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NETWORK ECONOMY AND SUSTAINABLE REGIONAL DEVELOPMENT: INTERCONNECTION AND OPPORTUNITIES

МЕРЕЖЕВА ЕКОНОМІКА ТА СТІЙКИЙ РЕГІОНАЛЬНИЙ РОЗВИТОК: ВЗАЄМОЗВ'ЯЗОК ТА МОЖЛИВОСТІ

Abstract. The modern economy is currently transitioning to a network-based mode of functioning, which is manifested through the active use of digital platforms, the expansion of connections between businesses, the integration of business processes into global value chains, the development of various associations, and the strengthening of cooperation between regions. Thus, the article examines the features of the network economy's functioning and its impact on sustainable regional development through the lens of interconnections and opportunities. Within the study, attention is drawn to the fact that the network economy model remains open to global economic processes and international cooperation. This provides grounds for considering it as a form of economic relations with a high level of interconnectedness between businesses, consumers, government structures, and other market participants. Attention is drawn to the fact that the key characteristics and factors determining the development of the network economy are digitalization, networking, globalization, decentralization, and resource sharing. It has been proven that digitalization involves the active use of online platforms, cloud technologies, blockchain, and big data, which optimize core business processes. It has been stated that networking is the expansion of horizontal and vertical connections between economic entities, enhancing their flexibility and facilitating rapid adaptation to changes. Attention is drawn to the fact that globalization is the integration of local markets into international value chains, enabling the swift exchange of resources, knowledge, and innovations. It has been stated that decentralization reduces the influence of traditional hierarchical structures in business due to the development of self-regulating networks. It has been proven that resource sharing is the expansion of the sharing economy, which is based on digital platforms such as Uber, Airbnb, BlaBlaCar, and others. The study results emphasize that the network economy is a key direction in the transformation of modern economic management, ensuring effective interaction between economic agents, the integration of innovative technologies, and increased adaptability of regional economic systems to the challenges of the global environment.

Keywords: network economy model, global environment, global value chains, socio-economic relations, social reproduction.

Анотація. Сучасна економіка переходить до мережевого характеру функціонування, що проявляється через активне використання цифрових платформ, розширення зв'язків між бізнесами, інтеграцію бізнес-процесів у глобальні ланцюги створення вартості, розвиток різноманітних об'єднань і посилення співпраці між регіонами. Відтак, метою статті є вивчення особливостей функціонування мережевої економіки та її впливу на стійкий регіональний розвиток через призму взаємозв'язків та можливостей. У межах дослідження звернено увагу на те, що мережева модель економіки залишається відкритою до глобальних економічних процесів і міжнародної співпраці. Це дає підстави розглядати її як форму економічних відносин з високим рівнем взаємопов'язаності між бізнесом, споживачами, урядовими структурами та іншими учасниками ринку. Звернено увагу, що основними характеристиками та факторами, які визначають розвиток мережевої економіки, є цифровізація, мережація, глобалізація, децентралізація та спільне використання ресурсів. Доведено, що цифровізація – це активне використання онлайн-платформ, хмарних технологій, блокчейну та великих даних, що оптимізує основні бізнес-процеси. Констатовано, що мережація – це розширення горизонтальних і вертикальних зв'язків між економічними суб'єктами, що підвищує їхню гнучкість і сприяє швидкій адаптації до змін. Звернено увагу, що глобалізація – це інтеграція локальних ринків у міжнародні ланцюги створення вартості, що забезпечує швидкий обмін ресурсами, знаннями та інноваціями. Констатовано, що децентралізація – це зменшення впливу традиційних ієрархічних структур у бізнесі завдяки розвитку саморегульованих мереж. Доведено, що спільне використання ресурсів – це поширення економіки спільного доступу, що базується на цифрових платформах (Uber, Airbnb, BlaBlaCar тощо). За результатами дослідження акцентовано увагу на тому, що мережева економіка є ключовим напрямом трансформації сучасного господарювання, забезпечуючи ефективну взаємодію економічних агентів, інтеграцію інноваційних технологій та підвищення адаптивності регіональних економічних систем до викликів глобального середовища.

