
| RESEARCH ARTICLE

Unleashing the Power of Artificial Intelligence and Automation in Public Administration

Showkat Ahmad Dar

Research scholar of Public Administration, Annamalai University Tamil Nadu, India

Corresponding Author: Showkat Ahmad Dar, **E-mail:** darshowkat41@gmail.com

| ABSTRACT

The study explores the use of automation and artificial intelligence (AI) in public administration and its potential benefits and constraints for government organizations. It discusses how automation and AI can revolutionize public administration by improving productivity, effectiveness, and service quality. The study provides an overview of automation and AI technologies, highlighting their strengths and weaknesses. It identifies key areas where automation and AI can be integrated into public administration, including policymaking, service delivery, decision-making, and citizen engagement. The advantages of using automation and AI in public administration are examined, such as data-driven policy decisions, streamlined administrative procedures, and enhanced service delivery through AI-powered chatbots and virtual assistants. Ethical considerations, privacy concerns, and job displacement are also addressed, proposing methods for ensuring ethical and equitable application of automation and AI. The study includes case studies from different countries that demonstrate successful applications of automation and AI, showcasing increased citizen involvement, transparency, and improved government services. It concludes by emphasizing the importance of strong leadership, collaboration between governmental organizations and technical experts, and ongoing research and development to maximize benefits and minimize risks. The study aims to provide insights and recommendations for policymakers, administrators, and researchers, contributing to the knowledge base on AI and automation in public administration.

| KEYWORDS

Artificial Intelligence (AI), Automation, Service Delivery, Workforce Transition

| ARTICLE INFORMATION

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1. Introduction

In recent years, there has been a lot of discussion and interest surrounding the integration of automation and artificial intelligence (AI) in public administration. Global governments face both opportunities and problems as a result of the rapid improvements in technology. Government operations could be transformed by AI and automation, enhancing productivity, effectiveness, and service provision (Busuioc, M., 2021). However, issues with ethics, privacy, workforce displacement, and operational difficulties are also raised by their implementation. In order to fully understand the possibilities of utilizing AI and automation in public administration, this paper will examine their advantages, discuss their difficulties, and offer suggestions for responsible and efficient application.

The management and governance of public organisations, policies, and services are all included in the field of public administration. Government operations and service delivery have historically relied on manual and paper-based methods, which frequently lead to inefficiencies, delays, and bureaucratic difficulties. The development of AI and automation technology opens up new opportunities for streamlining these procedures and advancing citizen-centric service delivery (Feijoo, C., et al., 2020). Computer systems that can carry out activities that traditionally require human intelligence are referred to as artificial

intelligence (AI) systems. Systems can learn from data and gradually improve their performance over time with the help of machine learning, a subset of artificial intelligence. Contrarily, automation entails the use of technology to carry out repetitive operations automatically, minimizing human intervention and potential errors ((Busuioc, M., 2021)).

There are a plethora of possible uses for AI and automation in public administration. In the creation of policies, AI can quickly analyze enormous amounts of data, assisting in the use of evidence-based decision-making and outcome prediction. Automated technologies can improve efficiency and reduce administrative overhead by streamlining bureaucratic procedures like document management and application processing. AI and automation have the potential to improve decision-making by facilitating real-time data analysis and predictive modeling (Valle-Cruz, D., Criado, J. I., Sandoval-Almazán, R., & Ruvalcaba-Gomez, E. A., 2020). AI-powered chatbots and virtual assistants can increase citizen engagement by offering personalized and responsive interactions and enhancing overall service delivery. By making it possible to gather and analyze data on government performance, these technologies can also help promote greater (Mialhe, N. (2017) transparency and accountability.

Although there are many advantages to using automation and AI in public administration, there are also issues that need to be resolved. Instances of algorithmic prejudice, data privacy, and the ethical application of AI to decision-making processes are just a few examples of the ethical issues that can occur. In order to maintain public faith in these technologies, it is vital to provide openness, comprehensibility, and fairness. Concerns about job losses and the requirement for employee retraining or upskilling are brought up by the potential for worker displacement caused by the application of AI and automation (Chatterjee, S., Khorana, S., & Kizgin, H., 2022). A just and inclusive strategy must be used to manage this change. For successful implementation, practical obstacles including financial restrictions, technical infrastructure needs, and interoperability difficulties must also be solved. To successfully manage these issues, collaboration between government agencies, technology specialists, and stakeholders is crucial.

This article offers case studies from several nations that have effectively adopted these technologies to demonstrate the practical application of AI and automation in public administration. These case studies highlight the advantages attained, the lessons discovered, and the best practises that can direct upcoming implementations. The incorporation of AI and automation in public administration has enormous potential to improve service delivery, streamline government operations, and encourage citizen engagement (Broussard, M. 2015). However, due to the potential ethical ramifications, privacy issues, worker dynamics, and practical difficulties, their deployment must be done with prudence. Using insights and suggestions for policymakers, administrators, and researchers interested in leveraging these game-changing technologies to improve public service delivery and governance, this paper seeks to add to the body of knowledge on AI and automation in public administration.

