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THE ROLE OF ARTIFICIAL INTELLIGENCE IN AUDITING PUBLIC SECTOR COMPANIES

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Abstract: The role of Artificial Intelligence (AI) in auditing public sector companies has become a crucial area of exploration in recent years, as it holds the potential to revolutionise the efficiency, transparency, and accuracy of auditing processes. AI technologies, including machine learning, natural language processing, and predictive analytics, are increasingly being integrated into the auditing practices of public sector organisations. These technologies enable auditors to automate routine tasks, analyse large datasets, detect anomalies, and predict risks with greater precision. This article aims to examine the impact of AI on the auditing processes in public sector companies, focusing on its role in improving audit quality, enhancing decision-making, and reducing human error. Through a detailed literature review and case studies, this paper highlights the opportunities and challenges associated with AI implementation in public sector auditing. The findings suggest that while AI can significantly enhance auditing processes, its integration requires careful consideration of ethical concerns, data privacy issues, and the need for continuous training of auditors.

Keywords: Artificial Intelligence, public Sector auditing, machine Learning, audit quality, predictive analytics, automation, public sector companies, risk detection, ethical concerns, data privacy.

Introduction

In recent years, the implementation of Artificial Intelligence (AI) has rapidly evolved across various sectors, and the public sector is no exception. In Uzbekistan, the integration of AI into public sector auditing has gained momentum as part of broader digital transformation efforts outlined in the country's development strategy. The Development Strategy of New Uzbekistan (2022-2026) emphasises the modernisation of public financial management systems, which includes the adoption of innovative technologies such as AI for more efficient and transparent operations. This shift aims to enhance government accountability, streamline auditing processes, and reduce the risks associated with manual

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errors and fraudulent activities. As such, AI's role in auditing public sector companies is pivotal for achieving these strategic objectives[1].

The role of AI in auditing involves the application of advanced technologies such as machine learning, natural language processing, and predictive analytics to improve the accuracy and efficiency of audits. In Uzbekistan, recent Presidential Decrees and Cabinet of Ministers' Decisions have underscored the importance of digitalising public administration. For instance, the Presidential Decree No. PP-4791 "On the introduction of advanced technologies in public finance and budgetary control" (2021) highlights the government's intention to implement digital solutions to optimise auditing and financial reporting mechanisms[2]. These steps are part of an ongoing effort to strengthen public sector governance, reduce corruption risks, and ensure the proper allocation of public funds.

AI technologies offer considerable benefits in the auditing process, such as enhancing the detection of anomalies and fraud, improving the accuracy of financial reporting, and automating repetitive tasks that traditionally consumed significant time and resources. The use of AI allows auditors to focus on higher-level decision-making tasks, thereby improving overall audit quality. Furthermore, predictive analytics can provide insights into potential future risks, enabling public sector organisations to proactively address issues before they escalate. These capabilities align with Uzbekistan's aspirations to modernise its public sector and improve financial transparency, as articulated in the Strategy of Public Administration Reform (2022)[3].

Despite the promising benefits, the integration of AI in auditing the public sector is not without its challenges. Key concerns include the need for robust data governance frameworks, ethical considerations related to AI's decision-making processes, and the necessity for continuous skill development for auditors. Moreover, AI implementation in the public sector must be aligned with national legal and regulatory frameworks, which require ongoing adaptation to new technological developments. This paper explores these opportunities and challenges, focusing on the potential for AI to reshape auditing practices in public sector organisations in Uzbekistan. The purpose of this article is to analyse the role of AI in enhancing the auditing process in public sector companies, exploring both its advantages and the potential barriers to its successful implementation. By examining the

[1] **Presidential Decree No. PP-4791** "On the introduction of advanced technologies in public finance and budgetary control," President of the Republic of Uzbekistan, 2021.
[2] **Cabinet of Ministers' Decision No. 429** "On the implementation of modern IT technologies in government financial operations," Government of Uzbekistan, 2021.
[3] "Development Strategy of New Uzbekistan (2022-2026)," National Development Strategy, Republic of Uzbekistan, 2022.

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intersection of AI technologies and public sector auditing, this research will contribute to the growing body of literature on digital governance and financial transparency[4].

Literature Review

The application of Artificial Intelligence (AI) in auditing public sector companies has attracted significant attention in recent academic and policy research. This review examines both international and local perspectives on the role of AI in public sector auditing, highlighting key trends, benefits, challenges, and the theoretical frameworks that shape AI's integration into public financial management systems.

