

## DIGITALIZATION AND INNOVATIZATION OF ECONOMIC SPACE

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**Abstract:** The article analyzes the implementation of the processes of digitalization and innovation of the economic space in the domestic and foreign economies, as well as potential of gaining advantages provided by digitalization. Spatial economics is currently one of the main directions in the development of economic thought. The reason for interest in the research is changing the scale of economic activity. Even though digitalization processes already have a tangible impact on the economic space of both the global economy and its regional subspaces integrated into the global one, the world is only at the very beginning of transformations, which, in turn, determines the relevance of research in this field. The quantitative and qualitative indicators of digitalization and innovation are considered. Methods of general economic theory are applied, in particular, market players' behavior patterns and implications. The tendencies that determine the prospects for digitalization and innovatization of the Russian and global economic space are identified. In this context, the phenomenon of isolated markets convergence, as well as clustering previously homogeneous markets is described. It was determined how the processes of digitalization and innovatization of the economic space are interconnected and indicate the directions of using these interconnections in order to innovate the national economy. The article outlines most promising areas of digitalization concerning Russian requests for the development of an innovative system. The conceptual model of interconnection of digitalization and innovatization processes in the framework of reformatting the economic space.

**Keywords:** Digitalization, Economic space, Foreign experience, Innovation, National economy.

### 1 Introduction

In the context of the new geo-economic realities, in which the modern economic space is being formed, it is critically important for each state to clearly define the parameters of the new spatial and economic development policy, otherwise, in the near future, it may face the problem of appearing among the non-competitive participants in international relations with a dependent economy and limited sovereignty.

The problems of studying the essence of space, in general and economic in particular, are currently one of the most difficult and unsolved in both the scientific and expert communities, and, therefore, they deserve special attention. This is due to the search for new productive forces, the need to involve the elements of space into active economic activity, adaptation to the new world model of economic development. In this regard, at present, it is relevant to revise and change the theoretical and methodological foundations of the allocation of productive forces. This process and its result are less and less associated with the concept of "territory". At the same time, the attention of scientists is attracted by the more capacious category "space".

Thus, from the point of view of modern economic science, the attraction of spatial aspects to the study of development processes can provide a more detailed understanding of the meaning of these processes. In addition, the scientific and theoretical significance of the study is confirmed by the fact that, at the moment, there is no single and consistent idea of the conceptual foundations of the spatial aspect in the economy; the conceptual and categorical apparatus has not been fully formed; the methodology for modeling spatial economic processes requires a separate revision and clarification, especially in the context of digitalization.

Spatial economics is currently one of the main directions in the development of economic thought. The reason for such a keen interest of the scientific community is that changing the scale of economic activity, all other things being equal, can have a direct impact on the economic efficiency of all participants. The

scaling of economic activity also has a similar effect on the performance indicators of an individual subject of economic relations [5, 13, 34, 35].

At the same time, the situation observed both in the Russian and in the global economy allows talking about the predominance of centrifugal forces in them, leading to a decrease in the scale of economic entities and the loss of some production factors from the system of economic relations [30]. An example of relevant global phenomena is the introduction of US sanctions against the Chinese corporation Huawei, which reduces Google's sales and the strength of US-Chinese relations in general. This event is the next link in the chain of conflicts shaking the global economy in the last decade [32].

At present, it is obvious that there is a need to shift the emphasis towards the spatial aspect of the regional economy. In its most general form, the use of the spatiality of regional development will mean the identification of the real territorial contour of the country's development, including the nodes of advanced growth and the connections between them, which are manifested in the global economic context; planning directions for the accelerated development of these nodes based on the use of local competitive advantages; development and implementation of projects of such advanced development that are capable of attracting so-called depressed territories into their orbit [24]. The main economic incentive for the formation of such nodal centers is to increase the potential of the region through the use of the "center of gravity" effect. The effect of the "center of gravity" should be understood as an additional inflow of investments, the possibility of obtaining higher incomes and creating additional jobs due to the development of modern infrastructure that is capable of serving significant flows of goods, services, information, financial and technological resources.

