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DIGITAL TECHNOLOGIES AS REGION INNOVATIVE ECONOMY FACTOR

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Abstract

This paper discusses innovative and digital technologies as an inherent factor in the innovative economy development of the Republic of Dagestan. Specific regional features of innovative and digital technologies in the agricultural sector, which are implemented in the context of the development of digital economy in the Republic of Dagestan, as well as country's readiness for the direct implementation of the program Digital Economy of the Republic of Dagestan, are revealed. The share of the innovative activity of enterprises within agricultural sector of the Russian Federation by type of economic activity for 2017 is analyzed. The dynamics of analysis of the level of innovation activity by types of the Republic of Dagestan innovation for a number of years is considered. The main idea of using digital economy with innovative technologies is that one may create a new quality of life for the population, as well as products with innovative properties.

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Keywords: Innovative technologies, innovative economy, digital technologies, innovations, digital economy.



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1. Introduction

Due to the development of the Digital Economy program, and with the development of innovative activities, digital technologies for agricultural sector are becoming the main growth factor for farmers and for the state. After all, the future of the agriculture is framed into innovative and digital technologies. There are several factors leading to the production decline and competitiveness decrease in the of domestic agricultural sector during the transition to market relations, among which are the following: unsuccessful experiments with the main branches of the agro-industrial complex (crop production and animal production); a decline in the production of the machine building industry; lack of one's own funds and insufficient state financing; backward material and technical base. This has led to a large lag in innovation development. The issues of using opportunities and advantages of digital economy have become obvious (Maksimova, 2018). To further increase the competitiveness and increase the efficiency of agribusiness sectors, qualitative changes in the production based on digital technologies are required, not only in agriculture, food and processing industries, but also in agricultural organizations (Maslova & Andreev, 2018).

2. Problem Statement

To investigate the state of digital technologies in the agricultural sector of the region in the context of development of information and computer as well as innovative and digital economies of the region in order to increase the efficiency and competitiveness of the agricultural sector of the Republic of Dagestan. At the same time, the introduction of digital and innovative innovations into widespread use requires significant financial and material investment and qualified personnel. The Republic of Dagestan has faced the problems in implementing Digital Economy of the Republic of Dagestan program, as well as in the development of the innovative economy of the region. As you know, the republic is an agricultural and industrial region; therefore, there is no developed industrial and production base for introducing advanced technologies into the economy of the region. In addition, an important reason that impedes the implementation of the developed program Digital Economy of the Republic of Dagestan and innovative technologies is the fact of subsidization of the republic. At present, subsidies received by the republic from the center account for 59.6 % of the revenue of the budget of the Republic of Dagestan (previously this figure was about 80 %). According to media reports, to implement a program in the field of computer technology in the republic, it is necessary to train specialists in the range from 1.5 thousand to 1.7 thousand people (Gasnov et al., 2019).

3. Research Questions

Currently, an upcoming trend for improving the efficiency of the agricultural sector is the introduction of innovative, digital technologies for the agricultural sector. The development of any sector of the economy is impossible without appropriate technologies, new technical means, and the material base, which makes it possible to organize profitable production. In particular, it is necessary to consider the features of innovative technologies in the digital economy for agro-industrial complex, which must be

taken into account in the process of planning the activities of the enterprise, and when adopting and approving the RD Digital Economy program, etc.

The country agro-industrial complex, along with industry, trade, financial, banking, educational field, etc., is one of the largest consumers of various kinds of information services and resources, which is due to the widest variety of factors, conditions, technologies and methods of production and sales of products. The growth of agricultural production under new economic conditions largely depends on the provision of agricultural enterprises with the necessary means of informational support and information infrastructure (Gorbachev, 2018).

Innovations for the agricultural sector are innovations that have passed the stage of commercial use and market offers in the form of new varieties, hybrids of plants, new breeds, types of animals, or production, technological, organizational, managerial, economic innovations which result in an increase in the efficiency of production and sales of products.

