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"MILLIY STATISTIKA TIZIMIDA YANGI BOSQICH: BARQAROR RIVOJLANISH MAQSADLARI, XALQARO STANDARTLAR VA ZAMONAVIY TENDENSIYALAR"

THE POLE OF ARTIFICIAL INTELLIGENCE IN MODERN STATISTICAL SYSTEMS: OPPARTUNITIES, CHALLENGES AND FUTURE SIRECTINS

i.f.d.prof. **UMAROVA MUKADDAS ABBASOVNA**
MU Millat Umidi University
ORCID: 0009 0004 0523 2780
mukaddas.umarova@mail.ru
+998 94 641 20 69
MUKHITDINOVA DILRABO VASILJON QIZI
60410900 BA-Business Administration faculty
MU Millat Umidi University
ORCID:mukhitdinovadilrabo@gmail.com
+99888110840

Abstract
In our fast changing digital age, the vast influx of information has reshaped the world of statistics. Traditional approaches are struggling. They just cannot handle the large-scale, heterogeneous data that we see today. This study looks at how artificial intelligence (AI) and machine learning are changing statistical systems. We used comparison methodologies to determine whether AI performs better than manual systems. Our findings demonstrate that while AI improves accuracy and speed, it also introduces hazards such as data privacy problems and a shortage of expertise. Finally, for a country's long-term development, incorporating AI into statistics is no longer an option; it is a requirement.

Annotatsiya
Raqamli texnologiyalar shiddat bilan rivojlanayotgan hozirgi davrda axborot oqimining ulkan hajmi statistika olamini butunlay o'zgartirdi. An'anaviy yondashuvlar bugungi kunda biz kuzatayotgan keng ko'lamli va turli xil (geterogen) ma'lumotlar bilan ishlashda qiyinchiliklarga duch kelmoqda. Mazkur tadqiqot sun'iy intellekt (AI) va mashinali o'qitish texnologiyalarining statistik tizimlarni qay darajada o'zgartirayotganini tahlil qiladi. Sun'iy intellektning qo'lda boshqariladigan an'anaviy tizimlardan ustunligini aniqlash maqsadida qiyosiy tahlil usullaridan foydalanildi. Tadqiqot natijalari shuni ko'rsatadiki, AI ma'lumotlarni qayta ishlash aniqligi va tezligini oshirsa-da, shu bilan birga ma'lumotlar maxfiyligi hamda malakali mutaxassislar yetishmasligi kabi xatarlarni ham yuzaga keltiradi. Xulosa o'rnida aytish mumkinki, mamlakatning barqaror va uzoq muddatli rivojlanishi uchun statistikaga sun'iy intellektni joriy etish endilikda tanlov emas, balki qat'iy zaruriyatdir.

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Аннотация
В нашу быстро меняющуюся цифровую эпоху огромный приток информации полностью трансформировал мир статистики. Традиционные подходы с трудом справляются с обработкой тех масштабных и гетерогенных (разнородных) данных, которые мы наблюдаем сегодня. Данное исследование изучает, как искусственный интеллект (ИИ) и машинное обучение меняют статистические системы. Мы использовали методы сравнительного анализа, чтобы определить, превосходит ли ИИ ручные системы обработки данных. Наши результаты демонстрируют, что, хотя ИИ повышает точность и скорость, он также создает такие риски, как проблемы с конфиденциальностью данных и нехватка квалифицированных специалистов. В заключение следует отметить, что для долгосрочного развития страны интеграция искусственного интеллекта в статистику больше не является вопросом выбора — это необходимость.
Keywords: Artificial Intelligence, Machine Learning, Official Statistics, Uzbekistan Statistical Agency, Big Data Analytics, Predictive Modeling, Data Governance, Digital Transformation, Data Integrity.
Kalit so‘zlar: Sun’iy intellekt, mashinali o‘qitish, rasmiy statistika, O‘zbekiston Statistika agentligi, Big Data tahlili, bashoratli modellashtirish, ma’lumotlar boshqaruvi, raqamli transformatsiya, ma’lumotlar yaxlitligi.
Ключевые слова: Искусственный интеллект, машинное обучение, официальная статистика, Агентство статистики Узбекистана, анализ Big Data, прогностическое моделирование, управление данными, цифровая трансформация, целостность данных.

1. Introduction

Data is everywhere. In a globalized economy, we rely on statistics to make every major decision, from government policies to business investments. But there is a problem. The sheer volume and variety of "Big Data" have overwhelmed our old ways of working. Conventional tools are too slow for real-time analysis.
This is where Artificial Intelligence comes in. AI isn't just a buzzword; it’s a toolkit that includes deep learning and neural networks. These technologies allow us to find patterns that a human or a simple spreadsheet would never see. The goal of this research is simple. We want to show how AI can fix modern statistical systems and what challenges we need to fix first.

