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Review

Artificial intelligence and public services: Enhancing effectiveness and citizen satisfaction

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Abstract: The paper discusses how artificial intelligence (AI) is transforming public services that are provided to people by governments and directing decision-making in the government. The research addresses the topic of AI technologies being fitted into government processes more often to achieve efficiency, better service provision, and data-driven policymaking. The research applies a secondary research methodology, which is a desk analysis of the available literature, in assessing the opportunities and challenges linked to the use of AI in the public sector. The results show that AI can enhance the quality of government and society services in the field of governance management, law enforcement, and medical services, and help make more informed administrative decisions. The paper also points to the significance of tackling the problem concerning data privacy concerns, ethical governance, and institutional preparedness. The study indicates that the successful implementation of AI should entail proper technological infrastructure, regulatory framework, and organizational capacity in government institutions.

Keywords: artificial intelligence; public administration; public services; public service delivery; AI governance; data-driven decision-making; digital governance; government innovation; policy automation; predictive analytics; machine learning; ethical AI; data privacy; transparency; citizen satisfaction; public sector efficiency; smart governance; e-government

1. Introduction

1.1. Problem statement

The traditional public service systems are unable to meet the growing expectations of citizens. The inefficiencies can lead to high procedural delays, which, as a result, can become the cause of public dissatisfaction and wasted resources. Public agencies often deal with limited budget issues and increasing demands, due to which they struggle to provide timely and efficient services, mainly in areas such as education, healthcare, and social welfare. These inefficiencies often stem from old-style bureaucratic processes, a lack of incorporated technology, and a fragmented system, which makes it difficult to improve operations and allocate resources effectively. The increasingly complex circumstances of modern governance have created new challenges for public service institutions. For instance, population and urbanization growth need scalable solutions to provide services more effectively to larger populations (Lungu, 2024). AI in the public sector means automating

documentation-based work to relieve the civil servants and give them time flexibility, with increasing accuracy. The purpose of using AI in public services is to get assistance in decreasing costs, streamlining service delivery, and reducing redundancies. AI helps the public service to make more informed decisions and to handle effectively with minimum errors. Today's world is more focused on technological developments, which have created the need for all governments and public services to modernize their systems to stay relevant with the current demands of the digital age. However, the adoption of AI in public service remains limited because of challenges, such as regulatory hurdles, infrastructure gaps, and ethical concerns, which highlight the need for a systematic exploration of its potential and limitations. The services that are still dependent on conventional decision-making frameworks and manual processes affect the ability of AI integration in public institutions. AI is taken as a formative tool that allows individuals to deal with the inefficiencies in any sector by automating routine tasks and enhancing the decision-making process based on data-driven insights (Lungu, 2024).

1.2. Purpose of the study

After the emergence of AI, a significant change has been observed in both the private and public sectors. AI tools can develop new opportunities and systems that will be beneficial for both the providers and the citizens. Public services need to carefully implement the new technologies by giving more focus on strong regulations and duties of care. AI has a range of potential benefits and challenges. Therefore, rolling out a new system is not an easy task. Any new development must be safeguarded to protect the data and to ensure its effectiveness. AI plays an important role in helping public services to make informed decisions. Governments can use the AI models to spot patterns within their data. It helps make improvements or minimize inefficiency. Digital transformation demands a culture that is ready for it. Testing and implementing new technologies enable the public sector to prepare its workforce and infrastructure for future developments. The incorporation of this technology allows for reduced response times and improved resource allocations by analyzing a large amount of data. The use of AI tools can support evidence-based policymaking to improve the accuracy of decision-making and offer predictive analysis for making a better plan. The significance of AI lies in its transforming role within the government and public service sector, permitting smooth operations to provide data access to citizens, along with a personalized experience. It does not come without challenges. Therefore, it is necessary to offer a balanced perspective on how to deal with these issues while implementing AI to reduce the risk of public trust and equality. The most important role of AI in public services is its impact on the decision-making processes. The question is raised regarding the balance between machine-based recommendations and human oversight. Therefore, the purpose of this research is to give a detailed analysis of AI's role in shaping public

services by dealing with the challenges to ensure its maximum benefits.

1.3. Significance of the study

The research holds significant importance not because of the use of AI in the modern world but because of what is transforming the role of modernizing public services by addressing the challenges in service delivery. The research offers critical insights into the adoption of AI for promoting citizen-focused governance. It was observed that all the governments around the world are facing problems in adapting to the fast-developing societal needs and changing preferences. AI adoption offers a unique ability as it allows us to simplify the large datasets with more accuracy and facilitates real-time decision-making. Today's world is more interconnected. Therefore, it is necessary to deal with the increasing complexities of administrative tasks by implementing effective technology. The research not only offers theoretical insights but also provides practical relevance for improving policymaking. The data-driven approach measures that the resources are equally allocated to decrease waste and improve accountability. AI-driven analytics is beneficial for governments in predicting new social friends by identifying the developing needs and crafting policies accordingly, which are not only responsible but also inclusive. The importance of this research is not only limited to providing insights regarding AI implementation in public services, but it also fills the gap in previous research. It offers insights into governance and technology by analyzing the practical challenges and ethical implications of AI adoption. Policymakers and public administrators can integrate AI responsibly by dealing with the key issues like citizen trust, equity, and transparency. The research provides a strong foundation for the researchers to explore the prospects of identifying gaps in previous knowledge and presenting new policies to decrease the risk linked with AI adoption. The research supports the development of a more inclusive, efficient, and smarter public service system and governance for better service administration. The research has added value to the available body of literature in that it offers a comprehensible insight into the potential impact that artificial intelligence has on the quality of service delivery and decision-making within the context of public services. Previous research focuses primarily on technological factors or individual sector applications; this one relates the structures of governance, policy systems, and administrative practices to elucidate the overall impact of AI in government bodies.

1.4.Related work section

The studies conducted in research have concentrated on the application of artificial intelligence in enhancing the efficiency of administration, decision and the traditional government system. A research article by Choi and Park (2023) suggested a comprehensive framework of AI governance in the government. According to the research study, an effective policy framework, institutional structure, and

technical infrastructure are needed to introduce the use of artificial intelligence in government administration. The current government structures are barriers to transitioning to artificial intelligence in government administration, meaning that an integrated government structure is a requisite to deploy artificial intelligence in government administration (Choi & Park, 2023). Batool et al.'s (2025) systematic review of the research studies on AI governance is also another research study that emphasises the significance of artificial intelligence in government administration. Despite the benefits of artificial intelligence technologies in enhancing the effectiveness of the administration, governments are grappling with the issue of applying artificial intelligence in government administration because of risk management, regulatory policies, and accountability (Batool et al., 2025). Aarab et al. (2025) conducted research to evaluate the role of artificial intelligence in the process of public governance by conducting a systematic review of 67 studies. The research states that AI technologies can enhance the effectiveness of the administration of the state. Nonetheless, the study also demonstrates how problematic governments can be, as they are not always ready to implement AI systems. This, consequently, is a deterrent to the implementation of the AI systems by the governments (Aarab et al., 2025). Söker (2024) attempted to examine how AI contributed to the delivery of digital public services. As the studies suggest, AI systems can enhance the efficiency of the decision-making process and resource allocation by governments. Nevertheless, the study indicates the extent of transparency, algorithmic bias, lack of explainability, and potential erosion of public trust as the key barriers. This, consequently, becomes an obstacle to the implementation of AI systems by governments (Söker, 2024). Overall, these articles show that AI can revolutionize the sphere of public administration by increasing decision-making quality, improving the quality of delivered services, and making the government operate on the principle of data.

2. Literature review

The purpose of this literature review section is to analyze the transformative role of AI in changing the public service in terms of improving efficiency, reducing costs, and supporting data-based decision-making. The literature review is not only a simple discussion of previous studies on the impact of AI on the administrative process but also highlights the gap, its influence on policy formulation, barriers to AI implementation, and its link to the current research. It examines the scholarly viewpoint on the incorporation of AI in public administration by highlighting its application, challenges, and ethical considerations. This session aims to offer a comprehensive understanding of the potential of AI to revolutionize public services while addressing the associated complexities by analyzing different journal articles.

2.1. Role of AI in public service delivery

The study conducted by Kulal et al. (2024) shows the key transferring role of AI in improving public service delivery, particularly in citizen-focused services and municipal water governance. The research primarily focuses on the analysis of the lack of infrastructure readiness. It is found that only 25% of organizations can use advanced AI tools in their business process. The authors focus on the significant growth achieved by the businesses only because of the implementation of AI, while dealing with its moderate influence on human-centric factors. It highlights the need for policy reforms and infrastructure investment to deal with similar issues in other contexts. (Kulal et al., 2024).

The study conducted by Latupeirissa et al. (2024) focused on the transforming role of digital development within public services. Through the deep analysis, the author highlights the importance of AI in public services as it plays a key role in enhancing citizen engagement, developing efficiency, and government responsibility. According to the results of the study by Latupeirissa et al. (2024), AI can help organizations to increase their effectiveness by meeting the citizens' demands. It also highlights the importance of the organization's willingness to incorporate technology for dealing with the challenges of data security, resource management, and inclusivity. However, it is necessary to ensure that fair access is a key area for the application strategies of AI. Latupeirissa et al. (2024)'s study aligns perfectly with the present research, concentrating on how AI as a digital tool can address service delivery challenges (Latupeirissa et al., 2024).

The study conducted by Madupati (2024) indicates the significance of AI adoption in the public sector regarding its role in improving the efficiency of governance, helping in the decision-making process, and automating routine tasks. The author has identified different technologies, such as ML (Machine Learning), NLP (Natural Language Processing), and RPA (Robotic Process Automation), in revolutionizing the PA (Process Automation). The author states that AI has a large potential to improve and deliver new public services, along with giving significant attention to the risks linked with AI and its implementation. These risks can only be tackled by the proper development of an adequate and effective governance framework. It is linked to present research as it found that AI is quickly becoming the leading and innovative factor within the governance of the public sector, positively impacting the decisions, operations, and service offerings (Madupati, 2024).

Anshari et al. (2024) explain the key role of Artificial Intelligence in public service delivery (PSD) to support sustainable development goals. It emphasizes the AI potential for data-driven computerization, modified services, and enhanced efficiency. To get insights into the topic, the study developed a bibliography for classifying the global trends and difficulties in the connection of SDGs (Sustainable Development Goals), AI, and PSD (Public Service Delivery). The authors highlighted the ability of AI to empower public servants for complex tasks and to improve citizen-centric services. The use of AI in public service has been improving

public interactions and effective utilization of resources (Anshari et al., 2024).

According to Noordt & Misuraca (2022), AI has been helping the government in improving the policy-making process, public service, and the internal supervision of public administration. In this study, the authors explore which level of AI usage within the public sector can influence the essential purposes of governance. The results show that AI is typically used to improve public service delivery, which is followed by the development in inner management, and only to a partial extent in policy decision-making. This analysis is related to the topics because it proposes that diverse types of AI tools are used for governance purposes, emphasizing the need for detailed future examinations to better comprehend their role and impact on governance (Noordt & Misuraca, 2022).

