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PROSPECTS FOR THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN INSURANCE

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Abstract: *This thesis examines the prospects for the application of artificial intelligence (AI) in the insurance sector of the Republic of Uzbekistan. It analyzes global AI adoption trends and the digital transformation of the national insurance market. Particular attention is paid to risk assessment, underwriting, fraud detection, claims settlement, and customer service. The study substantiates the need for the gradual implementation of AI based on data quality, information security, algorithm transparency, and professional competencies.*

Keywords: *artificial intelligence, insurance, insurance market, digitalization, InsurTech, risk management, underwriting.*

ПЕРСПЕКТИВЫ ПРИМЕНЕНИЯ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В СТРАХОВАНИИ

Аннотация: *В тезисе исследуются перспективы применения искусственного интеллекта (ИИ) в страховом секторе Республики Узбекистан. Рассматриваются международные тенденции внедрения ИИ и цифровая трансформация национального страхового рынка. Особое внимание уделяется оценке рисков, андеррайтингу, выявлению мошенничества, урегулированию страховых случаев и обслуживанию клиентов. Обоснована необходимость поэтапного внедрения ИИ с учётом качества данных, информационной безопасности, прозрачности алгоритмов и развития профессиональных компетенций.*

Ключевые слова: *искусственный интеллект, страхование, страховой рынок, цифровизация, InsurTech, управление рисками, андеррайтинг.*

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SUG'URTADA SUN'IY INTELLEKTDAN FOYDALANISH ISTIQBOLLARI

Annotatsiya: Tezida O'zbekiston Respublikasining sug'urta sektorida sun'iy intellekt (SI) foydalanish istiqbollari tadqiq etilgan. SI texnologiyalarini joriy etishning xalqaro tendensiyalari va milliy sug'urta bozorining raqamli transformatsiyasi ko'rib chiqilgan. Risklarni baholash, anderrayting, firibgarlikni aniqlash, sug'urta hodisalarini tartibga solish va mijozlarga xizmat ko'rsatishda SI dan foydalanish imkoniyatlari tahlil qilingan. Sini ma'lumotlar sifati, axborot xavfsizligi, algoritmlar shaffofligi va professional kompetensiyalarni hisobga olgan holda bosqichma-bosqich joriy etish zarurligi asoslangan.

Kalit so'zlar: sun'iy intellekt, sug'urta, sug'urta bozori, raqamlashtirish, InsurTech, risklarni boshqarish, anderrayting.

Artificial intelligence has become an important driver of transformation in the modern insurance industry. AI-based technologies enable insurers to process large volumes of information, identify patterns in insurance data, improve risk assessment, automate routine operations, and enhance interaction with customers. Consequently, the integration of AI is increasingly viewed as a strategic instrument for improving the efficiency and competitiveness of insurance companies.

For Uzbekistan, this issue is particularly relevant in the context of the digital transformation of the national economy and financial sector. The development of digital infrastructure, electronic insurance services and state initiatives aimed at expanding the use of artificial intelligence creates favorable conditions for the gradual introduction of intelligent technologies into insurance. At the same time, AI adoption raises important economic and institutional challenges related to data quality, cybersecurity, protection of personal information, algorithmic transparency and regulatory oversight.

The purpose of this study is to identify the main prospects for the application of artificial intelligence in insurance in Uzbekistan and to determine the most promising areas for its implementation considering the characteristics of the national insurance market.

International research demonstrates that artificial intelligence can influence almost the entire insurance value chain. Eling, Nuessle and Staubli emphasize that AI

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can transform traditional approaches to risk assessment, underwriting, claims management and the overall organization of insurance activities [6]. A systematic review by Bhattacharya et al. also shows that AI technologies are increasingly applied to underwriting, fraud detection, risk prediction and customer-oriented insurance services, while issues of data quality, explainability, ethics and regulation remain significant constraints [7].

International insurance markets demonstrate a gradual transition from experimental applications of AI toward its integration into core business processes. European insurers, for example, increasingly use AI for data analysis, customer service, underwriting and claims management. This experience is relevant for Uzbekistan because it demonstrates that the economic value of AI is determined not simply by the availability of advanced technologies, but by their integration into existing insurance processes.

The development of the Uzbek insurance market provides an initial technological basis for such transformation. According to data from the National Agency of Perspective Projects, approximately 10 million insurance contracts were concluded in Uzbekistan in 2024. Insurance premiums reached 9.8 trillion soums, while insurance payments amounted to 2.2 trillion soums. Total assets of insurance organizations reached 11.8 trillion soums. The scale of these operations generates substantial amounts of information that can potentially be used for analytical modelling and risk management.

