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СТАТИСТИКА ЦИФРОВИЗАЦИИ И УПРАВЛЕНИЯ НА ОСНОВЕ ИИ В СЕКТОРЕ ЗДРАВООХРАНЕНИЯ УЗБЕКИСТАНА

Аннотация: В настоящей статье рассматривается роль статистики, искусственного интеллекта (ИИ) и цифровизации в управлении и трансформации системы здравоохранения Узбекистана. На основе данных из национальных и международных источников в исследовании анализируется, как Узбекистан использует цифровые платформы, диагностические решения на базе ИИ и электронные системы управления здравоохранением для модернизации своей медицинской инфраструктуры. С применением описательно-аналитической методологии, основанной на вторичных данных, в исследовании представлены количественные данные в виде таблиц и диаграмм, которые иллюстрируют ключевые тенденции в области внедрения цифровых технологий, инвестиций в здравоохранение и интеграции ИИ в период с 2020 по 2025 год. Результаты показывают, что Узбекистан достиг значительного прогресса во внедрении единых электронных медицинских карт, сокращении времени диагностики благодаря ИИ и расширении спектра услуг частного здравоохранения.

Ключевые слова: статистика, искусственный интеллект, Узбекистан, управление здравоохранением, цифровизация, цифровое здравоохранение, DMED, реформа здравоохранения

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STATISTICS OF AI-DRIVEN DIGITALIZATION AND MANAGEMENT IN HEALTHCARE SECTORS OF UZBEKISTAN

Abstract: This article examines the role of statistics, artificial intelligence (AI), and digitalization in the management and transformation of healthcare sectors in Uzbekistan. Drawing on data from national and international sources, the study analyzes how Uzbekistan has leveraged digital platforms, AI-driven diagnostics, and electronic health management systems to modernize its healthcare infrastructure. Using a descriptive-analytical methodology grounded in secondary data, the study presents quantitative evidence through tables and charts illustrating key trends in digital health adoption, healthcare investment, and AI integration from 2020 to 2025. The findings reveal that Uzbekistan has made significant progress in deploying unified electronic medical records, reducing diagnostic times through AI, and expanding private healthcare provision.

Keywords: statistics, artificial intelligence, Uzbekistan, healthcare management, digitalization, digital health, DMED, healthcare reform

Introduction

Uzbekistan, Central Asia's most populous nation with over 36 million inhabitants, has embarked on a sweeping transformation of its healthcare system since 2018. The country's ambitious development framework—the Uzbekistan 2030 strategy—places healthcare modernization, digitalization, and the adoption of artificial intelligence at the center of national policy priorities (President of the Republic of Uzbekistan, 2024). Between 2021 and 2025, the government allocated approximately €16.3 billion to the healthcare sector, signaling an unprecedented commitment to infrastructure renewal, digital integration, and human capital development (Euronews, 2026).

Globally, digital health technologies and AI have reshaped healthcare delivery, enabling faster diagnostics, more efficient resource management, and improved patient outcomes (WHO, 2021; Topol, 2019). However, developing and transitional economies face unique challenges in adopting these technologies, including limited digital infrastructure, workforce shortages, and fragmented data systems (World Bank, 2025). Uzbekistan's experience offers a valuable case study of how a middle-income country can strategically deploy statistical frameworks, AI tools, and digital management platforms to address these challenges.

The statistical foundations for evidence-based healthcare management in Uzbekistan are anchored in the work of the National Statistics Committee (stat.uz), which publishes annual compendia on healthcare indicators, demographic trends, and social development (National Statistics Committee, 2024). These datasets, combined with international monitoring by the World Health Organization, the World Bank, and UNICEF, provide the empirical basis for tracking progress in healthcare digitalization. Despite growing interest in Uzbekistan's digital health reforms, systematic analyses integrating statistical evidence, AI applications, and management outcomes remain scarce in the academic literature.

Methodology

This study employs a descriptive-analytical research design based on secondary data collection and synthesis. The methodology was selected to enable a comprehensive assessment of digitalization and AI integration in Uzbekistan's healthcare sector without the constraints of primary field research, and is consistent with established approaches to health systems analysis in transitional economies (Rechel et al., 2013).