### 2 Literature Review

Despite the fact that spatial economics still does not have the official status of a separate scientific discipline on a par with macro- and microeconomics, the importance of this area of scientific research is recognized throughout the world. The study of economic life in the spatial dimension originates from the emergence of economic and geographical sciences. In the last quarter of the 19th century, interest in understanding spatial development as a fundamental phenomenon that determines the entire spectrum of human and human activity has intensified in European culture [11].

Among the latest significant publications on this topic, it is advisable to note the work of Padmini Pani (2020) [26], in which a theoretical analysis of the categories of "space", "economic space", "spatial economy" is carried out in order to further develop the concept of a network economy. The scientist formalizes the reasons on the basis of which the factor of space was not the subject of consideration of classical economic theories, which allowed him to come to the conclusion that the omission of this category in classical economic studies led to some simplification. The results of the work are conclusions about the need to shift the emphasis towards the spatial aspect of economic development. The use of the spatiality of regional development will mean the identification of the real framework of the country's development, including points of advanced growth and connections between them.

A team of authors led by Emil Malizia, studying the influence of economic space on the territorial organization of society, came to the conclusion that the territory, as an economic space, is a dynamic category that demonstrates the patterns of economic development and a certain unpredictability of this development [23]. In this regard, it is necessary to conduct constant monitoring, determine and justify specific measures in order to rationalize the system of economic territorial units, based on the appropriate methodological tools [27].

A number of authors, within the framework of the development of the theory of spatial organization of the economy, are developing the concept of growth poles. According to this concept, the centers of economic space, where enterprises of leading industries are located, become fields of attraction for production factors, since they ensure their most efficient use. The poles of growth are considered not only a set of enterprises, but also specific settlements that perform the functions of a source of innovation in the country's economy [2, 4, 6, 15].

Considerable attention is attracted by the developments of Western scientists who use an integrated approach to considering the spatial economy and the prospects for its development, which allows them to define spatial economic development as a structural-parametric and spatiotemporal ordering of business entities based on the coordination of elements and connections, that ensures the efficient use of their potential [11, 12, 25].

Namely the integrated approach makes it possible to consider a combination of enterprises and institutions as the basis for economic development, for which the territorial community of their components is an additional factor in increasing economic efficiency due to the significant stability of mutual relations (including information) and the rhythm of the production process, reducing transport costs, rational use of all types of local resources and favorable conditions for maneuvering them [14].

Regional socioeconomic systems have complex multi-vector connections with the environment, and their mutual existence is interconnected and interdependent. In such conditions, "localized" development strategies based on reasonable specialization of the territory, providing for the establishment of priorities aimed at gaining competitive advantages by developing their own scientific and innovative potential in accordance with the needs of business, acquire a priority value, to take full advantage of existing market opportunities and trends, while avoiding duplication and fragmentation of efforts.

### 3 Materials and Methods

Methods of general economic theory were applied for analysis, in particular, market players' behavior patterns and implications.

The explanation of this situation is seen in the fact that scaling up a business and maintaining a stable network of contracts that allows companies to obtain the corresponding advantages is possible only if the system of rules, which are the framework of the economic space, is strictly observed [17, 18, 19]. This system of rules assumes the initial inequality of participants and the unequal exchange of the results of economic activity between them, however, it establishes a strict ratio of exchange parities depending on the position of the counterparty in the hierarchy [7].

In exchange for agreeing to act in the established system of restrictions, agents of the lower levels of the economic hierarchy receive guaranteed rights and opportunities, forming a kind of social contract. The areas of activity and the territory covered by this agreement are considered a single economic space in the sense of determinism for the following positions:

- System of rules, including the rules of the monetary market, such as the dollar system, rules of a regulatory nature, including the tax system;
- General infrastructure, the degree of development of which throughout the entire economic space varies slightly;
- General axiological attitudes of the participants.

The stability of the economic space according to the above parameters exists as long as they form a saddle point. The emergence of one or more participants in behavioral strategies that optimize their economic situation by refusing to comply with one or several principles for the formation of the economic space leads to the transformation of the economic space and toughening the competition [20].

