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THE ROLE OF ARTIFICIAL INTELLIGENCE IN IMPROVING TAX ADMINISTRATION IN THE DIGITAL ECONOMY

Sanakulova Iroda Abrorovna
Student of Kattakurgan State Pedagogical Institute
irodasanakulova06@gmail.com
+99850-190-79-29
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Abstract. The rapid development of the digital economy has significantly transformed public administration, including taxation systems. Artificial Intelligence (AI) has become one of the most innovative technologies for improving tax administration by increasing efficiency, transparency, and accuracy in tax collection and compliance. This article examines the role of AI in modern tax administration, focusing on its contribution to digital tax services, risk assessment, fraud detection, and taxpayer compliance. It also analyzes the experience of different countries in implementing AI-based tax administration systems and evaluates recent digital tax reforms in the Republic of Uzbekistan. Furthermore, the study identifies existing challenges, including cybersecurity, data protection, and technological infrastructure, and proposes recommendations for strengthening AI applications in tax administration. The findings indicate that integrating AI into tax systems enhances fiscal efficiency, reduces tax evasion, and supports sustainable economic development in the digital era.

Keywords: Artificial Intelligence, digital economy, tax administration, digital taxation, Big Data, machine learning, tax compliance, fiscal policy, economic development, digital transformation.

The emergence of the digital economy has fundamentally changed the way governments manage public finance and taxation. Digital technologies have accelerated economic activities, increased electronic transactions, and expanded online business operations, creating new challenges for tax authorities worldwide. Traditional tax administration methods are often insufficient to manage large volumes of digital transactions, making technological innovation an essential component of modern tax systems.

Artificial Intelligence (AI) has become one of the most effective tools for improving tax administration. AI technologies enable tax authorities to process enormous amounts of financial data, identify irregularities, detect tax fraud, and improve tax compliance through automated decision-making systems. Unlike traditional approaches, AI-based tax administration provides real-time analysis, minimizes human error, and enhances the overall efficiency of tax collection.

Many developed countries have already integrated AI into their tax administration systems to improve transparency and strengthen fiscal governance. Machine learning algorithms, predictive analytics, and Big Data technologies allow governments to identify high-risk taxpayers, reduce administrative costs, and optimize tax audit procedures. Consequently, AI contributes not only to increasing government revenues but also to creating a more transparent and business-friendly tax environment.

In recent years, Uzbekistan has also introduced significant digital reforms aimed at modernizing tax administration. Electronic tax services, digital reporting systems, electronic invoices, and online cash registers have become important elements of the country's digital transformation strategy. The next stage of these reforms involves wider implementation of Artificial Intelligence technologies to improve tax administration efficiency and strengthen fiscal sustainability.

Therefore, analyzing the role of Artificial Intelligence in tax administration is highly relevant both from theoretical and practical perspectives. This study aims to evaluate the opportunities, challenges, and future prospects of AI implementation in tax administration and to identify policy recommendations for improving digital taxation systems in the context of the digital economy.

Artificial Intelligence has become one of the most influential technologies driving the digital transformation of tax administration. Modern tax systems generate enormous volumes of financial information every day through electronic invoices, online payment systems, banking transactions, customs declarations, and digital business platforms. Processing such a vast amount of information using traditional methods is both time-consuming and inefficient. AI-powered systems enable tax authorities to analyze these datasets quickly and accurately, improving decision-making and strengthening tax compliance.

One of the primary applications of AI in tax administration is risk-based tax management. Machine learning algorithms can examine historical tax records, financial statements, and transaction patterns to identify taxpayers with a high probability of tax evasion or fraudulent activities. Instead of conducting random audits, tax authorities can focus on high-risk cases, reducing administrative costs while increasing the effectiveness of tax inspections. This approach allows governments to allocate their resources more efficiently and minimize unnecessary interventions in the activities of compliant taxpayers.

Fraud detection is another significant advantage of AI-based tax administration. Traditional tax audits often identify irregularities only after considerable financial losses have occurred. Artificial Intelligence can continuously monitor transactions in real time and recognize suspicious behavior using predictive analytical models. These systems compare current transactions with historical patterns and automatically generate alerts whenever unusual financial activities are detected. As a result, tax fraud can be prevented at an early stage, protecting public revenues and improving the integrity of the tax system.

Big Data technologies complement AI by providing access to large volumes of structured and unstructured information from multiple sources. Tax authorities can integrate data from banking institutions, customs services, business registries, social security agencies, and electronic commerce platforms into a unified analytical environment. Such integration improves the accuracy of tax assessments and enables governments to detect hidden economic activities more effectively. Comprehensive data analysis also supports evidence-based policymaking and enhances fiscal planning.

Artificial Intelligence also improves taxpayer services by increasing accessibility and reducing administrative burdens. AI-powered virtual assistants and chatbots provide taxpayers with immediate responses to common questions regarding tax obligations, filing procedures, payment deadlines, and legal regulations. Automated customer support services operate continuously without time limitations, improving communication between taxpayers and tax authorities. Consequently, voluntary tax compliance increases because taxpayers receive faster and more accurate assistance.

Predictive analytics represents another important application of AI in tax administration. By analyzing historical economic indicators, consumption patterns, and tax collection statistics, AI systems can forecast future tax revenues with a high degree of accuracy. Reliable revenue forecasting supports better fiscal planning, budget preparation, and public expenditure management. Governments can identify potential fiscal risks in advance and implement appropriate policy measures before significant revenue losses occur.

Several countries have successfully implemented AI technologies within their tax systems. Estonia has established one of the world's most advanced digital government platforms, allowing taxpayers to complete tax declarations electronically within a few minutes. Singapore applies advanced analytical technologies to improve tax compliance and simplify business taxation. South Korea has invested heavily in intelligent tax administration systems that automatically identify high-

risk financial transactions and improve audit efficiency. These international experiences demonstrate that AI contributes significantly to increasing transparency, reducing compliance costs, and strengthening public trust in tax institutions.

In conclusion, Artificial Intelligence has become one of the most important technological innovations for improving tax administration in the digital economy. The integration of AI into tax systems enables governments to process large volumes of financial data more efficiently, strengthen tax compliance, detect fraudulent activities, and improve the quality of public services. Advanced technologies such as machine learning, predictive analytics, and Big Data contribute to more accurate tax assessments, effective risk management, and evidence-based fiscal decision-making.

The analysis presented in this study demonstrates that countries implementing AI-driven tax administration have achieved significant improvements in transparency, operational efficiency, and revenue collection. Digital tax services not only reduce administrative costs but also simplify tax procedures for businesses and individual taxpayers, encouraging voluntary compliance and strengthening public trust in tax authorities.

In Uzbekistan, ongoing digital reforms have established a solid foundation for the future application of Artificial Intelligence in tax administration. Expanding the use of intelligent analytical systems, strengthening digital infrastructure, enhancing cybersecurity, and improving the professional skills of tax officials will further increase the effectiveness of tax administration and support sustainable fiscal development.

Overall, the successful implementation of Artificial Intelligence in tax administration represents a strategic opportunity to modernize public finance management, combat tax evasion, improve government efficiency, and promote long-term economic growth. Continuous investment in digital technologies, legal reforms, and international cooperation will ensure that tax systems remain effective and responsive to the challenges of the rapidly evolving digital economy.

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