-oriented work environment. AI is not just a technical tool; AI also requires strategies that are inclusive and focused on public values. Some of the recommendations that emerged from this study include:

Accelerating regulation is an urgent need in the context of AI research in the public sector. Today, many countries, including Indonesia, are still struggling to provide a comprehensive legal framework to support the development of AI technology. The drafting of AI ethics guidelines and strengthening the Personal Data Protection Act (UDAP) should be a top priority as these technologies affect sensitive aspects such as national security, privacy, and the development of automated decisions that negatively impact the daily lives of many people. Strong regulation is necessary, but not to stifle innovation; rather, it is necessary to create a safe and secure environment for the unrelenting development of AI. Without clear legal guidance, the introduction of AI into the public sector has raised serious concerns about the use of data, algorithmic discrimination, and a lack of reliability in developing mechanistic decisions (Mashudin, 2025).

The implementation of AI is still the most realistic strategy for the Indonesian context. As an alternative to the meaningful application of AI in each sector, the government should focus more on priorities such as health and education. AI is well established in the healthcare sector and can help diagnose diseases, predict outbreaks, and manage hospitals. In contrast, in the field of education, this technology can help school administrators and personalize learning. By starting from sectors that directly impact the well-being of the general public, governments can build public trust before expanding AI research into more complex fields such as law enforcement or security. In addition, this approach allows the government to evaluate all the social and ethical aspects of any AI development before digging deeper (Kurhayadi, 2022).

Public education about AI is a crucial element that is often discussed in government digital transformation discussions. There is a lot of resistance to AI development, which usually stems from ignorance and unfounded fears. Therefore, the government should implement a comprehensive socialization program to explain the benefits of artificial intelligence for citizens' daily lives, as well as communicate the risks and dangers associated with this technology transparently. Education should not only be beneficial for the general public, but also for those who care about the community, such as members of the House of Representatives, local residents, and community leaders. Not only would society benefit more from these innovations if they had a better understanding of AI, but they could also actively participate in preventing its use. This educational program must be inclusive, emphasize existing digital knowledge, and use the right communication tools to reach all walks of life, from urban to rural.

These three aspects—regulation, implementation, and education—are generally very interrelated and very important. High-level regulation will create a legal framework for robust implementation, while low-level regulation will allow for education and strict enforcement of regulations as technology advances.

Public education in other fields will create a crucial social environment for the implementation of AI-related government regulations and policies. In the long run, the cooperation between these three elements will create a healthy AI ecosystem in the public sector, where emerging technologies serve as tools to improve public services and the well-being of citizens, rather than as a guide for warring countries or new social indicators.

CONCLUSION

This research concludes that integrating Artificial Intelligence (AI) into public policy and state administration in the Society 5.0 era holds transformative potential for enhancing efficiency, accuracy, and innovation through automation, data-driven policy analysis, and strengthened governance accountability. However, successful adoption entails navigating complex socio-technical challenges, including balancing technological progress with good governance principles—transparency, accountability, and public participation—while addressing regulatory gaps, algorithmic bias, bureaucratic resistance, and the digital divide to prevent exacerbating inequalities. The findings affirm the necessity of a human-centered approach aligned with Society 5.0 values to harmonize digital innovation with democratic and equitable outcomes. Future research should empirically examine the socio-technical impacts of AI in public bureaucracies via comparative case studies across diverse national contexts, develop and test inclusive algorithmic governance models to mitigate bias and improve explainability, and explore the long-term societal implications of AI—particularly generative AI—while evaluating regulatory frameworks and public literacy initiatives to foster trust and responsible adoption.

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