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The Role of Artificial Intelligence in Enhancing Good Governance: An Analytical Study

دور الذكاء الاصطناعي في تعزيز الحوكمة الرشيدة: دراسة تحليلية

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الملخص

تقدم هذه الورقة البحثية دراسة تحليلية لدور الذكاء الاصطناعي في تعزيز الحوكمة الرشيدة، موضحةً مفاهيم الذكاء الاصطناعي والحوكمة، ومحافظةً على خصائصهما الأساسية ومبادئهما الجوهرية، ومستكشفةً العلاقة بينهما. وتتناول البحث تطبيقات الذكاء الاصطناعي العملية التي تُعزز الحوكمة، مثل تحليل البيانات، والنمذجة التنبؤية، وعمليات صنع القرار. وتُقدم دراسات حالة إيجابية من دول عديدة، تُظهر كيف عزز تبني الذكاء الاصطناعي الشفافية والمساءلة في الخدمات الحكومية. كما تتناول الدراسة العديد من العقبات التي تعترض تطبيق الذكاء الاصطناعي في الحوكمة، كالمعوقات القانونية والتقنية، وتقترح حلولاً عملية لضمان التكامل الفعال للذكاء الاصطناعي في تعزيز الحوكمة الرشيدة.

الكلمات المفتاحية: الذكاء الاصطناعي، الشفافية، الحوكمة الرشيدة، صنع القرار، الأتمتة

Abstract

This paper provides an analytical investigation of the role of artificial intelligence (AI) in enhancing good governance illustrating the concepts of AI and governance, maintaining their basic characteristics and fundamental principles, and exploring the connection between AI and governance. The research probes into practical AI apps enhancing governance, like data analysis, predictive modeling, and decision-making processes. Positive case studies from numerous countries are presented, showing how AI adoption has bolstered transparency and accountability in government services. The study also tackles numerous obstacles pumping into applying AI in governance, like legal and technical obstacles, and proposes practical solutions to ensure the effective integration of AI in fostering good governance.

***Keywords*: Artificial Intelligence, Transparency, Good Governance, Decision-Making, Automation**

Introduction

Amid the rapid developments of the modern technological era, artificial intelligence arose as a transformative tool across numerous fields. Institutions and governments worldwide are increasingly counting upon artificial intelligence technologies to analyze enormous and complex data, enhance transparency, and increase efficiency. These advancements are poised to improve human life in the future by providing better and faster services, thereby contributing to the promotion of sound governance, which is the focus of this research.

Research Objectives:

The paper aims at demonstrating the relationship between AI and governance, clarifying some AI apps in enhancing governance areas, and focusing on the legal and techno-challenges facing the application of AI in governance.

Research Importance:

The research importance stems from analyzing the role of AI in enhancing transparency, accountability, and the analysis of vast and complex data within institutions, as well as improving government services provided to citizens in numerous fields including healthcare, transportation, education, agriculture, and others.

Research Problem:

The research problem is stemmed from the following questions:

1. How is governance enhanced by using artificial intelligence technologies?
2. What are the challenges that have hindered artificial intelligence in enhancing governance?

Research Hypothesis:

Artificial intelligence contributes to enhancing accountability and transparency in government institutions. Overcoming the challenges that have hindered the use of artificial intelligence in promoting governance depends on relying on solutions to address these challenges and achieve the intended goals, which is the enhancement of sound governance.

Section One: The Theoretical Framework of AI and Governance

First Requirement: Artificial Intelligence: History and Concept

1. The History of Artificial Intelligence

The term “Artificial Intelligence (AI)” first appeared during a computer conference held in the United States in 1946. Since then, the fields of AI application have diversified across various branches. (Al-Daquosi, 2022). The development of artificial intelligence began alongside the evolution of computers during the 1950s. From that time until the present, AI has witnessed remarkable progress. In the 1950s and 1960s, the concept of artificial intelligence was as an academic sector and evolved into the first program capable of simulating human thought. During the 1970s and 1980s, the focus of AI shifted toward expert systems and programs designed to solve specific problems. (Al-Tamimi et al. 2024)

In addition, artificial intelligence has included a wide range of methods and techniques that have proven their effectiveness and efficiency when applied to solving complex problems in various professional and practical fields. Among the most

prominent of these methods are knowledge acquisition, machine learning, explanatory procedures, research processes, and expert systems, all of which have contributed to the development of intelligent systems. AI has become deeply integrated into commercial and industrial applications, such as predictive analytics, self-driving vehicles, intelligent assistants, and more. (Al-Hadi, 2021).