Ключові слова: мережева модель економіки, глобальне середовище, глобальні ланцюги створення вартості, соціально-економічних відносин, суспільного відтворення.

Problem statement. The modern economy is currently transitioning to a network-based mode of operation, which is manifested through the active use of digital platforms, the expansion of connections between businesses, the integration of business processes into global value chains, the development of various associations, and the strengthening of cooperation between regions. For example, the development of digital platforms such as Amazon, Alibaba, or Uber promotes the networking of businesses by providing access to global markets and simplifying logistical processes. In the industrial sector, production clusters like the “Bavarian Automotive Cluster” or IT clusters in Ukraine enable companies to exchange knowledge, jointly develop innovations, and use resources more efficiently. Another example is the expansion of horizontal connections between small and medium-sized enterprises through B2B cooperation platforms, which facilitate their entry into international markets. The integration of business processes into global value chains is also evident in outsourcing models, where technology companies transfer part of their processes to countries with competitive advantages, such as Ukraine in the IT sector. Thus, the network economy creates new interconnections and opportunities for regional development, promoting the integration of diverse economic systems.

At the same time, ensuring the sustainable development of regions becomes a critical task, requiring consideration of economic, social, and environmental aspects.

Analysis of recent research and publications. The issue of studying the phenomenon of the “network” economy and the methodological features of forming a network approach as a specific form of economic activity has been explored by Kizym M. O., Haustova V. Y., Trushkina N. V. [2], Topishko N. P., Topishko I. I., and Galetskaya T. I. [4]. However, the issue of the peculiarities of the functioning of the network economy and its impact on sustainable regional development, through the lens of interconnections and opportunities, has not been sufficiently covered in the scientific literature.

The purpose of the article. The aim of the article is to examine the features of the functioning of the network economy and its impact on sustainable regional

development through the lens of interconnections and opportunities.

Presentation of the main material. Within the article, the author emphasizes that the network economy is gradually becoming the basic model of regional economic development. To specify the outlined term, scholars apply different approaches, defining it as: a new form of economic order that replaces hierarchical forms of service [1]; a form of socio-economic organization in the global coordinates of economic relations in societies [4]; a specific form of organizing the economic system of a country, characterized by a high level of informatization of socio-economic relations and social reproduction, stimulated by state support [5].

At the same time, from the given definitions, it is clear that it is a form of economic relations or a way of organization and management based on the unification of businesses through the use of digital technologies, decentralized connections, and resource sharing.

It should be noted that although precise statistics on the number of network associations at the regional level are limited and depend on the country and methodology of counting, scholars are increasingly paying attention to their growing number in different countries. According to the European Cluster Panorama Report 2024, the number of regional production-logistics, innovation-technological, and financial-investment associations in 27 European Union countries has increased significantly over the last 15 years, especially in the new member states, as clearly shown in the data in Table 1.

Moreover, the World Economic Forum reported in January 2025 the emergence of over 100 new types of network associations in various regions of Australia, Brazil, Colombia, India, the Netherlands, Saudi Arabia, Sweden, Thailand, and the United Kingdom during 2024. These include socio-economic and cooperative associations, as well as economic cooperation networks (Table 2). This highlights the global trend toward the growth of networked business associations.

Indeed, the network economy is becoming an increasingly widespread model of regional economic development, contributing to the enhancement of

Table 1 – Number of regional production-logistics, innovation-technological, and financial-investment associations in 27 European Union Countries, 2008–2023

Type of regional association	Subtype of regional association	General specificity of formation	Number of regional associations (Units)	
			2008	2023
Production-Logistics	Industrial cluster	Association of enterprises within the same industry	105	530
	Supply chains	Association of manufacturers, suppliers, and logistics companies	130	420
	Regional agro-industrial networks	Association of farms, logistics operators, and processors	120	660
Innovation-Technological	Scientific-technological parks	Association of businesses, universities, and research centers	68	330
	Startup ecosystems	Association of incubators, accelerators, and investors to support innovative projects	180	1090
	Associations based on digital platforms	Technological associations around large platforms	67	1790
Financial-Investment	Financial alliances	Association of banks, insurance companies, and investors to develop financial technologies	130	450
	Crowdfunding platforms	Associations for attracting investments through decentralized financial models	30	330

