

Methodological approach to the socio-economic development of rural areas in the context of a digital economy

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Abstract—The analysis of works devoted to various aspects of import substitution made it possible to single out import substitution as the most effective national and regional development strategy. The development of digital technologies is relevant not only in the economic sphere, but also in agriculture. Digital agriculture is seen as a new area, focused on the development of both farming industry and rural areas by means of digital technologies. Predictability of rural areas socio-economic development on the basis of assessing their social and economic status makes it possible to introduce digital economy tools into the management system. The methodology for assessing the socio-economic status and level of rural areas development is based on forming and implementing their organizational and economic potential. Introducing information and computer technologies aimed at strengthening the development of rural areas will result in a significant multiplicative effect not only in the farming sector, but in the economy as a whole. The results assessing the status of the farming sector and the system of its state regulation make it possible to identify the vectors of making the management mechanism and reproduction processes regulating more effective and to adapt the agricultural sector to market relations. The results of the study can be used by the authorities to improve the quality of strategic planning at the regional and municipal levels.

Keywords—*socio-economic development, food security, forecasting, digital economy.*

I. INTRODUCTION

In the context of modern economic management in theory and practical activity of many states, the concept of “digital economy” has become relevant, while information and communication technologies, which are an integral part of the digital economy, have started playing a key role in many areas of society.

Every year spheres of implementing the digital economy are growing and among the most developed are: e-business; Internet banking; Internet advertising; Internet games; education; telecommunications; information systems; industry; electronic services of state authorities, electronic agriculture.

At the same time, there are no studies in the scientific community establishing the influence of the “digital”

economy on the organizational and economic conditions for ensuring food security.

The most important condition for ensuring Russia’s food security is a reasonable choice of a long-term strategy that takes into account the current trends of the world economy and the prospects for implementing state food sovereignty [1].

To solve the problem of ensuring national food independence, it is necessary to create conditions for active agricultural development through rapid modernization of its technical and technological base, socio-economic rationale for selecting priority areas, development of organizational and economic mechanisms to ensure food security in Russia [1].

National food security is a complex socio-economic system that ensures the high level of development, sustainability and competitiveness of the agro food sector, which makes it possible for all segments of the population to get quality food in guaranteed volume and range [2].

Import substitution is a factor for realizing the natural resource and scientific and technological potentials of the Russian economy, increasing the level of Russia’s economic security and employment growth under a structural transformation of the labor market [3].

We should note that the key aspects in defining digital systems are exchanging knowledge and technologies that make it possible for the process to take place, and economic agents capable of participating in this exchange and managing it effectively.

Digitization of the economy, including agricultural sector, has both positive and negative consequences.

The World Bank, in its report on the world development “Digital dividends” considers the following advantages of the digital economy [4]:

- the growth of labor productivity due to transferring routine and repetitive tasks to automation, while workers can focus on the activities that have a higher surplus value;

- new job formations in the field of digital technologies;
- bridging the gap caused by disability through the digital technology;
- improving the efficiency of the public sector through using information technology to communicate with citizens;
- increasing the citizens' participation in political and public life, which helps to improve the quality of public work;
- improving the enterprises competitiveness through intensifying application of information and communication technologies;

Along with the positive effects of the digital economy, the World Bank report highlighted the risks of the digital economy [4]:

- the risk of cyber threats connected with the problem of personal data protection;
- using people's personal data for managing them;
- an increase in the unemployment level due to the further spread of information technologies, and there is a risk that a number of professions may disappear (shops with electronic cash registers, robots serving customers, unmanned vehicles, etc.);
- the gap between digital education and people's well-being.

Keshalava A.V. adds to the risks of the digital economy mentioned above the following [5]:

- a threat to the country's "digital sovereignty";
- interference with privacy due to potential surveillance of economic entities;
- reducing the security of personal data;
- reducing low-skilled jobs;
- increasing the level of business structures complexity and schemes of interaction between them;
- increased competition in all sectors of economic activity;
- the necessity to revise the administrative and tax codes.

In the course of the study, the authors analyzed federal and regional laws and subordinate regulatory legal acts that determine the composition of import-substituting measures including: The strategy of innovative development of the Russian Federation for the period up to 2020, (approved by Decree of the Government of the Russian Federation of December 8, 2011f * No. 22270), Decree of the Government of the Russian Federation of 04.08.2015 No. 785 "On the Government Commission on Import Substitution", Resolution of the Cabinet of Ministers of the RT of 13.09.2016 No. 639 "On the Action Plan for the Development of Import Substitution in the RT Industry on 2016 ". When preparing the paper, the authors used monographs, collective works, publications in periodicals, materials of scientific conferences, Internet information resources as information sources [3].

