The Function of Artificial Intelligence for Transcendent Governance with a Strategic Management Approach

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Abstract

This study follows a qualitative-quantitative method, employing textual content analysis in the qualitative section. Data collection tools include past research documents and library resources in this field. The data analysis method is based on open coding. According to the study's findings, among 187 relevant articles and books, 42 studies were analyzed using a systematic review. After screening the indicators through the Delphi method, the remaining indicators were categorized into four groups for strengths and weaknesses and three groups for threats and opportunities, resulting in a total extraction of 55 indicators. The statistical population of this research consists of 10 government officials in governance who simultaneously held faculty positions in public administration and had authored works in this domain. In the quantitative section, utilizing the AHP-SWOT approach and analyzing internal and external factor matrices, the study sought to identify the most significant strengths and opportunities. It then developed and prioritized aggressive strategies to provide a practical framework for implementing artificial intelligence in governance. Ultimately, the strategies were ranked using the QSPM method. Based on the research findings, the most significant strength was facilitating informed decision-making based on logic, reason, and intuition, with a weight of 0.057, while the most important opportunity was enhancing democracy, with a weight of 0.105. The strategy of leveraging strengths in informed decision-making to improve democracy was ranked as the top strategy, with a score of 3.234. The results indicated that adopting informed decision-making based on logic and rationality as a superior strategy has significant potential for strengthening democracy and transparency in governance.

Keywords: *Transcendent governance, artificial intelligence, strategic management of artificial intelligence implementation, opportunities for artificial intelligence implementation, mixed-methods analysis*

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1. Introduction

In recent years, the emergence of artificial intelligence (AI) technology has garnered significant attention as a crucial need for Iran [1]. The advent of AI technology has led to a productivity revolution and has had a profound impact on global transformations. On the one hand, AI has provided novel and innovative opportunities and solutions for scientific and executive elites in various countries, while on the other hand, it has confronted them with new puzzles and challenges [2, 3].

Some potential risks fall under the category of unintended and unforeseen consequences [4]. One of these issues is algorithmic bias and the problems arising from justice and inequality [5]. Furthermore, due to issues related to training data, algorithms can sometimes favor specific political ideologies and may reinforce discriminatory practices and other undesirable actions. These problems are real and significant, and any AI technocracy must implement algorithmic oversight mechanisms to address such issues [6].

Political harms pertain to the marginalization of individuals and the deprivation of political power and influence [7]. This issue relates to the potential depoliticization effects of algorithmic governance [4]. Additionally, transparency and procedural concerns are also relevant in analyzing political harms [8].

AI is profoundly transforming governance. The automation of tasks, data analysis, and the provision of new insights have the potential to enhance the efficiency, effectiveness, and accountability of governments. However, these emerging transformations also bring about challenges and opportunities that must be carefully examined. AI is a driver of success and flexibility [9]. When individuals encounter optimization problems, AI has the potential to assist humans in addressing them [10]. The application of AI through participatory algorithmic design enhances the capacity of managers and employees at various levels [11], enabling managers to effectively communicate with group members or their peers [1, 12].

Algorithmic governance is a term that describes the use of algorithms both in regulating human actions broadly and in traditional political structures [4, 8, 13]. This form of governance faces political, existential, and discursive harms [7], which include issues related to privacy, surveillance, representation, autonomy, and freedom [4, 14-17].

Hypothetically, policymaking can also be based on machine learning combined with simulation [10]. The increased use of data and the transformation of all aspects of human action into data inherently involve multiple stages of human interpretation, challenging the objectivity of decision-making based on big data [6, 14-19]. Gao and Zhang (2024) outlined the opportunities and challenges of the AI revolution and explained the further development trajectory of the intelligent revolution from the perspective of blockchain [20]. Alon-Barkat and Busuioc (2023) discussed decision-making implications in the era of automation, as well as the potential positive and negative effects of administrative automation on vulnerable and marginalized citizens [21]. Abungu et al. (2023) introduced AI as a unique catalyst for change [22]. Zuiderwijk et al. (2021) proposed a research agenda for using AI in public governance and examined effective implementation strategies for government AI applications in the public sector [23].

