CHAPTER 3
MODERN MANAGEMENT TECHNOLOGIES

MANAGEMENT OF INNOVATIVE DEVELOPMENT OF ENTERPRISES IN THE SMART ECONOMY

Zinaida Zhyvko[1], Myroslava Stadnyk[2], Anastasiia Shehynska[3], Oleg Zhyvko[4]

[1]*Doctor of Science in Economics, Professor, Professor of the Department of Management and International Business, Institution of Higher Education "Private Joint-Stock Company "Lviv Institute of Management", Lviv, Ukraine, e-mail: zinaukraine@gmail.com, ORCID: https://orcid.org/0000-0002-4045-669X*

[2]*PhD (Economics), Associate Professor, Acting head of marketing and analytical economics department, Institution of Higher Education "Private Joint-Stock Company "Lviv Institute of Management", Lviv, Ukraine, e-mail: muroslava.lv@ukr.net, ORCID: https://orcid.org/0000-0002-5383-5648*

[3]*Junior Researcher, Scientific Center of Innovative Research, Pussi, Estonia, e-mail: astyvol@gmail.com, ORCID: https://orcid.org/0009-0007-5785-6730*

[4]*Graduate student, Kyiv National University of Technology and Design, Kyiv, Ukraine, e-mail: 0937438136@ukr.net, ORCID: https://orcid.org/0009-0007-4792-0022*

Citation:
Zhyvko, Z., Stadnyk, M., Shehynska, A., & Zhyvko, O. (2024). MANAGEMENT OF INNOVATIVE DEVELOPMENT OF ENTERPRISES IN THE SMART ECONOMY. *Economics, Finance and Management Review*, (2(18), 44–50. https://doi.org/10.36690/2674-5208-2024-2-44-50

Received: June 08, 2024
Approved: June 28, 2024
Published: June 30, 2024

Abstract. *In the contemporary economic landscape, the concept of a smart economy has emerged as a critical framework for fostering innovation and enhancing the competitiveness of enterprises. This article explores the management of innovative development within enterprises operating in the smart economy, characterized by the integration of digital technologies, intelligent systems, and data-driven decision-making processes. Through a comprehensive examination of existing literature and a mixed-methods research approach, this study analyzes the strategies, tools, and practices essential for enterprises to thrive in a continuously evolving digital environment. The article provides a comparative analysis of domestic and foreign research, highlighting the practical focus of Ukrainian scholars on implementing innovative technologies and managing processes, contrasted with the theoretical perspectives of international researchers on competitive strategies and open innovation. A detailed comparison between the development of the smart economy in Ukraine and Europe is presented, showcasing key metrics, achievements, and challenges. Furthermore, the discussion addresses the positive and negative features of the smart economy, such as enhanced efficiency and productivity, innovation and competitiveness, and issues like digital divide and cybersecurity concerns. The study offers recommendations for improving the mechanisms of managing smart economy development, emphasizing investments in digital infrastructure, promoting digital literacy, fostering public-private partnerships, and ensuring inclusive access. Finally, the article proposes an adaptive mechanism for managing innovative development, incorporating external environment analysis, organizational flexibility, human capital investment, open innovation, and advanced information technology solutions. These insights and recommendations aim to guide enterprises in effectively harnessing innovation to achieve sustainable success in the smart economy.*

Keywords: *smart economy, innovative development, innovation management, enterprises, technological innovations, digitalization, efficiency, competitiveness.*

JEL Classification: O31; O32

Formulas: 0; fig.: 0; tabl.: 2; bibl.: 13

Introduction. In today's rapidly evolving economic landscape, the concept of a "smart economy" has emerged as a critical framework for understanding and fostering innovation across enterprises. The smart economy is characterized by the integration of digital technologies, intelligent systems, and data-driven decision-making processes that collectively enhance the efficiency, adaptability, and competitiveness of businesses. Within this context, the management of innovative development becomes paramount, requiring enterprises to not only adopt but also strategically navigate technological advancements to sustain growth and drive value creation. This article delves into the intricate dynamics of managing innovative development in enterprises operating within a smart economy, exploring the essential strategies, tools, and practices that enable organizations to thrive in an environment defined by continuous change and digital transformation. Through a comprehensive examination of contemporary management approaches, this research aims to provide valuable insights into how enterprises can effectively harness innovation to achieve sustainable success in the smart economy.