The objective processes of the development of information and communication technologies, the ongoing changes in the global economy associated with the globalization process, and a number of other factors contributed to the emergence, and then the establishment of a new area in the economy, i.e. Digital Economy.

Innovation and the digital economy are closely interconnected since digital technologists are innovations. Therefore, it is necessary to develop innovative technologies for the development of digital economy, since innovative technologies are an element of digital economy.

Digital economy covers the entire system of public relations based on advanced scientific achievements and innovative technologies, primarily in digital information and communication technologies the action of which is aimed at increasing the efficiency of social production, maintaining stable economic growth rates aimed at the improvement of public welfare and life of citizens, ensuring economic security of the country and national sovereignty of the state.

The development of innovative technologies in the digital economy for agricultural sector will make it possible to increase efficiency of the land use; reduce manual labor intensity for the production of products; reduce manual labor intensity regarding livestock raising and crop production. Innovative technologies will lead to the automation processes in the field of the internal document management for agricultural enterprises, as well as automated electronic data exchange between an enterprise and government bodies and improvement of food security of the country, since agricultural sector is its foundation, etc. (Dokholyan et al., 2018).

In the last few years, there has been an explosive growth in the application of new technologies in the field of agriculture and agribusiness. It was accompanied by a significant increase in labor efficiency, lower costs for the production and sale of products, higher quality and a significant improvement in the potential for consumer characteristics of products and services (Laptev, 2018).

The development of innovative and digital technologies in the agricultural sector of the Republic of Dagestan and the Russian Federation contributes to following: globalization of the world economy; increased competition between different countries; the formation of multinational companies (TNCs); unfair competition, virtual currencies launching (cryptocurrency), etc.

In 2017, Russia ranked 45th regarding the development in the global innovation ranking.

Currently, innovative, digital technologies in the agricultural sector are very popular in the development of agriculture abroad. Nowadays such digital technologies as “smart farming”, “smart farming”, etc. are actively used in the agriculture of the USA, countries of Europe, the Middle East, and Asia-Pacific region. Russia is far behind these countries in the development of agriculture. To say more the RD does not use digital technologies in the agricultural sector at all. Smart agriculture refers to the use and implementation of IT products developed for agricultural sector. Based on this, it is clear that innovative technologies and digital technologies are closely interconnected, since digital technologies are innovations.

In the development of the agro-industrial complex, Russia lags significantly behind the countries of the West. In connection with the economic sanctions of the West and forced measures directed against these sanctions by Russia, and in connection with the import substitution program of the Russian agro-industrial complex, it needs the rapid development of agro-industrial complex. The basis for the development of the agricultural sector is rapid development of innovative, digital technologies.

According to media reports, the largest investments are made by China – 48 % and the USA – 38 % of the shares, respectively, of the total investment in the area of research. Thus, this indicates that the developed countries are increasing their investments in the information and virtual areas, rather than in the material production. Thus, in the future, these countries hope to manage the processes of artificial intelligence to create economic security and effectively manage the entire system of economy. The basis for the creation of artificial intelligence is a digital economy system using a quantum computer. In this case, a virtual value appears in the form of virtual money or cryptocurrency.

Recently, the development of artificial intelligence has become important, and it has become an integral element of the economy. Artificial intelligence for agriculture can make a new revolution in the development of agriculture, it is able to study and process a tremendous amount of information for processing and studying agricultural land, to study the needs of buyers, etc.

For example, artificial intelligence for agriculture in Europe is used to dig a hole in the ground and plant a tree there, following predefined common patterns, but taking into account the specific features of the landscape, in order to care for plantings, working with each plant individually. Moreover, when the time comes, artificial intelligence will harvest, and at the same time will process each plant again as it should.

However, the use of artificial intelligence in the field of agriculture in Russia is not widespread phenomenon and even less, in the Republic of Dagestan. Regarding the application of innovative technologies, the RD lags far behind most of the regions of the Russian Federation.