Subsequently, technology witnessed an enormous part during the period between 2011 and 2020. During this time, institutions and governments prioritized the use of technological tools in the era of "Big Data". The theoretical aspect of AI expanded significantly across numerous scientific articles and books, making artificial intelligence today a widely circulated and commonly used term in society. (Bin Othman, 2020). For instance, we can clearly observe how modern smartphones differ entirely from those used in earlier years, such as in 2011. Consequently, anyone can now utilize smart devices and interact with information systems, even without specialized knowledge or expertise in artificial intelligence. (Bin Othman, 2020)

2. Definitions of Artificial Intelligence

The definitions of artificial intelligence (AI) vary according to the perspectives of scholars and thinkers in both the humanities and scientific disciplines. Among these definitions: AI is described as a branch of computer science concerned with creating intelligent systems capable of performing tasks that typically require human intelligence, such as problem-solving, learning, and decision-making. (Bin Othman, 2020).

Human intelligence, on the other hand, is defined as the individual's ability to understand, distinguish, and analyze by using the innate power of reasoning. (Clark, 2019). This indicates that the keys to intelligence lie in learning, comprehension, and perception. The term "artificial" refers to anything created by a maker, that is, something brought into existence through an act or process of fabrication. This distinguishes it from naturally occurring entities that exist without human intervention. (Al-Khouli, 2021)

Winston defines AI as the mental capability achieved through the use of computational models. (Al-Khouli, 2021). Alan Turing (or Bonnet, depending on reference) describes it as the development of computational programs capable of simulating human behavior characterized by intelligence. (Khamis, 2022). Similarly, John McCarthy defines AI as the science and engineering of intelligent machines. (Mahmoud, 2021)

Samia Shihwan et al. (2018) define AI as the science encompassing all algorithms, theoretical and applied methods that facilitate decision-making in place of humans, either partially with human assistance or fully, with the ability to infer, predict, or adapt. Ahmed Habib and Abdullah Mousa describe it as a method for creating a robot or computer system controlled via computer, or a program that thinks in the same way as intelligent humans. (Rasheed, n.d). Hence, it can be concluded that artificial intelligence simulates human behavior through advanced intelligent technologies. Within the field of computer science, machines act as humans do, by studying actions, behavioral patterns,

and modes of thinking, while collecting and analyzing data and making decisions in an analytical manner that imitates human thought.

Second Requirement: Good Governance: Concept and Objectives

1. The Concept of Governance

Governance is among the most widely recognized concepts that emerged in the early 1990s and is considered one of the most contemporary concepts that has received significant attention in recent years. This growing interest is attributed to the efforts of organizations working to consolidate principles of transparency and integrity across all forms of institutions. The concept of governance is closely linked to the principle of performance improvement, which relies on governance mechanisms and principles in the context of the twenty-first century. Nonetheless, governance gained leaders' and researchers' traction having to do with management, who were extensively relying upon its mechanisms and principles to improve performance. (Najim et al, 2017).

No single definition for governance has consensus among the literature. The Qur'an describes it as valuing the rights and duties within society, upholding moral values, and achieving justice. Allah says: يا ايها الذين امنوا كونوا قوامين لله شهداء بالقسط ولا يجبر منكم شنئان قوم على الا تعدلوا اعدلوا هو أقرب للتقوى واتقوا الله أن الله خير بما تعملون " *O you who believe!* Stand out firmly for Allâh as just witnesses; and let not the enmity and hatred of others make you avoid justice. Be just: that is nearer to piety; and fear Allâh. Verily, Allâh is Well-Acquainted with what you do." (The Holy Quran: Sura Al-Maidah, V8)

For the International Finance Corporation (IFC) "governance is the system whereby companies are perfectly managed and their operations are under controlling". (Thourya et al. 2017).

