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Artificial Intelligence In Public Policy Cycle: Opportunities And Challenges

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Abstract -Artificial intelligence has become a transformative technology that is reshaping governance and public administration by enhancing governments capacity to design , implement and evaluate public policies. The growing integration of Artificial Intelligence technologies , including machine learning, natural language processing, predictive analytics and generative AI has significantly influenced every stages of the public policy cycle. This paper examines the role of AI across the public policy cycle. This paper examines the role of AI across the policy cycle, focusing on agenda setting, policy formulation, policy implementation, policy monitoring, policy evaluation and feedback. The study critically analyse the opportunities created by AI , including evidence based decision making, improved public service delivery, enhanced administrative efficiency, predictive governance, optimised resources allocation and greater citizens engagement. At the same time, it highlights key challenges associated with AI adoption in policy making such as algorithmic bias , cybersecurity threats , digital inequality,ethical dilemmas and accountability issues. The paper argues that although AI has considered potential to improve the quality, responsiveness and effectiveness of public governance. The integration of Artificial intelligence into the public policy cycle requires robust legal and regulatory frameworks, transparent governance mechanisms, meaningful human oversight , institutional capacity building and active citizens participation. The study concludes that a human centred and ethically governed approach to AI adoption is essential for developing inclusive, transparent, accountable and sustainable public policies capable of addressing the increasingly complex governance challenges of twenty first century.

Keywords – Artificial intelligence, Public Policy Cycle , Policy Formulation, Policy Implementation, Policy Evaluation , Policy feedback

Introduction –

Artificial intelligence has emerged as one of the most transformative technologies of the twenty first century, fundamentally reshaping governance, public administration and policy making across the world. Advances in machine learning, natural language processing, computer vision, predictive analytics and generative AI have enabled governments to process vast amount of data , automate administrative processes, improve public service delivery and support evidence based decision making (Russell C Norvig, 2021; Organisation for Economic Co-operation and Development [OECD], 2019). As government

increasingly confront complex policy challenges such as climate change, public health crisis, economic instability, urbanization and digital transformation, Artificial intelligence has become an important tool for enhancing the effectiveness, efficiency and responsiveness of public governance (United Nations, 2024). The public policy cycle provides a systematic framework for understanding how governments identify public problems, formulate policy alternative, implement decisions, monitor policy performance, evaluate outcomes and incorporate feedback into future policy making. Traditionally these stages have heavily relied on human expertise, administrative experience, statistical analysis and stakeholders consultations. However, the growing volume, variety and velocity of data generated through digital technologies have created new opportunities for integrating Artificial intelligence into policy making processes. Artificial intelligence enables governments to analyse structured and unstructured data from diverse sources, identified emerging trends, forecast future policy challenges and generate evidence based recommendation that support informed public decision making (Howlett et al., 2020; Russell C Norvig, 2021).

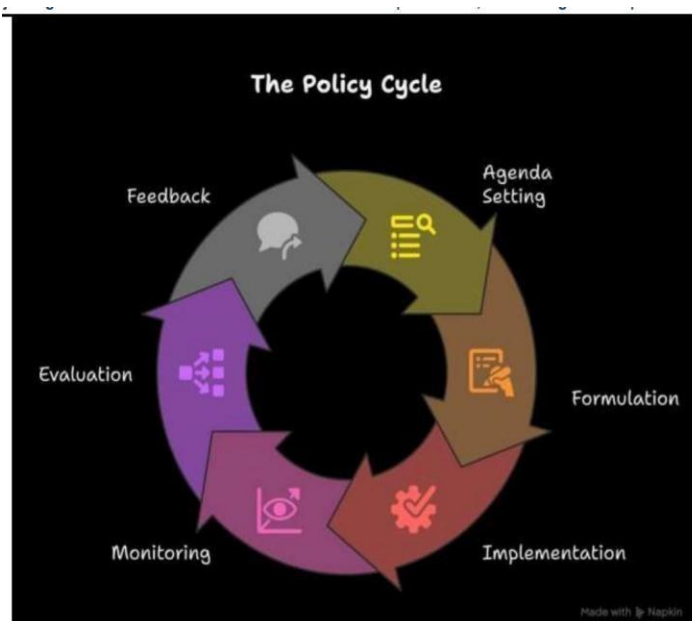
Objective of the study –

- 1- Examine the role of Artificial intelligence across the stages of public policy cycle
- 2- Identify the opportunities of AI offers for improving public policy making
- 3- Analyse the ethical, legal and governance challenges associated with AI adoption
- 4- Propose policy recommendations for responsible AI governance

Conceptual Framework: The Public Policy Cycle

The public policy cycle generally consists of six interconnected stages

- 1- Agenda setting
- 2- Public Formulation
- 3- Public implementation
- 4- Policy monitoring
- 5- Policy Evaluation
- 6- Policy feedback



Source – Malik, R. (2025). Role of Artificial Intelligence in Public Policy.