1.1 Objectives

The study's primary goals are to assess the current condition of public administration and to identify potential avenues for incorporating AI and automation to improve public administration's performance in these areas. It will evaluate the strengths and weaknesses of these technologies, as well as their prospective effects on government management. The potential for AI and automation to enhance policymaking, organizational efficiency, decision-making, and public participation will be studied. We'll discuss ethical and privacy considerations and offer solutions for how to implement them in a way that benefits everyone. The study identify problems and impediments to adoption through the analysis of successful case studies, including best practises and lessons learned, and will provide recommendations for overcoming those barriers. Leadership, cooperation, and R&D will be examined in terms of their respective contributions to optimizing outcomes while minimizing costs. The study's ultimate goal is to add to the body of knowledge in the subject by providing new perspectives and suggestions for administrators, politicians, and academics.

1.3 Statement of the Problem

Artificial Intelligence (AI) and Automation hold the potential to revolutionize public administration by enhancing efficiency, service delivery, and data-driven decision-making. Nonetheless, addressing key challenges is essential for successful implementation. These challenges encompass concerns like policymakers' and researchers' knowledge gaps, ethical and privacy considerations, potential workforce displacement, retraining needs, funding and technical infrastructure obstacles, public trust, and regulatory framework establishment. To fully harness AI and automation's benefits and ensure their responsible integration into public administration, effective resolution of these issues is imperative. The existing body of research lacks a comprehensive understanding of the distinct challenges and opportunities related to the deployment of artificial intelligence and automation in various public administration contexts. Moreover, there is a shortage of empirical investigations into the long-term effects of these technologies on administrative efficiency, accountability, and citizen engagement within public administration.

Scope of the Study

The purpose of the study is to examine the potential benefits of AI and automation in government administration. This includes a look at how AI and automation can be used in different parts of government administration, the pros and cons of doing so, examples of where these technologies have been successfully implemented, policy recommendations, an examination of ethical and legal considerations, and case studies of successful adoption. The scope of this research is limited to administrative settings where AI and automation are being used; other domains or applications are not considered.

2. Methodology

The study adopts a qualitative approach to investigate the integration of AI and automation in public administration. The methodology involves conducting interviews with special experts, policymakers, and administrators to gather their insights and perspectives. These interviews are then thematically analyzed, along with a comprehensive review of secondary sources including books, articles, national and international reports, and administrative commission reports. Through this analysis, the study aims to identify trends, patterns, and key themes relevant to the adoption and impact of AI and automation in public administration. By utilizing a diverse range of credible sources, the study ensures the reliability of its findings and enhances the validity of its conclusions. The study contributes valuable insights and recommendations to the field of AI and automation in public administration, offering guidance for policymakers, administrators, and researchers in this area of study.

3. Result and discussion

3.1 Public administration for AI and automation integration to improve efficiency.

Increasing complexity and rising citizen expectations for successful service delivery characterise the state of public administration today (Susar, D., & Aquaro, 2019). There is rising understanding of the transformative potential of combining automation and artificial intelligence (AI) to address these difficulties. By leveraging AI and automation technologies, governments can improve efficiency, effectiveness, and service delivery in various areas (Maalla, H. A. 2021). Streamlining bureaucratic procedures is one area where AI and automation can have a substantial influence (Ojo, 2019). Governments can increase efficiency by automating rote processes like data entry, document processing, and record-keeping to free up resources for higher value-added activities. In turn, this might lead to better service delivery and speedier reaction times.

AI and automation may enhance public administration decision-making (O Dingli, A. 2021). Governments can make fact-based policy decisions and increase the precision of outcome forecasts by utilizing AI-powered analytics and decision-support tools. For instance, AI can examine enormous volumes of data to find patterns and trends, allowing policymakers to create tailored actions and successfully deal with new difficulties (Ojo, 2019). The interaction between citizens and the overall citizen experience can be improved by integrating AI and automation. Virtual assistants and chatbots driven by AI can offer responsive and personalized interactions; answering common questions, disseminating knowledge, and helping users use government services. As a result, people's convenience and accessibility are improved, which raises their levels of happiness (Surden, H. 2019).

The most successful way to combine AI and automation is to maximize resource allocation and boost output. Governments can improve resource allocation, predictive maintenance, and supply chain management by utilizing AI-based decision-making algorithms (Ruvalcaba-Gomez, E. A. (2023)). For instance, real-time sensor data analysis using AI algorithms can be used to spot abnormalities, optimize energy use, and lessen environmental impact. Numerous opportunities to increase efficiency, effectiveness, and service delivery are presented by the integration of AI and automation in public administration. Governments can better meet the needs and expectations of citizens by reducing bureaucratic procedures, improving decision-making, strengthening citizen contacts, and optimizing resource allocation (Ozdemir, V., & Hekim, N. 2018). However, it is crucial to approach AI integration properly, taking ethical issues, responsibility, and transparency into account. Governments can revolutionize public administration and provide more responsive and citizen-centric services by utilizing the promise of AI and automation.

3.2 AI and automation's impact on public administration.

Automation and artificial intelligence (AI) have the potential to significantly improve service delivery, efficiency, and effectiveness in public administration. To evaluate their potential impact on public administration, it is essential to investigate and examine their capabilities and limitations. The ability of AI to swiftly and precisely analyze enormous volumes of data is one of its fundamental features. AI systems are able to find patterns, trends, and insights that people might overlook, enabling public administration to make better decisions. For instance, AI can examine citizen feedback and sentiment data (Zeadally, S. et al 2020) to find areas for improvement in governmental services, enabling politicians to make fact-based decisions and allocate

resources appropriately. On the other hand, automation excels at streamlining routine and repetitive work. Governments can decrease human error, increase speed, and free up human resources for more complicated and value-added tasks by automating basic administrative tasks including data input, document processing, and record-keeping. (Broussard, M 2015) In the public sector, this may lead to greater production and efficiency.

