

DOI <https://doi.org/10.30525/978-9934-26-459-7-94>

THEORETICAL FOUNDATIONS OF THE CONCEPT OF SMART ECONOMY IN THE GLOBAL SPACE

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Abstract

The evolving concept of the smart economy is delved into, characterized by a reliance on digital technologies, big data, and innovation in economic activities. The smart economy is discussed in the context of digital transformation influenced by Industry 4.0 and 5.0, with an emphasis on the integration of Information and Communication Technologies (ICT), the Internet of Things (IoT), and other innovative technologies to foster more efficient, sustainable, and intelligent economic systems. Various scientific approaches to defining the smart economy are reviewed, including urbanistic, spatial, digital transformation, sustainable development, and ecosystem-based perspectives, highlighting the diversity of interpretations among scholars. The interconnections between smart cities, smart rural areas, and the global smart economy are explored, contributing to the understanding of digital transformation's impact on economic paradigms and the importance of an integral approach for sustainable development.

Key words: *smart economy, digital transformation, industry 4.0 and 5.0, sustainable development, green economy*

The concept of the smart economy considers a relatively new state of the economic system characterized by the transformation of established societal relationships, the emergence of new business models, and social connections through digital solutions. The study of relationships between economic agents in the smart economy, in the context of digital transformation based on Industry 4.0 and 5.0, is crucial for understanding contemporary economic dynamics.

This topic was reflected in the works of many Ukrainian and foreign scientists. Let's note such as D. Y. Artyomov, T. Bosona, J. Bruneckiene, V. Voronkova, L.P. Galperina, G. Gebresenbet, A.T. Girenko, B. Dahiya, X. Zhang, Z. Zhang, V. Nikitenko, I.S. Kalenyuk, D. Colbrey, T. M. Vinod

Kumar, D. Lupu, V.P. Mazurenko, N. Mandaluniz, L.G. Makha, N. Metelenko, A. Nasirahmadi, D. Patterson, H. Persson, J. Sinkiene, O. Sunstsova, I. M. Uninets, M. Tsai, Z. Zhao, B. Fischer and others. Concurrently, the rapid transformations within the global economic landscape necessitate the timely update of research in this direction.

A review of the literature reveals that scholars and practitioners interpret the term "smart economy" differently, depending on the chosen scientific approach. Specifically, several primary scientific approaches to the formulation of the smart economy concept can be distinguished:

- Urbanistic (concept of smart cities) [1; 2];
- Spatial (concept of smart rural areas and smart villages, smart regions within a country) [3];
- Digital transformation (network economy, innovative economy, learning economy, and knowledge economy, smart business) [4; 5; 6];
- Sustainable development (circular economy, green economy) [7; 8];
- Ecosystem-based [9; 10].

Many scholars advocate for an integral approach. For instance, J. Bruneckiene and J. Sinkiene have identified the following general characteristics of the smart economy: innovation and the knowledge economy; the learning economy; the digital economy; the competitive economy; the green economy; the network economy; and the socially responsible economy [3]. O. Sunstsova proposes several dimensions (technological, economic, and organizational) [6]. I. Uninets distinguishes three main components of the smart economy from the perspective of types of economic growth: intelligent; stable and sustainable; intensive [10]. The scientific approaches are inherently integral in terms of sustainable development [7] and ecosystem-based, as demonstrated in the works of I. Kalenyuk and I. Uninets [9].

Irrespective of the chosen research approach, a common characteristic of the smart economy concept is its affiliation with an economic paradigm that is marked by an increased dependency on digital technologies, big data, and innovations in economic activities. This concept envisages the integration of ICT (Information and Communication Technologies), IoT (Internet of Things), and other innovative technologies based on Industry 4.0 and 5.0 frameworks to create more efficient, sustainable, and intelligent economic systems.

In this context, Y. Ostropolska notes that the development of the smart economy is not limited solely to rapid economic growth. For sustainable growth, an appropriate development strategy and effective state policy are required, which would leverage the opportunities presented by the new phase in the development of the global economy, termed the smart economy.

Within this framework, the traditional approach to restructuring the economy and institutional reforms, while important, focuses on eliminating existing inefficiencies and regulatory barriers. It often overlooks the potential of new technologies and digital transformation as components of the smart economy [11].

Thematic studies of economies or sectors that have undergone significant digital transformations can provide specific examples of "smart" economic activity characterized by a dynamic interplay of causes and effects. For instance, Vinoda Kumar and B. Dahiya highlight the potential of smart city management technologies to foster entrepreneurial industrial cultures. Conversely, the implementation of smart city technologies acts as a catalyst for smart economic development, as demonstrated by case studies: "Ottawa, St. Louis, Stuttgart, Bologna, Cape Town, Nairobi, Dakar, Lagos, New Delhi, Varanasi, Vijayawada, Kozhikode, Hong Kong" [2]. As the authors of this study note: "Smart cities and smart economies are interconnected by causal relationships" [2, p. XI]. Specifically, we concur with the authors' reasoning that, on one hand, "there is a greater likelihood that smart city management technology will be invented, tested, and adopted in a city with an entrepreneurial industrial culture. On the other hand, smart city technology can facilitate smart economic development" [2, p. XI].

A. Yudono, D. Satria, A. Erlando emphasize that the smart economy constitutes a form of sustainable economy and can be characterized as a "green economy" or "green industry" [12]. The authors cite the example of Ireland, where the "Foundations for Sustainable Economic Recovery," adopted by the government in 2008, stated that a significant aspect of the smart economy is the greening of the economy and the development of green entrepreneurship. In this document, the smart economy and the green economy are equated: "the smart economy is a green economy as it recognizes the interconnected issues of climate change and energy security" ([13] as cited in [12]).

Therefore, in accordance with the imperative of digital transformation, the concept of the smart economy is in constant evolution, as technological advancements alter the interrelations within its component structure. This necessitates a dynamic approach to the development of the smart economy concept in the global arena.

A pertinent topic for research into smart economic development in the global space today includes the interrelationships between smart city technology and smart economies; between smart villages and smart rural areas and the smart economy; and the role of smart megacities in shaping the global smart economy.

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