Dwivedi et al. (2021) highlighted significant opportunities, a realistic assessment of challenges, and the potential research agenda resulting from the rapid emergence of AI in business and management, government, the public sector, and science and technology. They provided timely and substantial insights into AI technology and its overall impact on the future of industry and society [24]. Yazdani and Hakimi Nia (2024) used the meta-synthesis method to examine the challenges and opportunities of AI implementation. They identified the challenges as technical/informational, human, ethical/legal, and organizational, while the opportunities included enhancing employee user experience, improving human resource processes, reducing human resource management costs, strategy development, alignment with digital transformation, and enhancing managerial levels [3]. Esm Khanio Aadeh (2023) found that the future landscape of technology in human resources will be significantly dominated by AI, necessitating transparent approaches for HR teams to balance these advancements. Despite the possibility of AI performing inadequately in some cases, its applications are extensive, and it remains a valuable resource [9]. Babaian et al. (2023) conducted a qualitative study aimed at identifying the dimensions of AI application in public policymaking using a meta-synthesis approach. They categorized the findings into four overarching themes: applications, methods, benefits, and challenges of AI in the public policy cycle [25]. Azimi (2023) stated that AI systems will not replace humans in high-level decision-making, but AI will increasingly become an integral part of the environment in which human decision-makers operate [26]. Sharifzadeh et

al. (2023) demonstrated that all U.S. AI strategies are based on seven themes: research and development funding, regulation and standard-setting, public awareness and education, advisory and acceleration services, networking and ecosystem development support, government procurement, and market demand stimulation [19]. Jafari Hezarani (2023) indicated that AI could influence various domains, including politics and elections. However, this technology not only creates opportunities but also presents challenges and threats [27].

Although AI has the potential to significantly impact governance, relatively few studies have exclusively focused on the indicators for its application in transcendent governance. Furthermore, no study has yet presented a quantitative model for AI application in transcendent governance from a strategic management perspective. This theoretical gap provides an opportunity to explore this topic through an exploratory approach and propose a model.

2. Methodology

In the qualitative section of the present study, textual content analysis and qualitative coding were utilized. In this phase, domestic studies conducted between 2023 and 2024 and international studies from 2016 to 2024 were reviewed. After extracting relevant concepts, these results were presented to experts. Through interviews using a semi-structured Delphi questionnaire and considering the opinions of 10 faculty members specializing in public administration from various universities—who had published research on governance or AI and held governmental positions in governance—an expert-based screening of the extracted indicators was conducted.

Strategic management in AI for transcendent governance requires tools for identifying, analyzing, and prioritizing internal factors (strengths and weaknesses) and external factors (opportunities and threats). The AHP-SWOT method serves as an effective hybrid tool for strategic analysis, incorporating the SWOT framework and the Analytic Hierarchy Process (AHP). These factors were categorized within the SWOT framework. Subsequently, AHP was employed to prioritize these factors. To accomplish this, pairwise comparisons among factors were conducted using designed questionnaires, and each factor's weight was calculated based on expert opinions.

For data analysis, expert opinions were incorporated into the AHP execution and consistency analysis of comparisons. Ultimately, the identified and weighted factors were analyzed using the SWOT-AHP matrix, and appropriate strategic approaches were introduced by evaluating the obtained weights from the Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices, comparing the results with the threshold value of 2.5. Subsequently, based on the identified key indicators, strategies were formulated and ranked using the Quantitative Strategic Planning Matrix (QSPM). This approach, by integrating qualitative and quantitative data, enables the identification of key priorities and the development of practical strategies for leveraging AI in transcendent governance.

3. Findings and Results

To identify the relevant indicators for transcendent governance from a strategic management perspective, textual content analysis was employed to extract key components.