For the Organisation for Economic Co-operation and Development (OECD) governance is the exercising of administrative, economic, and political authority required for running state's affairs. In the public sector, it is the collection of policies, legislations, procedures, organizational structures, and controls determining how governmental bodies are managed and directed for achieving its aims ethically and professionally, with full transparency and integrity. It also requires mechanisms for evaluating, monitoring, and holding accountability to maintain efficiency and effectiveness, and justice in the provision of public services. (Ministry of Public Sector Development, 2017)

Accordingly, international institutions have adopted the concept of good governance as a foundational principle and have developed it to eliminate waste and extravagance. Good governance is thus considered a fundamental factor in eradicating poverty and stimulating growth, as emphasized by (Kofi Annan, (2001), who was the 7th Secretary General of UN 1997-2006 who was awarded Noble Peace Prize, and subsequently defined by the World Bank as "good governance," referring to the exercise of authority in managing a country's economic and social resources for development. (Hamza, 2023). Governance is a crucial process in building trust within institutions to

promote economic growth and allocate resources efficiently and effectively. It encompasses decision-making and ensuring that decisions serve the best interests of citizens. (Tars, 2025). In essence, good governance can be described as a supervisory and guiding system at the institutional level. It defines rights and responsibilities, clarifies the rules and procedures necessary for making sound decisions related to an organization's operations, and supports justice, transparency, and accountability. Moreover, it enhances credibility and trust within the work environment. (Hamza, 2023)

Objectives of Good Governance

Governance clarifies the mechanisms through which institutions and government bodies operate, organize their affairs, and implement their strategies and policies, such as decision-making processes and the methods by which they deliver services to achieve their desired outcomes.

Good governance aims to achieve several objectives, including: (Abu Dhabi, n.d.)

1. Equality: Governance seeks to ensure equality between small and large investors. For example, the owner of a single share has the same rights as the owner of a million shares, including voting, participation, holding boards accountable, profit distribution, and other rights.
2. Transparency: Transparency is one of the advanced and modern concepts in governance that conscious management must adopt due to its importance. It involves openness, avoiding ambiguity, deception, and secrecy, and ensuring that all actions are visible, verifiable, and understandable.
3. Responsibility: Governance aims to enhance the sense of responsibility, ensuring that each member of the board of directors acts with high professional ethics. Responsibility also includes legal rights and encourages cooperation between companies and shareholders in various matters.
4. Accountability: This means that shareholders have the right to hold management accountable for its performance, a right guaranteed by law and governance regulations. Accountability also takes in the responsibility of management toward the panel of directors.

In a nutshell, governance is deemed to be a set of policies and core processes within governmental bodies, made out for getting maximal results positively impacting society and promoting the public interest.

Chapter Two: Applications of Artificial Intelligence in Enhancing Good Governance

First Requirement: Uses of Artificial Intelligence in Governance

AI undoubtedly enhances the efficacy and competence of governance. Several noticeable apps include:

1. Participation Enhancement: for voting at elections, encouraging people engaged in politics, and in opinion polling mechanisms. Further, it is used for referendums in

rapidly and efficiently, thereby getting rid of intermediaries and combating administrative corruption. Also, there's potentiality of AI for detecting hatred in social media platforms and take measures for deterring similar harmful content. (Abdul-Sadiq, 2009)

2. Decision-Making Support: AI unquestionably had the capability to analyze enormous data from diverse sources, including surveys and social media platforms, to adequately provide insights for decision-makers. It is extremely used for forecasting, monitoring future trends, and assessing potential objectives, which undoubtedly aids governments in effective planning and preparation for upcoming challenges. It is also applied evaluate public policies before their implementation. (Brown, n.d.)

