

DEVELOPMENT OF BIG DATA TECHNOLOGIES IN FOREIGN COUNTRIES

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Annotation

This article examines the development and application of Big Data technologies in foreign countries and their impact on economic growth, public administration, and corporate efficiency. The study highlights the extensive use of Big Data in the United States, Europe, and Asia across various sectors, including industry, finance, healthcare, transportation, and smart city systems. The paper also explores how leading global corporations such as Amazon, Google, Siemens, Alibaba, and Samsung leverage Big Data analytics to enhance competitiveness, optimize operations, and create innovative solutions.

Keywords: Big Data, digital transformation, economic efficiency, Industry 4.0, smart cities, data analytics, public administration, corporate management.

Аннотация

В данной статье рассматривается развитие и применение технологий Big Data в зарубежных странах, а также их влияние на экономический рост, государственное управление и корпоративную эффективность. Исследование подчеркивает широкое использование Big Data в США, Европе и Азии в таких сферах, как промышленность, финансы, здравоохранение, транспорт и системы «умного города». В работе анализируется опыт ведущих мировых корпораций — Amazon, Google, Siemens, Alibaba, Samsung — которые используют аналитические инструменты Big Data для повышения конкурентоспособности, оптимизации процессов и разработки инновационных решений.

Ключевые слова: Big Data, цифровая трансформация, экономическая эффективность, Индустрия 4.0, умные города, аналитика данных, государственное управление, корпоративный менеджмент.

Introduction. In recent years, the development of Big Data technologies in foreign countries has played a crucial role in global economic processes and digital transformation. These technologies are widely applied not only in large enterprises and government administration but also in scientific research, healthcare, transportation, energy, and other sectors. International experiences clearly demonstrate the advantages that Big Data technologies bring to the economy and society.

In the United States, Big Data technologies are extensively used in industry, finance, healthcare, and public administration. Large companies such as Amazon, Google, Microsoft, and Facebook utilize massive volumes of data to analyze user behavior, optimize marketing strategies, and create new products and services. Additionally, the U.S. government relies on Big Data technologies to manage the healthcare system, enhance security and tax administration, monitor urban infrastructure, and control environmental issues. In the U.S., Big Data has become a key driver of economic efficiency and innovation.

Methods. In European countries – including the United Kingdom, Germany, and France – Big Data technologies are actively used in the development of Industry 4.0, smart city projects, and digital services. These countries have developed advanced infrastructures for data integration, secure storage, and large-scale analytics. For instance, in Germany, IoT sensors and Big Data analytics optimize manufacturing processes and reduce production costs. At the same time, the European Union ensures the sustainable and secure development of Big Data technologies through comprehensive data protection and privacy regulations.

Results. In Asian countries such as China, Japan, and South Korea, Big Data technologies serve as a major tool for stimulating economic growth and accelerating digital transformation. In China, e-commerce, financial technologies, transportation,

and smart city systems are managed based on Big Data analytics. In Japan and South Korea, large-scale data is used in industrial robotics, transportation infrastructure, and healthcare systems, increasing economic efficiency and fostering innovation.

Additionally, developed countries widely apply Big Data technologies in scientific research, artificial intelligence, machine learning, and social sectors. These technologies not only increase economic efficiency but also contribute to sustainable social development, environmental monitoring, healthcare system improvement, and enhanced security.

Overall, the development of Big Data technologies in foreign countries demonstrates their importance in improving economic efficiency, introducing innovative solutions, accelerating digital transformation, and ensuring sustainable development across various sectors of society. This experience serves as an important reference for other countries, including Uzbekistan, in strategically developing Big Data technologies and increasing economic efficiency.

Corporate Use of Big Data Technologies Abroad. Large corporations in developed countries actively apply Big Data technologies to increase economic efficiency, enhance competitiveness, and develop innovative solutions. These experiences play a major role in creating modern business models, personalizing services, and improving decision-making processes.

U.S. companies such as Amazon, Google, Facebook, and Microsoft use Big Data technologies extensively to analyze user behavior and predict market needs. For example, Amazon analyzes customers' purchase histories, search habits, and viewing behavior to provide personalized product recommendations. This approach increases sales volume, strengthens customer loyalty, and ensures competitive advantage. Google, on the other hand, analyzes huge datasets in its search and advertising systems to deliver targeted advertisements and improve marketing effectiveness.

In Europe, especially in Germany and the United Kingdom, corporations actively apply Big Data technologies within Industry 4.0 initiatives. Siemens collects

and analyzes data from IoT sensors in manufacturing processes to optimize production, detect failures in advance, and increase operational efficiency. In the United Kingdom, companies such as Tesco and Barclays analyze customer data to personalize marketing strategies and improve the efficiency of financial services.