The development of digital technologies is effective with a certain high level of crop yield and productivity, a certain level of training, profitability, etc. It is also important to ensure the effectiveness of investments in digital technologies. That is why in real Russian practice, many examples of the use of digital technologies can be found mainly in large farms that are part of the so-called agricultural holdings. Here is the use of GPS and GLONASS systems for harvesting, control over the use of fertilizers, milk robots and automated cow milking systems (Kiselev, 2018).

For complete analysis, let us consider the volume of innovative goods and work services in the North Caucasian Federal District.

Table 01. Volume of innovative goods, works, services 1), by the subjects of North Caucasian Federal District

| | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------------------|----------|----------|----------|----------|----------|
| North Caucasian Federal District | 23 889.8 | 27 961.5 | 41 437.3 | 37 048.9 | 34 722.4 |
| Stavropol Territory | 22 758.6 | 26 940.7 | 39 776.8 | 36 242.1 | 33 566.7 |
| Chechen Republic | – | 103.8 | 100.0 | 39.4 | 576.4 |
| Kabardino-Balkar Republic | 925.4 | 752.2 | 1327.0 | 421.8 | 307.1 |
| Republic of Dagestan | 21.4 | 119.9 | 151.1 | 202.5 | 182.0 |
| Karachai-Cherkess Republic | 175.1 | 19.7 | 43.0 | 62.9 | 40.9 |
| Republic of North Ossetia-Alania | 9.2 | 19.1 | 33.9 | 57.8 | 26.4 |
| Republic of Ingushetia | – | 6.1 | 5.4 | 22.5 | 22.8 |

Source: edited by the authors based on data from Rosstat (Innovative activity of organizations).

An analysis (Table 1) showed that in terms of the volume of innovative goods, works and services among the subjects the North Caucasian Federal District takes the 4th place in 2017; the 1st place is occupied by the Stavropol Territory; the 2nd place is occupied by the Chechen Republic; and the 3rd place is occupied by the Kabardino-Balkarian Republic. For a more complete analysis, we consider the level of innovation activity by type of innovation of the RD for 5 years.

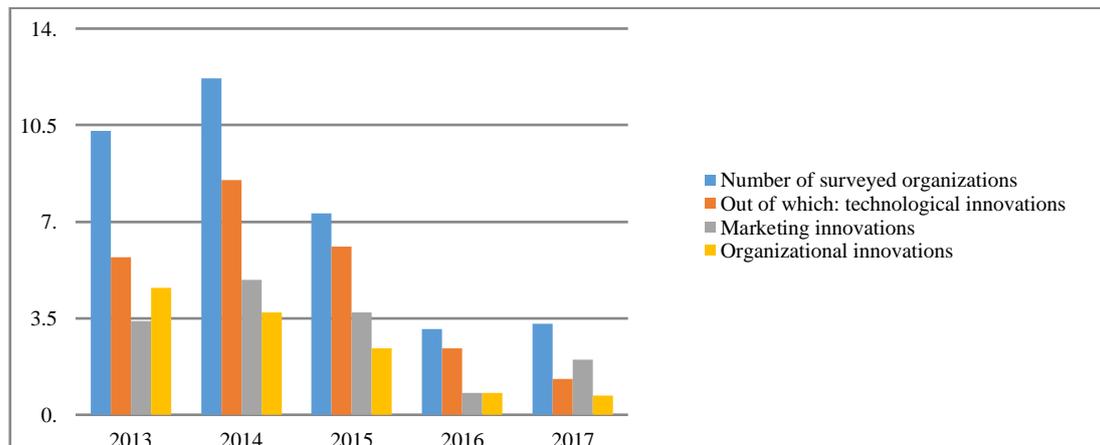


Figure 01. Level of innovation activity by type of the RD innovation (in % of the total number of organizations surveyed) for 5 years

Figure 01 shows that in 2014 in the Republic of Dagestan the number of organizations engaged in innovative activities increases, and then sharply decreases due to low funding, as well as due to Western sanctions against Russia. It is clear that marketing innovations are favored in the RD. In 2017, the number of organizations engaged in the technological innovation is sharply reduced.