3. Gov. Services Improvement: AI automates routine and repetitive tasks, such as processing applications, which helps reduce the workload and save time for government employees. It can also analyze user data to provide services tailored to individual needs, ensuring that public services are delivered efficiently and quickly. Additionally, AI-powered chatbots can efficiently provide data and respond to citizens' inquiries around the clock. (Mettz, 2023)

4. Enhancing Transparency and Combating Corruption: AI can unswervingly analyze massive datasets to effectively detect patterns indicative of fraud, thereby assisting in anti-corruption efforts. It can also facilitate the presentation of data and make it easily accessible to people, strengthening accountability and transparency. (Al-Subaie, 2010)

Second Requirement: Mechanisms (Tools) of Artificial Intelligence in Enhancing Governance

1. Data Analysis: AI analyzes big data from varying sources, like government records, social media platforms, and opinion polls, to better understand citizens' needs. It also measures the effectiveness of government policies and programs and identifies areas that require improvement. (Boubaiya, 2021). AI enables real-time analysis by handling larger datasets beyond traditional statistical samples, which enhances confidence in the results and increases the accuracy of performance reporting.

2. Automation: AI can undoubtedly automate routinic and reiterative tasks, like processing apps, mitigating the workload for government employees. It also improves speed and efficiency in service delivery. Additionally, smart robots can provide information and respond to citizens' inquiries, while image recognition technologies can be used to review documents and detect fraud. (Al-Husary, 2024)

3. Decision-Making and Forecasting: AI has the capability to make predictions about future events, such as the likelihood of crimes or demand for government services. This helps governments allocate resources efficiently, plan effectively, and analyze different scenarios to evaluate public policies before implementation, thereby supporting informed and accurate decision-making. (Boubaiya, 2021)

4. Developing Public Services: AI can analyze data to provide personalized services that meet individual needs. AI-powered chatbots can offer information and respond to citizens' inquiries around the clock. Additionally, AI contributes to the development of innovative services that were previously unavailable. (Bakkah, 2025)

As previously noted, the number of AI-supported applications has increased significantly in recent years. One example is Saudi Arabia, which has utilized AI to enhance government services. The country relies primarily on a national AI strategy implemented by the Saudi Data and Artificial Intelligence Authority (SDAIA). Several initiatives have been launched in the government sector, including the "Aber" project, which organizes the entry of pilgrims to Mecca for Umrah using AI, improving the flow of movement and preventing overcrowding. (Bakkah, 2025)

Intelligent Applications Used in the Kingdom of Saudi Arabia:

1. Farajat Application: This application provides services to citizens and residents in Saudi Arabia, allowing them to access data and information about individuals detained in financial cases and to offer assistance to them.
2. Burooq Application: Built on AI technology, this application enables highly secure and reliable virtual meetings.
3. Allam Application: This application translates documents from Arabic into other languages, generates summaries for all documents, and also processes and converts images.
4. Tawakkalna Application: This important application is used in the health sector. It was launched during the COVID-19 pandemic to electronically issue permits during curfew periods. After the pandemic, the application continued to provide various electronic services across multiple sectors, including health, entertainment, and education.
5. Nafath Platform: This national platform provides unified and secure access for citizens to all government platforms. It includes an electronic identity system that verifies users upon login.

   In addition to the important role these applications play in improving government services, Saudi Arabia aims to integrate artificial intelligence technology into its Vision 2030 to enhance digital transformation and provide smart government services characterized by ease and efficiency. This includes establishing a dedicated governmental body and allocating a budget specifically for AI initiatives. (Salama, 2023)

Another country that has leveraged AI technologies to promote transparency and combat corruption is Qatar. Some of these applications include: (Al-kwari. n.d.)

1. Intelligent Reporting System: Through AI-based electronic applications, citizens can report suspicions and cases of corruption automatically without revealing their identities.
2. Financial Transaction Analysis: AI algorithms are used to monitor and detect any suspicious activities within government institutions.