Ogunleye (2023) explored the role of machine learning, AI, and data science in improving government decision-making and public service optimization. Ogunleye (2023) emphasizes the importance of machine learning, AI, and data analytics for improved service delivery. It is also important to highlight the role of AI in designing transparent governance systems in the public sector. This study shows the importance of AI in addressing the longstanding challenges in public service delivery through automation and predictive insights. The potential of AI in resolving systematic difficulties within public service delivery can be solved through effective resource allocation, fraud detection, predictive analytics, and traffic management (Ogunleye, 2023)

Chen et al. (2021) have discussed AI-based self-service technology (SST) and its role in the public service sector. The paper focuses on the use of AI technology in promoting personalization, efficient operations, and cost reduction. Chen et al. (2021) state that the key elements influencing the user experience, like aestheticism, personalization, and trust in the government, considerably influence citizen satisfaction. The findings of this study show that public managers focus more on developing trust to guarantee aesthetically pleasing, personalized AI services for good results. This study has strong relevance to present research as it addresses the issue of AI and how it can help in developing public service delivery and citizen experience (Chen et al., 2021).

The study by Alshahrani et al. (2024) has discussed the role of AI in decision-making in the public sector. The study had collected data from Chartered Association of Business Schools (CABS)-ranked journals from 2012 to 2023. AI technology has transformed the healthcare and educational sectors across the globe. The study provides a future research agenda to improve public sector management by using AI technology (Alshahrani et al., 2024).

The study by Gesk and Leyer (2022) focused on the acceptability of AI in the public service sector. The study highlights that in today's world, greater focus is placed on AI implementation rather than human-provided services. However, some areas still require human intervention, which

highlights the continuing importance of human involvement alongside AI. Effective implementation of AI tools can be affected by the citizens' trust, security issues, and transparency. It is not only dependent on the technology but also on the citizens' willingness to apply AI-driven processes for enhancing operations and productivity (Gesk & Leyer, 2022).

Criado et al. (2024) highlight the role of AI in implementation by applying a multi-level analytical structure that includes meso, macro, and micro-opinions. The study analyzes the impact of AI on governance structure, institutional adaptation, and regulatory framework at the macro level. In terms of meso, the focus is on organizational processes, AI-driven decision-making, and policy implementation. The authors have also discussed how citizens can effectively interact with AI tools. It links to the current study as it offers a thorough understanding of AI adoption in the public sector and institutional transformations of AI-driven public administration (Criado et al., 2024).

Zuiderwijk et al. (2021) offer different perspectives by exploring the role of AI in two different ways. First, it conducted a systematic review of previous literature to get insights into the AI implications in public governance. Second, it develops a research agenda along with recommendations. The results of the study show that AI applications in public governance should move toward a public sector focus by developing a specific form of AI instead of AI in general. There is a need to develop effective implementation strategies to increase AI engagement in the public sector (Zuiderwijk et al., 2021).

2.2. Challenges in AI implementation in public service

The study by Alhosani and Alhashmi (2024) focused on the potential challenges and benefits of AI implementation in the government sector. AI can eliminate language barriers, improve efficiency, modernize processes, and reduce service delays. The findings of the study by Alhosani and Alhashmi (2024) give more emphasis on the development of a strategic and informed approach to AI adoption to enhance its benefits in governance. It is connected to the topic under discussion as it highlights the importance of addressing ethical, organizational, and societal challenges for successful AI incorporation (Alhosani & Alhashmi, 2024).

The study conducted by Tangi et al. (2023) highlights key challenges in implementing AI in the public sector by emphasizing the ethics law, AI society, technology implementation, and organizational change. In order to eliminate technological barriers, there is a need to apply change management strategies by public organizations. The study focuses on the successful incorporation of AI in public service delivery and the transformation of organizational structure/practices. Addressing the potential challenges proactively can help in the effective and sustainable implementation of AI technology in the public administration sector (Tangi et al., 2023).

Mahusin et al. (2024) highlight the key issues in the implementation

of AI in the public sector of Malaysia. It consists of concerns regarding data privacy, lack of qualified expertise, and organizational opposition. Data privacy issues negatively affect the ability of any organization to effectively incorporate AI to improve the efficiency of public service delivery. The findings of this study are relevant to the current research as it also deals with the same barriers in public service implementation (e.g., ethical concerns and infrastructure willingness). This study offers an understanding of the future agenda of dealing with AI tensions from a perspective of AI implementation and diffusion of opinions within the public administration. It highlights the need for targeted interventions to address both cultural and technical hurdles to guarantee the transformative potential of AI in public administration (Mahusin et al., 2024).

Correia et al. (2024) shed light on the several challenges of artificial intelligence implementation within societies, particularly emphasizing public administration. This study conducted a detailed literature review to underline the challenges that have been a source of issues in public affairs, particularly in terms of developing a smart cities framework. It also considers the legal opinions that are deeply associated with the development of smart cities. The results of this study show that AI applications not only help in speeding up the process of transforming cities but also enhance the quality of life of citizens. From the legal perspective, it is found that there is a need to work in alignment with a principle of good administration, as it will provide proper justification for all the administrative functions facilitated by an AI system (Correia et al., 2024).

The study by Madan & Ashok (2023) highlights the ethical tensions developed by AI in public administration, such as transparency, privacy, fairness, and human rights. The literature review shows the lack of contextual and procedural understanding of AI implementation. It links to the present research because it highlighted the benefits, risks, and challenges of AI in public administration, explored by the previous studies, but still, there is a gap in understanding AI tensions as it links to the public value creation (Madan & Ashok, 2023).

Li et al. (2023) highlight the role of digital transformation in local governance within public value theory. The study by Li et al. (2023) identifies four key dimensions of a deployment, which include smart application, data integration, policy Innovation, and collaboration. AI can help the public sector in the form of an AI-based standard governance system through regulation and infrastructure. The AI can improve the decision-making for workers on the front line. AI can improve efficiency, agility and responsiveness in public service delivery. AI-driven systems can improve accountability, transparency, and public value creation in local administration (Li et al., 2023).

Seyadi et al. (2021) state that AI models help in accessing the data, understanding patterns in that data, and then giving results based on their findings, eventually making the best-informed decisions. Data analytics

and machine learning tools are the main AI technologies that play their role in enhancing governmental operations through non-biased data. The AI has significantly influenced the economic objectives (i.e., Bahrain's Vision 2023) to achieve economic growth benefits while ensuring efficient and equitable public services. The problems arise regarding the administrative and legislative challenges, which highlight the need for ethical guidelines. AI usage in the public sector has gained substantial consideration because of its potential to increase efficiency, decrease human error, and support decision-making (Seyadi et al., 2021).

Mahusin et al. (2024) explore the challenges faced by the public sectors in Malaysia due to the implementation of AI, highlighting both its transformative potential and the key problems. The author identifies three key challenges in AI implementation, which include the lack of an expert workforce with advanced technological skills, resistance to organizational challenges, and the issues of privacy. At the same time, the author also highlights the transformative potential of AI in public administration, such as better efficiency, streamlined processes, and smooth service delivery. It emphasizes the need for strategic commitments and continuous efforts to deal with issues. Concerning the current study, the author highlights AI integration as a key factor in advancing the government system to offer benefits for the citizens and national growth (Mahusin et al., 2024).

The study examined by Shaw et al. (2019) explores the issues of machine learning adoption within the healthcare system in the public sector. These issues include scalability, privacy, and algorithmic bias. The relevance of these challenges to the present research can be observed in the issues caused by the AI application in public service delivery. The study applied the NASSS (Non-adoption, Abandonment, Scale-up, Spread, and Sustainability) framework to inspect the problems in decision support and automation use cases. Shaw highlighted the need for public trust, transparency, and scalability in healthcare by providing valuable insights for overcoming the challenges faced by AI in public administration, particularly in improving operational efficiency (Shaw et al., 2019).

In this study, the authors highlight the key elements of improving service efficiency, including system interoperability, advanced information technology, and stakeholder collaboration. Prihatmanto et al. (2024) conduct a systematic review of smart government frameworks and structural design by stressing their impact on the public service. This study has discussed the ways to overcome barriers to effective AI implementation in public services. If barriers are effectively managed, then they can assist in ensuring better performance, transparency, and responsiveness across the government sectors. Technological infrastructure limitations, data security, and change resistance can become a hurdle for smart government initiatives (Prihatmanto et al., 2024).

2.3. Ethical considerations in AI adoption

According to Konidena et al. (2024), the value of AI is based on its high-quality and relevant data with higher accuracy. It also explores the ethical considerations of AI development based on key elements of fairness, transparency, and bias mitigation. The authors highlight how difficult algorithms can obscure the decision-making process by risking discrimination and mistrust. The use of co-occurrences and citation analysis allows recognition of the emerging themes in AI ethics, such as stakeholder management and big data. The findings offer valuable insights for policymakers, researchers, and practitioners by highlighting the need for ethical systems in alignment with societal values and human rights (Konidena et al., 2024).

Cath (2018) emphasizes the need for effective governance structures to ensure AI responsibility, transparency, and fairness concerning the present research on AI applications in public services. AI is also observed as a key element in decreasing the costs in the long term, which allows the government to consider its budget and costs in the present and future. The author emphasizes the need to address ethical concerns during AI implementation in the operations of an organization (Cath, 2018).

Prajapati (2025) highlights the ethical challenges of AI implementation, i.e., issues of algorithms, bias, accountability, and privacy. AI can be beneficial and challenging for customers, mainly in healthcare and finance. Ethical dilemmas in automated decision-making raise concerns regarding human autonomy and fairness, which demand regulatory guidance. The research is relevant as it increases awareness regarding fairness-aware algorithms and transparent decision-making as solutions. These ethical considerations in the public sector are necessary to ensure AI-driven governance remains accountable, which strengthens the need for an ethical framework to balance AI's benefits and risks in policymaking (Prajapati, 2025).

Madupati (2024) researches AI's role from a technical perspective, which shows how the adoption of technologies, including RPA (robotic process automation), NLP (natural language processing), and machine learning play transforming role within the field of healthcare, governance, policing, and smart city management. The study also highlights the challenges of these tools in terms of transparency issues in algorithmic insights, data incorporation, and scalability. It highlighted the need for developing a strong governance framework to deal with the ongoing debates on balancing the automation benefits while also dealing with the ethical concerns at the same time. It also strengthens the need for regulatory oversight and to maximize the effectiveness of AI while dealing with the risks (Madupati, 2024).