Table 1. Description of Content Analysis Sources

Code	Source	Code	Source	Code	Source
P1	[3]	L8	[24]	L22	[28]
P2	[27]	L9	[29]	L23	[30]
P3	[31]	L10	[32]	L24	[33]
P4	[19]	L11	[18]	L25	[34]
P5	[26]	L12	[35]	L26	[36]
P6	[9]	L13	[37]	L27	[38]
P7	[25]	L14	[39]	L28	[40]
L1	[2]	L15	[17]	L29	[41]
L2	[1]	L16	[5]	L30	[42]
L3	[12]	L17	[43]	L31	[44]

L4	[21]	L18	[45]	L32	[20]
L5	[22]	L19	[46]	L33	[47]
L6	[23]	L20	[48]	L34	[20]
L7	[49]	L21	[50]	L35	[47]

The final strategic management components of AI were extracted from the texts of these articles. Based on the codes provided in Table 1, the final strategic management components of AI in transcendent governance are displayed in Table 2. The Cohen's kappa coefficient for the obtained indicators was calculated to be 0.824, indicating a high level of inter-rater agreement.

Table 2. Final Extracted Indicators from Previous Studies

Indicator	Source(s)
Lack of trust among policymakers in AI system designers and developers	P6, P7, L4, L6, L9, L14, L15, L17, L18, L19, L24, L25, L26, L28
The lag in policymaking speed compared to AI technology development	P7, L6, L9, L14, L15, L17, L18, L19, L24, L25, L26, L28
Government's lag in AI technology development	P7, L6, L9, L14, L15, L17, L18, L19, L24, L25, L26, L28
Inability to control the effects of AI-driven decision-making	P6, L11
Algorithmic ambiguity for decision-makers	P6, P7, L6, L11, L13, L14, L15, F12, L16, L20, L24, L25, L29
Adoption of biased decisions	L1, L4, L6, L11, L13, L14, L15, F12, L16, L20, L24, L25, L29
Inherent lack of transparency in AI technologies	P1, P6, P7, L4, L6, L11, L13, L14, L15, F12, L16, L20, L24, L25, L29
Racial bias and discrimination in decision-making	P1, P7, L6, L8, L10, L11, L14, L15, L23, L24, L25, L26, L28, L29, L31, L33, L35
Lack of fairness and justice	L1, L6, L8, F6
Violation of ethical standards and principles	P1, P7, L6, L8, L10, L11, L14, L15, L23, L24, L25, L26, L28, L29, L31, L33, L35
Threat to human autonomy and self-actualization	P7, L6, L8, L10, L11, L14, L15, L23, L24, L25, L26, L28, L29, L31, L33, L35
National security threats from foreign firms collecting data	P3, P7, L1, L10, L13, L14, L16, L18, L19, L21, L24, L25, L26, L28, L31
Risk of misinformation proliferation and cybersecurity concerns	P3, P7, L1, L10, L13, L14, L16, L18, L19, L21, L24, L25, L26, L28, L31
Adequate legislation and regulatory frameworks	P1, L1, L5
Lack of access to sufficient data	P6, P7, L6, L12, L19, L20, L25, L26, L29
Undefined dependencies between data sets	P7, L6, L12, L19, L20, L25, L26, L29
Inequality in access to AI technology	P7, L6, L12, L14, L15, L19, L20, L23, L24, L25, L29, L33, L35
Difficulty in adopting a data-driven mindset	P7, L6, L12, L19, L20, L25, L26, L29
Potential misuse of sensitive data	P7, L6, L12, L19, L20, L25, L26, L29
High coordination costs associated with data sharing	P7, L6, L12, L19, L20, L25, L26, L29
Lack of comprehensive data protection laws	P7, L6, L12, L19, L20, L25, L26, L29
Privacy risks due to AI-based surveillance	P2, P7, L1, L5, L10, L13, L14, L16, L18, L19, L21, L24, L25, L26, L28, L31
Suppression of public voice and violation of civil liberties	P2, P7, L5, L6, L12, L14, L15, L19, L20, L23, L24, L25, L29, L33, L35
Government exerting control over public voting	P2, P7, L5, L6, L12, L14, L15, L19, L20, L23, L24, L25, L29, L33, L35
Spread of fake news, emotional manipulation, election fraud	P2, L5
Lack of understanding of AI functionalities	P7, L6, L8, L9, L14, L15, L23, L25, L26, L29
Absence of infrastructure for AI utilization	P7, L6, L8, L9, L14, L15, L23, L25, L26, L29
Negative attitudes towards AI implementation	P7, L6, L8, L9, L14, L15, L23, L25, L26, L29
Lack of AI adoption culture	P4, L1
Shortage of skilled AI professionals	P6, P7, L5, L6, L7, L8, L10, L14, L19, L20, L23, L25, L26, L28, L30
Resistance from employees towards AI-driven workflow changes	P6, L1, L4, L5
Limited knowledge of employees on AI and machine learning	P6, P7, L5, L6, L7, L8, L10, L14, L19, L20, L23, L25, L26, L28, L30
Low technological literacy among employees	P6, P7, L5, L6, L7, L8, L10, L14, L19, L20, L23, L25, L26, L28, L30
Unclear accountability structures	P7, L6, L8, L11, F22, L25, L26
Concerns over lack of accountability	P7, L6, L8, L11, F22, L25, L26
System's failure to ensure responsibility	P6, P7, L6, L8, L11, F22, L25, L26
Facilitating data access and accelerating data collection and processing	P7, L6, L8, L10, L12, L14, L18, L19, L20, L24
Enhancing efficiency and speed in policymaking	P7, L6, L8, L10, L12, L14, L18, L19, L20, L24
More effective planning and policy formulation	P7, L6, L8, L10, L12, L14, L18, L19, L20, L24
Improving communication between government and citizens	P5, P6, P7, L2, L3, L6, L11, L20, L33, L35
Incorporating collective intelligence in policy formulation	P5, P7, L2, L3, L6, L11, L20, L33, L35

