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The Importance of Artificial Intelligence in Improving the Compliance Monitoring System in the Healthcare Sector

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Abstract: The article explores the role and significance of artificial intelligence in improving the compliance control system in the healthcare sector. It also examines global experiences in this field, the current situation in Uzbekistan from scientific, theoretical, and practical perspectives, and provides relevant proposals and conclusions.

Keywords: healthcare, artificial intelligence, digitalization, compliance control, corruption, decree, decision, regulation.

Currently, the rapid development of artificial intelligence (AI) and digital technologies around the world is bringing about revolutionary changes in various fields. From art to medicine, from education to industry, AI is widely and systematically used as an auxiliary tool for human activities, as well as for regulating the rapidly evolving social relations.

In the healthcare sector, improving the effectiveness of compliance with legislation, regulations, and monitoring systems is a key factor in socio-economic development, safeguarding human health, and combating corruption. To achieve this, it is necessary to widely apply modern technologies, especially automated analysis and monitoring methods based on AI, in line with current demands.

Global experience shows that the application of AI tools in the healthcare system contributes to the improvement of the compliance monitoring system, which, in turn, enhances the quality of medical services, eliminates financial shortcomings, and provides an effective means of combating corruption in the sector. This article analyzes the role of AI in the development of compliance monitoring mechanisms in healthcare, achievements made by foreign countries through the use of AI, as well as the risks and problems that could arise from the improper use of this technology. Furthermore, it discusses the positive aspects and prospects of introducing AI-based compliance monitoring in Uzbekistan's healthcare system.

First of all, it is worth noting the concepts of compliance monitoring and AI, which are considered new and modern institutions in Uzbekistan.

Compliance monitoring is the process of assessing adherence to internal policies, industry standards, and legal documents. In other words, compliance monitoring is an internal comprehensive control system that checks all activities of an organization within the framework of the law and prevents corrupt situations.

AI (or AI) is a field of automated science and technology aimed at creating machines and algorithms capable of mimicking human intelligence in a digital environment.

In Uzbekistan, scientific research in the field of combating corruption has been limited. Specifically, due to the lack of in-depth scientific research into the compliance monitoring system, problems related to its practical application have arisen. It should be noted that, year by year, there is a need to further improve the scientific and organizational-legal foundations of the compliance monitoring system, which is widely applied in the fight against corruption.

At the same time, the role of compliance monitoring in the healthcare system and the issue of applying AI in this area remain urgent tasks from scientific, practical, and legal perspectives.

According to scientists, AI performs three main tasks in healthcare:

Data analysis – quickly and accurately evaluating patient history, diagnostic results, and treatment processes.

Automated decision-making – assisting doctors in making clinical decisions for patients (such as systems like IBM Watson Health).

Early identification of corrupt situations, i.e., risks – identifying inaccurate prescriptions, violations of law, or financially driven corrupt factors.

Currently, countries around the world are achieving significant results in improving the compliance monitoring system in healthcare through artificial intelligence (AI). The experience of foreign countries shows that the use of AI in healthcare demonstrates its importance in ensuring adherence to legislative documents, evaluating potential problems, identifying corrupt situations in advance, and improving sector efficiency.

Firstly, the automation of legal documents through AI in the implementation of compliance monitoring in healthcare systems. For example:

Platforms like IBM Watson and Google DeepMind check the alignment of healthcare system standards with national and international medical standards (GDPR, HIPAA). For instance, Australia's "Harvey" program analyzes legal documents and offers the possibility to identify compliance violations in the healthcare system in advance.

Secondly, using AI in healthcare helps speed up the detection of illegal actions or corrupt situations. For example, the "Fraud Detection AI" system in the US identified wrongful payments in Medicare and Medicaid, recovering 1.5 billion dollars (2022).

Thirdly, it assists in real-time monitoring and risk assessment. For example, the "Zorgprisma Publiek" system in the Netherlands, using AI, reduced the probability of law violations by medical institutions by 30%. "Predictive Analytics" helps to foresee sectoral errors made by healthcare workers (e.g., SAS Risk Management).