Source: Data from the European Cluster Panorama Report

Table 2 – Number of new types of regional associations according to the world economic forum, as of January 2024, Units

Type of regional association	Subtype of regional association	General specificity of formation	Number of regional associations
Socio-Economic and Cooperative	Shared economy communities	Business associations for exchanging services and resources, including shared use of production facilities and equipment, commercial spaces, transport, and technological platforms	30
	Virtual cooperative associations	Virtual associations of small producers within a shared brand or platform	15
	Creative economy clusters	Associations for exchanging cultural and creative ideas and their commercialization	35
Economic Cooperation	Knowledge associations	Associations of universities, analytical centers, and international organizations	25

Source: Data from the World Economic Forum, January 2025

competitiveness and innovative potential of regions. At the same time, it is important to note that despite its regional orientation, the network model remains open to global economic processes and international cooperation.

This allows the network economy to be characterized as a form of economic management with a high level of interconnection between businesses, consumers, government structures, and other market participants, with an increase in opportunities formed through [2–3; 6–7]: digitalization; networking; globalization; decentralization; resource sharing.

Indeed, digitalization is a key factor in the transformation of regional development, aimed at its sustainability, efficiency, and innovativeness. In fact, the role of digital technologies in the regional development of the network economy is highly diverse, including: online platforms as a catalyst for economic growth, cloud technologies as a catalyst for optimizing business processes, blockchain technologies as a catalyst for enhancing transparency and security in economic relations, and big data as a catalyst for the predictability and rationale of managerial decisions [5]. The general characteristics of the role of digitalization in the transformation of regional development are outlined in Table 3.

Overall, digitalization is a key driver of sustainable regional development, as it ensures flexibility, adaptability, and efficient resource utilization. The impact of each of the outlined catalysts is highly specific. For example, in regional logistics networks of the agricultural and manufacturing sectors, blockchain technology can provide transparency in supply chains, while in the field of innovation and technological development, it creates

opportunities for resource and information exchange without intermediaries [4].

Networking is a key factor in the transformation of regional development, through active interaction between businesses and other economic agents. It allows for the exchange of knowledge, resources, and technologies. This, in turn, ensures flexibility and the ability to quickly adapt to changes, which is a crucial factor for the resilience of the economy at the regional level.

Horizontal connections encompass relationships between businesses within the same industry or those operating in related sectors. These connections provide opportunities for participants to exchange experiences, resources, and practices, thereby increasing their competitiveness. Specifically, the creation of specialized clusters – business associations within a particular sector (such as IT clusters or agrotechnology clusters [2]) – allows participants to collaborate on innovations, jointly solve problems, and enhance overall efficiency. As a result, such associations not only lead to cost savings but also foster increased production volumes and technological development.

For regional development, horizontal connections contribute to the growth of small and medium-sized businesses, allowing them to join larger business networks and gain access to new technologies and markets. This, in turn, stimulates economic growth and the creation of new jobs at the local level.

Vertical connections involve interactions between different levels of supply chains, where businesses at lower levels (e.g., raw material or component suppliers [4]) integrate with manufacturers and intermediaries who deliver

Table 3 – Characteristics of the Role of Digitalization in the Transformation of Regional Development

Catalysts of Regional Development	Specifics of Forming Connections and Opportunities
Online platforms, such as marketplaces (Amazon, Alibaba), financial services (PayPal, Revolut), and remote work platforms (Upwork, Toptal)	Enables regional businesses to scale their operations and access global markets. Contributes to the creation of new jobs and the development of small and medium-sized enterprises, which are the foundation of a sustainable regional econ
Use of cloud services (Google Cloud, AWS, Microsoft Azure)	Allows businesses to reduce IT infrastructure costs, ensure secure storage, and enable fast data processing. Enables efficient team collaboration, interaction with suppliers and consumers, and rapid response to changes in demand or market conditions.
Blockchain technology applied in finance, logistics, trade, and public service management	Enables the creation of decentralized and secure transactions, reducing corruption, simplifying bureaucratic processes, and increasing trust between businesses and consumers.
Big Data analytics	Helps regions effectively utilize resources, forecast economic trends, optimize transportation systems, and improve the quality of municipal services.

