brightness based on pedestrian activity to save energy. In San Francisco, smart trash cans inform when they're full, helping to optimize collection routes and reduce operating costs.

2. Sustainable urban infrastructure. In smart cities, attention is given to energy-efficient buildings and the use of renewable energy sources. This helps reduce the environmental impact of urban areas and makes cities more vitality.

3. Intelligent transportation systems. Transport is one of the most problematic areas of metropolises such as traffic jams and air pollution. Smart technologies offer the introduction of electric vehicles, intelligent traffic management systems and innovative public transport. Integrating these technologies with transportation systems can boost their efficiency and reduce their environmental impact.

4. Urban Digital Twins (UDTw). These are dynamic virtual models of physical urban environments, enable sophisticated risk analysis and strategic planning. The deployment of these twins increases the sustainability of cities against natural disasters and economic disruptions, by that directly strengthening public safety and citizen quality of life.

5. Citizen engagement. Smart city technologies engage residents in city management through various applications, but this may lead to a potential digital divide. While more people will be actively involved in city life, increasing their satisfaction uneven access to technology among different groups could increase social inequality.

The study showed that modern technologies can greatly improve life in cities. They affect the economy, the environment and society itself. Crucially, these technologies are most effective when they form part of an overall city-wide strategy. This approach requires engaging residents in the process and prioritizing investments in infrastructure, including transportation and communication networks as well as fostering cooperation between the public and private sectors.

Achieving a smart city that is both user-friendly and just for all requires resolving data protection issues and overcoming the digital divide to include all segments of the population.

K. A. Bratchenia
К. А. Братченя
БНТУ (Минск)
Научный руководитель Н. П. Буланова

PROSPECTS FOR THE DEVELOPMENT OF THE DIGITAL ECONOMY IN THE CONTEXT OF GLOBAL COMPETITION

Перспективы развития цифровой экономики в условиях глобальной конкуренции

Digitalization is becoming a key factor in economic development and the transformation of entrepreneurial activity. The purpose of this work is to study the features

of the formation and impact of the digital economy, to identify its advantages and risks for business and society. The analysis will identify the main trends and challenges of digital transformation, as well as possible ways to solve them.

Today, digital technologies are significantly enhancing economic efficiency, transforming business models, and opening new opportunities in both domestic and global markets. Even traditional industries are increasingly using big data analysis to optimize processes, improve decision-making, and reduce operational costs.

In Belarus, however, the development of innovative enterprises is still limited by insufficient investment. Public spending on research and development accounts for about 0.6 % of GDP, which is relatively close to the level of some Eastern European countries. At the same time, the share of private investment in R&D remains low – roughly 0.3 % of GDP, compared to 2.0 % in Germany and 1.9 % in the United States. Expanding the venture capital market and encouraging private participation are therefore essential for sustainable technological growth. One promising direction is the development of crowdfunding platforms, supported by an appropriate legislative and regulatory framework to ensure transparency and investor protection [1].

Digitalization of the economy has a number of clear advantages. It contributes to the reduction of production and transaction costs by minimizing intermediary links, accelerates the delivery of goods and services, and increases labor productivity through automation and the use of digital tools. Furthermore, it stimulates the emergence of new professions and forms of employment, which are in growing demand in the modern labor market.

At the same time, the digital economy creates new challenges and risks. Among them are the growth of cybercrime, structural unemployment caused by automation, and social inequality arising from unequal access to digital technologies and education. These problems require active attention from both the government and the private sector to ensure balanced digital development [2].

The process of digitalization has also reshaped the competitive landscape. Reduced market entry barriers have led to a sharp increase in the number of firms offering similar products, which intensifies competition and, in some cases, encourages the use of unfair methods. Online platforms simplify transactions but can also become a space for manipulations – from collusive agreements to falsification of documentation.

Another consequence of digital transformation is the spread of unfair competition. The Internet removes geographic boundaries, enabling companies to sell products far beyond their local markets. At the same time, dishonest competitors may imitate well-known brands, copying design elements, color schemes, or trademarks, thereby misleading consumers. Open access to various databases and registries often facilitates such practices, undermining trust and distorting fair competition principles [3].

Finally, the digital environment ensures rapid dissemination of information – which can be both a benefit and a threat. False or misleading data about companies can quickly spread online, damaging reputations and causing a loss of consumer trust. Restoring credibility after such incidents is a lengthy and resource-intensive process.

Thus, digital transformation brings both opportunities and risks. On one hand, it drives innovation, productivity, and global connectivity; on the other, it requires stronger mechanisms for protecting intellectual property, ensuring cybersecurity, and maintaining fair competition in an increasingly open digital economy.

References

1. *Ашинова, М. К.* Цифровая экономика: позитивные эффекты и вероятные риски / М. К. Ашинова, А. К. Доргушаова // Цифровая экономика: новая реальность : сб. ст. по итогам междунар. науч.-практ. видеоконф., посвящ. 25-летию вуза, Майкоп, 4 дек. 2018 г. / ФГБОУ «Майкоп. гос. технол. ун-т» ; отв. ред. Т. А. Овсянникова. – Майкоп : Кучеренко В. О., 2018. – С. 216–223.

2. *Ашинова, М. К.* Цифровая трансформация отрасли финансовых услуг / М. К. Ашинова, С. К. Чиназирова, Р. В. Костенко // Математические основы разработки и использования машинного интеллекта : сб. науч. ст., посвящ. 70-летию со дня рождения д-ра техн. наук, проф. Лябаха Николая Николаевича / ФГБОУ «Майкоп. гос. технол. ун-т». – Майкоп : Кучеренко В. О., 2018. – С. 4–14.

3. *Чепурнова, Н. М.* Свободная конкуренция в условиях цифровой экономики: механизмы защиты / Н. М. Чепурнова, В. О. Мурызева // Государственная служба. – 2020. – № 2 (124). – URL: https://cyberleninka.ru/article/n/svobodnaya-konkurentsiya-v-usloviyah-tsifrovoy-ekonomiki-mehanizmy-zaschity (дата обращения: 05.11.2025).

K. Budkov
К. С. Будков
БНТУ (Минск)
Научный руководитель С. А. Класси Мутабир

INFORMATION SYSTEMS AND DIGITALIZATION OF LOGISTICS: THE EXPERIENCE OF BELARUS

Информационные системы и цифровизация логистики: опыт Беларуси

The objective of the study is to improve the efficiency of digitalization of the industrial complex of Belarus with the framework of the implementation of the National Strategy until 2040.

Belarus is planning its future, starting with a new National Strategy development plan until 2040. The main goal of economic development will be to build a smarter, more advanced economy by modernizing key industries with new technology, automation and intelligent systems. We are shifting our industrial policy towards high-tech, breakthrough projects and the accelerated development of production. The goal for the next decade is to efficiently improve our economy through automation, intelligent systems and a new