Data Sources. Quantitative data were drawn from multiple authoritative sources. National-level healthcare statistics were obtained from the National Statistics Committee of the Republic of Uzbekistan (stat.uz), including its

annual publication Healthcare in Uzbekistan (2023–2024) and the Statistical Yearbook of the Regions of Uzbekistan (2024). International datasets were sourced from the World Health Organization Global Health Observatory (data.who.int), the World Bank Open Data platform (data.worldbank.org), UNICEF country profiles, Statista Digital Health Market Forecasts, and the CEOWORLD Healthcare Index (2024). Policy documents included presidential decrees, the Strategy for the Development of Artificial Intelligence Technologies until 2030 (Resolution PP-358, October 14, 2024), and

Results

Healthcare Investment Trends

Government investment in healthcare has risen substantially since 2021, reflecting the priority status assigned to the sector under the Uzbekistan 2030 strategy. Figure 1 presents the annual investment trajectory from 2021 to 2025, demonstrating a general upward trend with total cumulative spending reaching approximately €16.3 billion over the five-year period (Euronews, 2026). The 2025 allocation alone amounted to €3.2 billion, directed toward infrastructure modernization, digital system deployment, and medical education reform. This investment has enabled the establishment of 231 maternity complexes and 46 inter-district perinatal centers, equipped with advanced monitoring technologies valued at approximately €40.46 million (Euronews, 2026).

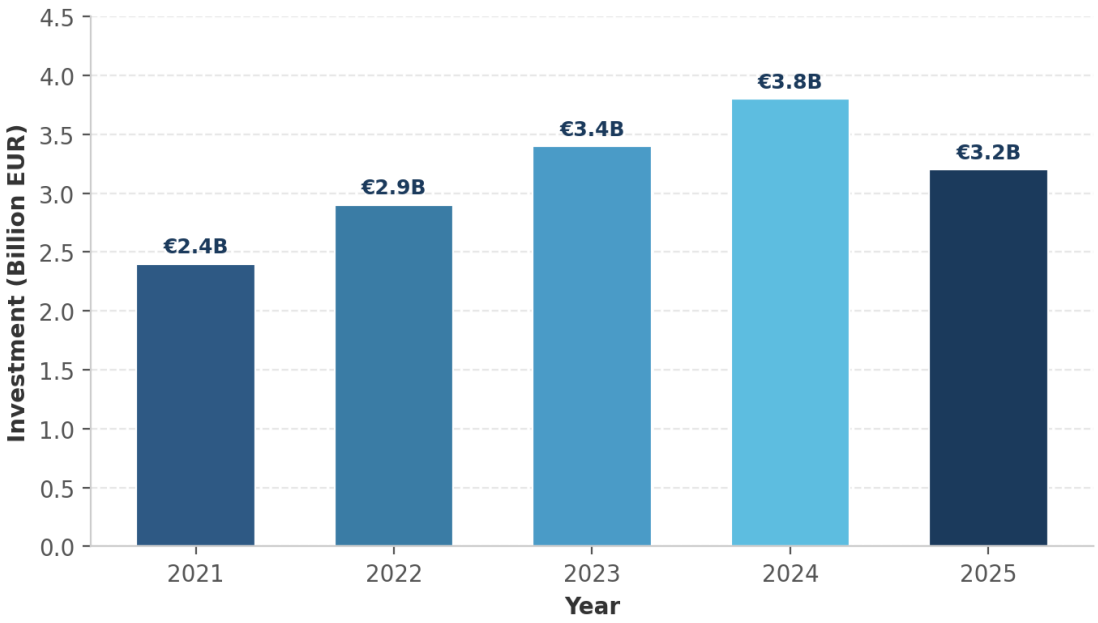

Figure 1. Government healthcare investment in Uzbekistan (2021-2025)

Source: Compiled from Euronews (2026), P4H Network (2024), and WHO (2024) reports.

Digital Health Infrastructure and Key Indicators

Table 1 presents a summary of key digitalization and healthcare indicators tracked across the period 2020–2025. The most notable developments include the rapid expansion of the DMED unified electronic health platform, which has grown from covering 12.5 million citizens in 2020 to approximately 37 million by 2025—effectively encompassing the entire population (Caspian Post, 2025). Simultaneously, the number of private healthcare clinics has nearly tripled from approximately 3,500 in 2017 to over 9,000 by 2025 (Euronews, 2026), reflecting the government's public-private partnership strategy. Average consultation times per patient have fallen from 30 minutes to 17 minutes as a result of digital workflow optimization (Euronews, 2026).

Table 1.

Key Healthcare Digitalization Indicators in Uzbekistan (2020–2025)

Indicator	2020	2022	2024	2025
Private healthcare clinics	~3,500	~5,800	~7,600	~9,000
DMED registered citizens	12.5	24.0	34.0	37.0

(millions)				
AI-based health projects	0	3	12	20+
Consultation time (min/patient)	30	25	20	17
Health expenditure (% of GDP)	5.3	5.1	5.4	5.6
Physicians per 1,000 population	2.6	2.7	2.8	2.9

Sources: National Statistics Committee (stat.uz, 2024); Euronews (2026); Caspian Post (2025); WHO (2024); P4H Network (2024); Statista (2024).

