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The Level of Digital Transformation of The Regions as A Factor of The Efficiency of The Digital Economy

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Abstract

The term digital economy has already entered everyday life around the world. Moreover, if five years ago it was about assessing the readiness of countries for digital transformation, now the question of assessing its effectiveness is already arising. The development of the digital economy of an entire state depends, first of all, on the development of its parts, both territorially and sectorally. The paper investigates the hypothesis of a direct effect of digitalization in the region to the level of the digital transformation of the entire state. The reported study was funded by the Siberian Institute of Management – branch of the Russian Presidential Academy of National Economy and Public Administration.

Keywords: Digital transformation; Digital economy; Factor; Region.

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Introduction

At the present stage of social development, there is a problem of assessing the results of the digital economy. For these, there are involves the necessary consideration of all components of the digitalization process of society, business, households, and assess the effect by the transformation of socio-economic development of regions and the country as a whole (Current…, 2019; Digital…, 2018). In this regard, a comprehensive methodological approach to assessing the performance of the digital economy was developed, including an analysis of the prerequisites for transformation, the factors of influence on it, the performance of society and business transformation process itself, and the economic results obtained under the influence of digitalization (Competition…, 2018; Yushina, K., 2021).

The proposed methodological approach to assessing the efficiency of the digital economy consists of the following stages: SWOT analysis of a regions readiness for digitalization; determining the position of a particular region among the rest in the coordinates of attractiveness and stability in the market; identification of the main factors influencing the process of digital transformation of the regional economy; analysis of the influence level of the received factors of development of the digital transformation of the region's socio-economic activity; assessment of the contribution of the digital economy to the domestic product of the country; design strategies for the development of digital transformation of regions and methodological recommendations for their implementation (Yushina, K., 2021).

Let us consider the specifics of the individual stages of the methodological approach in more detail.

SWOT analysis of a region's readiness for digitalization

The first stage, based on the SWOT analysis, establishes whether a particular region is ready for digital "transition" or whether the digital transformation was "artificially imposed" on it. The readiness of a region to digitalization can be determined by the DECA (Digital Economy Country Assessment) methodology, which also assesses the level of development of the digital economy (Glinskiy, V., 2008). This methodology uses a system of indicators reflecting the development of the digital space at the moment, including an analysis of non-digital and digital factors, as well as the digital sector of the economy. Thus, the SWOT analysis is based on the consideration of digital and non-digital factors. This methodology was used to evaluate Russia as a whole and at the level of constituent entities of the Russian Federation - Ulyanovsk region and the city of Sevastopol.

DECA includes an analysis of three segments:

1) Factors of development of the digital economy (non-digital, digital, digital sector of the economy), which form the basis of the digital space. These are the "three pillars" on which the digital economy rests. The indicators characterizing these factors reflect the readiness of the economy for digital transformation.

2) The level of use of digital technologies in the private and public sector, population and households (digital public sector, digital business, digital citizens / consumers). This segment of digitalization illustrates the use of digital technology.

3) The economic and social impact of digitalization on economic growth, jobs and quality of services. The analysis of this segment reflects the results of entering the digital space and its impact on various spheres of society.

The listed digital factors act as internal factors and characterize strengths and weaknesses. The non-digital factors include the characteristics of the economic situation of the country, public administration, the development of the social sphere of society and the emergence of new technologies. These indicators are used in the PESTEL analysis and show the influence of the external environment on the digital space, acting as opportunities or threats.

The analysis of non-digital factors allows us to identify the opportunities and risks of the region to successfully carry out the digital transformation of the economy.

Determining the position of a particular region among the rest in the coordinates of attractiveness and stability in the market

In order to carry out the typology of regions and determine the position of a particular region in the coordinates "Region attractiveness" (Y axis) and "Market stability" (X axis), a BCG portfolio analysis modified matrix is constructed. The sustainability of each region is defined as the ratio of the regional Digital Russia index for the last reporting year to the national average index value, in other words the higher a region's rating on this scale, the more effective its digital transformation is (Glinskiy, V. et al, 2018, 2020)

The attractiveness of the region is defined as the growth rate of the integral indicator "Investments in the information environment". The integral indicator "Investments in the information environment" is determined using the method of multivariate average of indicators: "Costs of information and communication technologies", "Investments in fixed capital in the industry "Information and communication activities" and "Turnover of organizations in the industry "Information and communication activities". All indicators are preliminarily normalized by the maximum value. The resulting integral indicator shows the interest of investors in investing in the region.

The critical values on the X-axis are equal to 1, on the Y-axis - the average growth rate. The value of the share of the Gross Regional Product in the industry "Information and Communication Activities" is taken as the size of the "bubble".

This analysis helps to determine in which regions the lag in the development of digitalization slows down the balanced development of the digital space of the state as a whole.

Identification of the main factors influencing the process of digital transformation of the regional economy

At the third stage, a system of indicators is built to determine the factors influencing the development of the digital transformation of the economy in the region. Indicators that describe the "course" of digitalization in the analyzed period are selected expertly. Then they are checked for multicollinearity, and, as a result, a final indicators system is formed. It serves as the basis for conducting factor analysis and identifying the groups of main factors affecting the development of digital transformation of the economy.

Analysis of the obtained factors for the development of digital transformation of the socio-economic activity of the subject

Then, based on the factors of development of the digital transformation of the economy obtained at the previous stage, the assessment of the current state of this process is performed (Glinskiy V., 2008). The dynamics of specific indicators, the structure and intensity of the influence of factors on the socio-economic development of the region are analyzed. For example, the distribution of the population as an active Internet user by age groups and change in its structure are estimated. The digital transformation of the public sector, organizations, infrastructure (medicine, education, culture, etc.) is also necessarily analyzed.

To assess the effectiveness of the digital economy of the studied region, based on regression analysis, the level of influence of digital transformation indicators on Gross Region Product, labor productivity, innovative development of the region, investment potential, business development, level of education, healthcare, culture and leisure are calculated.

Assessment of the contribution of the digital economy to the Gross domestic product of the country

The next step is to determine the digital economy's contribution to GDP. Since GDP is formed by all regions, the contribution of the digital economy to the domestic product of the country also depends on the contribution of the digital economy of individual regions. Accordingly, the level of digital transformation of the regions becomes a factor in the efficiency of the digital economy.

The problems of measuring the contribution of the digital economy are now the focus of statisticians in all countries: first, they are discussed at meetings of international statistical organizations, second, they are on the agenda of national statistical services, and third, they are the subject of scientific research (Passport…, 2018). It is believed, for example, that the system of national accounts should be the basis for assessing the contribution of the digital economy: on the one hand, it is a tool for measuring the digital economy, and on the other hand, its further development is related to solving the above-mentioned problems. Another methodological approach is the construction of a model of factor dependence of the contribution of individual industries to the digital economy of a region, and then the country as a whole (Passport…, 2018).

Development of methodological recommendations

At the stage of developing methodological recommendations, the results of all previous stages must be taken into account. It is especially important to compare the assessment of the effectiveness of digital transformation obtained in the fourth stage and the information about readiness to the digital transition, presented in the SWOT - analysis in the first stage. The connection will be especially indicative if the low performance of the digital economy is found to depend on the revealed weaknesses and risks.

Conclusion

The presented methodology allows us to investigate the direct and indirect impact of the level of digitalization in a region on the digital transformation of the entire state and determine the contribution of the region to the overall result of the digital economy of the country.

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