



# The Future of Public Policy in a World of Artificial Intelligence

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## Abstract

This research examines the future of policy making in artificial intelligence. We seek to demonstrate the challenges and trends of this technology that may cause changes in the educational, industrial, economic, health and commercial policies of various organizations and governments around the world. Due to the emergence and development of artificial intelligence and the opportunities and threats of this technology in the global arena, it has led policymakers to design policies in line with the advancement of this technology and the changes that are made in different areas of a government.

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## 1. Introduction

Today, the expression that public policy is in a "crisis" has become a common theme, simultaneously raising a double alarm that may be used with different interpretations to support diverse and sometimes contradictory projects across the political spectrum (Hillgren et al., 2020). The rapid pace of artificial intelligence and information technology in the world demands that policymakers be equipped with decision-making, broad conceptual thinking, and data analytics skills (Yar et al., 2024). The

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increasing adoption of Artificial Intelligence (AI) within government is creating a variety of opportunities for governments around the globe. Conventional methods of delivering services, formulating policies, and enforcing regulations can shift swiftly with the incorporation of AI technologies into governmental practices and public-sector frameworks. As an illustration, governments have the ability to leverage AI technologies to enhance the quality of public services (Zuiderwijk et al., 2021).

In AI's economic and political aspects, cloud system gadgets are becoming more common. Object identification, robotics, and data-driven product platforms are also growing. Public policy sector AI is creating global opportunities. AI technologies will change service design and delivery, public policy and decision-making, and law compliance and enforcement in government and public-sector organizations (Akhoirshieda et al., 2024). Information technology has the potential to change different aspects of organization, including processes, interaction with customers, service delivery, decision-making and policy design and evaluation (Valle-Cruz et al., 2020).

However, due to the significant development of artificial intelligence and technology, gadget have been created to help the decision-making process (Sánchez et al., 2020). Although technology can bring about beneficial effects for humanity, AI implementations can also lead to unforeseen and unintended outcomes, as well as introduce new types of risks that governments must manage effectively. The capacity to imitate or compete with human intelligence in resolving intricate problems distinguishes AI from other technologies, as numerous cognitive tasks that have typically been carried out by humans can now be replicated and surpassed by machines (Taeihagh, 2021). Given the explanation given and the importance of addressing AI and its impact on public policy we are looking to answer this main question in this study: How can AI technology affect the future of public policy globally?

## 2. Public Policy

Discussions surrounding public policy matters primarily revolve around varying interpretations of the issues at hand and the methods for defining suitable interventions to bring about enhancements (Head, 2023). Harold Lasswell's primary objective in establishing a multi-method and interdisciplinary approach to "policy sciences" was to create policy analysis that is informed by an understanding of the context in which policymaking occurs. He articulated that "the policy sciences can be

understood as the knowledge of the policy process and the significance of knowledge within that process" (Cairney, 2021). The idea of policy mixes originated from Mundell's exploration of the interplay between fiscal and monetary policy, but it only began to transition into the field of policy sciences approximately twenty-five years later, coinciding with discussions on the functioning of policy instruments and designs (Migone & Howlett, 2024). Policy-making encompasses a technical and political process that aligns the objectives and resources of various stakeholders. Consequently, policies represent actions that include specific goals and the methods to attain them, regardless of how effectively they are identified, justified, articulated, or formulated. A widely recognized and succinct definition of public policy is provided by Thomas Dye, who states that it is "anything a government chooses to do or not to do" (Howlett & Cashore, 2014). A public policy represents a strategic initiative aimed at achieving specific goals within the public sector. It is typically selected from various options, taking into account the prevailing political context and ideological beliefs, and is endorsed by the individuals tasked with its execution (Butcher, 1998).

In the context of public policy, "inherent vices" refer to the challenges associated with policy formulation and execution that form the foundational issues into which policies are integrated. Policy frameworks and decision-making processes that overlook or underestimate these challenges are more prone to failure during implementation (Leong & Howlett, 2022). The public sector is characterized by several inherent features, including a political dimension, limited economic incentives, accountability to elected officials, a range of diverse and sometimes conflicting objectives, minimal competition among organizations, and considerations regarding the service supply and pricing. These factors can pose challenges to its overall performance.

However, despite these limitations, there are also positive aspects that can be developed and strategically managed throughout the public policy cycle. These include substantial budgetary resources, a workforce with an increasingly high level of education, access to extensive Big Data related to citizens, conducive conditions for intra-organizational learning, adaptability to political shifts, and the capacity for innovation dissemination (Correia et al., 2024). AI technologies are increasingly being integrated into various sectors of the public policy domain. In the field of education, AI systems utilize algorithms to forecast which teachers are likely to provide the most significant value added to student learning. In the realm of social policy, AI is employed to identify at-risk youth, enabling more effective intervention strategies. Additionally, in regulatory practices, AI systems are being used to enhance health inspections within

the restaurant industry (Sun & Medaglia, 2019). The impact of Big Data and artificial intelligence is poised to profoundly reshape public policy for governments around the world (Pencheva et al., 2018).

