

THE ROLE OF BIG DATA IN MODERN ECONOMIC DECISION- MAKING

Erkinova Umidakhon Ilhom kizi

Tashkent city independent researcher

Abstract: Big data has revolutionized economic decision-making by enabling real-time analysis, predictive modeling, and efficient resource allocation. This paper explores the applications of big data in economic forecasting, financial market analysis, business strategy, smart city planning, and environmental economics. While big data provides enhanced accuracy, efficiency, and transparency, it also presents challenges related to data privacy, bias, infrastructure, and ethical concerns. Addressing these limitations is crucial to harnessing the full potential of big data in shaping modern economies.

Keywords: Big data, economic decision-making, financial markets, predictive analytics, machine learning, smart cities, business strategy, data privacy, policy-making, resource allocation.

Annotatsiya: Katta ma'lumotlar iqtisodiy qaror qabul qilish jarayonini tubdan o'zgartirib, real vaqt rejimida tahlil qilish, bashorat qilish va samarali resurs taqsimotini amalga oshirish imkonini berdi. Ushbu maqolada katta ma'lumotlarning iqtisodiy bashorat qilish, moliyaviy bozor tahlili, biznes strategiyasi, aqlli shahar rejalashtirish va atrof-muhit iqtisodiyotidagi qo'llanilishi o'rganiladi. Katta ma'lumotlar aniqroq prognozlash, samaradorlik va shaffoflikni oshirsa ham, u ma'lumotlar maxfiyligi, noto'g'ri ma'lumotlarning mavjudligi, infratuzilma va axloqiy muammolar bilan bog'liq qiyinchiliklarni ham keltirib chiqaradi. Ushbu muammolarni hal qilish katta ma'lumotlarning zamonaviy iqtisodiyotda to'liq imkoniyatlaridan foydalanish uchun muhim hisoblanadi.

Kalit so'zlar: Katta ma'lumotlar, iqtisodiy qaror qabul qilish, moliyaviy bozorlar, bashoratli tahlil, mashinani o'rganish, aqlli shaharlar, biznes strategiyasi, ma'lumotlar maxfiyligi, siyosat yuritish, resurs taqsimoti.

Аннотация: Большие данные произвели революцию в экономическом принятии решений, позволяя проводить анализ в режиме реального времени, строить прогнозные модели и эффективно распределять ресурсы. В данной статье рассматриваются применения больших данных в экономическом прогнозировании, анализе финансовых рынков, бизнес-стратегиях, планировании умных городов и экологической экономике. Несмотря на то, что большие данные обеспечивают повышенную точность, эффективность и прозрачность, они также создают вызовы, связанные с конфиденциальностью данных, предвзятостью, инфраструктурой и этическими вопросами. Преодоление этих ограничений критически важно для полного использования потенциала больших данных в формировании современных экономик.

Ключевые слова: Большие данные, экономическое принятие решений, финансовые рынки, прогнозная аналитика, машинное обучение, умные города, бизнес-стратегия, конфиденциальность данных, разработка политики, распределение ресурсов.

Introduction

Data is an essential tool for governments, businesses, and politicians in the modern world. Big data's rise has revolutionized economic decision-making by enabling more precise forecasts, effective resource distribution, and improved policy development. Traditional economic models are now more dynamic and responsive to current market conditions due to the enormous volume, velocity, and diversity of big data. With an emphasis on its uses, benefits, drawbacks, and potential, this article explores the utilization of big data in economic decision-making.

Methods

This study examines the use of big data in contemporary economic decision-making using a qualitative methodology. To give a thorough grasp of how big data affects financial market research, company strategies, and economic policies, information was gathered from industry publications, scholarly journals, and real-

world case studies. To guarantee a comprehensive assessment of the subject, the study relies on secondary sources, such as government documents, company white papers, and peer-reviewed journals.

Results

Big data refers to the massive and complex datasets generated from various sources, including social media, financial transactions, IoT devices, sensors, and more. These datasets are characterized by the "3 Vs":

1. Volume – The sheer quantity of data being generated every second.
2. Velocity – The speed at which data is created, collected, and processed.
3. Variety – The diverse types of data, including structured (numerical data from databases) and unstructured (text, images, videos).