Source: compiled based on [2; 5]

finished products. For example, in the agribusiness sector, vertical connections can be observed with local raw material suppliers working with large food processing companies. Farmers growing grains, for instance, can supply their products to large agriprocessing companies, which then produce finished products like flour, cereals, or animal feed. This vertical integration provides farmers with stable supply contracts, ensuring income growth and stability, while agriprocessing companies can optimize raw material supply, reducing transportation and storage costs [2; 7].

This process allows regional manufacturers not only to reduce costs but also to enhance production efficiency, gain access to new technologies, and improve the quality of their products. Vertical connections are especially important for the development of infrastructure and large industrial projects. For instance, the participation of small enterprises in global supply chains ensures economic stability in the region by creating new investment and development opportunities.

Globalization is a key factor in regional development transformation, acting as a catalyst for the integration of local markets into international value chains through the rapid exchange of resources, technologies, knowledge, and innovations, as well as access to international orders, investments, and infrastructure development. The overall characteristics of the role of globalization in regional development transformation are presented in Table 4.

It should be noted that the scope of the interconnections and opportunities provided by globalization is quite broad [7]. For example, enterprises in agricultural regions can use the latest technologies for land processing, product storage, and automation of production processes thanks to close cooperation with international technology providers. Companies operating in the information technology sector can exchange cutting-edge software, artificial intelligence, and automation developments with international partners, which enhances the efficiency of their business processes and enables them to create innovative products for new markets. However, regardless of the specifics, the combined action of the outlined catalysts allows regions not only to adapt to global trends but also to actively leverage opportunities for growth and innovation.

Decentralization is a key factor in sustainable regional development, as it allows regions to independently develop their own economic strategies without waiting for centralized decisions. This enhances their competitiveness and innovation potential by promoting the development of self-regulated business networks, expanding the powers of regional communities, local businesses, and innovation clusters in economic decision-making, as well as actively utilizing technologies that ensure transparency, autonomy, and effective resource management.

Indeed, the traditional business model, based on rigid hierarchies, is gradually being replaced by decentralized business ecosystems, where businesses and regional communities interact within horizontal structures [6]. For example, sharing economy platforms (such as Airbnb, Uber, and local platforms for selling agricultural products) enable small businesses and individuals to directly interact with consumers without intermediaries.

Moreover, while in traditional economic models most decisions are made centrally, decentralization expands the powers of regional communities, local businesses, and innovation clusters in making economic decisions. A striking example of this is the technology cluster in the city of Kraków (Poland), which has become one of the leading IT and startup ecosystems in Central Europe. Thanks to a decentralized approach to economic development, local authorities created favorable conditions for the establishment of startups, and the key role in the ecosystem's growth was played by the entrepreneurs themselves, universities, and private investors.

One of the main drivers of decentralization is digital technologies, including blockchain, smart contracts, and decentralized financial systems (DeFi).

These technologies enable economic agents to conduct joint transactions, verify data authenticity, and manage assets without the need for centralized intermediaries. For instance, the use of blockchain technology in agriculture allows farmers to directly enter into smart contracts with suppliers and buyers, ensuring a fair distribution of profits. Similarly, in the real estate sector, blockchain can simplify the buying and selling processes, reducing bureaucratic barriers and intermediary costs.