The limitations of AI and automation technologies must be understood, though. Lack of human-like contextual awareness and common sense thinking is a major drawback. Although efficient data processing and analysis are strengths of AI systems, (Susar, D., & Aquaro, 2019). They might have trouble comprehending and interpreting context, which could result in mistakes or biased results. AI models can only be as good as the data they are trained on, biased or inadequate data can produce biased findings or amplify already-existing inequities. The prospect for job displacement constitutes yet another restriction. There is concern that particular employment types could become obsolete as a result of automation and AI technologies, disrupting the workforce (Dorr et al., 2023). To adapt to the changing environment and ensure a seamless transition, it is critical for governments to take into account policies for reskilling and upskilling the workforce. The employment of AI and automation in public administration is subject to ethical questions. To make sure that AI systems are open, impartial, and accountable, concerns including algorithmic bias, privacy issues, and the responsible use of data must be addressed. To direct the development and implementation of AI systems in the public sector, governments must establish strong governance frameworks and ethical standards. Despite these drawbacks, automation and artificial intelligence have a large potential impact on public administration. Governments can improve service delivery, enhance decision-making, and develop more responsive, citizen-centric services by utilizing these technologies (Uechi, E. 2019). Virtual assistants and chatbots powered by AI may connect with citizens in a personalized and effective way, immediately resolving their questions and concerns. By enabling proactive policy interventions, predictive analytics can assist governments in spotting and addressing new problems before they become more serious.

Resource allocation and optimization can both be improved by AI and automation. Machine learning algorithms can examine large datasets to find inefficiencies, allocate resources more efficiently, and enhance financial planning (Andronie, et al., 2021). This may result in cost reductions and more efficient resource use, which will ultimately benefit the general population (Kunert, J. 2019). The potential of AI and automation technologies to improve public administration is enormous. Their capacity to process massive amounts of data, expedite administrative procedures, and improve decision-making can result in more effective, efficient, and citizen-centered public services (Wirtz et al., 2021). However, it is essential to address the drawbacks and difficulties brought on by these technologies, such as algorithmic discrimination and job displacement, and to make sure that their implementation is constrained by ethical considerations. Governments may effectively use AI and automation to transform public administration and provide better outcomes for residents by understanding and leveraging the potential while limiting the constraints (Maalla, H. A. 2021).

3.3 AI and automation benefits in public administration.

Utilizing automation and artificial intelligence (AI) in public administration has a number of advantages that can considerably improve several facets of governance. We may learn more about the transformational potential of AI and automation in public administration by researching and examining these advantages (Lazaroiu, G et al 2022). Improved policy development is one of the main advantages of AI and automation in public administration. A deeper knowledge of complicated policy challenges is possible for policymakers thanks to the processing capability of AI in analytics. AI can offer insights that support evidence-based decisions by examining trends, patterns, and correlations (Ojo, A. (2019)). Policymakers can create more focused and efficient policies using this data-driven approach, better tackling social issues. Another significant benefit of AI and automation in public administration is the streamlining of processes. Governments can decrease human error, save time, and more effectively use resources by automating regular administrative operations including data input, document processing, and record-keeping (Sigfrids, A., Nieminen, et al. 2022). Public administrators' productivity and effectiveness are increased as a result of the process simplification by allowing them to concentrate on more intricate and valuable tasks.

An important advantage of automation and AI in public administration is improved decision-making. Huge amounts of data may be analyzed by AI algorithms, which can also spot trends and produce insights to aid in decision-making (Kuziemski, et al. 2020). Policymakers may now make educated decisions and predictions thanks to this data-driven methodology, resulting in more effective and efficient governance. According to Barnes et al. (2019), AI can analyze citizen feedback and sentiment data to evaluate public opinion, enabling policymakers to better tailor policies and services to citizens' needs and preferences. Leveraging automation and artificial intelligence in public administration also has a favourable impact on citizen participation. AI-powered chatbots and virtual assistants can communicate with citizens in a personalized and timely manner, immediately resolving their questions and concerns (Medaglia, R. et al., 2022). This increases information accessibility, improves the citizen

experience, and promotes inclusivity and transparency in government services. Additionally, AI can use data created by individuals on social media and other platforms to analyze developing problems, enabling governments to engage with citizens proactively and promptly address their needs (Thurman et al. 2019). Data-driven decision-making and evidence-based policy evaluation can be made easier by AI and automation. Governments may assess the success of policy and make data-driven modifications by using AI algorithms to analyze enormous volumes of data and uncover patterns, trends, and consequences. Better outcomes for citizens are made possible by this iterative process, which enables continual improvement and the fine tuning of policies and programmes (Surden, H. 2019).