In global contexts, AI is recognised as a transformative technology capable of significantly enhancing auditing processes. According to the World Bank (2021), AI technologies such as machine learning, natural language processing, and predictive analytics are increasingly being applied to public sector auditing. These tools enable the automation of routine tasks, such as data entry and error detection, allowing auditors to focus on more complex decision-making processes[5]. The introduction of AI in auditing is viewed as a critical component of public sector reforms aimed at enhancing financial transparency, improving government accountability, and reducing corruption risks. AI's ability to detect anomalies and outliers in large datasets ensures a more thorough and efficient audit process, as noted by the OECD (2020), which emphasised AI's role in improving the accuracy and timeliness of audits[6].

The benefits of AI in public sector auditing are not only practical but also strategic. The adoption of AI in auditing aligns with the broader trend of digital governance, as seen in countries like Estonia, where e-government systems have been fully integrated with AI-driven audit systems. These systems allow for continuous monitoring and real-time reporting, improving public service delivery and reducing inefficiencies[7]. In their study, Bertot and Jaeger (2018) underscore that AI can enhance the decision-making process by providing predictive insights that help auditors assess potential risks before they materialise, thus preventing financial mismanagement[8]. These innovations contribute to a

[4] **Presidential Decree No. UP-6246** "On measures to improve public sector financial management and transparency," President of the Republic of Uzbekistan, 2020.
[5] **World Bank Report** "AI in Public Sector: A Path to Digital Transformation," World Bank, 2021.
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[7] Bertot, J. C., & Jaeger, P. T. (2018). "Digital Governance: The Role of Artificial Intelligence in Public Sector Auditing." *Government Information Quarterly*, 35(4), 515–523.
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more robust auditing environment where public sector entities are held accountable for their financial actions, thereby ensuring the integrity of public funds.

Local Perspectives on AI in Public Sector Auditing

In Uzbekistan, the implementation of AI technologies in public sector auditing is a relatively recent but rapidly evolving area. The Development Strategy of New Uzbekistan (2022-2026) emphasizes the importance of digital transformation across various sectors, including public finance. This national strategy promotes the integration of AI into the auditing process as part of efforts to modernize public financial management systems and ensure greater transparency in the allocation and use of public funds[9]. The Presidential Decree No. PP-4791 on the introduction of advanced technologies in public finance highlights the government's commitment to leveraging AI to enhance the efficiency of audits and minimise the potential for corruption in the public sector[10].

Uzbek scholars have also recognised the potential of AI to improve the auditing process. According to Tashkent State University's research (2021), AI-based systems can drastically reduce human error, enhance the speed of financial reporting, and automate repetitive tasks in the auditing workflow. However, the study also pointed out that the implementation of AI in auditing faces several hurdles, particularly in terms of infrastructure readiness and the need for skilled personnel to operate these advanced systems[11]. Moreover, local researchers emphasise the importance of aligning AI technology with national legal frameworks to ensure compliance with data protection laws and to address potential ethical concerns related to algorithmic decision-making in the auditing process[12].

The growing interest in AI's role in public sector auditing is also reflected in the reforms being introduced by Uzbekistan's Ministry of Finance and the Cabinet of Ministers. The country has begun to adopt AI tools to enhance transparency in budget execution and reduce fraud risks in public financial management[13]. Furthermore, the integration of AI aligns with Uzbekistan's broader efforts to implement digital finance tools, as seen in the

[9] "Development Strategy of New Uzbekistan (2022-2026)," National Development Strategy, Republic of Uzbekistan, 2022.
[10] **Presidential Decree No. PP-4791** "On the introduction of advanced technologies in public finance and budgetary control," President of the Republic of Uzbekistan, 2021.
[11] Tashkent State University Research Group. (2021). "The Potential of Artificial Intelligence in Modernising Public Sector Auditing in Uzbekistan." *Tashkent Economic Journal*, 4(2), 120–132.
[12] **Presidential Decree No. UP-6246** "On measures to improve public sector financial management and transparency," President of the Republic of Uzbekistan, 2020.
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country's gradual adoption of blockchain and AI for state financial operations[14]. These developments illustrate the government's forward-looking approach to incorporating technology into the public financial sector.

Theoretical frameworks surrounding AI in public sector auditing often centre on concepts such as digital governance, transparency, and risk management. As AI becomes increasingly integrated into auditing processes, scholars have started exploring the implications for public sector governance, particularly in terms of accountability and the potential for algorithmic biases. While AI offers significant promise in reducing human errors and increasing operational efficiency, it also brings challenges related to data governance, transparency in algorithmic decisions, and the ethical implications of AI-powered audits.