3. Detection of Fraud in Contracts and Procurement: Machine learning models are trained to identify repeated contracts or contracts that have been fraudulently executed.

Consequently, Qatar has made significant efforts in using AI to enhance good governance. It established the Administrative Control and Transparency Authority, enacted Anti-Corruption Law No. 17 of 2007, and worked to strengthen transparency in both the private and public sectors. (Public Authority for Administrative Control and Transparency, 2025)

Chapter Three: Challenges and Solutions Facing Artificial Intelligence in Enhancing Governance

First Requirement: Challenges

Ensuring good governance is not an easy task, as governments face several challenges, including:

1. Legal Challenges:

One of the current challenges facing artificial intelligence is the lack of regulations and laws governing its use in governance. International laws also vary, particularly regarding data exchange, which creates potential risks when implementing AI across borders. (Abdel-Rabah, 2023)

2. Ethical Challenges:

AI can impact fundamental human rights, such as privacy, freedom from discrimination, and fairness. Some AI systems may exhibit bias based on the data they are trained on, potentially leading to discrimination against certain groups. Additionally, issues of transparency and accountability arise, as users often find it difficult to understand how AI systems make decisions. This lack of clarity can hinder accountability and the evaluation of outcomes. (Al-Hadi, 2024)

3. Technical Challenges:

Despite the benefits AI offers in governance, it faces limitations in infrastructure, including a shortage of specialized skills required to effectively develop and implement AI systems. This hinders wider adoption and reliance on AI. Additionally, AI systems demand high computing power, which places a significant burden on current infrastructure, especially in developing countries.

Second Requirement: Solutions

To ensure the wise, ethical, and fair use of AI in governance, it is essential to establish regulations and laws governing AI applications, while upholding privacy and data security. Countries should also collaborate to develop common international standards. Other solutions include engaging citizens in discussions about AI applications in governance, ensuring that their expectations and needs are addressed. (Farhan, 2024)

Investing in infrastructure is crucial; governments must allocate resources to develop and strengthen the systems required to operate AI, such as 5G networks and high-performance computing devices. (Kareem, 2024)

Governments should also fund initiatives to build capacity, train the necessary competencies, and enable the effective use of AI. This includes ensuring the credibility of the data used to train AI models through diversified data collection and bias prevention. Finally, clear principles for AI usage should be developed, promoting transparency, understandability, and informed decision-making regarding AI deployment. (Al-Amri, 2025)

Regarding the future of Artificial Intelligence in governance, we observe that artificial intelligence has moved beyond being confined to research laboratories and Hollywood films, materializing in real-world applications and developing rapidly. It is expected to play a profound and influential role in all aspects of our lives in the future, becoming an integral part of our daily existence. As AI advances, it is vital for regulating its use via legal frameworks and guidelines, rather than waiting until a time when we might have to consult AI itself in drafting legislation.

Results

Artificial intelligence has the potential to make transparency within government institutions more and more enhanced via effective monitoring mechanisms that to some extent can detect and thwart administrative corruption. Its own powerful potentiality to analyze enormous and sophisticated datasets quickly and precisely allowing deeper insights into trends and more informed decision-making processes. The results uncover the integration of AI apps having notably optimized the delivery of public services in sectors like education and healthcare, causing greater people satisfaction. However, despite such advancements, AI still encounters numeroius legal and regulatory obstacles hindering its optimal implementation and optimal role in governance.

Recommendations

It is recommended to foster interdisciplinary research to effectively gain deeper and more comprehensive understandings of AI and its sundry apps. It undoubtedly emphasizes the need to effectively develop and put international laws and regulations into effect that govern the responsible adoption of AI across all sectors. Nevertheless, it helps in integrating AI technologies with the principles of good governance in governmental operations to enhance transparency and efficiency. The paper also highpoints the importance of expanding AI implementation within government institutions and establishing specialized AI committees in various ministries to ensure the swift and effective delivery of services to citizens.

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