Strengthening democracy	P3, P7, L6, L11, L20, L33, L35
Lowering governance-citizen communication costs	P3, P6, P7, L2, L3, L1, L20, L22
Reducing inter-citizen communication costs	P6, P7, L1, L2, L3, L20, L22
Potential for reducing error-related costs	P4, P7, L1, L20, L22
Facilitating informed decision-making based on logic, reason, and intuition	P3, P5, P7, L1, L4, L7, L8, L14, L15, L20, L24, L28, L32, L34, L33, L35
Advancing human judgment and decision-making	P5, P7, L4, L7, L8, L14, L15, L20, L24, L28, L32, L34, L33, L35

The study conducted three rounds of semi-structured Delphi interviews with 10 public administration experts and academics familiar with governance and AI. The Delphi process reached saturation when further interviews no longer contributed new information. The AHP method was applied for pairwise comparisons and weight calculation of indicators. The overall consistency ratio of comparisons remained below 0.1, confirming their validity.

Table 3. Categorization of Indicators

Factor	Factor Weight	Criterion	Criterion Weight	Sub-Criterion	Sub-Criterion Weight	Indicator	Indicator Symbol	Indicator Weight	Final Weight
Internal	0.529	Strengths	0.666	Efficiency Improvement	0.299	Facilitating data access and accelerating data collection and processing	S11	0.275	0.029
						Increasing productivity and innovation through data management automation and analysis	S12	0.327	0.034
						Establishing effective and efficient automation	S13	0.193	0.020
						Reducing bureaucracy	S14	0.136	0.014
						Simplifying employee work procedures	S15	0.069	0.007
		Decision-Making Enhancement	0.390	Facilitating informed decision-making based on logic, reason, and intuition	S21	0.411	0.057		
						Reducing uncertainty due to human cognitive limitations	S22	0.311	0.043
						Enhancing human judgment and decision-making	S23	0.278	0.038
		Transparency and Accountability	0.207	Strengthening government responsibility for decisions	S31	0.332	0.024		
						Shifting governance toward greater accountability through data-driven innovations	S32	0.269	0.020
						Creating public value, efficiency, and transparency in government	S33	0.187	0.014
						Enhancing government responsiveness to citizens	S34	0.144	0.011

