access, leakage, or destruction. The most common methods of personal data protection are as follows: encryption; anonymization and pseudonymization, removing identifying information from data sets to minimize risks; access control, restricting access to data to authorized users only; conducting regular security audits and testing to identify vulnerabilities; and raising employee awareness of the importance of protecting personal data and possible threats. Compliance with cybersecurity and personal data protection regulations and standards helps organizations not only avoid legal consequences, but also increase customer trust.

Ultimately, cybersecurity is not a one-time task, but an ongoing process that requires attention and adaptation to new threats. Protecting personal data is an important part of this process, as the leakage or compromise of such data can lead to serious consequences for individuals and organizations. A comprehensive approach based on technology, training, and compliance is key to effective protection in the face of an ever-changing cyber threat.

Y. Darakhovich
Я.Д. Дорохович
БГЭУ (Минск)
Научный руководитель О.П. Гуминская

ARTIFICIAL INTELLIGENCE IN ECONOMIC DATA ANALYSIS

Искусственный интеллект в анализе данных в экономике

Artificial intelligence (AI) has transformed economic data analysis by enabling the processing of large datasets and providing insights previously unattainable. As of 2023, the global AI market in economics and finance was valued at USD 63 billion and is expected to reach USD 123 billion by 2030, with a 15 % compound annual growth rate (CAGR) [1]. The focus on the U.S. economy in this study arises from its significant global economic impact and the vast amount of data available, which allows for a more comprehensive and reliable analysis using AI models. The primary objective is to evaluate how AI-driven methodologies, specifically in economic forecasting, demand prediction, credit scoring, and fraud detection, can enhance accuracy and efficiency in economic and financial analysis. By leveraging AI, this study aims to showcase improvements in these areas and highlight AI's potential for driving more effective economic policy and business decision-making.

AI is enhancing macroeconomic forecasting by allowing for more precise predictions of key indicators like GDP, inflation, and unemployment. Unlike traditional econometric models that rely on historical data, AI-driven time-series models can adjust to current economic conditions, improving adaptability in volatile markets. Machine learning

techniques such as LSTM and RNNs analyze complex data, enhancing economic trend understanding. For example, LSTM networks reduce inflation forecast errors by 12.5 % compared to traditional ARIMA models [2]. This improvement has made AI models essential for institutions such as central banks and financial agencies, which rely on accurate economic predictions. The European Central Bank (ECB), for instance, achieved a 15 % improvement in GDP growth predictions by using an AI-based model in 2022 [3].

AI's role in financial analysis is growing, particularly in credit scoring. Traditional credit scoring systems are being replaced by AI models that assess vast datasets, including financial history, transactions, and behavioral patterns, resulting in more accurate risk profiles. AI-driven credit scoring systems have reduced default rates by 30 %, according to Equifax [4]. The Federal Reserve’s 2023 study found that AI models can identify high-risk applicants with 95 % accuracy, far surpassing traditional models [5]. AI is also expanding financial access in emerging economies by analyzing alternative data sources like mobile usage to assess creditworthiness.

Fraud detection is another critical area where AI is making a significant impact. Traditional rule-based systems often struggle with evolving fraud tactics, while AI models can detect fraud more efficiently by learning from new data. AI’s ability to analyze transaction patterns in real time allows it to identify fraudulent activity before it affects consumers. Javelin Strategy reports that AI implementation reduced financial industry losses by 25 % in 2023 [6].

The application of AI in economic data analysis offers notable improvements across various domains. For instance, the use of LSTM models in inflation prediction has reduced forecast errors by 12.5 %. Furthermore, AI-driven credit scoring systems have demonstrated an ability to reduce default rates significantly, with high-risk applicants identified at 95% accuracy. These results affirm AI's essential role in advancing economic insights, enabling better resource management, and fostering resilience in volatile markets.

References

1. Artificial Intelligence Market by Offering, Technology, Deployment Mode, Organization Size, End-User Industry, and Region – Global Forecast to 2030 // MarketsandMarkets. – URL: https://www.marketsandmarkets.com/Market-Reports/artificial-intelligence-market-74851580.html (date of access: 01.11.2024).

2. Inflation Prediction: A Comparative Study of ARIMA and LSTM Models Across Different Temporal Resolutions / L. Narayanaa, R. Skandarsinir, Ms.S. Jhansi [et al.] // 3rd International Conference on Innovative Mechanisms for Industry Applications (ICIMIA). – IEEE, 2023. – P. 1390–1395.

3. Using AI to Forecast Demand // McKinsey & Company – URL: https://www.mckinsey.com (date of access: 01.11.2024).