AI Applications in Healthcare

Table 2 details the specific AI applications that have been deployed or piloted in Uzbekistan's healthcare system as of 2025. The most impactful implementations include AI-powered medical image analysis for breast cancer and stroke detection, which has reduced diagnostic processing times by approximately 80 percent (President of the Republic of Uzbekistan, 2025). In rural regions, AI-assisted retinal cameras now screen premature infants for retinopathy, enabling diagnosis in areas previously lacking specialist ophthalmologists (Euronews, 2026). The electronic prescription system, integrated into the DMED platform, has algorithmically reduced unnecessary prescriptions by 40 percent, improving both patient safety and pharmaceutical resource management (Caspian Post, 2025). More than 20 AI-based healthcare projects are currently in progress, with plans to launch over 10 additional projects in 2026 (Euronews, 2026; Kun.uz, 2025).

Table 2.

AI Applications in Uzbekistan's Healthcare Sector (2024–2025)

AI Application Area	Technology Used	Reported Outcome	Implementation Status
Breast cancer screening	Medical image analysis	80% faster diagnostics	Operational in Tashkent

Stroke detection	Neural network imaging	80% reduction in diagnosis time	Pilot in republican centers
Retinopathy screening	AI-assisted retinal cameras	Remote neonatal diagnosis	Active in rural regions
Electronic prescriptions	DMED platform algorithms	40% reduction in unnecessary Rx	Nationwide
Digital medical assistant	NLP + speech recognition	Reduced documentation burden	Pilot in Almazar, Yunusabad
Medical education simulation	AI-driven simulation centers	Enhanced clinical training	Operational in universities

Sources: President.uz (2025); Euronews (2026); Oxford Insights (2025); Kun.uz (2025); Caspian Post (2025).

Discussion

The results presented above demonstrate that Uzbekistan has made remarkable strides in integrating digital technologies and AI into its healthcare management infrastructure within a relatively short timeframe. Several dimensions of this transformation merit deeper analysis and contextualization.

First, achieving near-universal electronic health record coverage for 37 million citizens in approximately four years places Uzbekistan among the more successful e-health rollouts in the post-Soviet space, contrasting with fragmented digital health landscapes in neighboring countries (WHO Europe, 2024). The DMED system's integration of records, appointments, results, and prescriptions within a single platform aligns with WHO recommendations for health information system design (WHO, 2023).

Second, the application of AI in clinical diagnostics—particularly the 80 percent reduction in breast cancer and stroke detection times—indicates that Uzbekistan is selectively adopting AI technologies where the clinical impact is most immediate and measurable. This targeted approach is consistent with the recommendations of the Oxford Insights Government AI Readiness framework,

which advises developing countries to prioritize AI deployments in areas with acute workforce shortages and high disease burden (Oxford Insights, 2025). The national AI strategy's explicit goal of ranking among the top 50 countries on the Government AI Readiness Index by 2030 provides a quantifiable benchmark for tracking progress (Regulations.AI, 2024).

Third, the rapid growth of private healthcare provision highlights the role of public-private partnerships in expanding service capacity (World Bank, 2025). However, persisting challenges remain: physician density stands at 2.8 per 1,000 population, below the WHO European Region average; and out-of-pocket payments have historically exceeded 50 percent of total health spending (P4H Network, 2024; Destatis, 2024). These constraints suggest that digitalization alone cannot resolve equity gaps without complementary financing reforms.

Fourth, the allocation of $50 million for supercomputer procurement and planned collaboration with NVIDIA signal the government's recognition that AI scalability depends on computational infrastructure (Gov.uz, 2025). The expansion from 20 active AI healthcare projects to 100 cross-sectoral projects will require sustained attention to data governance, algorithm validation, and workforce upskilling. The national Big Data database initiative, mandated for completion by September 2025, will be a critical enabler (Lex.uz, 2024).

The Statista Digital Health Market Forecast projects Uzbekistan's digital health market to grow at 11.33 percent annually through 2029, reaching $304.70 million (Statista, 2024). The 2024 CEOWORLD Healthcare Index ranked Uzbekistan 64th globally—the highest in Central Asia—confirming that reform efforts are yielding measurable improvements in healthcare quality (Times of Central Asia, 2025).

Conclusion

This study has demonstrated, through a systematic review of statistical evidence, that Uzbekistan's healthcare sector is undergoing a transformative

shift driven by digitalization, AI integration, and reformed management approaches. The deployment of the DMED electronic health platform to cover 37 million citizens, the application of AI to reduce diagnostic times for life-threatening conditions by up to 80 percent, and the tripling of private healthcare facilities collectively illustrate a healthcare system in accelerated modernization.

Statistical data from national and international sources converge on a clear narrative: Uzbekistan has moved beyond policy aspiration to measurable implementation. The national AI strategy, backed by substantial investment and institutional infrastructure, provides a credible roadmap toward 2030 targets. However, sustained progress depends on closing the physician density gap, reducing out-of-pocket expenditure, ensuring equitable digital access across regions, and building a robust regulatory framework for AI in clinical decision-making.

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