Agenda Setting –

Agenda setting is one of the first and most crucial stages of the public policy, where government identity, priorities and define public issues that require policy intervention. Traditionally, this process relied on political priorities, expert opinions , public consultations, media coverage and administrative reports. However the exponential growth of digital data has made it increasingly difficult for policymakers to identify emerging issues using conventional methods alone . Artificial intelligence has transformed agenda setting by enabling governments to process vast volumes of structured and unstructured data in real time, thereby improving the identification and prioritisation of public problems. AI powered technologies such as machine learning, Natural language processing, sentiments analysis, computer vision and predictive analytics allow Governments to collect and analyze data from diverse sources , including social media platforms, online news portals , citizens grievance systems , government databases, satellite imagery, sensor networks and public surveys . By identifying hidden patterns, trends and anomalies, Artificial intelligence helps policymakers detect emerging issues before they become critical policy problems.

Opportunities of AI in Agenda setting

- 1- Early identification of emergissues
- 2- Evidence based prioritisation
- 3- Real time public sentiment analysis
- 4- Predictive policy-making
- 5- Efficient use of administrative resources

Challenges of AI in Agenda setting –

- 1- Algorithm bias
- 2- Privacy and data protection concerns
- 3- Lack of transparency
- 4- Over reliance on Quantitative data
- 5- Digital divide

Policy Formulation –

Policy Formulation is the second stage of the public policy cycle, where governments develop and evaluate alternative policy options to identified public problems . This stage involves extensive analysis of evidence, stakeholders consultation, cost -benefit assessment, risk evaluation and forecasting of policy outcomes. Traditionally, policy formulation has relied on expert knowledge, statistical analysis and administrative experience. However , the increasing complexity of governance and the availability of large datasets have made Artificial intelligence an important decision – support tool in designing effective public policies. Furthermore, Natural language processing strengthen policy formulation by analysing legal documents, legislative debates, academic literature, public consultations and policy reports. This allows governments to rapidly synthesize large volumes of information, compare international best practices and identify relevant policy innovations .Furthermore, generative AI tools can assist policymakers by drafting policy briefs , summarising stakeholders submissions, identifying gaps and preparing preliminary versions of policy documents . These capabilities reduce administrative workload and enable officials to focus on strategic analysis and political deliberation. Nevertheless, Artificial intelligence should support -not replace – human expertise as policy formulation requires ethical judgement, democratic accountability and consideration of social values that extend beyond algorithmic analysis.

Opportunities of AI in Policy Formulation –

- 1- Evidence based policy design
- 2- Scenario modelling and policy simulation
- 3- Strengthen policy innovations
- 4- Support for interdisciplinary policy making
- 5- Mitigate unintended consequence

Challenges of AI in Policy Formulation –

- 1- Legal and regulatory concerns
- 2- Ethical and value based limitations
- 3- Data quality and availability
- 4- Algorithmic bias
- 5- Excess reliance on technology

Policy Implementation –

Policy Implementation is the stage of the public policy cycle where approved policies are translated into concrete actions, programmes and public services. It involves the coordination of government agencies, allocation of resources, enforcement of regulations and delivery of services to citizens. Effective implementation is essential because even well designed policies may fail if they are not executed efficiently. In recent years Artificial intelligence has emerged as a powerful tool for strengthening policy implementation by improving administrative efficiency, enhancing service delivery and enabling data driven governance. Artificial intelligence support policy implementation through technologies such as machine learning, natural language processing, computer vision, robotic process automation, predictive analytics and intelligence decision support systems. These technologies automate repetitive administrative tasks , streamline workflows and reduce processing time for government services. For example – AI powered chatbots assist citizens in accessing information about government schemes, filing applications and resolving grievances , thereby improving accessibility and reducing the workload of public officials. Despite these advantages, policy implementation requires continuous human oversight because Artificial intelligence systems cannot independently address complex social, ethical and political issues . Effective implementation

depends not only on technological capability but also on institutional capacity, public trust, legal safeguards and administrative accountability. Therefore, Artificial intelligence should function as an enabling technology that supports public administrators rather than replacing human Decision-makers.