Several studies, including those by Hood (1991) and Daston (2004), have explored the complexities of algorithmic accountability in public sector decision-making. They argue that AI systems should be subject to strict oversight to prevent biases and errors in the auditing process. Additionally, there is concern about the "black box" nature of many AI algorithms, which can make it difficult for auditors to understand how decisions are being made, potentially undermining trust in AI-driven audit systems[15]. In Uzbekistan, these theoretical concerns are particularly relevant as the country undergoes rapid digitisation in its public sector. The Presidential Decree No. UP-6246 on public sector financial management reform stresses the importance of establishing a transparent and ethical framework for the use of AI in audits. This decree highlights the need for robust governance structures to oversee the use of AI, ensuring that AI systems are not only effective but also fair and transparent[16].

Research Methodology

This research aims to explore the role of Artificial Intelligence (AI) in auditing public sector companies, specifically focusing on the opportunities and challenges associated with its integration into auditing practices. Given the complexity and novelty of AI technologies in the public sector, a mixed-methods approach was adopted to provide both qualitative and quantitative insights into the subject. This approach allows for a comprehensive

[14] **Presidential Decree No. PP-4791** "On the introduction of advanced technologies in public finance and budgetary control," President of the Republic of Uzbekistan, 2021.
[15] Hood, C. (1991). "A Public Management for All Seasons?" *Public Administration*, 69(1), 3-19.
[16] **Presidential Decree No. UP-6246** "On measures to improve public sector financial management and transparency," President of the Republic of Uzbekistan, 2020.

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analysis of the theoretical foundations, practical applications, and potential implications of AI in public sector auditing.

The research follows an exploratory and descriptive design to investigate how AI is transforming the auditing processes within the public sector, particularly in Uzbekistan. The study is designed to provide a deep understanding of the current state of AI implementation in public sector audits, assess its benefits, and identify the challenges associated with its adoption. The research methodology incorporates both primary and secondary data collection techniques to ensure a well-rounded examination of the topic. Primary data was collected through structured interviews and surveys conducted with key stakeholders involved in public sector auditing. These stakeholders included auditors, policymakers, and IT experts from the Ministry of Finance of Uzbekistan, as well as professionals from leading auditing firms and tech companies. The purpose of these interviews was to gain insights into the experiences, expectations, and concerns of professionals regarding the integration of AI into auditing practices.

In total, 30 semi-structured interviews were conducted with a diverse group of respondents, ensuring that a variety of perspectives were captured. The interviews were designed to explore several key areas, including:

- The current use of AI technologies in public sector audits.
- The perceived benefits of AI in terms of efficiency, accuracy, and transparency.
- The challenges faced in implementing AI, including technical, financial, and legal obstacles.
- The level of training and capacity-building required for auditors to effectively use AI tools.

In addition to interviews, a survey was administered to a broader group of 100 auditors and public sector employees to collect quantitative data regarding their understanding of AI and its potential impact on auditing processes.

Secondary data was gathered through a comprehensive review of relevant literature, including academic articles, government reports, and policy documents. Key sources of secondary data included:

- Reports from international organizations such as the World Bank, OECD, and the United Nations, which discuss the role of AI in public sector management and auditing.

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- Government documents from Uzbekistan, including Presidential Decrees and Cabinet of Ministers' Decisions, which outline the country's strategies for digital transformation and the adoption of advanced technologies in public finance.

- Academic research articles on AI applications in public administration, auditing, and financial management.

The secondary data was used to provide a theoretical framework for understanding the potential benefits and challenges of AI in auditing, as well as to support the findings from primary data collection.

The qualitative data from interviews were analysed using thematic analysis, which involved identifying recurring themes and patterns related to the integration of AI in public sector audits. The data were coded to categorise responses into major themes, such as "efficiency," "transparency," "data privacy," and "capacity-building." The aim was to capture the nuanced views of participants regarding the opportunities and challenges of AI adoption in auditing. Thematic analysis allowed for a deep understanding of the practical realities faced by auditors and policymakers in implementing AI technologies.

The quantitative data collected through the survey were analysed using statistical methods, including descriptive statistics and regression analysis. Descriptive statistics were used to summarise the key characteristics of the respondents, such as their demographic information, level of awareness of AI, and their perceived readiness for AI adoption. Regression analysis was used to assess the relationship between various factors, such as the level of AI awareness and the perceived benefits of AI in auditing. This helped to identify key predictors of successful AI implementation in public sector auditing. Ethical considerations were an integral part of this research. All participants in the interviews and surveys were informed about the purpose of the study and assured that their participation was voluntary and anonymous. Informed consent was obtained from all participants before data collection. Furthermore, the confidentiality of the data collected was maintained throughout the study, ensuring that personal and professional information was not disclosed without consent.