The delivery of public services could become more effective and efficient with the help of AI. Predictive analytics enabled by AI, for instance, can optimize service delivery planning and resource allocation, ensuring that resources are distributed where they are most required. This results in greater service quality, shorter wait times, and higher levels of general citizen satisfaction (Ishengoma, F. R., Shao, et al. 2022). A variety of advantages that have a favourable impact on policy development, streamlined procedures, improved decision-making, and citizen participation are provided by the use of AI and automation in public administration. Governments can use these technologies to make data-driven decisions, automate routine processes, and provide residents with more individualized and effective services (Nikiforova, A. 2022). However, in order to reduce potential hazards and ensure responsible use of AI and automation, it is essential to address ethical issues, promote transparency, and maintain human oversight (König, P. D. et al. 2020). Public administrations may harness the potential of these technologies and transform government for the benefit of society by properly adopting them, according to Saxena (2020).

3.4 Ethical and privacy concerns in AI and automation adoption

There are ethical and privacy concerns that must be addressed in order to achieve a responsible and inclusive implementation of artificial intelligence (AI) and automation in the public sector (KONIG, P. D. 2022). These concerns are brought about by the adoption of these technologies in the public sector. It is absolutely necessary, in order to preserve the trust of the general public and to protect individual rights and values, to conduct an analysis of these problems and to suggest possible solutions. The existence of bias in algorithms is one of the key ethical concerns. The data that AI systems are trained on determines the degree to which they are objective. If the training data reflects existing biases in society, then the AI algorithms can perpetuate and magnify those biases, which can lead to biased outcomes and discrimination (Ozdemir, V. et.al 2018). In order for governments to address this challenge, they need to prioritize the quality and diversity of their data. This includes the utilization of datasets that are representative and inclusive, the routine auditing of algorithms for bias (Hekim, N. (2018), and the participation of a wide variety of stakeholders in the planning, development, and evaluation of AI systems.

Transparency and explainability are crucial for the responsible deployment of AI. Since many AI algorithms are often treated as "black boxes" (Anastasopoulos et al., 2019), understanding their decision-making process becomes challenging. The lack of openness raises concerns about accountability and the ability to question the outcomes. The creation of AI models that can be explained should be encouraged by governments, and it should be required of algorithms that they provide transparent justifications for the results they produce. In addition (Ruvalcaba-Gomez, E. A. 2023), the establishment of legislation that requires artificial intelligence systems employed in the public sector to be open can improve accountability and reduce the danger of potential adverse events. When deploying AI and automation in the public sector, protecting individuals' privacy is another crucial concern that must be addressed. Effective operation of AI systems frequently necessitates access to vast quantities of personally identifiable data. It is imperative that governments put in place effective data protection and privacy policies in order to protect individual's information. This includes putting into practise the concepts of privacy-by-design, carrying out privacy impact assessments (Whitford, A. B. 2019), and adopting stringent practises for the processing and storage of data. In addition, it is necessary to get individuals' informed consent as well as anonymize and encrypt their data in order to safeguard their constitutionally protected right to privacy. Responsible use of artificial intelligence must necessarily include the promotion of inclusivity. Artificial intelligence (AI) systems should be built to fulfil the needs of all members of society in an equitable manner, independent of criteria such as a person's ethnicity, gender, or socioeconomic background. According to Pikkuaho (P. 2022), "Governments should make it a priority to include diverse perspectives and expertise in the development and deployment of artificial intelligence systems." In addition, in order to ensure inclusivity, it is essential to do continuous monitoring and evaluation of AI systems to search for any biases and discriminatory consequences.

There are a few different approaches that governments might take in order to address these ethical and privacy problems. To begin, (Koliba et al. 2023) they can set up specialised regulatory organisations or task forces that will be responsible for monitoring the ethical application of AI in the public sector. These entities have the ability to create rules, standards, and best practises for the responsible use of AI, in addition to conducting audits and enforcing compliance. It is important for governments to make investments in education and awareness campaigns in order to increase the level of AI literacy among policymakers, public administrators (Albert, J. R. G., et al. 2018), and citizens. This will lead to a greater

understanding of the advantages, disadvantages, and ethical issues that are related with AI and automation. The most effective way for governments to handle ethical difficulties and encourage the responsible adoption of artificial intelligence is to ensure that their citizens and workforce are properly educated.

Additionally essential to the application of AI in an ethical manner are collaboration and partnership. It is possible for governments to collaborate with civil society organisations, academic institutions (Ulnicane, I., et al. (2022)), and industry professionals in order to build ethical principles and frameworks. The participation of a wide range of stakeholders in the decision-making process can result in the development of more all-encompassing solutions, as well as increase public acceptance of and trust in AI technologies. In conclusion, it is vital to conduct continuous monitoring and evaluation of AI systems in order to discover and address any ethical concerns. To ensure that artificial intelligence systems function in an ethical manner and are in line with social values, governments should implement procedures for continual auditing, evaluation (Dwivedi, Y. K., et al. (2021)), and feedback collecting. Throughout the whole lifecycle of AI systems, transparency and accountability ought to be treated as top priorities. It is essential, for the purposes of both responsible and inclusive deployment, to address the ethical and privacy problems that are related with the use of AI and automation in the public sector. Strategies such as assuring transparency, (Melo, N. (2021) data privacy protection, inclusion, education, collaboration, and continuing monitoring can assist encourage the responsible and ethical use of AI technologies. These strategies can also help limit hazards. It is possible for governments to capitalize on the potential of AI while also protecting individual rights, fostering fairness, and preserving public trust in the public sector (Reis, J., Santo, P. E., et.al (2021)). This can be accomplished by giving ethical issues a higher priority and incorporating a diverse range of stakeholders.

