SCIENTIFIC AND PRACTICAL SIGNIFICANCE OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN DETERMINING THE POVERTY LINE

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ABSTRACT: This thesis examines the scientific and practical significance of artificial intelligence (AI) technologies in analyzing socio-economic processes, particularly in determining the poverty line through the integration of media and digital data. The study compares traditional statistical approaches with AI-based models, analyzes the experience of developed countries, and evaluates the prospects for implementing these approaches in Uzbekistan. The results show that artificial intelligence technologies enhance accuracy, timeliness, and adaptability in poverty measurement, thereby contributing to more effective formulation of state social policies.

Keywords: artificial intelligence, poverty line, media data, digital transformation, social policy.

ANNOTATSIYA: Mazkur tezisda sun’iy intellekt (SI) texnologiyalarining ijtimoiy-iqtisodiy jarayonlarni tahlil qilishdagi roli, xususan kambag‘allik chegarasini aniqlashda media va raqamli ma’lumotlar bilan integratsiyalashgan holda qo‘llanishining ilmiy asoslari va amaliy ahamiyati o‘rganilgan. Tadqiqot doirasida an’anaviy statistik yondashuvlar bilan sun’iy intellekt asosidagi modellar qiyosiy tahlil qilinib, rivojlangan mamlakatlar tajribasi hamda ularni O‘zbekiston sharoitida tatbiq etish imkoniyatlari baholandi. Natijalar shuni ko‘rsatadiki, sun’iy intellekt texnologiyalari kambag‘allikni aniqlashda aniqlik, tezkorlik va moslashuvchanlikni oshirib, davlat ijtimoiy siyosatini samarali shakllantirishga xizmat qiladi.

Kalit so‘zlar: sun’iy intellekt, kambag‘allik chegarasi, media ma’lumotlar, raqamli transformatsiya, ijtimoiy siyosat.

АННОТАЦИЯ: В данной диссертации исследуется роль технологий искусственного интеллекта (ИИ) в анализе социально-экономических процессов, в частности, научные основы и практическая значимость их применения при определении границы бедности с интеграцией медиаданных и цифровой информации. В рамках исследования традиционные статистические подходы были сравнительно проанализированы с моделями на основе искусственного интеллекта, а также оценены опыт развитых стран и возможности его применения в условиях Узбекистана. Результаты показывают, что технологии искусственного интеллекта повышают точность, оперативность и гибкость при определении бедности, способствуя эффективному формированию государственной социальной политики.

Ключевые слова: искусственный интеллект, граница бедности, медиаданные, цифровая трансформация, социальная политика.

INTRODUCTION

In the context of globalization and rapid digital transformation, artificial intelligence technologies are increasingly influencing all spheres of society. In particular, the use of modern technologies in analyzing socio-economic processes, assessing living standards, and identifying poverty has become highly relevant. Determining the poverty line is a key indicator in shaping state social policy, and inaccurate measurement may lead to inefficient allocation of public resources.

Traditional approaches to poverty measurement primarily rely on monetary indicators such as income and consumption levels. However, these methods often depend on delayed data and fail to fully capture regional and social disparities. Therefore, developed countries have increasingly adopted innovative approaches based on artificial intelligence, big data, and media sources (World Bank, 2022).

Mass media, social networks, and digital platforms generate vast amounts of data that can be used to assess living standards in real time. The integration of artificial intelligence technologies with media data has emerged as an innovative approach to poverty measurement. The purpose of this paper is to analyze the scientific and practical significance of AI technologies in determining the poverty line and to substantiate their potential application in the context of Uzbekistan.

THEORETICAL FOUNDATIONS OF ARTIFICIAL INTELLIGENCE AND MEDIA DATA INTEGRATION

In recent years, the integration of artificial intelligence and media data has become one of the key directions of socio-economic research. Media-generated data - including social networks, online information platforms, digital services, and electronic payment systems - serve as indirect yet valuable sources of information about population welfare. When processed using AI algorithms, these data provide more accurate insights into poverty levels compared to traditional statistical methods.

The academic literature identifies three main approaches to AI-based poverty assessment: income- and consumption-based models, multidimensional poverty indices, and predictive models based on digital footprints and media data (Atkinson, 2019). Among these, the third approach is particularly relevant in the context of the digital economy.

The main advantage of media data lies in their real-time availability and ability to capture changes in human behavior promptly. Therefore, AI-driven media analysis constitutes an innovative scientific basis for determining the poverty line under modern socio-economic conditions.