II. RESEARCH METHODOLOGY

The theoretical and methodological basis of the research is the main scientific developments in the theory of food security, the programs of state support for the development

of the agricultural sector. In the study, within the framework of the system approach, the following economic research methods were used: monographic, comparative, statistical.

III. THE MAIN BODY

Monographic analysis of academic literature made it possible to single out import substitution as the most effective strategy for developing the state and its regions.

The analysis of the works devoted to various aspects of import substitution as a strategy, economic policy and a set of management technologies shows that researchers have not fully revealed its potential for raising the level of the Russian economy expert orientation.

The model for implementing an export-oriented policy aimed at developing an agrarian economy makes it possible to work out a forecast of the main economic indicators dynamics, taking into account the implementation of the socio-economic development policy of the rural economy. The forecasting carried out in a number of scientific works demonstrates the advantages of the innovative development model causing an increase in production, a dynamic growth of the gross regional product with a decrease in the volume of imported products [3].

Predictability of rural areas socio-economic development on the basis of the assessment and the mathematical model of organizational and economic potential development makes it possible to introduce digital economy tools into the management system within the selected models [3]. The problem of developing digital technologies is relevant not only in the economic sphere, but in agriculture as well. Digital agriculture is seen as a new area, focused on the development of both farming industry and rural areas by means of digital technologies. The main advantages of introducing digital agriculture are [6]:

- exchanging information and its availability to;
- forming efficient food markets on the basis of reducing production costs and losses "from field to market", increasing the information availability and transparency of markets;
- reducing links of the intermediary chain and raising awareness of agricultural producers;
- reducing risks by reducing uncertainty in making management decisions, increasing readiness for climate changes, natural disasters;
- increasing investments in innovation, in digital infrastructure, in human capital.

Developing digital agriculture contributes to [7]:

- moving to "smart" agricultural production based on using advanced technologies; automation, robot-based application, agricultural production, artificial intelligence and large amounts of data;
- introducing improved varieties of crops and animal breeds, new high-quality feed and veterinary drugs;
- developing processing of new types of biological raw materials, food markets, innovative delivery services.

At the same time, introducing information and computer technologies into agriculture will result in a significant multiplicative effect not only in the farming sector, but in the economy as a whole.

Competition for development resources: (investment, human capital, technologies, territory) determines the importance of the task to develop local strategic documents defining the vector of territories development [8].

At the same time, in many countries of the world, including Russia, national projects for developing e-agriculture have not been developed. At the end of 2017, the Ministry of Agriculture of the Russian Federation initiated the development of the State sub-program "Digital Agriculture", the main objectives of which should be the following [9]:

- to create a unified information system for recording agricultural lands;
- to organize a system for tracking the movement of agricultural products from the "field to the market";
- to create an interactive map of the country's land fund.

The most important goals of introducing information-computer technologies in agriculture and agricultural production are productivity growth and loss reduction. The problem of reducing losses is very relevant, since in developed countries about a third of agricultural production is lost when moving from field to market, in Russia the share of agricultural production losses is even greater.

An important direction in developing digital agriculture is remote sensing with the use of unmanned aircraft systems, allowing to ensure: the creation of up-to-date soil maps; integrated registration of agricultural objects; development of fields 3D-models necessary for the optimal construction of irrigation and land improvement systems, processing of crops, the introduction of mineral fertilizers and chemical plant protection products; assessment of the consequences of emergency situations [10]. The lack of available scientific tools for analyzing the socio-economic situation in the Chelyabinsk region and its municipalities development, taking into account the existing features of regional and municipal statistics, should be provided with opportunities for their proper comparison, which determines the urgency necessity to improve the quality of the existing economic tools and create new ones for analyzing the socio-economic development of municipal formations [8].

The methodological approach to assessing the socio-economic status of the municipalities, unlike the existing ones, makes it possible to analyze the socio-economic development in three natural and climatic zones of the Chelyabinsk region, since the tools of the methodological approach include forming a system of indicators for diagnosing the socio-economic status of settlements, database provisioning, a set of methods for assessing the place and role of the municipality in the regional economic system: typology, building up the economical profile of the municipality [8]. The possibilities of using various information databases for diagnosing the socio-economic state of the municipalities are based on the following algorithm:

Step I. Collecting data on the municipalities using the existing types of information sources.