3.5 Successful AI and automation implementations in public administration

Several nations all over the world have integrated AI and automation into their public administration systems. These nations have provided significant case studies and valuable lessons and best practises to other nations as a result of their successes. Let's take a look at several well-known instances, including India:

It is well known that Estonia has some of the most advanced digital governance efforts. The deployment of the (Engin, Z., & Treleven, P. 2019) X-Road system, which facilitates safe data sharing across government agencies, is a significant example of a success story. E-residency applications, tax filing, and healthcare services are just some of the administrative procedures that have been expedited in Estonia thanks to artificial intelligence and automation. The nation's success can be attributed to its advanced digital infrastructure, stringent data protection laws, and attitude that prioritize the needs of its citizens. Artificial intelligence (AI) and automation have been incorporated into Singapore's public administration in order to improve service delivery and citizen participation. The government has begun a programme known as "Smart Nation," which is centered on the utilization of technology (Pan, J., & Koh, G. 2018) to improve a variety of different industries, such as transportation, healthcare, and urban planning. For example, chatbots powered by artificial intelligence have been put into use to assist citizens with their questions and to deliver personalized services. A strong leadership commitment, investments in infrastructure, and an ecosystem that encourages collaboration are all factors that contributed to Singapore's success.

The government of the United Kingdom has made use of artificial intelligence and automation in a number of different areas of public administration. One example that particularly stands out is the use of AI algorithms to the task of uncovering fraudulent activity within the welfare and tax systems. According to Manyika, J. (2017), the algorithms examine huge volumes of data in order to discover potentially fraudulent trends and anomalies, which enable the government to efficiently prevent and handle fraudulent behaviour. The experience of the United Kingdom demonstrates how important it is to utilize artificial intelligence for data analysis and decision-making in order to improve efficiency and prevent fraud. The use of artificial intelligence (AI) and automated processes has seen substantial progress in India's public administration systems.

The mission of the "Digital India" effort in this country is to improve citizen access to government services by digitizing those services. Applications that are powered by artificial intelligence have been effectively implemented in India. Some examples of these applications include Aadhaar, a biometric (Vempati, S. S. 2016) identification system, and the Unified Payments Interface (UPI), which enables digital transactions to be completed without any complications. As a result of these approaches, service performance has improved, corruption has been minimized, and financial inclusion has increased. However, concerns over the privacy and safety of users' data will need to be addressed before responsible adoption can take place. The following are some of the most important things that can be learned from the examination of these case studies:

Strong Leadership: Successful implementation requires strong leadership commitment and vision to drive digital (Peifer, Y., et, al 2022) transformation and overcome challenges

Robust Infrastructure: Building a robust digital infrastructure is crucial, including reliable connectivity, secure data storage, and interoperability between systems.

Citizen-Centric Approach: Governments should prioritize citizen needs and design AI and automation systems that improve service delivery and enhance citizen engagement.

Data Governance and Privacy: Effective data governance, including robust data protection measures, privacy regulations, and consent (Delacroix, S., Pineau, J., et al 2021) mechanisms, is essential to ensure responsible and ethical use of AI and automation.

Collaboration and Partnerships: Engaging diverse stakeholders, including industry, academia, and civil society, fosters collaboration, innovation, and collective problem-solving.

Skills Development: Investing in upskilling and reskilling programs for government officials and employees is crucial to maximize the benefits of AI and automation.

Evaluation and Iterative Improvement: Continuous monitoring, evaluation, and feedback mechanisms allow for adjustments and improvements to AI and automation systems over time.

Successful implementation of AI and automation in public administration requires a holistic approach, including strong leadership, robust infrastructure, citizen-centricity, data governance, collaboration, skills development, and continuous evaluation. The case studies from Estonia, Singapore, the UK, and India showcase various best practices and provide valuable lessons for other countries seeking to leverage AI and automation effectively in their public administration systems.

3.6 Possible risks of AI in public administration

The implementation of AI in public administration offers numerous benefits, but it also comes with several potential risks that need to be carefully managed.

AI systems can inherit biases present in their training data, leading to biased decision-making. In public administration, this can result in discriminatory practices, such as biased hiring, lending, or resource allocation, which can perpetuate existing inequalities in society. The collection and analysis of vast amounts of citizen data for AI-driven decision-making can raise significant privacy concerns. Citizens (Wirtz, B. W., Weyerer, J. C., & Sturm, B. J. 2020) may worry about their personal information being mishandled, leading to breaches of privacy or misuse of data. As AI systems become more complex, it can be challenging to assign responsibility when things go wrong. If an AI algorithm makes a detrimental decision in public administration, it may be difficult to determine who is accountable for the outcome. The automation of routine tasks through AI and robotics (Thierer, A. D., Castillo O'Sullivan, A., & Russell, R. 2017) can lead to job displacement for public servants. While AI can increase efficiency, it may also result in the need for reskilling and the loss of certain job roles, potentially leading to job market disruptions. AI systems can be vulnerable to hacking and manipulation. In public administration, this can lead to security breaches, data leaks, and even cyberattacks that disrupt essential government functions.