Belk (2020) explores the increasing dependence on AI and robotic technology. The increasing use of AI has led to several ethical concerns that must be considered by both service providers and customers. This study highlights the five different issues caused by AI and robotics, where it presents ethical issues. Belk (2020) said that these issues have serious

consequences and are necessary to address them instantly to enhance

AI effectiveness in public service. This study fills the gaps in recent work on robotics and AI in services and provides prospects for exploring the implications of AI and Robotics for public policy and the application of service technologies (Belk, 2020).

Kinder et al. (2023) examine the ethical use of AI in local public service by stressing the Finnish cities recognized for their ethical AI practices. The paper focuses on the different key factors, which include the need to highlight the significance of citizen commitment, social learning, and collaboration between technical experts, providers, and users to enhance responsibility and avoid unethical consequences. The integration of ethical AI insights into public services helps in incorporating a more suitable framework for ethical evaluations and examining future trends. The author also presented an innovative framework to deal with the issues of accountability and explainability of AI by giving insights into the ethical practices while applying this technology in public services (Kinder et al., 2023).

Li (2023) conducts a detailed analysis to provide insights into the multiple challenges faced in the era of computers and digitalization. Many concerns are raised regarding the ethical implications of AI technology, such as public engagement, algorithm fairness, informed consent, and strong privacy protocols. It highlights the ethical dimensions that are inherent in the cutting-edge field. This paper also highlights the need to balance technology developments with ethical considerations to ensure that all the developing technology aligns with societal values and promotes transparency, fairness, and accountability. It also focuses on the significance of developing partnerships with different stakeholders, such as businesses, government, academia, and society, to promote responsible and fair AI practices within computer vision (Li, 2023).

Štefanišinová et al. (2021) explore the role of AI deployment and implementation within the different contexts of public services to get more information regarding the potential of AI in improving the service delivery processes and operational efficiency. The benefits and the challenges of AI application have also been discussed within the background of public institutions by highlighting the need for developing the most suitable, technological and organizational structures. There is a need to focus on ethical concerns, staff readiness, and data privacy issues for the long-term sustainability and successful application of AI (Štefanišinová et al., 2021).

Safdar et al. (2020) discuss the key challenges presented by AI integration, particularly in high-stakes fields like finance, journalism, healthcare, security, and law enforcement. AI also helps in facilitating a better diagnostic process in the healthcare sector, particularly radiology, along with better workflow, therapeutic planning and monitoring. It also focuses on dealing with the concerns of workers, such as the influence of AI and up-skilling their abilities with training programs. The findings show that the public service administration must focus on ethical governance and regulatory structures to deal with the societal influence of

AI (Safdar et al., 2020).

According to Schiff et al. (2021), in the last few years, many studies have been done regarding the exploration of ethical issues faced by numerous public, private, and non-governmental organizations. Several documentaries, such as policy strategies, principles, and frameworks, have been made, which state the ethical concerns, priorities, and associated strategies that lead governments and organizations across the world. The results of the study highlight the meaningful differences across private, public, and NGO sectors regarding the implementation and ethical issues of AI. It highlights that the public and NGO sectors face more ethical issues than those in the private sector. The outcomes highlight the differences in the underlying beliefs regarding the responsibilities of an organization and the significance of depending on experts to deal with these tensions (Schiff et al., 2021).

Yakhshiboyev and Ermetov (2024) research the different ethical dimensions of AI implementation. It focuses on key concerns, including bias, privacy, transparency, and accountability. The author provides a stance on how unintentionally AI strengthens societal values and inequalities and emphasises the need for developing an ethical structure to decrease the risks of AI. This research conducted a detailed analysis based on the case studies by implementing a regulatory approach. There must be an ethical use of AI, so the ethical considerations must be adopted by the public sector to ensure unbiased decision-making and the welfare of the public interest. There must be accountability and fairness in AI applications across policy implementation and governance (Yakhshiboyev & Ermetov, 2024).

2.4. Influence of AI on decision-making in public administration

Wilson & Velden (2022) highlight the significance of machine learning and AI for the government sector. According to the authors of the study, various factors (ethics, explainability, responsibility and accountability) are not enough to guide public sector administrators in regulating and implementing AI. These aspects can be identified using the adaptive framework of AI in governance. However, these aspects do not guide the public sector workers in how they should be understood. The study is relevant to the present research as it shows the concept of sustainable AI implementation within the public sector. The research highlights the five boundary conditions that must be implemented in the public sector's decision-making to effectively govern AI (Wilson & Velden, 2022)

Desouza et al. (2020) conducted comprehensive research on the application of AI in the public sector. Desouza et al. (2020) have highlighted the importance of addressing challenges linked to technology, data, organisational culture, and other environmental factors. Public organizations can use AI to advance efficiency, decision-making, and service delivery. This research highlights the need for best practices and

strategic planning to ensure the ethical adoption of AI technology(Desouza et al., 2020).

Aguiar-Costa et al. (2022) investigated the role of different constructs in developing customer satisfaction when they came to know about the use of AI within public service and the related technological advancement. The results of this study highlight that there are 5 important key constructs and one consequent construct that are used to develop the relationship between customer satisfaction and the use of advanced technology in intelligent services. It also highlighted the role of customer satisfaction and its link to the application of AI. It is linked to the current research because it provides empirical evidence on the way the use of AI is increasingly dependent on customer satisfaction. The constructs that link the use of AI in service include the perceived features, value perception regarding the quality, market orientation, and identification with the services (Aguiar-Costa et al., 2022).

Charles et al. (2022) highlighted the transformative potential of AI in public sector governance by emphasizing the fundamentals of data-driven decision-making in improving public value. The special issues analyze the AI governance enablers, citizen privacy, risks and challenges of AI implementation in public service, and its role in studying political opinions. It sets a renewed research agenda for advancing AI in public governance. There is a lack of empirical research; therefore, it calls for interdisciplinary approaches and longitudinal studies on the public value of AI along with ethical frameworks to deal with data privacy (Charles et al., 2022).

Young et al. (2019) present the concept of artificial discretion to explore the influence of AI on public administration. They analyze how AI reshapes the bureaucratic processes by automating tasks that demand significant decision-making. The study contrasts artificial and human discretion based on the task specification by using Salmon's tool of governance framework. Although AI improves scalability, quality and reduces cost concerns regarding equity, manageability, and political feasibility persist. The study offers valuable insights for incorporating AI into the public governance framework effectively (Young et al., 2019).

The study conducted by Alon-Barkat and Busuioc (2022) highlights the biases in human-AI interaction within public sector decision-making. The researchers conducted an experimental study to analyze the automation biases (overdependence on AI advice) and selective adherence (favoring advice aligned with stereotypes). The result of the study highlighted the Limited evidence for automation bias, but indicates a stronger obligation when advice matches stereotypes. The research also highlights the significance of awareness and mitigation of biases in AI-driven public sector governance and presents prospects (Alon-Barkat & Busuioc, 2022).

Di Vaio et al. (2022) conduct a comprehensive review of the role and potential of data intelligence and analytics through the lens of AI, human AI interface, and big data to enhance the overall decision-making process

in public service. The study has discussed the significance of AI implementation and its role in decision-making in the public sector. It highlights the significance of the public sector in the adoption of data intelligence and analytics, as well as its efficiency in streamlining operations. This study provides future agendas regarding how practitioners and researchers should interpret and understand AI for efficient decision-making (Di Vaio et al., 2022).

Van Noordt and Tangi (2023) investigate the role of AI capabilities in creating public value in public administration. The authors of the study have highlighted the impact of key challenges like in-house technical expertise, legal barriers, and organizational adaptability on AI implementation. The study emphasizes the importance of digital advancements, human skillsets, and the need for organizational change for long-term AI success. Funding alone is insufficient; balanced AI capabilities are essential for effective implementation (van Noordt & Tangi, 2023).

3. Research design

3.1. Purpose of the present study

AI tools can develop new opportunities and systems that will be beneficial for both the providers and the citizens. After the emergence of AI, a significant change has been observed in the private sector and public services, which has created new opportunities along with the challenges of its implementation. Public services need to carefully implement the new technologies by giving more focus on strong regulations and duties of care. AI has a range of potential benefits and challenges; therefore, rolling out a new system is not an easy task. AI plays an important role in helping public services to make informed decisions. The AI models can be used by governments to spot patterns within their data. The incorporation of AI technology allows for reduced response times and improved resource allocations by analyzing a large amount of data. The significance of AI lies in its transforming role within the government and public service sector, permitting smooth operations to provide data access to citizens, along with a personalized experience. It does not come without challenges; therefore, it is necessary to offer a balanced perspective on how to deal with these issues while implementing AI to reduce the risk of public trust and equality. The most important role of AI in public services is its impact on the decision-making processes. The question is raised regarding the balance between machine-based recommendations and human oversight.

3.2. Research questions

- How can AI be beneficial in decreasing costs and improving efficiency in public service delivery?
- What are the challenges and ethical considerations of implementing AI in public service?

- In what way does AI influence the decision-making processes in public administration?

3.3. Research method

The research employs a secondary research method using a desk-based approach to analyze the role of AI in the public sector. Secondary research includes the analysis of prevailing data sources, including peer-reviewed journal articles, government reports, industry papers, and policy papers. It allows for a detailed understanding of AI applications, challenges, and ethical considerations in public administration. It follows a systematic literature review process to ensure that only relevant and credible sources are considered. The selection criteria of literature are based on most publications within the last 5 to 7 years, relevance to AI governance, and its applicability to public sector decision-making.

The literature search was performed in Scopus, Web of Science, and Google Scholar to include the defined search terms, including, but not limited to, artificial intelligence, public sector, public administration, AI governance, and data-based decision-making. Peer-reviewed journal articles were used to make sure that it was scholarly and also make sure that the source had a DOI so that it was not fabricated. Government reports and institutional publications were also used. The sources were filtered out according to their direct contribution to the research questions, and this led to the removal of non-empirical commentaries, editorials, and non-English publications. The last sample was developed by applying thematic analysis, according to which the results were organized into the following themes: AI application in the services of the population, the advantages and disadvantages of AI implementation, ethics, and impact on decision-making.

Data analysis is conducted through thematic analysis by emphasizing key themes such as governance challenges, efficiency, and ethical implications that are identified and categorized. The qualitative approach helps to synthesize different perspectives on the impact of AI in public administration. The application of a desk-based approach decreases the risk of biases linked with primary data collection. The secondary desk research approach will ensure a broad and evidence-based understanding of AI's role in the public sector. The findings of the study can contribute to the ongoing discussion on AI governance, policy-making, and ethical considerations in government institutions.

3.4. Inclusion and exclusion criteria

In a bid to enhance transparency in relation to the inclusion and exclusion criteria, quality thresholds were introduced in this study so as to guarantee that only pertinent and high-impact studies were accessed. The inclusion criteria were as follows: updated, published primarily in the last 5-7 years, peer-reviewed, and the focus of the article was directly in the context of AI implementation in the work of a state or government. The government reports published over the years by institutions like the

OECD and UN were also factored in when they gave evidence-based information or empirical case studies. The studies were filtered so that only those based on empirical evidence (e.g., non-empirical blogs or opinion pieces) were included or those that addressed the questions of the research directly. The approach, with the help of the guidelines provided in the latest literature, lowers the likelihood of selection bias and concentrates the review on the evidence with a direct impact on the conceptual and analytical interests of the research to be undertaken (Patino & Ferreira, 2018).