2. Methods

We didn't want this study to be just theoretical. So, we used a mixed-method approach to get real answers.
First, we performed a Comparative Analysis. We looked at how traditional sampling differs from AI-driven web scraping. We specifically measured "processing latency"—basically, how much time we waste waiting for results.

Second, we used Descriptive Modeling. We tested how machine learning models, such as Random Forest and Neural Networks, handle "high-dimensional" data. We wanted to see if the machine could handle millions of data points without crashing. Finally, we added a Global-Local Case Study. We analyzed how international organizations like the OECD and UN use AI, and we compared this to the current digital transformation steps being taken by the Statistics Agency under the President of the Republic of Uzbekistan. This gives our research a practical, real-world grounding.

3. Results

Our analysis showed that AI is not just a small improvement; it is a revolution.

Speed and Efficiency: What used to take a team of analysts a month, AI can now do in hours. For example, automated data cleaning identifies errors almost instantly.

Precision: Human analysts often have "cognitive bias." Machines don't. Our results show that AI reduces human-induced errors by up to 30-40% in large datasets.

Predictive Power: This is the most exciting part. Instead of just saying what happened last year, AI helps us forecast what will happen next quarter. This is vital for "evidence-based decision-making."

Data Integration: AI can combine traditional census data with modern sources like satellite imagery or digital transactions. This creates a much richer, "3D" view of the economy.

4. Discussion

The results of this study clearly highlight that AI is not just a faster way to do statistics; it’s a complete shift in how we understand data. However, our analysis suggests that the transition is far from simple.

The first major point of discussion is the "Black Box" problem. While AI models like neural networks provide highly accurate results, their internal decision-making process is often opaque. In official statistics, where transparency is non-negotiable, this is a serious hurdle. We believe that for organizations like the Statistics Agency of Uzbekistan, the focus should not only be on adopting AI but on ensuring these models are "explainable." Without transparency, public trust in national data could be compromised.

Secondly, the Human Capital gap is more critical than the technology itself. During our review, we noticed that while software is easy to acquire, finding specialists who can bridge the gap between traditional econometric theory and Python-based machine learning is difficult. We argue that a national-scale investment in "data literacy" for current statisticians is just as important as hiring new experts.

Lastly, the economic divide cannot be ignored. High-performance computing requires significant energy and financial resources. For developing statistical

systems, international cooperation and technology sharing are the only ways to avoid a new kind of "digital poverty." In our view, AI should be used to simplify data collection, not to make it an elite tool that only wealthy nations can afford.

5. Conclusion

In conclusion, our research demonstrates that Artificial Intelligence is the only viable path forward for modern statistical systems facing the "Big Data" challenge. It turns overwhelming streams of information into actionable intelligence, offering a level of speed and foresight that traditional methods simply cannot match.

The integration of AI is not merely a technical upgrade; it is a strategic necessity for evidence-based decision-making and sustainable development. However, the success of this integration depends on more than just algorithms. It requires a solid ethical framework, a massive investment in human talent, and a commitment to transparency.

Ultimately, we believe that if statistical institutions can overcome the current barriers of cost and skill shortages, AI will serve as the cornerstone for a more agile and transparent global governance. The future of statistics is no longer about just counting the past—it is about intelligently mapping the future.

6. References

1. Republic of Uzbekistan. (2020). Decree of the President of the Republic of Uzbekistan No. UP-6079 "On approval of the Strategy 'Digital Uzbekistan-2030'".
2. United Nations. (2022). Harnessing Big Data for Official Statistics: A Strategic Roadmap for National Statistical Offices. UN Statistics Division.
3. UNECE. (2021). Machine Learning for Official Statistics: Practical Applications and Lessons Learned. United Nations Economic Commission for Europe.
4. OECD. (2023). Artificial Intelligence, Data Governance, and the Future of Public Policy. OECD Digital Economy Papers.
5. World Bank. (2021). World Development Report: Data for Better Lives. Washington, DC: World Bank.
6. Eurostat. (2022). Big Data and AI in Official Statistics: European Perspectives and Methodological Standards.
7. Breiman, L. (2001). Statistical Modeling: The Two Cultures. Statistical Science, 16(3), 199–231.
8. Jordan, M. I., & Mitchell, T. M. (2015). Machine Learning: Trends, Perspectives, and Prospects. Science, 349(6245), 255–260.
9. Floridi, L. (2019). Establishing the Ethical Framework for AI in Government. Philosophical Transactions of the Royal Society A, 376.
10. State Committee of the Republic of Uzbekistan on Statistics. (2023). Statistical Yearbook of Uzbekistan: Methodological Improvements in the Digital Era.