Overreliance on AI systems can make public administration vulnerable to system failures or technical glitches. If these systems fail, it can (Barth, T. J., & Arnold, E. 1999) disrupt government services and create significant challenges in delivering essential functions. Complex AI algorithms can lack transparency, making it difficult to understand how decisions are made. This opacity can undermine citizens' trust in the fairness and accountability of government processes. Developing and maintaining AI systems can be costly. Public administrations may need to allocate significant resources to implement and sustain these technologies, potentially diverting funds from other critical public services. Evolving AI technologies can outpace existing regulations and laws. Public administrations must adapt and create new regulatory frameworks to ensure that AI is used ethically (Nordstrom, M. 2022) and within the bounds of the law. The deployment of AI can have broader societal implications, such as changes in how people interact with government, potential erosion of personal autonomy, and ethical dilemmas related to AI-driven decision-making.

Public administrations must prioritize responsible AI development, conduct regular audits of AI systems for bias and fairness, establish clear guidelines for data privacy, invest in cybersecurity measures, and engage with stakeholders to ensure transparency and accountability in AI-based decision processes. Careful consideration of these risks is essential to reap the benefits of AI while minimizing potential harm in public administration.

3.7 AI and automation adoption challenges in public administration, propose solutions.

The incorporation of AI and automation into the workings of the public sector brings with it a number of difficulties and obstacles, all of which need to be overcome before the project can be considered a success. Let's identify, investigate, and evaluate these difficulties, including some that are unique to India, and then provide some suggestions on how they can be overcome:

One significant challenge is the availability and quality of data. Many public administration systems in India still rely on (Madan, R., & Ashok, M. 2022) manual record-keeping, resulting in incomplete or outdated data. To overcome this, the

government should focus on digitizing and standardizing data collection processes, ensuring data accuracy, and promoting data sharing and interoperability across government agencies.

Adequate digital infrastructure and connectivity are crucial for the effective implementation of AI and automation. In India, there are (Filgueiras, F. 2022) disparities in internet access and connectivity, particularly in rural areas. To overcome this barrier, the government should invest in expanding broadband infrastructure, ensuring reliable connectivity, and promoting digital literacy programs to bridge the digital divide.

The lack of a skilled workforce capable of implementing and managing AI and automation systems is a significant challenge. To address this, India should prioritize investments in skill development programs, providing training (Sobrinho-García, I. 2021) and upskilling opportunities for government officials and employees. Collaboration with educational institutions and industry can help design relevant courses and certification programs to build the necessary expertise.

AI and automation raise ethical and legal concerns, such as privacy, bias, and accountability. India needs to develop robust ethical and (Siau, K., & Wang, W. 2020) legal frameworks that address these concerns. The government should establish regulations and guidelines for responsible AI use, data privacy protection, algorithmic transparency, and accountability. This can instill public trust and ensure responsible implementation of AI and automation.

Building public acceptance and trust in AI and automation is crucial for successful adoption. There may be skepticism and concerns (Choung, H., David, P., & Ross, A. 2023) about job displacement and privacy violations. The government should engage in extensive public outreach and awareness campaigns to educate citizens about the benefits, risks, and safeguards in place. Transparent communication and involving citizens in the decision-making process can help foster trust and acceptance.

Effective implementation of AI and automation often requires collaboration and coordination among different government departments. In India, there may be (Ashoori, M., & Weisz, J. D. 2019) silos and bureaucratic hurdles that hinder interdepartmental cooperation. To overcome this, the government should establish cross-departmental task forces or committees to facilitate collaboration, share best practices, and promote knowledge sharing.

Implementing AI and automation systems can be costly, requiring initial investments in infrastructure, technology, and training. Governments need to carefully assess the cost-benefit analysis and demonstrate the long-term return on (Feuerriegel, S., Dolata, M., & Schwabe, G. 2020) investment. Prioritizing pilot projects, conducting feasibility studies, and leveraging public-private partnerships can help mitigate financial constraints.

Protecting sensitive government data and ensuring cybersecurity is critical. India should invest in (Zhang, Z., Ning, H., Shi, F., Farha, F., Xu, Y., Xu, J., ... & Choo, K. K. R. 2022) robust cybersecurity measures, including encryption, access controls, and continuous monitoring of AI and automation systems. Regular audits and compliance assessments can help identify vulnerabilities and strengthen security frameworks.

Addressing the challenges and barriers to the adoption of AI and automation in public administration requires a multi-faceted approach. India should focus on improving data quality, expanding digital infrastructure, investing in skill development, establishing ethical and legal frameworks, building public trust, promoting interdepartmental coordination, assessing cost-effectiveness, and prioritizing cybersecurity measures. By addressing these challenges, India can unlock the transformative potential of AI and automation, enhancing efficiency, effectiveness, and service delivery in public administration.