4. Data collection, analysis, and findings

4.1. Data collection

The research methodology of this paper is based on secondary research, which was implemented using a desk-based approach. The purpose of using this approach is cost-effectiveness and time-saving ability, as the researcher is dependent on the previous data, along with institutional sources, to analyze the role of AI in the public sector. For the data collection, the focus was given to the research articles, peer-reviewed journal research, policy papers, and industry reports to guarantee a comprehensive and balanced understanding of the AI challenges, benefits, and ethical implications for governance. The selection criteria are also designed based on the different factors to maintain the reliability and relevance of the research. To get the current and most relevant insights, the research emphasizes the studies published within the last 6 to 7 years within the background of AI and public services. Only credible and peer-reviewed articles are used to ensure reliability and validity, minimizing bias and misinformation. Priority is given to peer-reviewed articles, research papers, policy documents, and official government data from well-known organizations across the world. The reason behind preferring these studies is to explore the role of AI in government operations, service delivery, and decision-making. Cross-comparisons between different studies also help to develop consistency to ensure that different sources provide conclusions about the role of AI in governance.

4.2. Data analysis

For data analysis, the focus is given on the implementation of a systematic approach to examining the key trends, themes, and AI role in public services, which provides detailed and meaningful information about public administration. An effective strategy is developed for data analysis by categorizing the information into specific sections, such as the public service optimization role of predictive analysis for decision-making, the role of policy automation, and the driver engagement platform for analysis of AI in governance. The purpose of this categorization is to get a structured analysis of how AI plays its role in different governmental functions. A thematic analysis is conducted by identifying key themes in the literature related to the AI challenges, such

as data privacy, ethical concerns, and application barriers, along with benefits like improved policy responsiveness and improved transparency. It ensures a detailed understanding of the influence of AI on governance. It also highlights the application of AI frameworks in different governments to compare the variations in policy approaches, technology, and regulatory strategies.

4.3. Findings

4.3.1. Applications in the public sector

AI plays an important role in enhancing efficiency through automatic bureaucratic processes and streamlining regulatory compliance. AI allows for real-time policy adjustments based on predictive analysis. AI-driven chatbots and virtual assistants are being used in public service portals as they assist in handling citizen inquiries. AI can decrease administrative burdens and improve responsiveness. Governments use machine learning algorithms to examine public sentiment and forecast policy influence. Public sector organizations are incorporating AI for data-driven governance and AI-based decision support systems to enhance service delivery. Machine learning models help in effective resource allocation, financial management, fraud detection, and decreasing inefficiencies. Predictive analytics can meet infrastructure needs by improving urban planning and crisis management (Hjaltalin & Sigurdarson, 2024).

Figure 1 illustrates the AI use cases across government functions in OECD countries in 2025.

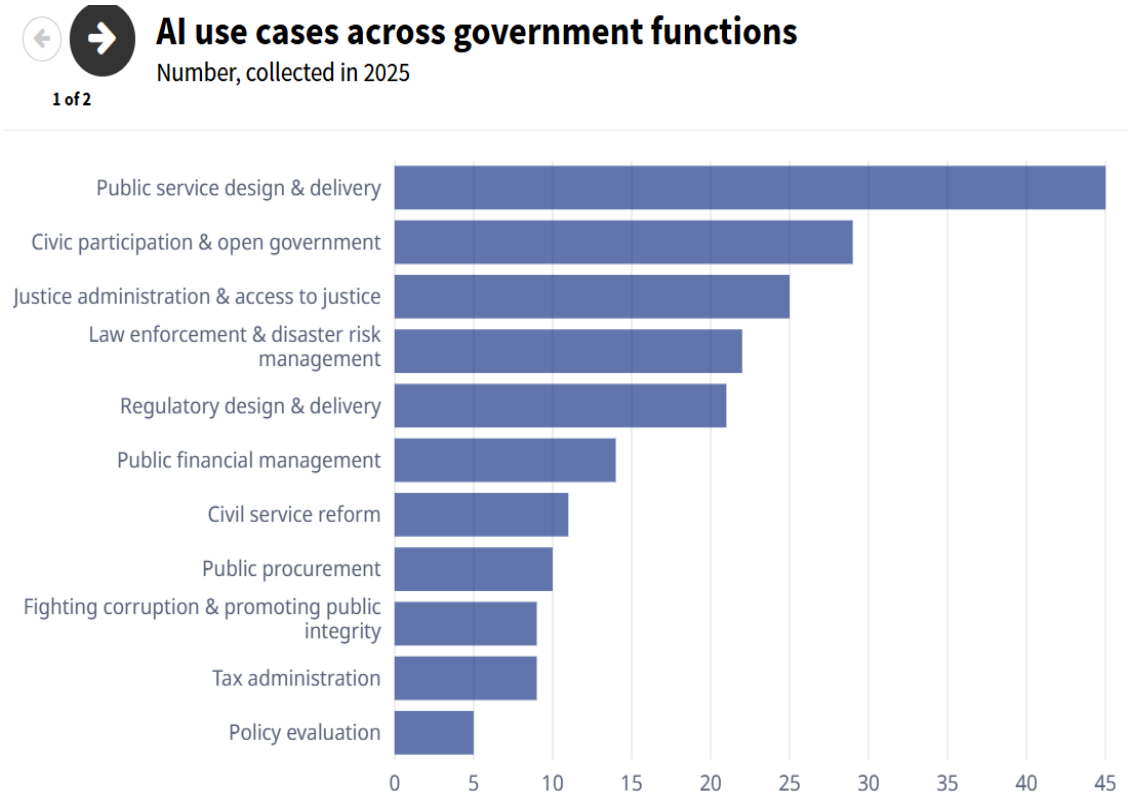

Figure 1. AI Use Cases Across Government Functions (OECD, 2025).

AI improves security through protective policing, cyber threat detection, and facial recognition. The government uses AI to examine crime patterns and assign law enforcement resources effectively. However, concerns regarding surveillance ethics, privacy, and algorithm bias demand oversight to ensure responsible AI deployment in security operations. AI revolutionizes healthcare by enhancing diagnostics, improving hospital resource allocation, and allowing personalized treatment plans. AI-driven predictive models help the government anticipate the health crisis. AI can help manage vaccine distribution and improve public health strategies to ensure efficient and equitable healthcare access (Mergel et al., 2023).

4.3.2. Challenges identified

The governments have been facing numerous ethical and regulatory challenges in the application of AI. The "EU AI Act" sets strict compliance standards to ensure accountability, transparency, and human oversight in AI systems. Many countries face problems in their implementation, such as Malaysia's struggles with the lack of comprehensive AI governance policies, which create uncertainty in its implementation. AI-driven surveillance in China raises ethical concerns regarding civil liberties and mass data collection. AI Adoption in public administration causes social inequalities without clear regulatory frameworks. AI system is dependent on large data sets, which also raises concerns regarding citizen privacy and data security. The incorporation of AI for predictive Healthcare analytics raised debates over patient data protection and third-party access in the NHS (UK) (Susar & Aquaro, 2019).

Figure 2 illustrates that most European Union Use Cases are in pilot or development phase, % of use in the European Union, 2025 (OECD, 2025).

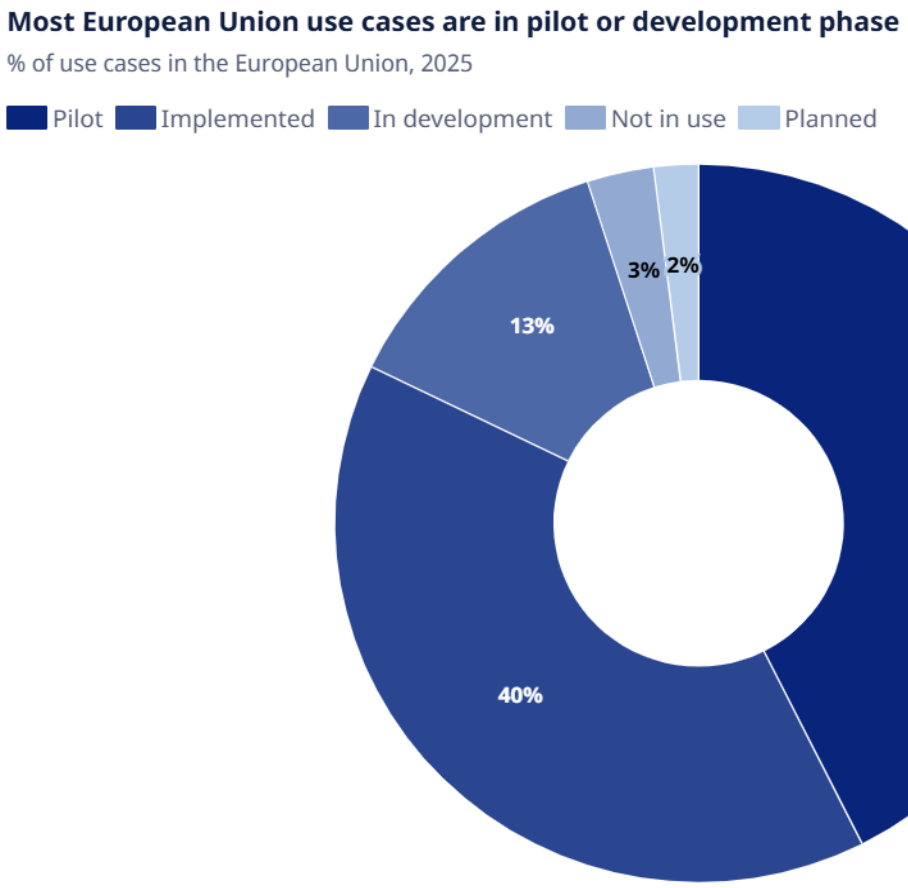

Figure 2. Most European Union Use Cases in Pilot or Development Phase (OECD, 2025).

Many government AI initiatives remain in pilot stages due to challenges in scaling, including the absence of impact measurement frameworks, widespread skills gaps, and difficulties accessing and sharing quality data. Although national AI strategies are increasingly common, limited practical guidance continues to hinder effective implementation (OECD, 2025). Algorithm bias remains another important issue because AI recruitment tools used in the US public sector are found to discriminate against minorities. Many public officials do not agree to implement AI due to the fear of job displacement and a lack of technical expertise.

Figure 3 illustrates the extreme cost of training AI models.