Table 4 – Characteristics of the Role of Globalization in the Transformation of Regional Development

Catalyst of Regional Development	Specifics of Forming Connections and Opportunities	Manifestation of connections and opportunities
Rapid exchange of resources and technologies	Globalization allows regional businesses to integrate into international supply chains, significantly improving their operational efficiency.	Regional businesses gain access to new technologies, advanced innovations, and resources that would not be available within the local market alone.
Exchange of knowledge and innovations	International value chains promote the continuous exchange of knowledge and innovations.	Regional businesses integrated into global networks have access to new ideas, technologies, and management practices, which promotes their rapid development.
Access to international markets	Globalization allows regional businesses to access international markets, increase sales, and attract investments. This fosters the development of regional enterprises and stimulates economic growth.	Regional businesses can sell their products abroad, reducing dependence on local demand and increasing business stability.
Investments and infrastructure development	Globalization also contributes to the inflow of foreign investments, which is a crucial factor for the development of regional infrastructure. Investors interested in developing local markets provide the necessary resources to improve infrastructure.	Opportunities are created for the development of small and medium regional businesses. Regional businesses become more efficient and competitive in the global market.

Source: compiled based on [1; 6–7]

Sharing economy is an important aspect of the networked economy that contributes to sustainable regional development. Within this model, the role of sharing is defined by the fact that participants in the associations can provide or receive services without the need to own the resources themselves. This leads to optimized resource usage, reduced costs, improved service availability, increased inclusivity and equality, reduced environmental footprint, the development of local communities, and support for regional economic development. The general characteristics of the role of the sharing economy in regional development transformation are summarized in Table 5.

For example, many small regional producers and startups may have limited access to expensive production facilities [6–7]. Instead of purchasing expensive equipment or renting large production spaces, they can use shared manufacturing spaces or equipment through platforms like Maker's Row or Fablabs. Thus, in general, the sharing economy actively contributes to the sustainable development of regions by ensuring more efficient use of resources, supporting business growth, improving service accessibility, and reducing environmental impact.

Conclusions. The results of the research indicate that the network economy is increasingly spreading as an effective model for regional economic development, fostering the growth of competitiveness and innovation potential in regions. Despite its regional focus, the network model remains open to global economic processes and international cooperation. This provides grounds to consider it as a form of economic relations with a high

level of interconnection between businesses, consumers, government structures, and other market participants.

The main characteristics and factors that define the development of the network economy are:

- Digitalization – the active use of online platforms, cloud technologies, blockchain, and big data, which optimize core business processes.
- Networking – the expansion of horizontal and vertical connections between economic agents, enhancing their flexibility and facilitating rapid adaptation to changes.
- Globalization – the integration of local markets into international value creation chains, enabling the rapid exchange of resources, knowledge, and innovations.
- Decentralization – the reduction of the influence of traditional hierarchical structures in business through the development of self-regulated networks.
- Shared resource utilization – the spread of the sharing economy, based on digital platforms (Uber, Airbnb, BlaBlaCar, etc.).

Thus, the network economy is a key direction in the transformation of modern economic management, ensuring effective interaction between economic agents, the integration of innovative technologies, and increasing the adaptability of regional economic systems to the challenges of the global environment.

The prospects for further research lie in a deeper analysis of the mechanisms of interaction among participants in the network economy, assessing its impact on sustainable regional development, and developing strategies for business adaptation to the new challenges of digital transformation.

Table 5 – Characteristics of the Role of the Sharing Economy in Regional Development Transformation

Catalysts of regional development	Specifics of the Formation of Relationships and opportunities:	Manifestation of interconnections and opportunities
Optimization of resource use	Sharing economy platforms allow maximizing the use of available resources.	Regional businesses can reduce the need for creating new production capacities or purchasing new goods.
Reduction of costs and accessibility of services	Thanks to the sharing economy, people can access goods and services without the need to purchase them.	Regional businesses can significantly lower costs at the household and small business levels.
Enhancement of inclusivity and equality	The sharing economy provides an opportunity for more people to participate in economic life.	Regional businesses can provide services without large investments in property or infrastructure.
Reduction of ecological footprint	Sharing economy platforms contribute to the development of local businesses and the improvement of the regional economy.	Regional businesses can establish interactions with local entrepreneurs and consumers.

Source: compiled based on [3; 6]

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