The economic spaces of the countries of the world at the beginning of 2019 are characterized by the coexistence of transnational and global rules of interaction.

Such coexistence within the framework of a single economic space is possible due to the presence of barriers to the penetration of more competitive structures into individual markets. The existence of such barriers may be due to two factors:

- The existence of protectionist barriers in the national markets, which explains, for example, the existence of an upward price trend for gasoline in Russia in 2014-2015 with downward global price trends for energy;
- The immanence of such barriers to the very nature of markets, which explains the differences in property prices in different regions of the world when using a single technology.

### 4 Results and Discussion

The digitalization of the economic space is a factor that ensures the destruction of such barriers. In turn, the process of breaking down barriers should lead to the formation of a new format of the economic space in which the position of each of the participants will be determined by its global competitiveness [19].

As shown in Figure 1, under the influence of digitalization, the process of forming a new contour of the global economic space is taking place, which is manifested in the following trends.

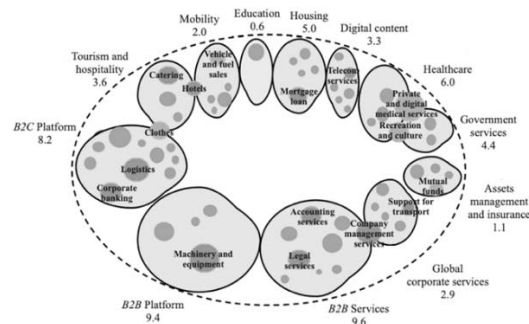


Figure 1 – Forecast of the global digital space for 2025, indicating the volume of sales in their markets, trillion US dollars.

Source: A. Bereznyy (2018, p. 13) [3].

The unification of previously isolated markets under the influence of the complexity of their products based on the convergence of individual elements of these products. An example of a new type of market, created based on the old ones by merging them, is the online banking market, which arose at the junction of the traditional banking business and the market of communication services [10].

Convergence has influenced traditional products such as hotel services. Maintaining the position of a separate business in 2019, hotels, however, are more actively using digital technologies to begin to cooperate with catering and transport companies, which leads to the merger of these businesses and the formation of a new product format for their services, distributed in digital economic space.

Clustering previously homogeneous markets and creating new products on their basis. An example is social networks that emerged as applied infrastructure elements, but quickly turned into an independent type of business, the prospects of which can hardly be overestimated.

Another example of the clusterization of a homogeneous market under the influence of digitalization is the emergence and rapid development of electronic commerce. If in the 1990s internet trading was considered as one of their potential additions to the

traditional one; now it's the Internet trading giants that control most of the trading in some markets, while their share, as shown in Figure 2, their market is still growing faster than GDP.

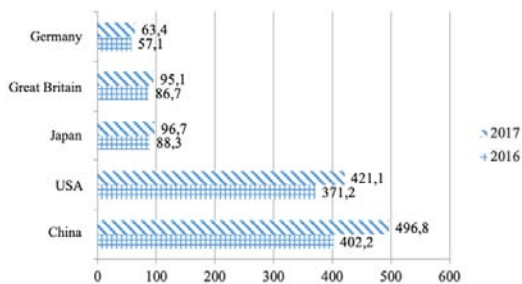


Figure 2 – Growth dynamics of the global e-commerce market in the top 5 leading countries in terms of e-commerce rating, billion US dollars.

Source: N. Ye. Yadova (2019, p. 120) [33].

E-commerce occupies a special place in the global economic space, as it is at the junction of all its other elements, on the one hand, and to the greatest extent currently uses the capabilities of digitalization, on the other. Because of the foregoing, some trends relevant to the current situation in the development of the global economic space should be noted, which are most clearly manifested by the example of electronic commerce:

- China is ahead of the US in terms of e-commerce, which, together with other successes of China in the global economic space, for example, in the field of 6g technology, indicates a possible change in the leader of the global competitive space;
- The market volume controlled by each of the participating countries is proportional to their share in the global economy in terms of GDP, calculated by PPP. In other words, regardless of the specialization of national economies, they all consider digital areas of business development as a priority [29];
- Similar relative annual growth indicators in all countries of the global economy indicate that in the field of electronic commerce, as well as in other areas generated by digitalization and the related transformation of the global economic space, there is no pronounced leader.