Step II. Primary data processing: selecting and cross-checking of the collected indicators of the municipality socio-economic development; selecting typological data blocks; forming the information base in the structured tables.

Step III. Analyzing the socio-economic state of the municipal formation; identifying its types using the methods of multidimensional statistical analysis according to the level of socio-economic development, to economic specialization (in accordance with OKVED), to the number of people employed in various economic activities; comparative analysis of clustering results; building and comparing economic profiles of the settlements [8].

The method of assessing the socio-economic status and level of rural areas development is based on forming and implementing the rural areas organizational and economic potential [2].

The methodology of multiple factor analysis of rural areas includes the following stages: the first stage implies defining indicators used for studying the state of rural areas organizational and economic potential; the second stage consists in calculating relative indicators of dynamics and structure; the third stage implies ranking rural areas according to previously calculated indicators in ascending or descending order; the fourth stage is compiling a generalized matrix of the ranks of the territories socio-economic development; the fifth stage is selecting the leading, middle and lagging areas, the sixth stage is calculating the integral indicator of the territories competitiveness [11].

Building an economic profile of a municipal formation according to socio-economic and demographic indicators makes it possible to assess the level of the municipality development on the basis of each indicator values deviations from the average of the sample, analyze the distribution of each indicator values of the sample, and also show the dynamics of changes and identify the "growth points" [8].

The method of system-social design as an organizational mechanism for involving people in solving territorial strategic development issues presupposes the use of various expert methods [8].

The results of the study can be used by the authorities to improve the quality of strategic planning at the regional and municipal levels [8].

For the "leading" territories, current development trends can be maintained. For the "middle" ones it is necessary to develop measures to improve the environmental situation and reduce social and economic tensions. For "lagging" territories, it is necessary to implement programs for improving the quality of rural population's life and developing agriculture [11].

The diagnostic results make it possible to determine the belonging of the municipal formations to the typological group of settlements, the position of each municipality in relation to others; identify weak and strong points in its development, assess the role of the municipality in the regional economic activity, find the economic growth points [6]. For each municipality, a chart of values variation for each indicator, average values and values of indicators for a given municipality is made. The combined chart represents the economic profile of the settlement [8].

The results of the study can serve as a methodological and instrumental base for improving the processes of developing strategic planning documents at the municipal level, and will also be useful in the work of regional and municipal governments, non-profit organizations [8, 12].

We must note that at the regional level, the share of agricultural producers using digital technologies in production is very low. This adversely affects the growth of crop yields, animal productivity and, ultimately, productivity in the industry [9].

Russia's transition to a digital economy and digital agriculture is constrained by a number of factors, which include:

- low level of economy and agriculture digitization;
- insufficient domestic developments in the field of automation and digitalization;
- low understanding of the benefits of economy and agriculture digitization;
- lack of qualified personnel;
- limited financial resources;
- insufficient costs of enterprises for innovative developments and research. Thus, the share of expenditure on research and development in the telecommunications industry in the budgets of world leaders is 10 times higher than that of Russian companies.

To form a digital economy in agriculture, a certain base is needed, particularly, it is necessary to:

- develop digital infrastructures and communication standards;
- ensure information security;
- expand online services;
- provide free access of citizens to the Internet and online communications;
- improve the management of information flows and knowledge in digital systems;
- create new forms of electronic interaction;
- use electronic platforms for integrating state bodies, business structures and society.

IV. CONCLUSIONS

Under the conditions of the digital economy development, specifying and improving theoretical and methodological approaches to statistical research on the effectiveness of implementing organizational and economic potential will provide an information basis for developing proposals for its improving and increasing the competitiveness of domestic agricultural producers in the domestic and foreign markets.

The results of assessing the current state of the domestic agricultural sector and the system of its state regulation allow us to identify the vectors of the management mechanism effectiveness, reproduction processes regulation and adapt the agricultural sector of the economy to transforming market relations [1].

In the context of intensifying globalization processes, intensifying competition in the world and national markets and increasing volatility of the environment, the inclusion of digital technologies in implementing strategic guidelines for developing the Russian Federation (RF) is essential to ensure the progressive dynamics of economic and social indicators [3].

In modern conditions, the main criterion for the efficient production and sales at the state level is satisfying social needs while preserving natural resources and the main types of efficiency at the macro level are economic, environmental-economic and social ones.

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