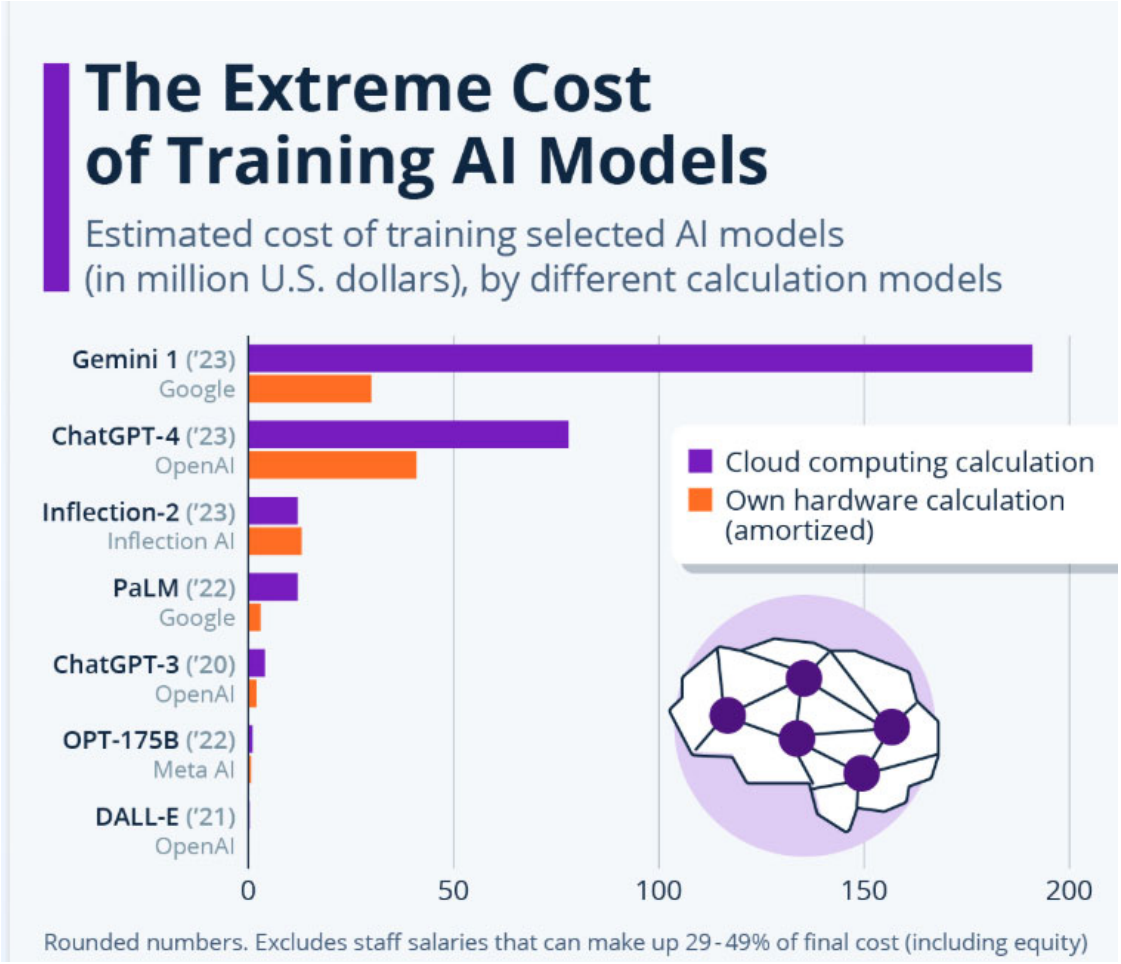

Figure 3. The Extreme Cost of Training AI Models (Buchholz & Richter, 2024).

The application of AI in India confronted several challenges, including opposition from civil servants who are concerned about automation replacing traditional roles. Developing countries are also facing problems due to insufficient AI infrastructure and an unskilled workforce. Limited internet access and outdated governmental systems can adversely affect AI deployment in public services. Addressing these challenges demands investment in education, cloud computing, and cross-sector collaboration to develop a sustainable AI ecosystem (Sousa et al., 2019).

4.3.3. Opportunities and benefits

AI helps streamline public services by automating routine tasks and enhancing resource allocation. AI-powered chatbots in Estonia help citizens handle administrative requests because AI can decrease the burden of the bureaucratic system, and as a result, of it minimum delays occur during service delivery. Singapore's Smart Nation initiatives use AI to automate urban planning and enhance traffic management, public transport efficiency, and waste disposal. AI-driven automation decreases human errors, which improves service delivery and ensures consistency in government operations (Chang & Das, 2020). AI can process vast data sets and take out relevant insights for evidence-based policymaking. AI in the US is used to predict crime patterns, which helps law enforcement to

allocate resources effectively. AI-powered economic forecasting models, as implemented in South Korea, help policymakers in designing fiscal policies as per economic fluctuations (Susar & Aquaro, 2019).

Figure 4 illustrates where AI is aiding productivity.

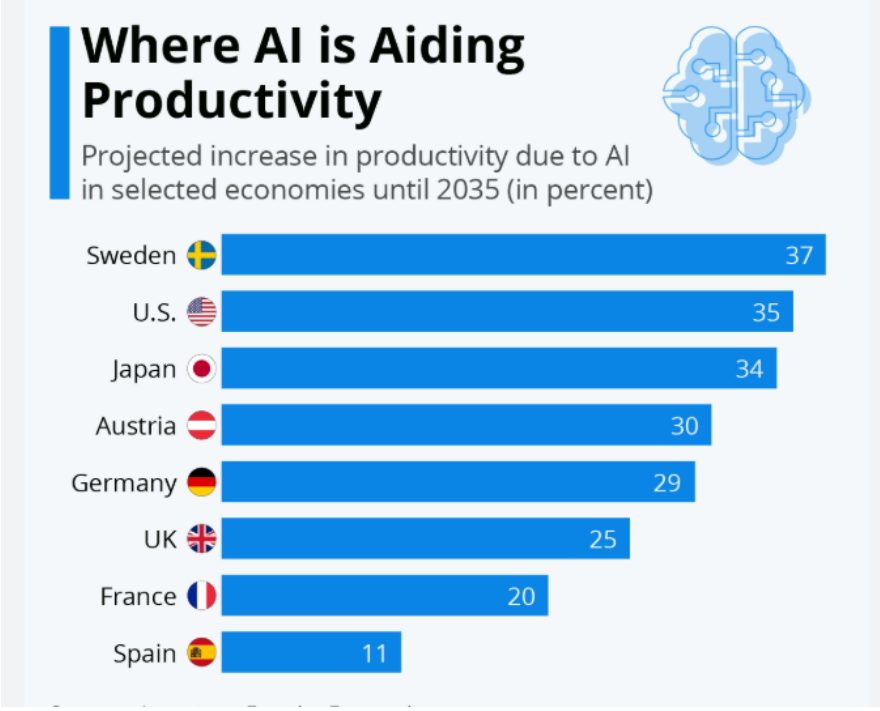

Figure 4. Where AI is Aiding Productivity (Buchholz & Richter, 2020).

AI can be used for analytical purposes rather than routine tasks, i.e., AI resulted in 57% automating or personalizing services, 45% enhancing decision-making and forecasting, and 30% improving accountability. 4% of AI systems (i.e., Greece's DidaktorikaAI library of 50,000 publications) allowed external actors to pursue independent objectives (OECD, 2025).

Figure 5 illustrates benefits of AI use cases across functions of government.

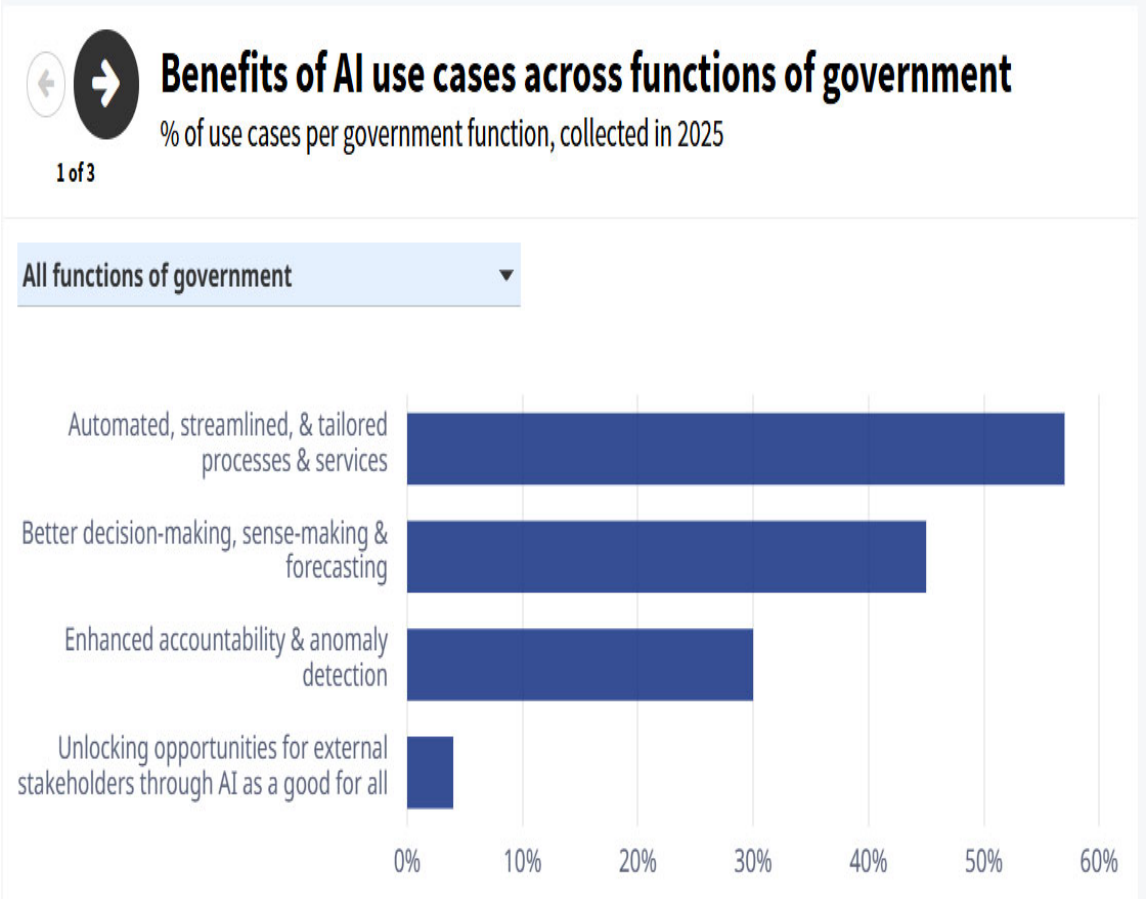

Figure 5. Benefits of AI Use Cases Across Functions of Government (OECD, 2025).

Governments can make proactive and informed decisions by analyzing real-time data instead of depending on outdated or incomplete reports. AI improves government transparency by detecting corruption, fraud, and inefficiencies. In Brazil, AI monitors public procurement contracts to recognize irregularities that prevent the misuse of taxpayer funds. Blockchain-integrated AI solutions in Ukraine track government transactions to ensure public accountability. AI-powered analytics tools also enhance audit processes, legal compliance, and election monitoring, which develops trust in governance (Odilla, 2023).