						Improving oversight of implementation processes through anomaly detection	S35	0.068	0.005
		Enhancing Transparency	0.104	Improving the speed of policy formulation	S41	0.212	0.008		
						Increasing the effectiveness of policy formulation and planning	S42	0.289	0.011
						Potential cost reduction of errors	S43	0.208	0.008
						Accelerating case processing and achieving higher quality	S44	0.290	0.011
Weaknesses	0.334	Infrastructure and Culture	0.414	Lack of necessary infrastructure for AI utilization	W11	0.109	0.008		
						Negative attitudes toward AI usage	W12	0.355	0.026
						Lack of proper AI adoption culture	W13	0.282	0.021
						Shortage of skilled and specialized workforce	W14	0.253	0.019
		Readiness and Knowledge	0.184	Limited employee knowledge of AI and machine learning	W21	0.539	0.018		
						Low technological literacy among employees	W22	0.316	0.010
						Resistance of employees to AI-driven workflow changes	W23	0.146	0.005
		Policy and Control	0.172	Lag in policymaking speed compared to AI development	W31	0.224	0.007		
						Inability to control the effects of AI-driven decision-making	W32	0.157	0.005
						Algorithmic ambiguity for decision-makers	W33	0.129	0.004
						Lack of trust among policymakers in AI developers	W34	0.155	0.005
						Government's lag in AI technology development	W35	0.112	0.003
						Adoption of biased decisions	W36	0.107	0.003
						Violation of ethical principles and standards	W37	0.116	0.004

The internal factors, categorized into strengths and weaknesses, and the external factors, categorized into opportunities and threats, were systematically analyzed and weighted. Among the strengths, the highest-weighted sub-criterion was decision-making enhancement, emphasizing the facilitation of informed decision-making based on logic, reason, and intuition, with a weight of 0.057. Additionally, reducing uncertainty due to human cognitive limitations had a weight of 0.043, and enhancing human judgment and decision-making was weighted at 0.038. Another major strength identified was the efficiency improvement facilitated by AI, particularly through increasing

productivity and innovation via automated data management and analysis, which also held a weight of 0.043. Other significant strengths included the establishment of effective and efficient automation and the reduction of bureaucratic complexity, both contributing to improved governance operations.

Among the opportunities, increasing democracy emerged as the most significant, with a weight of 0.105, followed by enhanced oversight on policy implementation, which had a weight of 0.080. Another crucial opportunity identified was the improvement of communication between government and citizens, with a weight of 0.056, demonstrating the potential of AI in fostering transparent governance and participatory decision-making. Furthermore, enhancing accessibility to public services was also considered a vital opportunity, with a weight of 0.046, reflecting AI's capability to streamline service delivery and make government resources more readily available to the public.

The analysis also revealed weaknesses in AI governance, with infrastructure and cultural barriers being the most pronounced challenge. A negative attitude toward AI adoption had a significant weight of 0.026, followed by the lack of a proper AI adoption culture, weighted at 0.021. Another critical weakness was the shortage of skilled and specialized personnel, which had a weight of 0.019, indicating a major gap in human capital required for AI-driven governance. Additionally, limited knowledge of AI and machine learning among employees and low technological literacy were also key concerns, reflecting the necessity for extensive training and skill development programs to ensure the effective integration of AI technologies in governance structures.

Threats posed by AI adoption in governance were also evaluated, with justice and freedom concerns being among the most pressing. The inequality in access to AI technologies had a weight of 0.017, emphasizing the digital divide as a significant challenge to AI-driven governance. Additionally, the potential for government overreach and control over public voting had a weight of 0.011, highlighting risks associated with AI in political decision-making. The suppression of public voices and violations of civil liberties was another notable threat, with a weight of 0.010, showcasing concerns related to mass surveillance and algorithmic discrimination. Another significant concern was the spread of misinformation, emotional manipulation, election fraud, and manipulation of results, which also had a weight of 0.010, illustrating AI's potential to disrupt democratic processes if misused.

By assigning scores based on the current situation, the IFE (Internal Factor Evaluation) matrix score was calculated at 3.343, while the EFE (External Factor Evaluation) matrix score was 3.372. Since both scores exceeded the threshold of 2.5, it was determined that aggressive (SO) strategies would be the most suitable for leveraging AI in governance. Based on the AHP-SWOT analysis, the most important strengths for AI utilization in transcendent governance were identified as the facilitation of informed decision-making based on logic, reason, and intuition (S21) with a weight of 0.057, reducing uncertainty due to human cognitive limitations (S22) with a weight of 0.043, enhancing human judgment and decision-making (S23) with a weight of 0.038, and increasing productivity and innovation through automated data management and analysis (S12) with a weight of 0.043. These strengths highlight AI's potential in strengthening rational governance, minimizing human errors, and improving decision-making efficiency.