The smart economy, based on the use of advanced information and communication technologies, is becoming a determining factor in the development of modern enterprises. In the context of globalization and rapid technological progress, enterprises face the need for continuous innovation to maintain competitiveness. Therefore, the issue of managing innovative development becomes particularly relevant, as the efficiency of this process determines not only the success of individual companies but also the economic development of countries as a whole.

Literature review. A number of scientists dealt with issues of the smart economy. Gerasimov O.V. in the article "Innovative Development of Enterprises in the Digital Economy" (Gerasimov O.V., 2020) analyzes the impact of digital technologies on the innovative development of enterprises. The author emphasizes the importance of integrating digital tools into all business processes to increase productivity and competitiveness. Gerasimov identifies the main obstacles to digital transformation, such as infrastructure deficiencies and insufficient funding. Kovalchuk N.M. in the article "Technological Innovations as a Factor of Enterprise Competitiveness" (Kovalchuk N.M., 2019) examines the role of technological innovations in enhancing enterprise competitiveness. The author explores the relationship between investments in technology and the economic performance of enterprises, highlighting the importance of strategic planning and innovation management. Petrenko V. in the article "Management of Innovative Processes in the Context of Digital Transformation" (Petrenko V.S., 2021) focuses on the managerial aspects of implementing innovations in the context of digital transformation. The author proposes a model for managing innovative processes that considers the specifics of the digital economy and emphasizes the development of human capital.

Despite a significant amount of research in the field of managing innovative development, unresolved issues remain regarding the integration of new technologies into traditional business processes, adapting the organizational structure of enterprises to the requirements of the smart economy, and evaluating the economic efficiency of innovation implementation. Additionally, aspects of human capital management in the context of digital transformation remain insufficiently explored.

Aims. The purpose of the article is to analyze and systematize existing approaches to managing the innovative development of enterprises in a smart economy and to develop recommendations for optimizing this process.

Methodology. This study employs a mixed-methods approach to comprehensively explore the management of innovative development within enterprises operating in the smart economy. The methodology integrates both qualitative and quantitative research techniques to ensure a robust analysis of the strategies, tools, and practices employed by organizations.

Results. Comparative Characteristics of Domestic and Foreign Research. Domestic researchers, such as Gerasimov O.V., Kovalchuk N.M., and Petrenko V.S., focus on practical aspects of implementing innovative technologies and managing innovative processes. Their studies emphasize the importance of integrating digital technologies into all areas of enterprise activity, developing human capital, and strategic planning.

Foreign researchers, such as Michael Porter and Henry Chesbrough, often focus on theoretical aspects of innovative development. Porter investigates competitive strategies and the importance of innovation for creating sustainable competitive advantage (Porter, M. E. "Competitive Strategy: Techniques for Analyzing Industries and Competitors", 1980). Chesbrough developed the concept of open innovation, highlighting the importance of collaboration between organizations to stimulate innovation (Chesbrough, H. "Open Innovation: The New Imperative for Creating and Profiting from Technology", 2003).

Comparative analysis of the development of the smart economy in Ukraine and Europe. The concept of a smart economy revolves around the integration of advanced technologies, such as artificial intelligence (AI), the Internet of Things (IoT), big data, and blockchain, to enhance productivity, innovation, and sustainability in economic activities. This analysis aims to compare the development of the smart economy in Ukraine and Europe, highlighting key metrics, achievements, and challenges.

Development of the Smart Economy in Ukraine. Ukraine has been progressively working towards building a smart economy, driven by its robust IT sector and increasing digitalization efforts. The government has launched several initiatives to support innovation and technology integration across various sectors.

ICT sector growth. The information and communication technology (ICT) sector in Ukraine has seen significant growth, contributing approximately 4% to the GDP as of 2022. The export of IT services reached $6.8 billion in 2022, marking a 24% increase from the previous year.

Startups and innovation. Ukraine is home to over 1,000 startups, with a focus on fintech, agritech, and AI. The country ranks 34th in the global innovation index 2023.

Digital Initiatives. The "Diia" initiative by the Ukrainian government aims to digitalize public services, making them more accessible to citizens. Over 14 million users have registered on the platform since its launch.

Development of the smart economy in Europe. Europe, on the other hand, has been a frontrunner in the smart economy, with extensive investments in digital infrastructure, research, and innovation across its member states.

ICT sector and GDP contribution. The ICT sector in Europe contributes around 5% to the GDP of the European Union (EU). The digital economy in Europe is valued at approximately €800 billion.