4.4. How the research findings answer our research questions

4.4.1. How can AI be beneficial in decreasing costs and improving efficiency in public service delivery?

AI provides transformative potential and decreases government expenditure while enhancing service efficiency through predictive analytics, automation, and intelligent resource management. Governments can decrease dependency on human labor for repetitive administrative tasks by incorporating AI into public administration, as it will lead to substantial cost savings. For example, AI-powered virtual assistants and chatbots in municipal offices can handle citizen inquiries, process applications, and help with text filings, which decreases the need for large customer service teams. It decreases labor costs and reduces human errors that usually demand costly corrections. Another cost-saving mechanism is

AI-driven maintenance in infrastructure management. Governments spend billions annually on reactive repairs of public assets like bridges, roads, and utilities (Abhaykumar & Kishan, 2022).

Figure 6 illustrates that business are employing AI for back office boost.

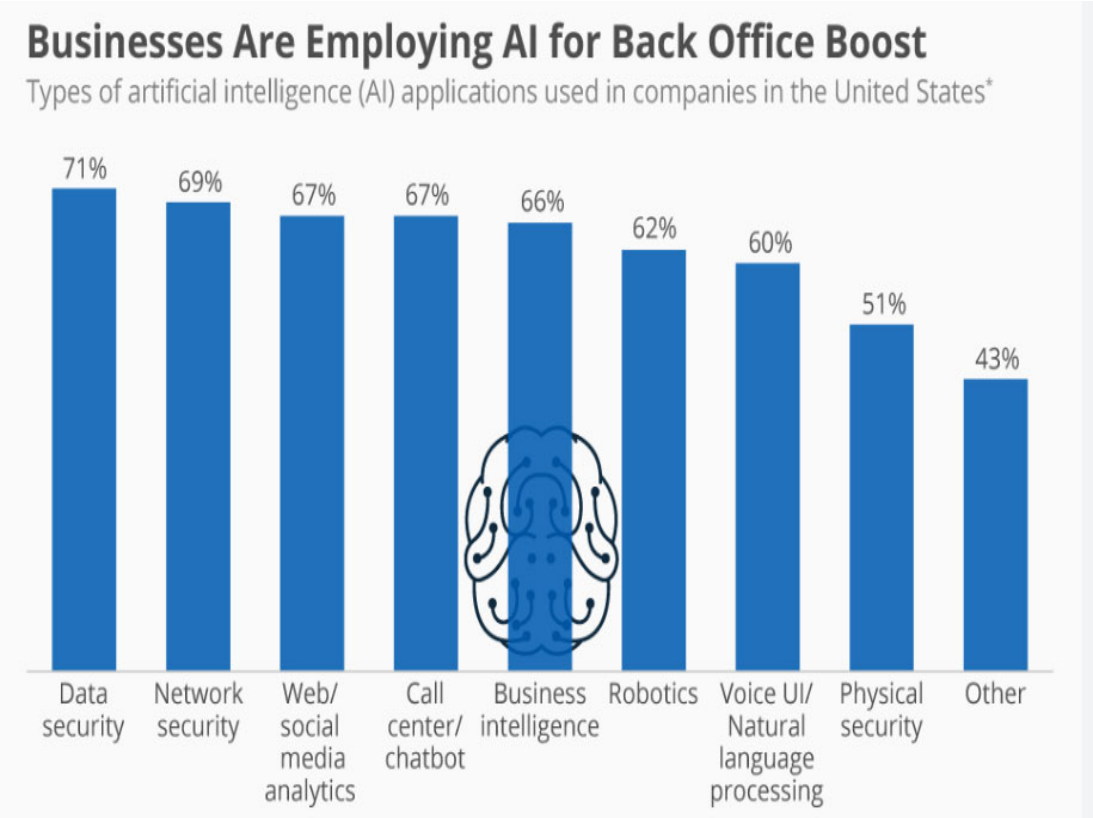

Figure 6. Business Employing AI for Back Office Boost (Richter, 2019).

AI-based predictive analysis can anticipate maintenance needs by examining environmental conditions, wear-and-tear patterns, and sensor data. For example, AI-driven grids in the energy sector of France have improved electricity distribution by decreasing operational costs and energy waste. AI-powered systems can examine financial transactions and detect anomalies in public procurement to prevent corruption and financial mismanagement. Many governments in the world use AI for real-time financial audits to ensure transparency and prevent fraudulent activities that drain public funds. AI also improves efficiency by enhancing workforce allocation. Machine learning models examine workforce patterns to identify the inefficiencies that allow the government to assign personnel more effectively (Ejjami, 2024). AI-associated workforce planning in Denmark implements AI-assisted workforce planning, which has improved healthcare staffing to guarantee that doctors and nurses are assigned based on real-time hospital needs. Additionally, AI-based document automation and digital verification streamline bureaucratic processes. Automated processing of tax returns, public benefits claims, and license applications decreases the administrative backlog and speeds up service delivery by cutting operational costs. The government can

achieve higher efficiency, reduce waste, and provide sustainable public service by using AI (Kulal et al., 2024).

4.4.2. What are the challenges and ethical considerations of implementing AI in public service?

The application of AI in public services presents significant challenges, mainly regarding ethical dilemmas, systematic inefficiencies, and regulatory gaps. One key concern is algorithmic transparency and accountability. AI is not like traditional decision-making processes, as it operates through complex models that lack explainability. The black box nature makes it further complicated for the citizens and policymakers to understand how AI-driven decisions are made, as it raises concerns regarding fairness and due process. For example, the automatic welfare eligibility system in the Netherlands has been criticized for lacking transparency, which leads to wrongful benefits denials (Machado et al., 2023). There are many other issues, among which data governance and privacy protection are more significant. The purpose of AI systems in the public sector is dependent on different factors, which include the handling of large amounts of personal data, and it also raises concerns regarding surveillance, misuse, and unauthorized access. All governments across the world need to guarantee that they follow the data protection laws while implementing AI in their business practices, such as the Data Protection Act of the UK, to prevent the misuse of customers' personal data and sensitive information. The failure to do this can also cause many legal liabilities along with the loss of public trust. It can be exactly fired from the scandal regarding AI-driven facial recognition in London, causing much backlash over privacy issues (Machado et al., 2023). Bias in the use of AI algorithms is also a main issue, as the AI models learn from historical data, which can cause societal bias and discrimination. The role of AI-driven productive analysis and policies in law enforcement has targeted marginalized communities, which raised concerns regarding racial profiling and systemic injustice. The government must implement unbiased audits and ethical AI policies to ensure the fairness of AI in the public sector. Furthermore, resistance to the adoption of AI in bureaucracy also presents challenges for governments because of workers' fear of job displacement or replacement, which can cause reluctance in the application of AI systems. To deal with this issue, the government should implement training programs and an AI-assisted partnerships framework to prepare the workforce for technological advancement. AI Regulation and ethical oversight also remain fragmented across different points. To improve this situation, a unified framework is necessary to guarantee the ethical deployment of AI along with the protection of citizens' rights and public accountability for responsible governance (Mishra et al., 2024).

4.4.3. In what way does AI influence the decision-making processes in public administration?

AI is changing the decision-making process in Public Administration

by providing data analysis, productive abilities prediction, and automation, which leads to more efficient, evidence-based, and responsive governance. One of the key ways AI impacts the decision-making process is through predictive analytics, which helps the government to anticipate economic, social, and environmental trends. For example, the Government of the UK has implemented AI to examine public sentiment on policy proposals to ensure that new regulations align with the citizens' needs (Campion et al., 2020). The use of AI in processing unemployment benefits decreases the decision time from weeks to minutes while maintaining compliance with regulations. AI helps in policy formulation by examining large data sets from public records, real-time feedback mechanisms, and social media. The data-driven approach improves democratic engagement and decreases the risk of policies being formed by subjective biases or political pressures. For instance, AI-driven models are used to predict crime hotspots, disease outbreaks, and economic fluctuations, which allow policymakers to take proactive actions instead of reactive responses. Governments use AI to process applications for social benefits, tax assessments, and business permits, which significantly decreases the processing time while ensuring fairness through consistent decision-making (Agrawal, 2024). Another important impact of AI is risk assessment and fraud detection. AI algorithms can detect fraud in financial transaction procurement processes and social service claims to avoid any corruption. An AI-based system helps in identifying fraudulent welfare claims, which saves millions in taxpayer funds. However, AI-driven decision-making must be carefully managed to ensure accountability, transparency, and fairness. Human oversight and an ethical AI Framework are necessary to prevent algorithms to ensure that do not align with the ethical and legal standards to safeguard the rights of citizens while improving government efficiency (Campion et al., 2020).

4.5. Discussion

4.5.1. AI's transformative role in public sector governance

AI significantly improves administrative efficiencies in the public sector by automating repetitive and time-consuming tasks. The government can streamline document processing and handle permit applications through robotic process automation (RPA) with minimal human intervention. Some governments have implemented AI chatbots to help with public service surveys by reducing the workload for human staff and improving service response times. Moreover, AI-powered data processing increases the decision-making process, which allows government agencies to act quickly on urgent matters such as disaster response or welfare distribution. Beyond efficiency, AI also drives innovation by enabling new service delivery models. AI-powered digital assistants and voice recognition systems make public services more accessible, mainly for disabled individuals. For example, in the UK, the National Health Service (NHS) uses AI in telemedicine to improve patient access to healthcare. AI plays a key role in urban planning, where smart

algorithms examine traffic flow and environmental data to enhance city layouts. The incorporation of AI with the Internet of Things (IoT) is driving smart city initiatives, allowing for real-time monitoring of energy use, infrastructure, and emergency-responsive systems. The framework of the AI for Good Global Summit of the United Nations affirms that ethical AI should respect human rights, privacy, and fairness and proposes procedural protection steps like impact evaluation and other public oversight measures before implementing AI in sensitive fields like law enforcement and welfare entitlement (United Nations, 2025). Historic bias in government services reflects societal imbalance and, therefore, may reinforce discrimination when not actively prevented. As an example, bias audits and fairness constraints are already being introduced into the procurement requirements in several OECD countries to avoid discriminatory results in welfare and justice systems. In addition, the study by the Public Sector AI Adoption Index 2026 reveals that in most countries, public servants feel empowered and eager to apply AI tools in their daily tasks, which means that the use of AI solutions is becoming a routine and is not experimental anymore. In the example, generative AI is assisting in content creation and immediate response of the citizen in nine countries with the help of chatbots, which means that the delivery of services to the citizen becomes more active and personalized in terms of interaction with the government (Castro, 2026).