Opportunities of AI in Policy implementation – 1-Automation of administrative processes

- 2- Strengthen public service delivery
- 3- Fraud detection and regulatory compliance
- 4- Bolster strategic coordination among government stakeholders
- 5- Predictive implementation management

Challenges of AI in Policy Formulation

- 1- Cybersecurity and data risks
- 2- High implementation costs
- 3- Algorithm bias and discrimination
- 4- Institutional and workforce challenges
- 5- Digital divide and unequal access

Policy Monitoring –

Policy Monitoring is the crucial stage of the public policy cycle that involves the continuous assessment of policy implementation to ensure that programmes are progressing according to established objectives, timeliness and performance indicators. It enables governments to identify implementation gaps, measures progress, detect emerging challenges and take timely corrective actions. Traditionally, policy monitoring has relied on periodic reports, field inspections, administrative records and manual data collection. However these approaches are often time – consuming, resource- intensive and unable to provide real time information. Artificial intelligence has significantly transformed policy monitoring by enabling governments to continuously collect

, process and analyse large volumes of data from multiple sources thereby supporting more responsive and evidence based governance. Artificial intelligence enhances policy monitoring through technologies such as machine learning, predictive analytics, natural language processing, computer vision, internet of things integration and geospatial analytics. These technologies facilitate the real time tracking of policy implementation by analysing data from government databases, sensors, satellite imagery, social media platforms, mobile applications and citizen feedback systems. Artificial intelligence powered monitoring systems can identify deviations from expected outcomes, detect operational inefficiencies and generate early warning signals that enable

policymakers to intervene before problems become more severe. Furthermore, AI facilitates participatory

policy monitoring by analysing citizens feedback, online complaints and public sentiments expressed through digital platforms. This enables governments to better understand public perceptions regarding policy implementation and respond more effectively to citizens concerns. Nevertheless Artificial intelligence based monitoring should not replace human supervision. Effective policy monitoring requires contextual interpretation, ethical judgement and administration accountability which remain essential responsibilities of public officials.

Opportunities of AI in Policy monitoring

- 1- Real time performance monitoring
- 2- Early detection of implementation problems
- 3- Fraud and anomaly detection
- 4- Citizen centric monitoring
- 5- Enhanced transparency and accountability

Challenges of AI in Policy monitoring

- 1- Data Quality and Reliability
- 2- Privacy and surveillance concerns
- 3- Cybersecurity risks
- 4- Institutional capacity constraints
- 5- Black Box systems

Policy Evaluation –

Policy evaluation involves the systematic assessment of a policy 's effectiveness, efficiency, sustainability, relevance and overall impact. The primary objective of policy evaluation is to determine whether the policy has achieved its intended goals, identified unintended consequences and generate evidence to improve future policymaking. Traditionally, policy evaluation has relied on surveys, interviews, administrative records, statistical analysis and field studies. While these methods remain valuable they are often time consuming, resources intensive and limited in their ability to analyse large and complex datasets. Artificial intelligence has emerged as a transformative tool that enhances policy evaluation by enabling governments to conduct faster, more accurate and evidence based assessments. Artificial intelligence supports policy evaluation through technologies such as machine learning, predictive analytics, natural language processing, data mining and advanced statistical modelling. These technologies enable governments to integrate and analyse large volumes of data collected from administrative databases, citizens feedback platforms, social media, remote sensing systems and digital public services. By identifying patterns, trends and causal relationship, Artificial intelligence provides policymakers with deeper insights into the effectiveness of public policies and programmes. Artificial intelligence also facilitates continuous evaluation rather than relying solely on

periodic assessments . Through automated data collection and real time performance analysis, government can identify implementation gaps , untended consequences and emerging risks more quickly, allowing timely policy adjustments .However Artificial intelligence cannot independently determine whether a policy is socially desirable or ethically acceptable. Policy Evaluation requires normative judgements regarding equity, justice, public values and political priorities which remain the responsibility of policymakers, researchers and stakeholders. Therefore, Artificial intelligence should function as a decision support systems that strengthen human evaluation rather than replacing it .