One of the most promising applications of AI is “risk assessment and underwriting”. Traditional underwriting relies considerably on standardized indicators and expert assessment. AI can process larger datasets and identify relationships between multiple risk factors, potentially allowing insurers to improve the accuracy of risk classification and develop more individualized insurance products. However, such systems require reliable historical data and mechanisms for monitoring the quality and fairness of algorithmic decisions.

Another important application is “fraud detection”. Machine-learning algorithms can identify unusual patterns in claims and transactions and detect relationships that may remain unnoticed during manual verification. For the Uzbek insurance market, this technology could contribute to reducing unjustified insurance payments and improving the financial stability of insurers.

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AI also has significant potential in “claims settlement”. Digital processing of applications and insurance documents creates the foundation for further automation. Intelligent systems can classify incoming claims, analyze documents, identify potentially fraudulent cases and determine which cases can be processed automatically and which require human assessment. Such an approach could reduce processing time and administrative costs while improving customer experience.

At the same time, the implementation of AI should not be regarded exclusively as a technological issue. The use of intelligent systems introduces additional risks associated with cybersecurity, personal data protection, inaccurate algorithmic outputs and insufficient transparency of automated decisions. Therefore, AI-based insurance solutions should operate within an appropriate regulatory framework and retain human oversight, particularly when automated decisions may significantly affect the rights and financial interests of policyholders.

For Uzbekistan, a gradual model of AI implementation appears to be the most appropriate. The first stage should focus on the development and standardization of digital insurance data. The second should involve the automation of routine insurance operations and analytical processes. The third stage can involve the wider application of predictive analytics, automated underwriting and intelligent risk management.

The effectiveness of this transition will depend on the ability of insurance companies to integrate digital platforms, accumulate high-quality datasets and develop professional competencies in both insurance and data analytics. The national strategy for artificial intelligence development also creates an institutional basis for expanding the use of AI technologies across economic sectors [1]. Thus, the development of AI in insurance should be considered as part of the broader digital transformation of Uzbekistan's financial system.

The analysis confirms that artificial intelligence has considerable potential to increase the efficiency and technological competitiveness of the insurance market in Uzbekistan. The most promising applications include risk assessment, underwriting, fraud detection, claims management and personalization of insurance products.

The introduction of AI should be implemented gradually and adapted to the institutional and economic conditions of the national market. Priority should be given to improving the quality and interoperability of insurance data, strengthening cybersecurity, developing specialists with combined insurance and analytical

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competencies, and establishing requirements for algorithmic transparency and human oversight.

Therefore, the long-term development of AI in Uzbek insurance should move beyond the simple automation of individual operations toward an integrated system of “intelligent risk management”. Such a transformation can contribute to lower operating costs, more accurate risk assessment, improved customer service and greater sustainability of the national insurance market.

REFERENCES

1. Republic of Uzbekistan. “Resolution of the President of the Republic of Uzbekistan No. PP-358 of October 14, 2024 “On Approval of the Strategy for the Development of Artificial Intelligence Technologies until 2030.””
2. Republic of Uzbekistan. “Law “On Insurance Activity,” No. ZRU-730 of November 23, 2021.”
3. Ochilov I. K. “Digital Revolution in the Insurance Sector: Integration of Artificial Intelligence in Uzbekistan and Strategic Achievements and Risks in Global Markets.” “International Multidisciplinary Journal for Research & Development”, 2025, Vol. 12, Issue 4, pp. 406–410.
4. Tangirberdieva G. R. “Digitalisation of the Insurance Sector: Trends and Technologies.” “European Journal of Economics, Finance and Business Development”, 2025, Vol. 3, No. 5, pp. 111–119.
5. Imomov U. “Evolution of Insurance Products: From Traditional Solutions to Digital Innovations.” “Ilg‘or iqtisodiyot va pedagogik texnologiyalar”, 2025, Vol. 2, Issue 4, pp. 288–296.
6. Eling M., Nuessle D., Staubli J. “The Impact of Artificial Intelligence Along the Insurance Value Chain and on the Insurability of Risks.” “The Geneva Papers on Risk and Insurance – Issues and Practice”, 2022, Vol. 47, pp. 205–241.
7. Bhattacharya S., Castignani G., Masello L., Sheehan B. “Artificial Intelligence in Insurance: A Systematic Review of Applications, Challenges and Future Directions.” “Frontiers in Artificial Intelligence”, 2025.