3.8 AI and automation in public administration: leadership, collaboration, research.

Leadership, collaboration, and research and development play crucial roles in maximizing the benefits and minimizing the risks of AI and automation in public administration

Effective leadership is essential for driving the successful implementation of AI and automation in public administration. Leaders must have a clear vision and strategic direction for the adoption of these technologies. They need to (Chui, M., Harryson, M., Valley, S., Manyika, J., & Roberts, R. 2018) provide strong support and commitment, ensuring that AI and automation initiatives align with broader policy goals and objectives. Leaders should prioritize ethical considerations, establish governance frameworks, allocate resources, and promote a culture of innovation and continuous learning within the public administration

Collaboration is critical for the successful deployment of AI and automation in public administration. Effective collaboration requires (Mikhaylov, S. J., Esteve, M., & Campion, A. 2018) engagement with diverse stakeholders, including government agencies, academic institutions, industry partners, civil society organizations, and citizens. Collaboration facilitates knowledge sharing, promotes the exchange of best practices, and fosters interdisciplinary research and expertise. By working together, stakeholders can address challenges, share resources, and develop comprehensive solutions that consider different perspectives and expertise

Robust research and development efforts are necessary to maximize the benefits and mitigate the risks associated with AI and (Zhang, K., & Aslan, A. B. 2021) AI automation in public administration. R&D activities contribute to the development of

innovative AI technologies, algorithms, and frameworks specifically tailored to the needs of public administration. Through research, governments can explore emerging trends, evaluate the impact of AI and automation on society, and identify best practices and lessons learned. R&D also plays a vital role in addressing ethical considerations, privacy concerns, and legal frameworks to ensure responsible implementation.

3.9 Research and development efforts should focus on:

Ethical Considerations: R&D should explore ethical frameworks, guidelines, and tools for ensuring responsible AI use in public administration. This includes addressing bias, privacy, transparency, and accountability issues.

Governance and Regulations: R&D can inform the development of governance frameworks and regulatory mechanisms that guide the deployment and oversight of AI and automation in the public sector. This includes data governance, privacy protection, algorithmic transparency, and standards for AI system

Impact Assessment: R&D efforts should evaluate the impact of AI and automation on public administration and society as a whole. This includes assessing benefits, risks, and unintended consequences to inform decision-making and policy development

Capacity Building: R&D initiatives can contribute to building the necessary capacity and expertise in AI and automation within the public administration. This involves developing training programs, academic collaborations, and knowledge-sharing platforms to enhance the skills and knowledge of government officials and employees.

By emphasizing leadership, collaboration, and research and development, governments can maximize the benefits of AI and automation in public administration while minimizing risks. Effective leadership ensures strategic direction and commitment, collaboration promotes collective problem-solving and knowledge-sharing, and research and development contribute to ethical frameworks, governance mechanisms, and capacity building. Together, these factors enable responsible and innovative adoption of AI and automation, leading to improved efficiency, effectiveness, and service delivery in public administration.

3.10 AI and automation in public administration: insights for policymakers, researchers.

Research on AI and automation in public administration plays a crucial role in contributing to the existing body of knowledge and providing valuable insights and recommendations for policymakers, administrators, and researchers. Here are some key contributions and recommendations for each stakeholder:

1. Policymakers:

Embrace evidence-based policymaking: Policymakers should leverage research findings on the benefits, risks, and best practices of AI and automation in public administration to inform policy formulation. They should prioritize data-driven decision-making and consider the societal impact and ethical implications of adopting these technologies.

Establish regulatory frameworks: Policymakers should develop robust regulations and guidelines that address ethical considerations, data privacy, transparency, and accountability in the deployment of AI and automation. These frameworks should ensure responsible and inclusive implementation, safeguarding individual rights and promoting fairness.

Foster collaboration: Policymakers should encourage collaboration among different stakeholders, including government agencies, academia, industry, and civil society, to develop comprehensive policies and governance frameworks. Collaboration can promote knowledge sharing, collective problem-solving and effective implementation of AI and automation initiatives.

2. Administrators:

Build organizational capacity: Administrators should invest in building the necessary capacity and expertise within their organizations to effectively adopt and manage AI and automation systems. This includes providing training programs, encouraging skill development, and establishing cross-departmental collaboration.

Ensure transparency and explainability: Administrators should prioritize transparency and explainability when implementing AI and automation. Citizens and stakeholders should have a clear understanding of how these technologies are used, how decisions are made, and what data is collected and processed. Clear communication and transparency contribute to trust and acceptance.

Monitor and evaluate: Administrators should establish mechanisms for monitoring and evaluating the impact of AI and automation initiatives in public administration. This allows for continuous improvement, identification of challenges, and fine-tuning of systems to ensure they align with organizational objectives and deliver intended benefits.

3. Researchers:

Focus on interdisciplinary research: Researchers should engage in interdisciplinary research that integrates various fields, including public administration, computer science, ethics, and social sciences. This interdisciplinary approach helps generate comprehensive insights into the implications and challenges of AI and automation in public administration.

Study societal impact: Researchers should investigate the broader societal impact of AI and automation in public administration, including economic, social, and ethical dimensions. This research can inform policy debates, contribute to ethical frameworks, and help identify potential risks and unintended consequences.

Collaborate with practitioners: Researchers should collaborate closely with policymakers and administrators to ensure that their research addresses practical challenges and provides actionable recommendations. This collaboration enhances the relevance and impact of research findings on real-world implementation.