Even though digitalization processes already have a tangible impact on the economic space of both the global economy and its regional subspaces integrated into the global one, experts say that the world is only at the very beginning of transformations. This is indicated, in particular, by the calculations of “McKinsey & Company CIS”, presented in Figure 3.

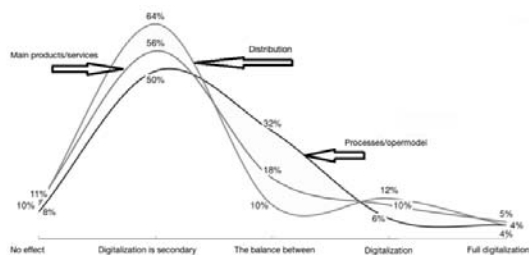


Figure 3 – Assessment of the use of digital technologies in various industries, integrated indicator.

Source: “Digital Future: Economic Effect” (2018) [8].

An understanding of the relevance of digitalization is observed at all levels of the global economic space, not excluding Russia. This was directly indicated by the President of the country V.V. Putin at his open all-Russian lesson in his statement, “Anyone who becomes a leader in this [artificial intelligence] will be the ruler of the world”.

In other words, the development of artificial intelligence and the resulting digitalization have become a factor in reforming the entire competitive space. The reason for this is the significant competitive opportunities that arise in a participant in economic relations using digital technologies, which include:

- The ability to cover the entire global market either from our resources or by using the services of global intermediaries; the second way went to companies offering their products on the AppStore platform both on a paid and free basis to promote their brand and/or technology;
- Significant savings in time, labor and financial costs by translating the relationship into a digital format;
- The availability on the global labor market of workers – (carriers) of all, including rare and unique, professions and the possibility of using them to develop their own business both on a permanent and on a variable basis by eliminating the geographical barrier. The latter has led to the strengthening of the position of highly skilled workers and secondary processes of specialization and division of labor;
- The possibility of solving the problem of asymmetry of information due to the increase in the availability of information, which negates the advantage of a monopoly on certain categories of information of major participants in economic relations, characteristic of an industrial economy [21, 22].

At the same time, it should be noted that the digitalization of the economy in itself creates only opportunities, but not competitive advantages themselves. At its core, the digitalization of the economic space is only a translation of economic interactions from the material form to digital. The economic result obtained from such a transfer may be different for different participants in the system of economic relations, up to negative. Indeed, digitalization, along with competitive opportunities, creates additional risks, such as:

- Risks associated with the hacking activity of both competitors and third parties;
- Risks associated with the loss or leak of valuable or confidential data due to negligence or malicious intent of employees;
- Risks associated with inefficient management of information flows, which have significantly increased compared to the traditional format of economic relations;
- Risks associated with a more intense time compressed change in the environment;
- Risks associated with the possibility of an unforeseen deterioration of the agent's competitive position due to the arrival of a new participant or the implementation of a non-standard competitive position by a known participant.

In other words, the digitalization of the economic space is essentially a neutral circumstance and poses the following problems to the participants in economic relations:

- The need to create a business model that enables the agent to function in more severe competitive conditions and respond to changes in the environment in a shorter time;
- The need for more efficient use of the conditions of a changing environment, primarily the communication and information space;
- The need for maximum protection of their market positions through the implementation of a unique competitive solution [31].

In other words, we are talking about innovation. In the traditional economic space, the innovative activity can be used by the organization as one of the tools, often auxiliary, or used on an irregular basis [16]. Digital economic space implies the permanent presence of an innovative process in an organization, while this process is central and requires maximum use of all resources available to the enterprise. This formulation of the problem explains the formation in economies characterized by the significant development of the digital space, such trends as:



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#### Primary Paper Section: A

#### Secondary Paper Section: AH