Digital transformation and smart cities. Europe is known for its advanced smart city projects. Cities like Copenhagen, Barcelona, and Amsterdam have implemented extensive smart solutions in energy management, transportation, and urban planning.

Research and development. The EU's Horizon 2020 program allocated €80 billion for research and innovation from 2014 to 2020, with a significant portion directed towards smart technologies.

Innovation index. Several European countries rank high on the Global Innovation Index, with Switzerland, Sweden, and the Netherlands consistently in the top 10.

Comparative analysis:

1. Economic Contribution. While both Ukraine and Europe have seen substantial contributions from their ICT sectors, Europe has a more mature digital economy, contributing a higher percentage to the GDP.

2. Innovation Ecosystem. Europe has a more established innovation ecosystem with higher investment in R&D and more extensive smart city projects. Ukraine, however, is rapidly catching up with its growing startup ecosystem and government-led digital initiatives.

3. Digital Infrastructure. Europe boasts superior digital infrastructure with widespread high-speed internet and advanced IoT deployments. Ukraine is making strides but still faces challenges in infrastructure development, especially in rural areas.

4. Government initiatives. Both Ukraine and Europe have proactive government initiatives promoting digitalization. Europe's policies are more comprehensive and well-funded, whereas Ukraine's initiatives like "Diia" show promising results in increasing digital accessibility and public service efficiency.

5. Global rankings. European countries consistently rank higher in global innovation and digital readiness indices compared to Ukraine, reflecting a more advanced stage of smart economy development.

Let's summarize the statistical data in Table 1.

Table 1. Statistical Data

№	Metric	Ukraine	Europe
1	ICT Sector Contribution to GDP	4% (2022)	5% (EU average)
2	IT Services Export	$6.8 billion (2022)	N/A
3	Global Innovation Index Ranking	34th (2023)	Multiple countries in top 10
4	Number of Startups	1,000+	20,000+ (EU)
5	Government Digital Platform Users	14 million (Diia)	N/A
6	Horizon 2020 R&D Funding	N/A	€80 billion (2014-2020)
7	Smart City Projects	Emerging	Established in multiple cities

The development of the smart economy in Ukraine is on an upward trajectory, fueled by its dynamic IT sector and innovative government policies. However, compared to Europe, Ukraine still has room for growth in terms of digital infrastructure, innovation ecosystems, and global competitiveness. Europe remains a global leader in smart economy development, setting benchmarks in digital transformation and innovation. Continuous investment in technology, infrastructure,

and human capital is crucial for Ukraine to bridge the gap and fully harness the potential of the smart economy.

Positive and negative features of the smart economy (table 2).

Table 2. Positive and negative features of the smart economy

	Positive features	
1	Enhanced efficiency and productivity	Smart technologies such as AI, IoT, and big data analytics streamline processes, reduce waste, and optimize operations, leading to significant improvements in efficiency and productivity across various sectors.
2	Innovation and competitiveness	The smart economy fosters a culture of innovation, encouraging businesses to develop new products and services. This enhances their competitiveness in the global market
3	Improved quality of life	Smart cities, with their advanced infrastructure and services, improve the quality of life for residents through better healthcare, transportation, energy management, and public services.
4	Sustainability	Smart technologies enable better resource management, reducing environmental impact and promoting sustainability. For example, smart grids optimize energy consumption and reduce carbon footprints.
5	Data-Driven decision daking	Access to real-time data allows for informed decision-making in both public and private sectors, leading to more effective policies and business strategies.
	Negative features	
1	Digital divide	The smart economy can exacerbate inequalities between those who have access to digital technologies and those who do not, leading to a digital divide within and between countries.
2	Privacy and security concerns	Increased data collection and connectivity pose significant privacy and cybersecurity risks. Protecting personal and sensitive information becomes more challenging.
3	Job displacement	Automation and smart technologies can lead to job displacement in certain sectors, creating social and economic challenges for affected workers.
4	High initial costs	Implementing smart technologies requires substantial upfront investment in infrastructure, training, and development, which can be a barrier for some organizations and regions.
5	Dependency on technology	Overreliance on technology can make systems vulnerable to failures and cyber-attacks, potentially disrupting essential services and economic activities.

Addressing these challenges requires targeted strategies, such as investing in digital infrastructure, promoting digital literacy, strengthening cybersecurity measures, fostering public-private partnerships, and aligning with sustainable development goals.