METHODS

The study employs general and specific scientific research methods, including theoretical analysis, a systems approach, comparative analysis, and economic-statistical methods. In addition, the potential application of artificial intelligence

techniques such as machine learning, clustering, and predictive modeling was examined.

Data sources include reports from the World Bank, OECD, and UNDP, as well as official statistics and open media data (OECD, 2021; UNDP, 2023). The research analyzes the mechanisms of AI-based poverty measurement in developed countries and evaluates their adaptability to Uzbekistan’s socio-economic conditions.

A key methodological aspect of the study is media data analysis. Indicators such as consumption behavior on social networks, employment-related digital signals, usage of digital payments, and access to online services are processed using AI algorithms. This approach allows for a broader and deeper assessment of poverty compared to traditional methodologies.

RESULTS

The findings indicate that artificial intelligence technologies are widely used in developed countries as effective tools for poverty measurement. In the United States and the European Union, machine learning models are applied to analyze real income levels, consumption expenditures, and regional disparities (World Bank, 2022).

The integration of media and digital data has significantly accelerated poverty assessment and improved the targeting of social assistance programs. For instance, analysis of social media activity and digital service usage enables the identification of vulnerable population groups with higher precision.

In the context of Uzbekistan, the application of artificial intelligence technologies presents new opportunities for improving poverty measurement. Combining official statistical data with media and digital sources can enhance the effectiveness of social policies. The results demonstrate that AI-based approaches increase accuracy and support timely decision-making in poverty reduction strategies.

PRACTICAL IMPACT OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN SOCIAL POLICY

The study reveals that the implementation of artificial intelligence technologies in social policy substantially improves decision-making processes related to poverty reduction. In developed countries, AI-based assessments of social conditions have enhanced the targeting of social assistance programs.

For example, in European Union countries, artificial intelligence is used to forecast poverty risks at the regional level, and social transfers are allocated based on these forecasts (OECD, 2021). This approach has increased the efficiency of public spending and ensured that support reaches genuinely vulnerable groups.

In Uzbekistan, the adoption of AI technologies could significantly modernize social policy. Media and digital data-based assessments of living standards would improve the accuracy of poverty line determination and reduce subjective bias, thereby fostering evidence-based policymaking.

DISCUSSION

The results confirm the scientific and practical significance of artificial intelligence technologies in poverty measurement. AI models integrated with media and digital data overcome many limitations of traditional statistical approaches. However, several challenges remain.

Data quality and reliability represent major concerns, as media and digital data are not always structured or complete. Additionally, issues related to data privacy and information security are of critical importance. Ensuring the protection of personal data and ethical use of AI technologies is essential to maintaining public trust (UNDP, 2023).

In Uzbekistan, additional challenges include limited technological infrastructure and a shortage of qualified specialists. Therefore, the gradual implementation of AI technologies, improvement of the legal framework, and support for scientific research are necessary for successful adoption.

CONCLUSION

In conclusion, artificial intelligence technologies play a crucial role in determining the poverty line and enhancing social policy effectiveness. The integration of AI with media and digital data enables more accurate, timely, and comprehensive poverty assessments. In Uzbekistan, the adoption of these technologies can significantly improve poverty reduction programs and support sustainable socio-economic development. Future research should focus on deepening regional and demographic analyses using AI-based models.

The study demonstrates that AI-based models can capture not only economic indicators such as income and consumption but also multidimensional aspects of poverty, including access to education, healthcare, and social services. This multidimensional perspective provides a more holistic understanding of poverty and helps design interventions that address both material and social well-being.

Furthermore, the experience of developed countries shows that AI technologies can improve the targeting of social programs, reducing misallocation and ensuring that support reaches the most vulnerable populations. Applying these insights to Uzbekistan could significantly enhance the effectiveness of state social programs, especially in regions with diverse socio-economic conditions.

Finally, the findings of this study highlight the potential for further research in several directions. Future studies could focus on developing region-specific AI models, integrating more diverse media data sources, and exploring predictive approaches to anticipate poverty trends. Such research would strengthen evidence-based policymaking and contribute to sustainable socio-economic development in Uzbekistan and beyond.

In summary, the adoption of artificial intelligence technologies, combined with media and digital data integration, represents a significant advancement in the field of poverty measurement and social policy design. By leveraging these tools, governments can implement more precise, adaptive, and impactful interventions to reduce poverty and promote social well-being.

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