Digital Strategies and IT Solutions for Managing in the Region: Optimizing Resources and Enhancing Sustainability

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Abstract. The article is devoted to the development of innovative digital strategies for land management in the region based on the assessment of the effectiveness of agricultural land management in agricultural organizations of the Chechen Republic. The relevance is that the influence of innovative, digital and engineering technologies in the realities of today are a factor in the intensive development of agriculture and are important for the sustainable development of rural areas and the ability to manage agricultural land. The issues of innovation based on digitalization of agricultural land management are currently still quite unexplored. The term "digital agriculture" is focused on improving rural areas and improving the quality of life in rural areas. These problems are still relevant today. The article describes the features, problems and opportunities of digitalization as a tool for the formation of innovative infrastructure in the agro-industrial complex of the Chechen Republic. The article provides an analysis of the essence of the digital development of the agricultural industry. Objective and subjective reasons hindering their development have been identified. The conducted research made it possible to formulate priority directions and strategic approaches to the formation of innovative infrastructure in the agro-industrial complex of the region.

1 Introduction

The relevance of the topic of the presented research is mainly due to the fact that the challenges faced by the Russian economic system in recent years directly relate to agricultural production, the effectiveness of which will largely determine how the Russian Federation will resist sanctions and overcome the consequences of their impact on the country's economy. In conditions of external constraints, volatile geopolitical conjuncture, unstable operation of logistics systems, Russian agriculture is showing significant growth. Thus, occupying half of the total weight of the gross harvest of crop production, the harvest of cereals and legumes in the period from 2012 to 2021 increased by more than 2.3 times, the collection of seeds and fruits of oilseeds increased by 3 times over the same period, and

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vegetables of open and closed ground – by 1.4 times. The production of livestock products in the Russian Federation is also showing growth – over the past 10 years, the slaughter weight of livestock and poultry has increased

The production of livestock products in the Russian Federation is also showing growth – over the past 10 years, the slaughter weight of livestock and poultry has increased by 40%. This has ensured a significant increase in the population's food supply, the implementation of the indicators of the food security doctrine and historically high levels of agricultural exports. An increase in production volumes without outstripping the growth of processing capacities leads to an increase in its exports. Of course, the increase in exports of the agricultural sector, in particular, the growth of grain exports, is currently one of the key agendas due to the aggravation of the situation around the high dependence of the national economy on sales, complicated logistics and rising costs for the transportation of hydrocarbons. The solution to the above tasks is the digital development of agricultural production. [11]. In 2022, the Russian Government allocated more than 900 million rubles to introduce modern technologies into agriculture in 8 regions, including the Chechen Republic. Artificial intelligence will be used to evaluate the yield of seven crops (potatoes, sugar beet, sunflower, winter/spring wheat, buckwheat, corn). The money will be spent on digitization of records of household books to create a unified information base on products[3;10].

2 Research methodology

To achieve the purpose of the study, the following materials were used: analysis of literature sources by domestic authors, foreign sources of information, articles based on interviews with representatives of agricultural enterprises and experts in the field of digital technologies, as well as analysis of statistical data. The attention of many Russian authors is focused on the digital development of the agricultural sector. A significant contribution to the development of theoretical and methodological foundations for improving the efficiency of Russian agricultural production based on digital solutions was made by Altukhov A. I. [1], Suslov S. A. [2], Dudin M. N. [3], Generalov I. G. [4], Melnikova K. M. [5], Yurina N. N. [6], Amirova E. F. [7], Hasanov G. A., Hasanov T. A. [8], Akmarov P. B., Gorbushina N. V., Knyazeva O. P. [9], Mentyukova O. V. [10] Note that the authors of the studied works are convinced that digitalization of agriculture is an important stage in development agriculture. The process of digital development includes the introduction of modern digital technologies that improve the efficiency and quality of production, optimize resources and increase the profitability of agriculture.

3 Results and Discussions

The predominant territory of the Russian Federation is occupied by rural areas. So, at the beginning of 2022, out of 19675 municipalities, more than 80% of them belong to rural settlements. About a third of the region's able-bodied population works in agricultural organizations in the Chechen Republic. Despite the general trend of a decrease in the acreage of the republic by farms of all categories, it should be noted that the rate of decrease in the acreage of grain crops over the past 10 years is 9.1% lower than the rate of decrease in the total acreage. It should be noted that in general, a significant increase in yield is observed for grain and leguminous crops . Thus, the yield in households increased by almost 12%, in agricultural organizations – by 32.5%, and in peasant (farm) farms it increased by more than 44%.