4.5.2. Addressing the challenges of AI implementation

The issue that arises in the application of AI is the lack of standardized regulation because of the government's lack of attention toward such initiatives. The AI Act given by the European Union triggers the developing role of new regulatory approaches in dealing with AI systems within its ethical and legal parameters. The purpose of developing an effective governance framework is to develop a risk classification system based on the application of AI to ensure that its application undergoes systematic testing before real-world deployment. One of the key concerns is transparency in governance because AI models operate as Black boxes, which makes it difficult for policymakers to implement them effectively. The government should focus on developing explainable AI models for dealing with these issues that can provide deep insights into the decision-making process. It also raises concerns regarding the application of AI in law enforcement, which is exemplified by the extensive use of AI-powered facial recognition in China for monitoring public spaces. The government needs to balance efficiency with civil liberties to ensure that the AI application does not compromise fundamental human rights. Another barrier to its implementation is the lack of AI expertise among government officials and civil servants. Many government agencies lack the technical knowledge to manage and oversee the AI system effectively. Moreover, partnerships with academic institutions and research centers can provide the government with cutting-edge insights and technical expertise. Countries such as Canada have launched AI training programs for civil servants to improve AI literacy,

which allows them to make informed policy decisions regarding AI implementation. Besides, the Government at a Glance report by OECD demonstrates that a significant number of countries have yet to develop strong governance frameworks and national AI plans to the specific use of AI in the public sector: more specifically, only a small proportional number of the Southeast Asian governments have specific AI strategies, which regulate the use of AI in the public services (OECD, 2025). Such institutional constraints are exacerbated by the continuing skills shortage in governmental agencies in nations such as the UK. Cite old-fashioned, obsolete legacy infrastructure and lack of digital skills as reasons to scale AI projects, which have been recorded in parliamentary review reports (Walker, 2025).

Figure 7 illustrates the availability of national strategy, agenda, or plan for AI in the public sector, SEA countries (2023) and OECD countries (2022) (OECD, 2025).

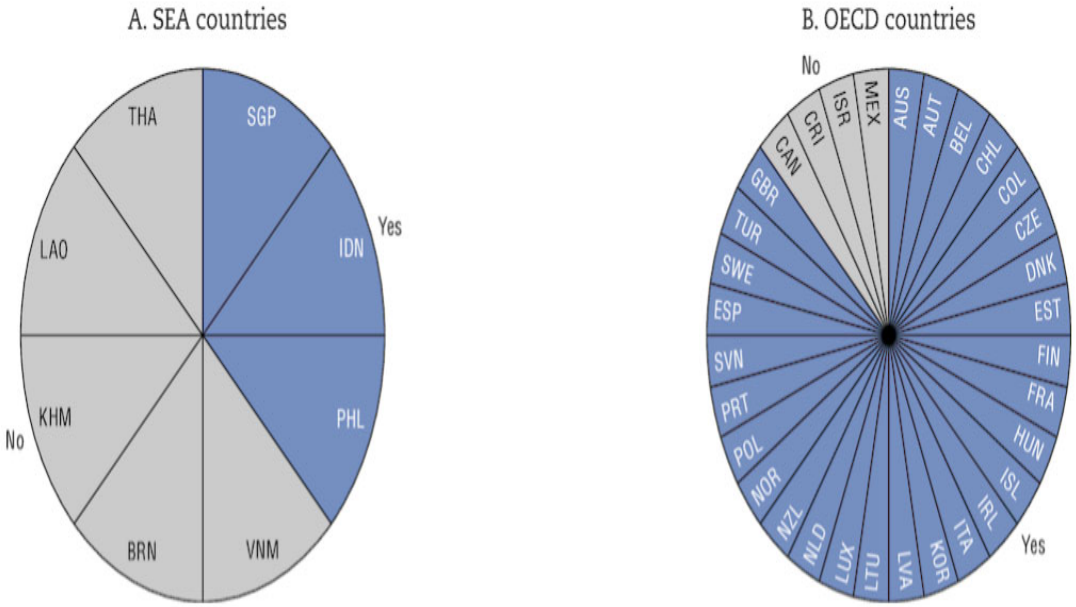

Figure 7. Availability of National Strategy, Agenda, or Plan for AI in the Public Sector, SEA Countries (2023) and OECD Countries (2022) (OECD, 2025).

4.5.3. AI and ethical considerations in government decision-making

Public trust is necessary for AI adoption to be successful in governance. The government must develop fairness-aware algorithms and regularly audit AI models to reduce such biases and ensure equity in decision-making. Citizens are usually skeptical of AI-driven decisions, particularly when they affect law enforcement, welfare distribution, or legal proceedings. The government should also implement a public AI oversight mechanism where civil society organizations and independent watchdogs review AI operations. AI allocations are susceptible to biases stemming from historical data imbalances and human-coded prejudices. AI-driven predictive policing in the US has been criticized for targeting

minority communities because of biased training data. Open AI audits can develop transparency and citizen confidence in AI governance due to the disclosure of how government agencies implement AI in decision-making processes. AI should not override democratic decision-making processes. The risk of AI centralizing power within a few entities can undermine participatory governance. The government must implement a human-in-the-loop (HITL) framework to ensure that AI does not replace human judgment but instead helps in making decisions. AI-driven governance must incorporate citizens' feedback loops, which allow the public to challenge the AI decisions through transparent appeal processes. Ethical AI policies must ensure that AI recommendations are subject to legislative scrutiny to prevent unchecked AI-driven policymaking. Media coverage of public sector AI initiatives also highlights concerns about data governance and transparency; for example, parliamentary critiques in the UK exposed a lack of transparency in how AI algorithm decisions are documented and communicated, which affects public trust (Walker, 2025). To deal with all these issues, there is a need to focus on the long-term assessment of the influence of AI on governance, societal structures, and public employment. Future research must explore how AI alters government workforce dynamics, whether it decreases bureaucratic inefficiencies without compromising employment, and how it influences the public trust in institutions over time. Governments across the world are adopting AI at different paces, which has created a fragmented approach to AI governance. AI governance frameworks must also incorporate cross-sectoral cooperation where policymakers can work together with academia, industry leaders, and civil society to develop strong and inclusive AI strategies. AI should not replace the traditional policy-making process; instead, it should enhance these processes.

5. Policy implications

5.1. Policy recommendation 1: Developing a national AI strategy for ethical and responsible AI adoption in public services

AI is changing the governance system as it plays an important role in improving the effectiveness of government systems by decreasing the cost of business operations and improving the decision-making process. The findings of this research provide insights that can be transferred to the policy implications for the government that wants to incorporate AI into its daily public services. However, the purpose of developing an effective policy framework is to deal with the ethical, regulatory, and infrastructure challenges that are associated with the adoption of AI. Governments should also develop a structured AI system within their administration domains to regulate the processes. A national AI strategy must clearly define the objectives, ethical considerations, and guidelines for responsible AI deployment. It is observed that many countries have implemented specific AI regulations and rules to ensure fair transparency

and responsibility in their public service. It can act as an inspiration for other governments that are looking for models to incorporate AI into their structures, particularly developing nations (Uzun et al., 2022).

5.2. Policy recommendation 2: Establishing regulatory frameworks for algorithmic fairness, data protection, and privacy compliance

Regulatory frameworks should develop strong AI audits to evaluate the accuracy and fairness of algorithms used in public administration. AI policy must address the issues of discrimination, biases, and algorithmic fairness. Governments across the world should apply similar actions to protect the rights of citizens while using AI abilities. Countries like the EU have proposed the AI Act that classifies the AI system based on risk levels and imposes strict regulations on high-risk applications to ensure public safety and privacy. Transparent data-sharing agreements between government agencies can further improve the application of AI while maintaining privacy compliance. Governments should also introduce strict government policies that develop clear protocols for data collection, storage, and sharing. Regulations like the General Data Protection Regulation (GDPR) in Europe should be enforced to safeguard the citizens' personal information while permitting AI-driven services to operate effectively (Hoofnagle et al., 2019).

5.3. Policy recommendation 3: Building technological infrastructure and enhancing AI literacy among public sector workers

Governments must implement policies for public sector workers to work alongside the AI system. Developing nations are facing the problem of limited technological infrastructure. Governments should capitalize on digital infrastructure such as high-speed internet, cloud computing, and data centers for the effective functioning of AI in public administration. Therefore, policymakers must assign budgetary resources to develop digital infrastructure to ensure that AI solutions can be applied effectively in public service sectors such as transportation, healthcare, and law enforcement. Singapore has implemented an AI competency framework to train public officials, which should also be adopted by other countries globally. Training programs must be developed to prepare Civil servants with AI literacy so that they can interpret the AI-given insights and make informed policy decisions (Uzun et al., 2022).

5.4. Policy recommendation 4: Implementing transparency policies and AI explainability frameworks in public administration

Governments must introduce transparency policies as they demand that agencies disclose how they incorporate AI into their systems and how they make decisions. The perception of the public about AI governance

also raises many concerns over biased decision-making, privacy issues, and the lack of responsibility. The US Algorithmic Accountability Act fills the role of legislation and requires organizations to develop transparency in AI-driven decision-making. An AI explainability framework must be developed to ensure that automated decisions in areas like social welfare, law enforcement, and taxation are understandable to the public. The government must work in collaboration with private sector institutions, universities, and research programmers to develop innovation within the public administration (Yar et al., 2024).

5.5. Policy recommendation 5: Promoting ethical AI development through joint initiatives and supporting workforce transition

Policy frameworks must encourage responsible AI development through joint research initiatives, pilot projects, and ethical AI guidelines. The guidelines must prevent the misuse of information and ensure that AI aligns with human values. An ethical oversight committee must be developed to evaluate the policies and to ensure compliance. The United Nations has presented recommendations for AI ethics that governments can adopt to guide AI use responsibly. Policy should focus on reskilling, unemployment safety nets, and economic inclusion strategies to support workers affected by automation. These policy recommendations offer a roadmap for responsible AI deployment, guaranteeing sustainable and unbiased governance in the digital era (Yar et al., 2024).

6. Theoretical implications

6.1. Defining theory

A theory is a systematic and rational form of abstract thinking about a phenomenon or the conclusions derived from such thinking. Theory provides a structured way to analyze real-world issues, guiding research and policy formulation (Abend, 2008). According to Bryman (2015), theories determine the research process by defining key variables, setting boundaries for inquiry, and allowing scholars to draw meaningful conclusions (Abraha & Hyder, 2021).

6.2. Relevant theories

6.2.1. Socio-Technical Systems (STS) theory

The Socio-Technical Systems Theory argues that technology, organizational structures, and human factors must be integrated in theory development. In public administration, AI governance models demand a balance between technological efficiency and human oversight to ensure ethical and transparent decision-making. Technology improves efficiency, but human administrators also oversee the AI process to ensure fairness and compliance. AI also helps in optimizing urban mobility, but policymakers continuously update regulations to maintain safety and

fairness (Thomas, 2024).