Regarding opportunities, increasing democracy (O12) held the highest weight at 0.105, indicating that AI could significantly enhance citizen participation and transparency. Another crucial opportunity was enhanced oversight of policy implementation (O13), with a weight of 0.080, showcasing AI's potential in ensuring more effective governance monitoring. Additionally, improving communication between government and citizens (O11) was weighted at 0.056, reinforcing AI's role in strengthening government-citizen interactions through digital platforms. The enhancement of accessibility to public services (O21), with a weight of 0.046, was also identified as a major opportunity, demonstrating AI's capability to streamline service delivery and improve access to essential government functions.

For formulating aggressive (SO) strategies, the approach focused on leveraging strengths to maximize opportunities. Using the QSPM (Quantitative Strategic Planning Matrix), Attractiveness Scores (AS) were assigned to each internal and external factor, and strategies were ranked accordingly. Based on the SWOT analysis and strategy scoring, the top-ranked strategy was utilizing AI-driven informed decision-making (S21) to enhance democracy (O12), with a score of 3.234. This strategy was prioritized due to the critical role of AI-driven data analysis in increasing transparency, public participation, and democratic governance. The second-ranked strategy was leveraging AI-driven automation and innovation (S12) to enhance democracy (O12), with a score of 3.228. This high ranking was attributed to AI's potential in automating bureaucratic processes, thereby increasing

efficiency and enabling greater democratic engagement. The third-ranked strategy was utilizing AI-driven productivity and innovation (S12) to improve communication between government and citizens (O11), with a score of 3.208. This strategy was recognized for its essential role in fostering direct and transparent government-citizen interactions, particularly through digital governance initiatives and AI-powered communication systems.

The fourth-ranked strategy focused on advancing human judgment and decision-making (S23) to improve accessibility to services (O21), with a score of 3.159. This strategy underscored the significance of ethical considerations and user experience in the delivery of public services, ensuring that AI is used responsibly to enhance citizen interactions with government institutions. Lastly, the fifth-ranked strategy involved reducing uncertainty (S22) to enhance oversight on policy implementation (O13), with a score of 2.861. This strategy emphasized the importance of AI in reducing governance risks, ensuring more effective monitoring of policy execution, and fostering greater accountability in public administration. However, despite its importance, this strategy was ranked slightly lower than others due to the challenges associated with AI-based policy enforcement and the need for robust regulatory frameworks.

These findings highlight the significant potential of AI in supporting effective governance, fostering democracy, and improving public services through strategic AI-driven initiatives. The research demonstrates that by focusing on aggressive strategies, governments can harness AI's capabilities to strengthen transparency, improve citizen engagement, and enhance policy implementation efficiency. Additionally, while AI presents numerous opportunities, it is essential to address the identified threats and weaknesses, such as algorithmic bias, ethical concerns, and cybersecurity risks, to ensure that AI-driven governance remains fair, transparent, and accountable.

4. Discussion and Conclusion

The present study was conducted with the aim of strategically managing the function of artificial intelligence (AI) for transcendent governance. In the era of digital transformation, AI, as one of the most innovative technologies, has a high potential for driving fundamental changes in governance and public administration. Given that this technology is capable of improving decision-making processes, data analysis, and service delivery in a more efficient and effective manner, examining the various dimensions of AI's role in transcendent governance is essential. Strategic management, as a powerful analytical tool, enables the identification and utilization of both the potential and actual capacities of AI in this domain.

This research adopted a mixed-method approach, employing a systematic review in the qualitative section to identify key indicators. In the subsequent phase, a qualitative-quantitative Delphi method was used to refine these indicators. In the quantitative section, the AHP-SWOT approach was applied, along with an analysis of internal and external factor matrices, to identify the most significant strengths and opportunities and to develop and prioritize aggressive strategies for AI implementation in governance. The findings revealed that AI possesses several key strengths, such as facilitating data-driven decision-making, reducing uncertainty caused by human cognitive limitations, and enhancing human judgment. Meanwhile, opportunities such as improving democracy, enhancing oversight of policy implementation, and strengthening communication between government and citizens indicate the strategic role of AI in governance. Furthermore, the study demonstrated that leveraging AI's capabilities can elevate governance to higher levels of transparency, accountability, and efficiency. Achieving this, however, requires careful policymaking and planning to ensure the ethical, fair, and sustainable use of AI technology.