In modern conditions, the moment has come in the agricultural land management system when a new way of thinking is required in the form of innovation based on digitalization. In our opinion, without a set of measures to modernize existing and build new elevator capacities, the agriculture of the region will certainly face the risks of having to sell agricultural raw materials at low prices during the harvest season and the impossibility of building up production systems for deep processing of agricultural products with high added value. Conducted research on the intensification of agricultural production in The Chechen Republic as one of the factors of increasing the efficiency of agriculture allowed us to identify some patterns. At the present stage, there is a systematic reduction in the number of all types of agricultural machinery used in agricultural organizations of the Russian Federation. The introduction of high-performance, energy-saturated technology is one of the ways to intensify agriculture. The intensity of grain production in the Chechen Republic is increasing. Assessing the work of the modern agro-industrial complex and its place in the digital innovation economy, today it is no longer possible to do without innovative integrators and the locomotive of innovative development in this chain can be both agricultural enterprises and enterprises of different industries, which in today's digitalization can interact within the framework of the project work method [7].

In a rapidly changing world and growing competition, agriculture faces a number of challenges that require innovative approaches to management and development. At the regional level, there are certain problems in the land use of agricultural production organizations in the republic, related not only to unused land for production purposes, but also to the problem of withdrawal of agricultural land from circulation. At the present stage, characterized by a high rate of digital transformation, the development of techniques and algorithms that allow assessing the level of information technology application is becoming more and more in demand. It is worth noting that, despite the positive dynamics in the field of grain and leguminous crops harvesting in Russia over the past 7-8 years, the share of foreign-made flour on domestic shelves has increased from 0.2 to 2%, i.e. almost tenfold. A similar situation can be seen in the markets of other food products. This means that food manufacturers often use raw materials in the production of products on the territory of Russia. The value added by a foreign processor is paid first by the Russian manufacturer, and then by the domestic consumer. In this regard, conditions should be created that encourage the inclusion of domestic raw materials in the food value chain. Innovative land management strategies in agricultural production are an integral part of the overall process of digitalization of agriculture. To create the possibility of accelerated digitalization of production and processing of agricultural products, the Ministry of Agriculture of the Russian Federation provides state support at all stages of the transition of enterprises to new business process models n recent years, there has been an increase in the area of agricultural land, despite the fact that the volume of their use over the analyzed period remained almost unchanged, which indicates a decrease in the share of agricultural land used in the total area of agricultural land of the agribusiness organization of the republic. The digital economy, as an economic category, has been considered in recent years by a number of authors in sufficient detail. Moreover, some domestic researchers speak about the digital development of agriculture as the most difficult strategic task due to the most difficult conditions for modeling business processes and the instability of most influencing factors. It should be noted that among the problems of digital development, some of them emphasize the lack of technological sovereignty in the field of IT development for the agricultural sector. However, in the future, the government plans to reduce the negative impact of this factor. The Ministry of Agriculture of the Russian Federation provides information on a multiple increase in the share of the Russian ICT market in agriculture. So, according to experts, by 2025 it will be five times more than in 2018. And by 2035, the

volume of the ICT market for the agricultural sector will reach $ 480 billion. Which is more than 10 times more than in 2015. The prospects for the growth of the share of domestic software and hardware in the agro-industrial complex need support for the implementation of specific production systems.

4 Conclusion

An analysis of the literature has shown that the digital transformation of agriculture is a global trend that covers various aspects of the industry, including management, production, logistics and marketing. The main directions of digital transformation include the use of digital platforms for farm management, automation of production processes, the use of the Internet of Things (IoT) for monitoring and controlling agricultural processes, as well as the use of analytical tools for data-based decision-making. Development of digital development directions Agro-industrial complex in order to increase the efficiency of agricultural production by maximizing labor productivity through automation of processes and minimizing costs through the introduction of innovations and the use of resource-saving technologies is possible only with a detailed analysis of the development trend of the agricultural sector in the region, increasing interest in spreading best practices in the agro-industrial complex and improving the results of production, processing and storage of agricultural products for agricultural organizations. In our opinion, there is no need to compete in areas where our foreign partners have been leaders for many decades. For example, the isolated development of the IT sector does not lead to extensive informatization of the agro-industrial complex, a program is needed to create agrotechnoparks, on the basis of which it is possible not only to rent experimental plots and demonstrate the effectiveness of agricultural machinery, but also to implement IT projects that improve the business processes of agricultural production. This approach opens up prospects for educational organizations that train personnel for the domestic agro-industrial complex. The symbiosis of specialists who understand the specifics of crop cultivation with IT competencies will certainly cause a synergistic effect, expressed in projects to increase the efficiency of agricultural sectors based on the integration of information solutions.

Thus, the results of this study once again confirm the need to develop a methodology for an innovative approach, which is the optimal model for the development of not only the agricultural sector, but also the entire economy as a whole. At the same time, the formation of an effective innovation infrastructure based on digitalization will contribute to the growth of labor productivity in "digital" agricultural organizations (enterprises), reduce the costs of agricultural producers, increase the prestige of agricultural labor, and involve representatives of new modern professions in material production.

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