### 3. Information Technology

Information technology (IT) has played a crucial role in defining the techno-economic framework of our contemporary society, impacting services across multiple industries (Alquran et al., 2024). Information is ubiquitous. The field of information technology is advancing swiftly, propelled by developments in artificial intelligence (AI) (Pang et al., 2025). IT expertise is becoming increasingly vital for modern businesses. To swiftly respond to environmental changes, organizations must leverage the information technology available to them while also actively seeking out innovative IT solutions (Liu & Chen, 2024).

The success of organizations frequently hinges on the adoption of innovative information technologies (ITs). Nevertheless, the implementation of these technologies can pose difficulties for both employees and the organizations themselves (Ansari et al., 2024). Information technology (IT) serves as the fundamental infrastructure for key global strategies, including the enhancement of information infrastructure, the promotion of commercial deployment and widespread application of 5G, and the significant advancement of innovative development within the industrial Internet (Sun et al., 2024). Companies have greatly enhanced their productivity, innovation potential, and risk management strategies through the strategic integration of information technology (IT) into their operational frameworks (Jun et al., 2024).

### 4. Artificial Intelligence

A The phrase "artificial intelligence" was introduced by John McCarthy and his associates in 1955, defined as "the science and engineering of creating intelligent machines," highlighting the ability of these machines to learn, at least to some extent, in a manner similar to human beings (Valenzuela et al., 2024). The evolution of technology has been remarkable since its origins in the 1960s, starting with basic chatbots such as ELIZA and progressing to advanced learning algorithms. Notably, advancements in machine learning and deep learning have played a crucial role in expanding AI's capabilities across multiple fields (Wang et al., 2024).

Artificial Intelligence (AI) has undergone three significant phases of development. After its initial warm-up phase from the 1950s to the 1980s (Stage I) and a research-focused period from the 1980s to 2010 (Stage II), AI has entered a prosperous, data-driven industrial era since 2010 (Stage III) (Huang et al., 2025). Artificial intelligence (AI) encompasses a variety of definitions. Some individuals perceive it as the technology developed to enable computers and machines to operate with intelligence. Others view it as a mechanism that substitutes human labor, delivering more efficient and rapid outcomes. Additionally, there are those who define it as a "system" capable of accurately interpreting external data, learning from that data, and applying those insights to accomplish specific objectives and tasks through adaptable methods (Tai, 2020). The concept of artificial intelligence (AI) refers to a machine's ability to perform tasks that typically necessitate human intelligence, including activities like speech recognition, natural language comprehension, and decision-making (Soori et al., 2023).

AI can be defined as the field of study and application focused on creating intelligent machines. This is achieved through the use of algorithms or specific rules that enable these machines to replicate human cognitive abilities, including learning and problem-solving (Bajwa et al., 2021). AI has recently gained momentum as a potentially disruptive set of technologies in many industry areas, such as financial, automotive, retail, travel, and media (Bughin et al., 2017). Technology has impacted almost every sector, necessitating a period of adjustment. Its significance spans telecommunications, healthcare, and politics, where it serves as a vital support system for humanity in numerous aspects. Artificial intelligence is employed in various domains, including public services (Ahmad et al., 2023). The swift evolution of technology within the public policy arena, coupled with the widespread adoption of artificial intelligence (AI) applications, is increasingly enhancing the importance of these technologies in public services (Sarman & Tuncay, 2024). AI has become a powerful catalyst for change in numerous fields, including public policy. Essential elements of AI, like machine learning, big data, and natural language processing, are transforming the delivery of public policy (Kim et al., 2024).

## 5. Public Policy and Artificial Intelligence

Artificial intelligence has the potential to simulate and forecast future trends across multiple domains, including social welfare, politics, economics, and environmental issues. Predictive analytics refers to the application of data, statistical algorithms, and machine learning methods

to examine historical data and forecast future events or results. This process employs sophisticated analytical techniques to uncover patterns, trends, and correlations within the data, enabling informed predictions or forecasts. The use of predictive analytics spans various sectors and industries, such as business, finance, marketing, healthcare, sports, and more (Božić, 2023).