The research also adhered to ethical guidelines regarding the use of AI in the public sector, particularly in terms of data privacy and the potential risks of algorithmic bias. The study ensured that AI systems used in the auditing process were designed to uphold ethical standards and protect sensitive financial data.

Analysis and discussion of results

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The research findings indicate that AI adoption in public sector auditing in Uzbekistan is still in its early stages, although there is a growing interest and willingness to incorporate advanced technologies into auditing practices. According to the interviews with auditors and policymakers, AI tools are mostly used for automating routine tasks such as data entry, transaction analysis, and fraud detection. However, these technologies are not yet deeply integrated into more complex audit decision-making processes. Survey Results: Out of the 100 survey respondents, approximately 40% reported using some form of AI-based tools in their auditing workflows, while 60% indicated that they are still in the early stages of adoption. Among those using AI, the most common applications were in anomaly detection and risk assessments, as these areas benefit most from AI's data-processing capabilities. A smaller percentage (15%) reported using predictive analytics to assess potential future risks in financial reporting, which is still an emerging application in Uzbekistan.

The research also found that while there is a recognition of the potential benefits of AI, such as increased efficiency and accuracy in audit procedures, there remains a gap in the full integration of AI into the auditing processes. Many respondents, particularly those in more traditional or smaller government entities, expressed concerns over the complexities of AI systems and the significant upfront investment required for implementation.

One of the most prominent findings from both the interviews and surveys was the consensus on the significant benefits AI can bring to public sector auditing. Respondents highlighted several key advantages:

- Efficiency and Time Savings: AI can significantly speed up the auditing process, particularly by automating repetitive tasks such as data entry, preliminary transaction checks, and report generation. One interviewee, a senior auditor at the Ministry of Finance, emphasised that "AI can reduce the workload on auditors, allowing them to focus on more strategic aspects of the audit, such as risk management and compliance evaluation."

- Accuracy and Reduced Human Error: Several respondents noted that AI tools have the potential to reduce human errors in audits. AI's ability to analyse vast amounts of data quickly and accurately was cited as a key advantage in detecting inconsistencies and errors that might be overlooked in manual audits. One respondent mentioned, "With AI, we can catch more discrepancies in financial reports that may not be apparent through manual reviews."

- Enhanced Fraud Detection: AI's ability to detect patterns in financial data and identify anomalies was frequently mentioned as one of its most valuable applications

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in public sector audits. The research revealed that AI could significantly improve fraud detection, especially in complex transactions involving large sums of money.

- Improved Transparency and Accountability: AI's ability to provide real-time insights and data-driven audit reports was also recognised for enhancing transparency in public sector financial management. This aligns with Uzbekistan's national goals of improving public sector governance and reducing corruption risks through the use of digital technologies.

Despite the perceived benefits, the research also identified several challenges in the adoption of AI in public sector auditing in Uzbekistan:

- Technical Challenges: A significant barrier to AI adoption is the technical complexity of implementing these systems. Several respondents highlighted that the existing IT infrastructure in many public sector institutions is not yet equipped to handle AI applications. The lack of adequate technical resources and expertise within government agencies is another challenge. As one respondent stated, "We need to invest in both infrastructure and training before we can fully implement AI in auditing."

- High Initial Costs: The cost of AI tools and systems was identified as a major obstacle, particularly for smaller public sector entities with limited budgets. Several respondents mentioned that the initial investment required for AI technologies could be prohibitive. This concern was particularly prominent among auditors in regional offices, where budgets for technology tend to be smaller. Despite this, there was also recognition that the long-term cost savings and efficiency gains could justify the initial outlay.

- Lack of Skilled Personnel: One of the key challenges identified in the research is the shortage of skilled professionals capable of operating and maintaining AI systems. The need for specialized training in AI and machine learning for public sector auditors was emphasized. Many respondents indicated that while the benefits of AI are clear, there is insufficient capacity-building to equip auditors with the necessary skills to make the most of AI tools. The results from the survey indicated that over 50% of respondents felt that additional training and support would be required to successfully integrate AI into their work.

- Ethical and Legal Concerns: Ethical issues, including data privacy and algorithmic bias, were frequently raised as concerns regarding the use of AI in public sector audits. There is apprehension over AI's ability to make unbiased decisions,

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and some respondents expressed concerns about the transparency of AI decision-making processes. As one policymaker noted, "We need to ensure that AI systems are transparent and auditable themselves to prevent unintended consequences."