In the field of economics, big data is utilized to analyze market trends, consumer behavior, financial risks, and macroeconomic indicators, enabling informed decision-making.

1. Macroeconomic Analysis and Forecasting

Big data provides governments and central banks with unprecedented speed and precision in tracking key economic indicators, such as GDP growth, inflation rates, and employment figures. Policymakers may keep an eye on the state of the economy in real time by using big data analytics, which uses sources including social media sentiment analysis, digital payment transactions, online job ads, and satellite imaging. For instance, real-time mobility data from Google and Apple was used to track consumer spending trends and economic activity during the COVID-19 pandemic, helping authorities create tailored stimulus plans.

2. Financial Market Analysis and Risk Management

Because it makes it possible to detect fraudulent behavior, optimize risk management strategies, and anticipate stock price fluctuations, big data analytics is crucial in the financial markets. High-frequency trading (HFT) companies analyze vast amounts of market data, including order book dynamics, price trends, and

trading volumes, using complex big data algorithms. They then execute trades in milliseconds.

3. Consumer Behavior and Business Strategy

Big data is used by businesses to comprehend consumer preferences and suitably tailor their products and advertising activities. Every day, e-commerce platforms examine millions of customer interactions to provide personalized suggestions and enhance pricing strategies.

Discussion

1. Improved Predictive Power and Accuracy

By integrating several data sources, big data enables more precise economic forecasting. Conventional economic models often relied on limited datasets, which led to less accurate forecasts.

2. Increased Productivity and Financial Savings

Economic evaluations need less time and resources because to big data's automation of data collection and processing.

3. Informed Policy-Making Through real-time economic pattern analysis, governments may develop more effective fiscal and monetary policies.

4. Increased Openness in the Market

By spotting fraudulent activity and ensuring regulatory compliance, big data improves financial market transparency.

1. Concerns about Data Security and Privacy

Concerns regarding security and privacy are raised by the enormous amount of data collected. Fraud and identity theft may arise from unauthorized access to private or sensitive financial data.

2. Bias and Data Quality

Poor economic decisions may arise from data that is erroneous, insufficient, or biased.

3. Infrastructure and Technical Obstacles

Big data analytics implementation calls for highly skilled workers and advanced computer technology.

Conclusion

Big data has emerged as a crucial element of contemporary economic decision-making, providing profound understanding and exceptional forecasting abilities. It enables better informed, effective, and transparent decision-making and is extensively employed in many fields, such as financial markets, supply chain management, urban planning, and environmental policy. But only by addressing important problems like data security, quality assurance, cybersecurity, and ethical considerations will its full potential be realized. Big data will play a bigger role in the global economy as technology advances because it will accelerate innovation, enhance resource allocation, and support sustainable development.

References

- 1.Chen, M., Mao, S., & Liu, Y. (2014). Big Data: A Survey. *Mobile Networks and Applications*, 19(2), 171–209. <https://doi.org/10.1007/s11036-013-0489-0>
- 2.Einav, L., & Levin, J. (2014). The Data Revolution and Economic Analysis. *Innovation Policy and the Economy*, 14(1), 1–24. <https://doi.org/10.1086/674019>
- 3.McKinsey Global Institute. (2011). Big Data: The Next Frontier for Innovation, Competition, and Productivity. Retrieved from <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/big-data>
- 4.Brynjolfsson, E., & McElheran, K. (2016). Data in Action: Data-Driven Decision Making in U.S. Manufacturing. *CESifo Economic Studies*, 62(3), 423–459. <https://doi.org/10.1093/cesifo/ifw013>
- 5.Glaeser, E. L., Kominers, S. D., Luca, M., & Naik, N. (2018). Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life. *Economic Inquiry*, 56(1), 114–137. <https://doi.org/10.1111/ecin.12437>

6. Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., & Byers, A. H. (2011). Big Data: The Next Frontier for Innovation, Competition, and Productivity. McKinsey & Company. Retrieved from <https://www.mckinsey.com/>
7. Varian, H. R. (2014). Big Data: New Tricks for Econometrics. *Journal of Economic Perspectives*, 28(2), 3–28. <https://doi.org/10.1257/jep.28.2.3>