In the RD there are unfavorable conditions for the innovative development of the agro-industrial complex. This is due to a sharp reduction in the financial support of science, underdevelopment of innovation infrastructure, lack of incentives for large enterprises to carry out their own R&D and (or) the introduction of technological and product innovations, lack of conditions for the establishment and development of small innovative enterprises, and lack of the approved program Digital Economy of the RD. Among the factors holding back on the innovative development are the underdevelopment of venture

financing, the lack of economic mechanisms to attract funds from banks, the insurance and other financial companies necessary to finance innovative activities, etc. (Eminova et al., 2017).

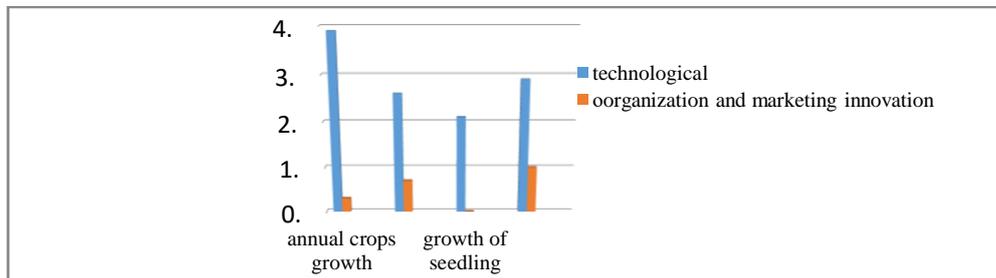


Figure 02. Share of innovative activity of organizations by agricultural sectors of the Russian Federation by type of economic activity for 2017

Figure 2 shows the share of innovative activity of the Republic of Dagestan in the agricultural sector. The dynamics show that the technological innovations are most developed in the agriculture of the republic rather than in the organizational and marketing innovations. Organizational and marketing innovations are mostly used in the livestock industry and technological innovations are used in the cultivation of annual crops.

4. Purpose of the Study

To reveal specific, regional features of innovative technologies in the agricultural sector, which are implemented in the context of development of digital economy in the Republic of Dagestan, as well as readiness of the republic to directly implement the program Digital Economy of the Republic of Dagestan.

5. Research Methods

Based on statistical data analysis, the innovative activity of the Republic of Dagestan is analyzed. The volume of innovative goods, works, services, by subjects of the North Caucasus Federal District is analyzed and summarized. The dynamics of the analysis of the innovation activity level by types of innovation of the RD for a number of years is considered in dynamics. Relying on the method of logical analysis based on statistical data, the main factors that hamper the effective development of innovative activity of the republic, and the process of developing and implementing an effective program Digital Economy of the Republic of Dagestan are identified. It also revealed the reasons for slowdown in the development of enterprise innovative activity of the republic, analyzed the external and internal reasons that affect innovative activity and hinder the development of digital economy in the agricultural sector.

6. Findings

The innovative development of agricultural and industrial complex in the conditions of digital technologies involves the use of innovative goods, services, information and computer technologies,

nanotechnologies, bio- and eco-innovations, as well as new managerial methods aimed at improving the efficiency of production, management and implementation in the area of agricultural.

The following features are inherent in digital technologies in the agricultural and industrial complex of the Republic of Dagestan, i.e. the lack of awareness of farmers, their underestimation of the significance, and difficulties in understanding the mechanism. The elimination of these shortcomings will contribute to the development of the innovative economy in the region and country under the conditions of digital economy.

7. Conclusion

The effectiveness of social production is largely determined by the use of innovative, information and computer technologies. However, the main idea of using digital economy with innovative technologies is that one may create a new quality of life for the population, as well as products with innovative properties.

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