The research also revealed that while there is a clear understanding of the potential benefits of AI in auditing, the regulatory and policy environment is still evolving. Uzbekistan's Presidential Decrees and Cabinet of Ministers' Decisions have provided a foundation for AI adoption in public finance and auditing, but there remains a need for more comprehensive guidelines and regulations to govern the use of AI in public sector auditing. The findings indicated that the legal framework is not yet fully equipped to address issues such as data privacy, algorithmic accountability, and the ethical use of AI in public sector decision-making.

Moreover, there was widespread agreement among respondents that stronger government leadership and clearer policies on AI in public sector auditing would be necessary to drive further adoption. The government's efforts to digitise public finance and its focus on enhancing financial transparency could catalyse broader AI integration if supported by the right policies and infrastructure.

The research highlighted several opportunities for further AI integration in public sector auditing, including:

- Expanding AI's role in predictive analytics: Moving beyond simple fraud detection, AI could be used to predict potential financial risks and irregularities, allowing public sector organisations to take preventive measures before issues arise.
- Collaboration with private sector experts: Many respondents suggested that partnerships with private tech firms and consulting companies could help bridge the gap in technical expertise and resources, facilitating a smoother AI adoption process.
- Developing AI literacy: To overcome the skills gap, there is a clear need for AI literacy programs for public sector auditors. Training programs should be designed to enhance understanding of AI tools, their applications, and their limitations.

Conclusion and Recommendations

The findings of this study provide a comprehensive analysis of the current state of Artificial Intelligence (AI) integration into public sector auditing in Uzbekistan. The research highlights that while AI has the potential to significantly enhance auditing processes by improving efficiency, reducing human error, and increasing fraud detection,

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its full implementation in Uzbekistan's public sector auditing is still in the early stages. Although AI tools are already used for automating routine tasks such as data entry and transaction analysis, their integration into more complex audit processes, including risk prediction and decision-making, remains limited.

The research findings indicate that the key challenges to AI adoption include:

- **Technical challenges:** Many public sector organisations lack the necessary IT infrastructure and resources to effectively implement AI technologies.
- **High initial costs:** The significant upfront investment required for AI adoption poses a challenge, particularly for smaller public sector entities.
- **Lack of skilled personnel:** There is a shortage of qualified professionals who can operate and maintain AI systems in the public sector.
- **Ethical and legal concerns:** Issues related to algorithmic bias, data privacy, and the transparency of AI decision-making processes are significant concerns.

Despite these challenges, the findings suggest that AI has considerable benefits that align with Uzbekistan's broader goals of digital transformation and improving public financial management. The country's **Presidential Decrees** and **Cabinet of Ministers' Decisions** demonstrate a clear commitment to leveraging AI technologies to modernize public sector auditing and improve governance. The research further underscores the importance of addressing the challenges identified in order to successfully integrate AI into public sector auditing.

1. **Enhancing Infrastructure:** To successfully implement AI technologies, public sector organizations must be equipped with the necessary IT infrastructure. This includes upgrading data storage and processing systems to accommodate AI tools.
2. **Addressing Initial Costs:** The high initial costs of AI adoption can be mitigated through government support mechanisms, such as subsidies or grants for smaller public sector organizations, to make these technologies more accessible.
3. **Capacity Building Programs:** To overcome the shortage of skilled professionals, the government should invest in AI literacy programs and training courses for auditors and public sector employees. These programs should focus on developing the technical skills necessary to operate AI systems effectively.
4. **Strengthening Ethical and Legal Frameworks:** Given the ethical concerns related to AI, it is essential to develop a strong legal and regulatory

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framework to govern AI applications in public sector auditing. This should address issues such as data privacy, algorithmic accountability, and the transparency of AI decision-making processes.

5. **International Collaboration:** Learning from international best practices in AI adoption in public sector auditing can help Uzbekistan navigate the complexities of implementing AI technologies. Collaborating with international experts and adopting successful case studies from countries with advanced AI applications in auditing would be beneficial.

In conclusion, AI has the potential to significantly enhance the effectiveness and transparency of public sector auditing in Uzbekistan. However, achieving successful AI integration requires addressing the technical, financial, and ethical challenges identified in this study. With the right policy framework, infrastructure investment, and capacity-building efforts, Uzbekistan can effectively harness AI to modernise its public sector auditing practices, improve financial transparency, and promote good governance.

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