By contributing to the existing body of knowledge and providing insights and recommendations, researchers can inform evidence-based policymaking, support effective implementation by administrators, and guide the responsible adoption of AI and automation in public administration. Policymakers and administrators, in turn, should actively engage with researchers, incorporate their findings into decision-making processes, and foster a culture of learning and innovation to maximize the benefits of AI and automation while mitigating risks.

Implications of the Study

The study on harnessing artificial intelligence (AI) and automation in public administration has several implications for policymakers, administrators, and researchers:

Enhanced Decision-making

The study highlights how AI and automation can improve decision-making in public administration by providing data-driven insights and predictive modeling. Policymakers can leverage these technologies to make more informed and evidence-based decisions, leading to more effective policies and governance.

Improved Service Delivery

By integrating AI and automation, governments can streamline bureaucratic processes, automate routine tasks, and enhance citizen interactions. This can result in improved service delivery, faster response times, and greater citizen satisfaction. Policymakers and administrators can consider these technologies to optimize service provision and enhance the overall citizen experience.

Ethical Implementation

The study emphasizes the importance of addressing ethical considerations in the use of AI and automation. Policymakers and administrators need to develop robust guidelines and frameworks to ensure responsible and ethical implementation. This includes addressing issues such as algorithmic bias, data privacy, and transparency in decision-making algorithms.

Workforce Transition and Reskilling

The adoption of AI and automation may lead to workforce displacement in public administration. Policymakers and administrators should proactively manage this transition, focusing on reskilling or upskilling employees to adapt to new roles and responsibilities. Investing in training programs and creating opportunities for professional development can help mitigate potential job losses.

Collaboration and Stakeholder Engagement

The study highlights the importance of collaboration and stakeholder engagement in the successful implementation of AI and automation in public administration. Policymakers and administrators should involve various stakeholders, including citizens, government agencies, technology experts, and researchers, to ensure the development and implementation of these technologies align with the needs and expectations of all stakeholders.

Legal and Regulatory Framework

The study emphasizes the need for a comprehensive legal and regulatory framework to govern the use of AI and automation in public administration. Policymakers should work towards establishing clear guidelines, standards, and safeguards to ensure compliance with ethical principles, data protection, and accountability.

Continuous Monitoring and Evaluation

Given the dynamic nature of AI and automation technologies, continuous monitoring and evaluation are crucial. Policymakers and administrators should actively assess the impact of these technologies, identify potential risks and challenges, and adapt policies and strategies accordingly. This includes staying abreast of technological advancements and incorporating feedback from citizens and stakeholders.

Research and Development

The study underscores the importance of ongoing research and development in the field of AI and automation in public administration. Researchers can contribute by investigating emerging trends, evaluating the effectiveness of different AI applications, and developing innovative solutions to address implementation challenges. Collaboration between academia, industry, and government is key to driving advancements in this domain. By considering these implications, policymakers,

administrators, and researchers can navigate the complexities of integrating AI and automation in public administration, ultimately realizing the potential benefits while ensuring responsible and effective implementation.

4. Conclusion

Government operations and service delivery can be significantly improved by integrating automation and artificial intelligence (AI) into public administration. We have examined the potential advantages and difficulties of utilizing automation and AI in the public sector throughout this article, offering analysis and suggestions for responsible and successful application. Technologies like artificial intelligence and automation have several benefits for public administration. They make it possible for governments to quickly analyze enormous amounts of data, which results in better policy decisions. By streamlining administrative procedures, automation lowers administrative responsibilities and frees up personnel for more value-added tasks. Chatbots and virtual assistants powered by AI increase customer service and citizen interactions. These technologies support accountability, transparency, and citizen participation.

However, the use of AI and automation in government administration also brings up issues that need to be resolved. To ensure ethical usage of these technologies, special thought must be given to ethical issues including algorithmic bias and data privacy. The valid issue of workforce displacement calls for efforts to reskill or upskill employees. Budget restrictions and technical limitations are just two implementation hurdles that must be surmounted through cooperation and stakeholder involvement. This study has provided concrete instances of effective AI and automation application in public administration through the use of case studies from various nations. These case studies emphasise the top techniques, the key takeaways, and the real gains made. They act as helpful resources for governments starting similar endeavors. A balanced and careful approach is needed for implementing AI and automation in public administration. Policymakers, administrators, and researchers must take into account the moral ramifications, privacy issues, workforce dynamics, and practical difficulties brought on by these technologies. Implementation success depends on cooperation between government organisations, technological professionals, and stakeholders. Leadership is essential for fostering an innovative culture, establishing a strategic vision, and accelerating the deployment of AI and automation in public administration. To keep up with technological breakthroughs and tackle new difficulties, ongoing research and development is required. The potential for AI and automation in public administration will grow as these technologies develop. It is crucial to regularly assess their impact, make necessary policy and regulatory changes, and involve the public in decision-making. By doing this, governments can fully utilize AI and automation, utilizing them to improve governance, improve public service delivery, and ultimately build a more effective and responsive public administration. The future scope of research in the realm of artificial intelligence (AI) and automation in public administration is extensive. It involves exploring effective adoption strategies, assessing long-term impacts, promoting interdisciplinary approaches, fostering human-machine collaboration, addressing privacy and security concerns, considering socio-economic implications, and exploring the potential of emerging technologies. By delving into these areas, the research aims to advance understanding, inform policy decisions, and drive innovative practices in utilizing AI and automation for public administration.

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