Fourthly, significant achievements have been made in data security and the protection of personal information within the healthcare system. Europe's "Differential Privacy" method (GDPR): AI anonymizes and encrypts data, ensuring the safety and anonymity of patients and healthcare professionals. In the US, "Apixio" is used to protect data within EHR (Electronic Health Record) systems.

Fifthly, the implementation of automated reporting and audit checks in healthcare systems. For instance, Blockchain+AI (e.g., Estonia's KSI Blockchain system) ensures the accuracy of medical processes. "Robotic Process Automation" (RPA) speeds up audit processes by 80% (Deloitte example). According to Deloitte's reports from 2017-2020, RPA helped speed up audit processes by 80%, reducing audit time by 50-75%.

According to scientist Eris Topol, "Implementing compliance monitoring in healthcare through AI, as well as effectively using AI in this field, will restore the humanity of the healthcare system, which has become bogged down, and once again build trust in it among people."

In recent years, the practice of using AI in various sectors has begun to take shape in our country as well. According to Professors S. Gulyamov and I. Bozorov, "AI is one of the most advanced

technologies in healthcare, as it helps maximize the efficiency and effectiveness of operations and patient care services. AI ensures the health and well-being of patients. It helps healthcare professionals better understand patients' needs and changing trends in society, enabling them to provide higher quality medical assistance."

In Uzbekistan, many regulatory and legal documents have been adopted regarding the implementation of compliance monitoring in the healthcare sector. In addition, a number of documents related to the use of AI in this field have been adopted, and many projects are in the process of being implemented.

Several important regulatory and legal documents related to the digital economy and AI have also been adopted.

In particular, several important documents have been adopted in Uzbekistan to improve the digital economy and the use of AI. These include the following decrees and resolutions: the Decree of the President of the Republic of Uzbekistan No. PF-5349 on February 19, 2018, on "Measures for Further Improvement of Information Technologies and Communications," the Decree No. PF-6079 on October 5, 2020, "On Approving the Strategy for Digital Uzbekistan 2030 and Measures for Its Effective Implementation," Decree No. PF-5953 on March 2, 2020, "On the State Program for the Implementation of the Action Strategy for the Development of Uzbekistan in the Years of Science, Education, and Digital Economy," Decree No. PF-60 on January 28, 2022, "On the Development Strategy of New Uzbekistan for 2022–2026," and the Resolution No. PQ-4699 on April 28, 2020, "On Measures for the Widespread Introduction of the Digital Economy and E-Government," as well as the Resolution No. PQ-4996 on February 17, 2021, "On Measures for Creating Conditions for the Rapid Implementation of Artificial Intelligence Technologies," the Decree No. PF-158 on September 11, 2023, "On the Uzbekistan-2030 Strategy," and the Resolution No. PQ-358 on October 14, 2024, "On Approving the Artificial Intelligence Technology Development Strategy until 2030," and a number of other documents.

In 2020, 239 projects were implemented in 14 districts, and in the first quarter of 2021, another 14 districts worked on digitizing health care, cadastre, social protection, agriculture, and education sectors, in response to the most frequent public inquiries. For example, the introduction of the "Electronic Polyclinic" system reduced paper documentation by 40% and decreased waiting times by 60%. To achieve further results, full digitization of central hospitals and polyclinics is required.

According to the Resolution No. PQ-4996 on February 17, 2021, "On Measures for Creating Conditions for the Rapid Implementation of Artificial Intelligence Technologies," a list of pilot projects to implement AI technologies in the healthcare sector was approved for 2021-2022, involving software products and information technology parks in the healthcare field. Two important steps were taken, including:

In healthcare: the use of artificial intelligence technologies for the initial diagnosis of pneumonia based on the analysis of human lung CT scans, and for diagnosing breast cancer through mammography analysis;

In the pharmaceutical sector: the application of AI technologies for analyzing and forecasting the demand for pharmaceutical products and medical devices.