In the fast-changing realm of public policy, predictive analytics has become a significant asset in combating administrative and political corruption (Kong, 2024; Singh, 2024). AI predictive analytics utilizes sophisticated algorithms and machine learning (ML) methods to examine extensive datasets related to policy making. This includes a wide array of information such as statistics, historical budget data, strategic plans, and organizational results (Dixon et al., 2024). The integration of artificial intelligence algorithms into decision-making processes should be undertaken with careful consideration and fairness. Algorithms were once thought to be effective tools for decision-making due to their ability to process vast amounts of information and produce seemingly impartial results. However, this perception is misleading, as machine learning algorithms do not consistently maintain the objectivity we anticipate. They are susceptible to biases that can lead to "unfair" outcomes in their decision-making processes (Wang et al., 2022).

In March 2022, Aaron Braxton, a Black homeowner, filed a lawsuit against Wells Fargo for discrimination after his mortgage refinancing application was denied. This action followed a Bloomberg report revealing that the bank had rejected over 50% of refinancing applications from Black borrowers in 2020. Additionally, in 2017, Amazon discontinued an experimental machine learning recruiting tool after discovering it was unable to prevent bias against women (Das et al., 2023). Public- and private-sector organizations are increasingly using software-based algorithms to support decision-making that directly affects individuals. This practice is commonly referred to as "automated decision-making" or "algorithmic decision-making" (ADM) (Boos, 2024). Amazon, for instance, employs an application for its contract workers (drivers) that can sever the employment relationship if they fail to achieve delivery quotas set by artificial intelligence (Lukács & Váradi, 2023).

Another example, between 2015 and 2020, the UK Home Office implemented an automated system designed to assist in visa decision-making. This system, referred to as the "visa streaming" tool, categorized applicants into three risk levels, taking nationality into account as a significant factor. Depending on the risk evaluation, applicants faced varying degrees of scrutiny from public officials. This

practice went largely unnoticed until 2020, when the Joint Council for the Welfare of Immigrants (JCWI) and the law firm "FoxGlove" raised concerns about the tool's discriminatory implications and its lack of transparency (Palmiotto, 2024). Technologies like artificial intelligence have the potential to develop intelligent infrastructures that enhance public services, including transportation, education, and energy.

As we progress further into the twenty-first century, the demand for infrastructure assets within society is increasing significantly, accompanied by heightened expectations for productivity and service delivery. This pursuit of more efficient infrastructure, driven by advancements in information technology (IT), has given rise to the idea of "smart infrastructure" (Ogie et al., 2017). The main idea behind developing digital infrastructure networks is to deploy an adequate quantity of sensors that fulfill the necessary requirements (Sim & Lee, 2021). The implementation of contemporary technologies for data gathering and storage brings about significant concerns related to privacy and cybersecurity. The connection between privacy and cybersecurity is significant. This relationship exists because individuals typically do not feel secure without a certain level of privacy, which involves managing the release of personal information. Furthermore, if the security of data—encompassing confidentiality, integrity, and availability—cannot be guaranteed, then the notion of controlling that data becomes meaningless. Issues surrounding security and privacy related to information that is stored, processed, and transmitted by computers have been prevalent since the inception of the computing field (Landwehr et al., 2012).

## 6. Conclusion

AI and Information Technology have significantly shaped public policy on a global scale over the past twenty years. These advancements have the potential to enhance the speed, accuracy, and efficiency of government operations. However, their extensive implementation has introduced intricate challenges that influence decision-making across various governmental tiers. One such challenge is Infrastructure Intelligence. To fully harness the capabilities of emerging technologies, governments must invest in digital infrastructure, which risks creating a digital divide both internationally and within different regions of the same nation. This disparity not only restricts access to public services but can also undermine social equity.

Another critical issue to address in public policy is algorithmic injustice. Poorly designed AI algorithms can result in biased and inequitable

outcomes in areas such as social security, hiring practices, and resource distribution. Consequently, it is essential for policymakers to focus on the design and implementation of algorithms to mitigate these risks. The reliance on automated decision-making systems, devoid of human oversight, presents significant challenges to transparency and accountability. This raises concerns regarding the monitoring of governmental processes and the potential inability to rectify erroneous decisions.

Therefore, it is crucial to establish regulatory frameworks and transparent policies governing the use of automated decision-making technologies. Data security and privacy are also paramount in the digital landscape. While AI necessitates access to vast amounts of data, the collection and processing of this information can jeopardize individual privacy and national security. Policymakers must enact legislation that safeguards data and prevents potential misuse. In conclusion, the substantial shifts in public policy prompted by these challenges highlight the necessity for governments to revise and adapt their laws and regulations in response to new technologies. It is imperative that these adaptations prioritize justice, transparency, and accountability.

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The authors declare no conflict of interest.

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