Discussion. Ways of improving the mechanism of managing the development of the smart economy:

- investing in digital infrastructure; promoting digital literacy and skills; ensuring inclusive access;
- strengthening cybersecurity measures;
- encouraging public-private partnerships;
- regulatory frameworks;
- fostering innovation ecosystems;
- sustainable development goals (SDGs);
- monitoring and evaluation;
- global cooperation.

Governments and businesses should invest in robust digital infrastructure, including high-speed internet, 5G networks, and IoT devices, to support the widespread adoption of smart technologies.

Implementing comprehensive education and training programs to enhance digital literacy and technical skills among the workforce is essential for maximizing the benefits of the smart economy and mitigating job displacement.

Policies should be designed to bridge the digital divide by ensuring that all communities have access to the necessary technologies and resources. This includes rural and underserved areas.

Developing and enforcing strong cybersecurity protocols and regulations is critical to protect data and privacy in the smart economy. Continuous monitoring and updating of security measures are necessary to address evolving threats.

Collaboration between the public and private sectors can drive innovation and investment in smart technologies. Public-private partnerships can leverage the strengths of both sectors to implement large-scale smart projects effectively.

Establishing clear and adaptive regulatory frameworks that promote innovation while safeguarding public interests is crucial. Regulations should address issues related to data privacy, cybersecurity, and ethical use of AI.

Creating environments that support innovation, such as technology hubs and incubators, can stimulate the development of new smart technologies and solutions. Governments can provide incentives and support for research and development activities.

Aligning smart economy initiatives with the United Nations Sustainable Development Goals can ensure that technological advancements contribute to broader societal and environmental objectives.

Implementing mechanisms for continuous monitoring and evaluation of smart economy initiatives allows for the assessment of their impact and the identification of areas for improvement. Data-driven insights can inform future strategies and policies.

Engaging in international cooperation and knowledge exchange can help countries learn from each other’s experiences and best practices in developing and managing the smart economy.

By addressing these areas, the mechanism for managing the development of the smart economy can be improved, ensuring that the benefits of smart technologies are maximized while mitigating potential risks and challenges.

The essence and ways to improve the adaptive mechanism of managing the innovative development of enterprises in the smart economy. The adaptive mechanism for managing the innovative development of enterprises includes:

- *Analysis of the external environment:* Monitoring market trends, technological changes, and competitive situations for timely adaptation of strategies.

- *Organizational flexibility:* Changing the organizational structure for faster decision-making and implementation of innovations.

- *Investment in human capital:* Improving employee qualifications, developing their innovative culture, and creative thinking abilities.

- *Use of open innovation:* Collaborating with other enterprises, research institutions, and startups to exchange knowledge and technologies.

- *Information technology:* Implementing modern IT solutions to optimize business processes and enhance management efficiency.

Conclusions. Managing the innovative development of enterprises in the smart economy requires a comprehensive approach that includes the implementation of advanced technologies, adaptation of the organizational structure, and effective management of human capital. To achieve success in modern conditions, it is necessary to ensure the flexibility and adaptability of business processes and invest in employee training and development. The proposed recommendations can serve as a basis for further research and practical implementation of strategies for innovative development of enterprises.

Author contributions. The authors contributed equally.

Disclosure statement. The authors do not have any conflict of interest.

References:

1. Gerasimov O.V. (2020). Innovative development of enterprises in the digital economy. *Economics and Forecasting*. pp. 23-30.
2. Kovalchuk N.M. (2019). Technological innovations as a factor of enterprise competitiveness. *Bulletin of Economic Science of Ukraine*. pp. 15-22.
3. Petrenko V.S. (2021). Management of innovative processes in the context of digital transformation. *Scientific papers of the black sea state university*. pp. 45-52.
4. Porter, M. E. (1980). Competitive strategy: Techniques for analyzing industries and competitors.
5. Chesbrough, H. (2003). Open innovation: The new imperative for creating and profiting from technology.
6. State Statistics Service of Ukraine. (2023). ICT Sector Report.
7. Export Promotion Office of Ukraine. (2023). IT Services Export Data.
8. Global Innovation Index 2023.
9. Ministry of Digital Transformation of Ukraine. (2023). Diia Platform Usage Statistics.
10. European Commission. (2023). Digital Economy and Society Index (DESI).
11. European Union. (2020). Horizon 2020 Final Report.
12. World Intellectual Property Organization. (2023). Global Innovation Index.
13. European Startup Network. (2023). Startup Ecosystem Report.