In Asian countries such as China and South Korea, major corporations including Alibaba, Tencent, and Samsung widely utilize Big Data technologies in e-commerce, finance, and technological innovation. Alibaba analyzes user behavior to optimize marketing and sales strategies, manage logistics chains, and reduce costs. Samsung uses massive datasets in production and technological development to enhance competitiveness.

Additionally, foreign corporations apply Big Data technologies in scientific research, healthcare, and transportation. For example, IBM Watson processes large medical datasets to diagnose diseases and develop treatment strategies. UPS analyzes real-time data in logistics to optimize delivery routes and improve operational efficiency.

Overall, international corporate practices clearly show the importance of Big Data technologies in improving economic performance, developing innovative solutions, forecasting customer needs, and ensuring competitive advantage. These experiences serve as a strategic guide for corporations in other countries, including Uzbekistan, in adopting Big Data technologies effectively.

Use of Big Data in Public Administration Abroad. In foreign countries, Big Data technologies are widely employed to improve decision-making quality in public administration, optimize social and economic processes, and accelerate digital transformation. By analyzing large volumes of data in real time, these technologies enable government agencies to make both strategic and operational decisions more effectively. They also play an important role in improving social services, ensuring security, and enhancing economic efficiency.

In the United States, Big Data technologies are actively applied at both the federal and state levels to optimize public administration. For example, in healthcare,

the analysis of electronic medical records and epidemiological data helps predict disease outbreaks and determine preventive measures. In urban management and transportation, data collected by IoT sensors is processed in real time to support urban planning and infrastructure management. In taxation and financial administration, the analysis of transaction data helps detect fraud and irregularities.

In European countries such as the United Kingdom, Germany, and France, Big Data technologies are widely used to digitize public administration. Within smart city initiatives, urban infrastructure, transportation, energy, and environmental monitoring systems are managed based on integrated datasets. Government services are digitized and optimized through data-driven approaches that enable rapid and efficient service delivery.

In Asian countries such as China and South Korea, Big Data technologies serve as strategic tools for modernizing public governance and enhancing economic efficiency. China uses large-scale data to monitor urban and transportation systems, tax and financial operations, healthcare efficiency, and economic forecasting. South Korea applies real-time data analytics in urban infrastructure, transportation, healthcare, and energy systems to achieve efficient governance.

Foreign countries also apply Big Data technologies in security, social services, and environmental monitoring. For example, in public safety systems, data analytics enable the prevention of crime and support rapid response. In social services, the analysis of population needs helps allocate resources effectively and improve service quality.

Overall, the use of Big Data technologies in public administration abroad contributes to better decision-making, optimization of socio-economic processes, and accelerated digital transformation. These experiences serve as valuable guidance for other countries, including Uzbekistan, in effectively applying Big Data technologies in public administration.

Discussion. Impact of International Experience on the Economy. The application of Big Data technologies in foreign countries significantly influences global economic development by enhancing innovation, competitiveness, and efficiency. This

experience serves as a strategic resource for developing economies such as Uzbekistan in implementing economic transformation and creating digital economic systems.

First, international experience contributes to increasing economic efficiency. By analyzing large datasets, companies and government agencies optimize production, transportation, finance, and service delivery. For example, U.S. corporations like Amazon and Google analyze user behavior to personalize marketing strategies, reduce costs, and improve sales efficiency. Big Data technologies thus create opportunities for maximizing outcomes and enhancing resource efficiency.

Second, international experience stimulates innovative development. Countries such as Germany, the United Kingdom, and Japan employ Big Data technologies in Industry 4.0, smart cities, and digital services. These technologies support the creation of new business models, technological solutions, and artificial intelligence systems. As a result, they increase the technological level of the economy and foster the development of innovative products.

Third, international experience strengthens competitiveness. Companies and states that effectively use Big Data technologies can respond quickly to market changes, forecast consumer demand, and improve service quality. This boosts competitive advantage and supports economic stability. For instance, Alibaba and Tencent in China optimize marketing and logistics through extensive data analysis, thus increasing economic efficiency.

Fourth, international experience improves efficiency in public administration. Big Data technologies are used to optimize tax systems, finance, transportation, healthcare, and security in the U.S., Europe, and Asia. This enhances economic stability, strengthens resource utilization, and accelerates digital transformation. Additionally, the international experience creates new economic value and new sources of income. Through data analytics, companies and governments develop new services, products, and strategic solutions, thereby improving investment efficiency and stimulating economic growth.

Conclusion. Overall, the application of Big Data technologies in foreign countries significantly contributes to increasing economic efficiency, stimulating innovation, strengthening competitiveness, and enhancing public-sector effectiveness. As such, this experience provides valuable guidance for other nations – including Uzbekistan – in modernizing their economies and promoting digital transformation.

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