One of the most important recent steps in our country was reflected in the following document: according to the Resolution No. PQ-358 on October 14, 2024, "On Approving the Artificial Intelligence Technology Development Strategy until 2030," the following task has been identified as a priority for implementing AI technologies: in healthcare—diagnosing diseases, determining treatment methods, analyzing medical images, and managing patient-related data.

According to the "Artificial Intelligence Technology Development Strategy until 2030," the following actions have been planned in the healthcare and pharmaceutical sectors:

Implementation of projects aimed at predicting diseases, diagnosing, and determining treatment methods;

Optimizing the process of manufacturing and delivering pharmaceutical products;

Using AI technology to detect pneumonia based on lung CT scan analysis;

Using AI technology for the initial diagnosis of breast cancer based on mammography analysis;

Analyzing the demand for pharmaceuticals, the minimum and maximum production quantities, and other financial information;

Establishing an early disease detection system through computer tomography and 3D imaging analysis;

Using segmentation methods to identify patient diseases;

Automating surgical interventions and increasing their accuracy.

These efforts have, in turn, provided the legal basis for implementing AI-based compliance monitoring in the healthcare system.

In addition, under the practical action plan for the "Population Health-2030" strategy for 2024-2026, the introduction of AI technologies is planned in 565 healthcare institutions across Uzbekistan. The following measures are planned for this purpose:

Establishing a unified electronic medical network;

Strengthening the material and technical base of medical institutions by providing them with information and technical tools. Ensuring that 100% of healthcare workers are equipped with digital technologies;

Implementing AI technologies in 565 healthcare institutions;

Upgrading the digital skills of 475,000 employees;

Creating a unified digital health platform under the "KfW" bank's "Support for Digital Health Reforms" project;

Digitizing healthcare services;

Ensuring that the implementation of digital healthcare adheres strictly to information security policies.

If these tasks are successfully implemented, it will significantly simplify the implementation of compliance monitoring in the healthcare sector, prevent the emergence of corrupt situations, increase public trust in the sector, and ensure the effective protection of human rights.

By utilizing AI, developed countries are focusing on creating digital platforms for healthcare and pharmaceutical logistics. Many advanced countries (such as the US, Austria, Australia, the UK, South Korea, and others) focus on "digital health" and "smart cities" social initiatives in their digital economy programs. Implementing "digital health" and "smart city" projects requires more complexity and diversity, but such projects are widely recognized by the general public. However, it is also important to consider that issues related to the legal status of AI, its accountability, and errors it might cause could bring about numerous challenges in the future.

In our opinion, the following practical steps should be implemented by our government: creating AI models that conform to national medical standards, organizing compliance monitoring courses based on AI (such as Singapore's AI for Healthcare program), developing projects in cooperation with international companies (Google, IBM), and piloting AI implementation in compliance monitoring.

Considering the above, it is proposed to develop a national draft law on "Artificial Intelligence and Healthcare," to define the legal status of AI, set legal accountability for the entities using AI,

and create guidelines and programs for implementing compliance monitoring in healthcare through AI.

In conclusion, AI is not only automating compliance monitoring but revolutionizing its preventive, objective, and speed aspects. As the importance of compliance monitoring in healthcare grows, AI becomes the modern tool for monitoring the sector. This technology allows for rapid data analysis, early error detection, and optimized decision-making.

Furthermore, by making the healthcare system, which is often susceptible to corruption, more transparent and impartial, AI helps ensure human rights and boosts public trust in both the state and the healthcare system. As President Sh. Mirziyoyev has stated, "Reforming the healthcare sector is one of the most important directions of state policy." Moreover, AI enhances transparency and efficiency in healthcare compliance monitoring. However, its success depends on the comprehensive mutual study, establishment, and impact of scientific, technical, and legal aspects.

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