6.2.2. Adaptive governance theory

It emphasizes the development of policies in reaction to technological advancement to ensure flexibility and resilience in governance. In terms of AI, governments across the world are adopting policies to address the developing challenges. For example, the AI Act in the EU is a dynamic regulatory framework that classifies AI risks and updates legal requirements. Canada's Directive on Automated Decision Making ensures AI applications in public services remain transparent and responsible while evolving with technology advancements. Adaptive governance develops responsible and effective AI used in Public Administration by incorporating real-time feedback and cross-sector collaboration (Janssen & van der Voort, 2016).

6.2.3. Decision-making theory

Decision theory is the approach that uses available information to make optimal decisions under uncertainty. Although classical Decision-Making Theory (including rationality and bounded rationality models) explains how information influences decisions, this model differentiates itself by explicitly conceptualizing AI-mediated rationality as a hybrid process where machine inference and human judgment intersect. AI has its own limitations regardless of its analytics power, such as data incompleteness and ethical concerns. The COMPAS system in the US criminal justice system has also faced decisions for racial bias in the risk assessment, which shows how AI can inherit systematic biases. Although AI improves rational decision-making in public administration, its limitations within bounded rationality demand human oversight, policy interventions, and ethical consideration to ensure fairness (Liu, 2023).

6.2.4. Public value theory

The public value theory focuses on how the government develops value for citizens through transparency, efficiency, and accountability. AI improves public value by enhancing service delivery, decreasing bureaucratic inefficiencies, and allowing data-driven policymaking. Public Value Theory foregrounds service efficiency, transparency, and accountability as sources of value creation. Risks, such as algorithm bias or corporate decision-making, can undermine public trust. AI must be implemented with a clear accountability mechanism to improve public value in governance (Fukumoto & Bozeman, 2018).

6.3. Discussion and analysis

Incorporating multiple theoretical perspectives is necessary for developing a strong AI governance framework. Adaptive Governance Theory highlights the need for flexible and developing policies that respond to the fast advancement of AI by preventing updated regulatory frameworks during innovative processes. STS theory emphasizes the interplay between AI and human decision-making structures to ensure that AI applications align with societal needs. Decision-Making Theory

provides insights into the ability of AI to improve rational decision-making while recognizing the limitations caused by bounded rationality, where human oversight remains critical (Wang, 2012). A holistic AI governance framework must incorporate these theories to create a balanced approach that maximizes efficiency, ensures ethical consideration, and maintains public trust. Public Value Theory ensures AI deployment prioritizes not just efficiency but also transparency and accountability. Future research must explore AI-specific policy-making models that incorporate real-time data ethics, algorithmic auditing, and public participation in AI governance. This synthesis will allow AI to function as an enabler of democratic governance instead of a tool for unchecked automation. The AI Public Value Governance framework is proposed as a new theory, based on AI in public administration, that is guided by three key pillars. The first pillar is technological-social alignment, which must be designed to complement human judgment to ensure that automation does not override ethical considerations. The second pillar is an adaptive policy ecosystem in which AI regulation should be continuously updated to deal with emerging legal, ethical, and operational challenges. The third pillar is public-centred AI governance to improve transparency and citizen participation instead of only focusing on operational efficiency. This integrated theory offers a structured approach for policymakers to apply AI responsibly to ensure its alignment with democratic values and public welfare (Wang, 2012).

6.4. Synthesizing theories for AI implementation

The structure of the theory would be shaped by identifying the aetiology of AI's impact — that is, understanding the historical, technological, and societal drivers behind AI adoption and its results. It would explore the moderating variables (X) such as technological infrastructure, staff training, ethical governance, and public trust; independent variables (I) such as the type of service (healthcare, education, public safety), level of funding, and urban versus rural context; and the primary dependent variable (Y), i.e., the effectiveness and citizen satisfaction of public services after AI implementation. The relationship among these variables can be modelled as follows: $X(n) + I = Y$

Where:

- **X** = Moderating variables (e.g., technological infrastructure, data privacy measures, workforce AI literacy)
- **n** = Intervening variables (e.g., policy adjustments, citizen feedback loops, oversight mechanisms)
- **I** = Independent variables (e.g., sector of public service, funding level, geographic location)
- **Y** = Dependent variable (e.g., measured improvements or declines in public service effectiveness and citizen satisfaction)

By using this equation, researchers could identify causal relationships and experiment with various intervening policies to modify

outcomes. The theory would emphasize that the success or failure of AI in public services depends heavily on both environmental factors and deliberate policy interventions. Below is an illustrative diagram, **Figure 8**, which outlines factors affecting Public Service Effectiveness & Citizen Satisfaction.

Figure 8 illustrates factors affecting public service effectiveness & citizen satisfaction.

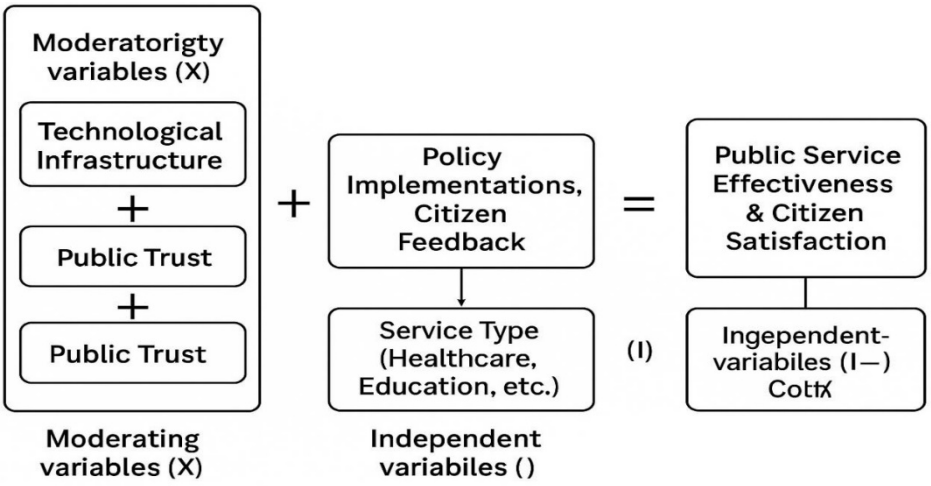

Figure 8. Factors Affecting Public Service Effectoveness & Citizen Satisfaction.

7. Conclusions

7.1. Brief summary

In conclusion, the research provides deep insights into the incorporation of AI and public services by highlighting the need for developing a balanced approach. AI plays an important role in making accurate decisions and improving business operations, but its application should be based on a strong policy framework to deal with the issues of biased results, violations, and public distrust. It explains that AI applications in smart governance, law enforcement, resource planning, and healthcare can improve public service delivery while ensuring accountability and transparency. The purpose of doing the critical analysis is to get insights into the implementation of AI in public administration and its transformative role, along with the difficulties it presents. AI-based innovations are changing the governance structures as they improve efficiency, decrease operational costs, and enhance data-driven policymaking. However, along with the benefits, AI also presents numerous challenges in terms of ethical dilemmas, algorithm bias concerns, regulatory gaps, and resistance within bureaucratic structures. Ethical considerations remain at the forefront, which demands the government to incorporate fairness-aware algorithms and develop regulatory oversight mechanisms in alignment with the democratic values of AI applications. From a theoretical perspective, this research has drawn upon multiple frameworks, which include Socio-Technical System (STS)

Theory, Adaptive Governance Theory, Decision-making Theory, and Public Value Theory. Together, these perspectives highlight the intersection between AI and governance by emphasizing the need for adaptable regulatory frameworks that evolve alongside technological advancement. The findings suggest that public administration should not only focus on AI adoption but also on developing an ecosystem where AI development aligns with societal values and governance principles. Moreover, the study also highlights the significance of collaboration between technologists, policymakers, and stakeholders to make sure that AI systems are effectively and ethically incorporated into governance. Addressing these barriers, such as technical infrastructure, knowledge gaps among public administrators, and legal uncertainties, is necessary to maximize the positive influence of AI. The findings emphasize that the future of AI in public administration lies not only in technological advancement but also in its ability to serve the public interest, develop trust, and reinforce democratic accountability. In conclusion, AI is a powerful enabler of public sector innovation, but its success is dependent on responsible governance and regulatory foresight. Governments must adopt a strategic, multi-stakeholder approach that focuses on ethical AI deployment, public engagement, and capacity building within bureaucratic institutions.

7.2. Future research

This research provided valuable insights into AI applications in public administration, but several areas still demand further exploration to guarantee responsible and effective AI integration. Future research must focus on assessing the long-term influence of AI on governance structures, ethical decision-making, and public trust. Continuous analysis is necessary based on the rapid evolution of AI technology to understand how AI-driven policies impact democratic institutions and whether they improve or undermine administrative fairness. This understanding regarding how to balance automation with human employment will be necessary for sustainable AI adoption. It is necessary to develop an AI governance Framework, modified to different political and economic backgrounds. Since AI adoption varies across countries based on the technological infrastructure, regulatory environments, and public sector readiness, conducting a comparative analysis on how several models are developed to provide insights for developing nations is meaningful. It can help policymakers to design more adaptable and inclusive AI regulations that consider the socio-political factors. Another area that needs investigation is the role of AI in policy formulation. Although AI can process large data sets to support evidence-based policymaking, future research must evaluate whether AI-generated recommendations align with human values and ethical considerations. Studies should explore mechanisms to ensure that AI does not reinforce biases or create policies that lack human oversight. Moreover, future research should analyze the socio-economic influence of AI automation in the public sector

workforce. It is observed that AI systems align with the administrative functions; therefore, there is a need to examine the strategies for workforce reskilling, job transition, and the long-term implications of AI-driven bureaucracy. Finally, interdisciplinary research incorporating AI ethics, public administration, and legal studies must be expanded to develop AI accountability models. These studies must explore different ways to improve transparency, prevent algorithms' discrimination, and enhance public engagement in AI-driven governance. Only through continuous research and evaluation can AI be effectively harnessed to improve governance while upholding democratic principles.

7.3. Limitations of the research

This research provides valuable insights into AI applications in public administration, but several limitations must be acknowledged. First, as secondary research based on desk-based analysis, the findings are based on the existing literature, reports, and article studies instead of direct empirical investigation. This limits the ability to capture real-time policy developments, evolving AI trends, or firsthand perspectives from stakeholders and government officials. Future studies should integrate primary data collection through surveys, interviews, or case-specific evaluations to improve the depth of analysis. Second, the study mainly focuses on the broad AI application in public administration without getting deep into the sector-specific information on AI adoption in areas like law enforcement, healthcare, or taxation. Each sector has different regulatory deployment and operational and ethical challenges that impact AI deployment. This study does not offer a comprehensive cross-national comparative analysis. Future research must conduct case studies in different governance settings to highlight best practices and challenges in different regions. Moreover, the research does not extensively address the unintended consequences of AI implementation, such as public resistance, and the long-term impact on government transparency. These issues are acknowledged but demand more empirical research to assess the real-world implications.

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