Facilitating informed decision-making through AI in transcendent governance necessitates the analysis of complex data, identification of hidden patterns, and provision of accurate predictions. This technology, by integrating mathematical logic, intuitive analysis, and real-world data, can assist decision-makers in selecting optimal choices. Additionally, by reducing human biases and increasing transparency in processes, AI contributes to more efficient policymaking and greater accountability. The reduction of uncertainty caused by human cognitive limitations in transcendent governance, through AI, requires the application of advanced data analytics algorithms and machine learning techniques to identify patterns and provide more precise forecasts. By minimizing errors arising from subjective judgments and cognitive constraints, AI facilitates data-driven, informed decision-making. Moreover, transparency in decision-making processes and performance evaluation plays a crucial role in enhancing public trust and mitigating policy-related risks. AI can strengthen democracy by facilitating data-driven decision-making and clarifying policy-making processes. This technology, through collaborative platforms, allows for the

collection and analysis of citizen feedback, thereby increasing public participation in decision-making. Additionally, AI tools can improve policy implementation oversight and government accountability, which in turn enhances public trust and strengthens democratic principles.

To improve oversight of policy implementation progress in transcendent governance, AI can analyze big data and generate real-time reports, identifying strengths and weaknesses in policy execution. This technology enables the prediction of potential problems and timely corrective actions. Furthermore, the use of advanced algorithms can increase transparency and reduce risks associated with human decision-making. For improving democracy through AI, leveraging strengths related to informed decision-making is crucial. The development of data analytics and machine learning systems enhances transparency in decision-making processes and, by providing accurate, evidence-based analyses, increases public participation and trust. Additionally, the creation of digital platforms for collecting citizen feedback and analyzing data assists policymakers in designing policies that align with societal needs. The application of automation and innovation in AI can make government processes more transparent, efficient, and accountable. By developing digital infrastructure and participatory platforms, citizens can directly engage in decision-making and policymaking based on data. This approach not only enhances transparency but also facilitates rapid feedback, equal access to information, and strengthened public trust, thereby making democracy more interactive and effective.

Findings from previous research indicate that AI holds substantial potential in governance and public policymaking, but it also presents various challenges. For instance, studies [2, 24] discussed the opportunities and challenges arising from the AI revolution, emphasizing the necessity of intelligent adoption of this technology in governance. Additionally, studies [3, 25] highlighted opportunities such as enhancing user experience and human resource processes. However, the findings of the present study suggest that AI can play a fundamental role in improving democracy, transparency, and public participation, particularly through automation and innovation. This study identified the use of AI's strengths, such as facilitating informed decision-making and reducing uncertainty, as the most effective strategies for strengthening democracy and monitoring policy implementation progress, which aligns with prior research. Specifically, the findings of this study, with an emphasis on using AI to enhance transcendent governance and improve government-citizen interactions, are similar to prior research [22, 23], which highlighted the positive transformations in governance through emerging technologies.

Future studies can focus on examining the challenges of implementing these strategies and developing operational models for integrating AI into government systems. Upcoming research could specifically address technical, legal, ethical, and social barriers and propose solutions to overcome these challenges. Given that the findings of this study emphasize the importance of AI in improving democracy and overseeing policy implementation progress, future research can adopt a foresight approach to evaluate the long-term impacts of these strategies at both national and international levels, providing an analysis of their implications for governance and society. Future studies could also compare AI applications in transcendent governance across different countries, identifying successful strategies and existing challenges. Such comparative analyses would help policymakers and decision-makers in developing countries select the best models for AI adoption in governance. Since AI can have profound effects on social and cultural relationships, future research should also explore its impact on public trust, citizen participation, and cultural transformations in various societies. These recommendations can contribute to the advancement of future research and the enhancement of AI applications in transcendent governance.

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Authors equally contributed to this article.

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Ethical Considerations

All procedures performed in this study were under the ethical standards.

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