Opportunities of AI in Policy Evaluation

- 1-Evidence based assessments
- 2-Predictive analytics
- 3-Comprehensive analysis of qualitative and quantitative
- 4-Identified of untended consequences
- 5-Real time evaluation

Challenges of AI in Policy Evaluation

- 1-Difficulty measuring qualitative outcomes
- 2-Accountability and governance issues
- 3- Data Quality and availability
- 4- Algorithm bias
- 5- Privacy and Ethical concerns

Policy feedback –

Policy feedback is an essential stage of the public policy cycle that focus on collecting, analysing and utilising information generated from policy implementation and evaluation to improve future policymaking. It creates a continuous learning process by enabling governments to understand how citizens, stakeholders and implementing agencies perceive the effectiveness of public policies. Traditionally, policy feedback has been obtained through public consultations, surveys and grievance redressal mechanism. However, these conventional approaches often require considerable time and resources may not adequately capture the diverse and dynamic perspectives of citizens. Artificial intelligence has significantly transformed policy feedback by enabling governments to collect, process and analyse large volumes of feedback data in real time , thereby supporting adaptive and evidence informed governance. Artificial intelligence employs technologies such as machine learning, natural language processing, sentiments analysis, speech recognition, text mining and predictive analytics to examine feedback obtained from multiple sources including citizen grievances portals , social media platforms, online surveys, emails, public consultations, mobile applications and call centres. These technologies enables government to identify recurring public concerns, emerging policy issues , level of citizen satisfaction and implementation challenges. By detecting patterns in public opinion and service delivery outcomes , Artificial intelligence helps policymakers understand whether policies are achieving their intended objectives and where modification maybe required.

Opportunities of AI in Policy feedback

- 1- Real time analysis of citizens feedback

- 2- Enhanced citizen participation
- 3- Improved policy responsiveness
- 4-Efficient feedback management
- 5-Sentiment and opinions analysis

Challenges of AI in Policy feedback

- 1- Digital Exclusion
- 2- Misinformation and Manipulation
- 3-
- 4- Limited understanding of social context 4-Transparency and accountability issues 4-Privacy and data security concerns

Policy recommendations –

To maximize Artificial intelligence 's benefits while minimising risks, government should

- 1- Develop comprehensive Artificial intelligence governance frameworks
- 2- Conduct regular algorithmic impact assessment
- 3- Monitor Artificial intelligence for bias and unintended consequence
- 4- Foster international cooperation on Artificial intelligence standards
- 5- Invest in Artificial intelligence literacy and capacity building for public officials 6-Establish independent Artificial intelligence committee
- 7-Strengthen data protection and privacy law

Future Research Directions –

- 1- Human and Artificial intelligence collaboration in administration
- 2- Enhance Citizen trust in Artificial intelligence supported policymaking 3-Artificial intelligence governance in developing countries
- 4- impact of generative AI on legislative and policy process
- 5- Comparative studies of national Artificial intelligence policy frameworks

Conclusion –

Artificial intelligence has emerged as a transformative force in public governance , fundamentally reshaping every stage of the public policy cycle from agenda setting and public formulation to implementation, monitoring, evaluation and feedback. It's ability to process large scale datasets, generate predictive insights, automate administrative processes and support evidence based decision making has significantly enhanced the efficiency, effectiveness and responsiveness of public policy making (Russell C Norvig, 2021; Organisation for Economic Co-operation and Development [OECD], 2019). The analysis presented in this

study demonstrates that Artificial intelligence offers numerous opportunities for improving public policy governance. It enables governments to identify emerging challenges, optimize resources allocation during implementation, evaluate policy outcomes more accurately and incorporate continuous citizen feedback into future policy making. These capabilities contribute to more transparent, efficient and citizen centric governance while supporting innovation in public administration (United Nations, 2024; World Economic Forum, 2024). The study concludes that the successful adoption of AI in public policy cycle requires a balanced and human centred governance approach. Nevertheless it's long term success depends not only on technological advancements but also on ethical governance, democratic accountability and institutional readiness. By integrating Artificial intelligence responsibly within the public policy cycle, governments can develop more adaptive, inclusive, transparent and sustainable public policies that effectively address the complex governance challenges of the twenty first century (United Nations, 2024; World Economic Forum, 2024).

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