FUNCTIONING OF AGROINDUSTRIAL COMPLEX IN THE CONDITIONS OF DIGITAL ECONOMY

Amirova E. F
Kazan State Agrarian University, Kazan, Russia

Voronkova O. Yu
Altai State University, Barnaul, Russia

Pyurveeva K. A
Kalmyk state University named after B.B. Gorodovikov, Elista, Russia

Shatalov M. A
Voronezh Economics and Law Institute, Voronezh, Russia

Panteleeva T. A
Institute Of World Civilizations, Moscow, Russian Federation

Sorokina O. A
State university of land use planning, Moscow, Russian Federation

ABSTRACT
The article deals with the development of the agro-industrial complex in the conditions of the development of digitalization of the economy, the experience of introducing the digital economy into the agrarian sector of developed countries and the possibility of its application in the Russian agriculture. It was proposed to expand the scope of application of the digital economy at the expense of public investment, the formation of new structural elements in the form of associations and associations.

Keywords: Agro-Industrial Complex, Agriculture, Digitalization of the Housekeeper, Information Technology, Information Support.

1. INTRODUCTION
In the present context, the innovative development of agriculture in Russia has significant inner reserves, the use of which will give fresh impetus to the development of the agro-industrial complex (AIC) of the Russian Federation in the third millennium [1]. One of them is the advances in the digital economy. Digitization of activities of the AIC subjects involves the integration of data from various sources and the processing of large information flows [2; 3]. In this regard, there is a need to form an information system that meets the requirements of the digital economy and satisfies the information needs of the concerned parties. The relevance of the study is primarily due to the role of informatization in the process of developing a socially-oriented regional economy. Today, the activities of any enterprises and organizations, various institutions and government agencies are impossible without information and communication technologies, which, in one way or another, are connected with all spheres of social life. Informatization processes are gaining momentum in all structural elements of the agro-industrial complex: planning and management, production and transport, banking and financial operations, the media industry, healthcare and education, sciences society and cultural environment [4-9]. It is necessary to determine possibilities for the growth of the Russian economy through the modernization of technical, technological and management operations based on the use of the latest technologies that offer digitalization of the economy as a new development model [10-11]. The transition from the generally accepted strategy of the digital economy, based on the use of individual digital devices and technologies, to the digitalization strategy of the actual economic ties and relations, ensures high economic growth rates in the AIC. The use of computer systems, information and communication technologies facilitate to accumulation, storage, processing and distribution of massive flows of information. These technologies are used for computational actions, handling of applied problems, creating databases, and controlling all kinds of devices, troubleshooting and modeling of various processes. Today, such technologies are an integral part of human life at work and home.

The digital economy in agriculture will allow developing a model for the growth of agriculture in the twenty-first century, reflecting the peculiarities of the Russian Federation and focusing on both the domestic and foreign markets [12]. This will increase the growth of production of the main product group, aimed at both export demand and import substitution and will ensure the demand for wheat, oilseeds, vegetable oil and other products produced by the Russian agro-industrial complex [13]. This will provide sustainable development as a steady increase in production.

2. METHODOLOGY
The research is based on the study of modern advances in the field of digitalization when making investment and management decisions by the AIC subjects. The attainment of this goal is ensured by using critical analysis of literary sources, general scientific methods of a systematic approach, analogy methods, design, abstract-logical and statistical-economic methods.

3. RESULTS
The study has systematized the data sources, formulated the requirements for the information support of digitalization. The author suggests an approach to the formation of the information support system for the digitalization. The factor dependence of the choice and specificity of the use of the software product on the targets of the subjects of the agro-industrial complex is justified. Furthermore, the study reveals the specific nature of setting information support.
objectives for various types of subjects of the AIC (producers and consumers of agricultural products, the government and investors).

The results will be useful to the government agencies regulating the activities of the AIC subjects, which will ultimately lead to an increase in the economic efficiency of all the subjects of the national economy.

4. DISCUSSION
Formation of the information support system for the digitization is a process combining various data into a single information space that requires prompt and complete verification of incoming information, increasing the level of the companies' intellectualization, developing domestic software products, expertise and the degree of training, as well as the culture of consumption [14-18].

Similarly to developed countries, digitalization will contribute to ensuring the conditions for the transition to a digital economy of domestic agricultural production in, increasing efficiency and minimizing AIC costs. It will allow to timely receive reliable information and will become a powerful tool for investing and controlling monetary circulation and the labor movement, reducing inflation; eradicating corruption [19-20], underhanded income, illegal business activities and financial crimes. Therefore, digitalization, as a new model of the digital economy, will ensure the growth of the national economy [21-27].

However, Russia has its own peculiarities and conditions, entirely different from the developed countries – high losses of produced raw materials during storage [28-36], processing and transportation. The initial results of digitalization in the agrarian sector of the Russian economy are insignificant, but the questions of innovation-investment process development, import substitution and export orientation are gaining momentum [37-40].

The level of digitalization of the AIC branches in real economic conditions might increase at least several times in index terms. The AIC branches are ready to use almost all the technologies that exist in the digital economy. In monetary terms, the market of information technologies in agriculture amounts to more than 360 billion rubles. According to experts, it should increase 3-5 times in the next 10-15 years. Integrated digitalization of agricultural production will allow farmers to reduce costs by 23%. Thus, the average cost savings in land use with the use of GPS navigation technology is 11-14%, with differential fertilization – 8-12%, and using the systems of parallel driving – 8-13%. With inefficient use of agribusiness tools, namely crop protection agents, seed-stock, machine and tractor fleet and new technologies, firstly, precision farming technologies result in up to 40% of the crop loss [41-48].

To date, any country transitioning to a digital economy, focus on a certain digital transformation strategy depending on the level of economic development, level of education, availability of the regulatory framework, applied technologies and their state for developing information systems to achieve positive results [5; 49-51]. The digital economy in agriculture can ensure the sustainability of agricultural development, the development of agrarian science, agrarian education, and compliance with environmental standards.

Innovative development of the agricultural sector requires the use of information and communication technologies. They can provide effective communication and interaction in online mode. In a network economy, technology platforms should become one of the key elements of digital ecosystems. For agrarian digital ecosystems, the two platforms "Technologies of food and processing industry of the agro-industrial complex – healthy food products", and "Eurasian Agricultural Technological Platform" can be the primary ones. Other platforms include "Space and geo-information technologies – products of global
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competitiveness", "Eurasian supercomputer technology platform", "Photonics", "Eurasian LED technology platform", "Environmental development technologies", "EVRAZIOBIO" [52-54]. Without them, the agricultural sector of the Eurasian Economic Union will lose competitiveness in the nearest future. With a low level of development of information and communication technologies in the agricultural sector, the largest number of innovative projects is placed on the platform called "Technologies of food and food processing industry of the agro-industrial complex – healthy food products" [4].

The development of information systems and computerization open up new opportunities for agriculture by improving the quality of work and increasing productivity. Enterprises producing agricultural machinery and equipment play an important role. At the same time, the most important advances are those in the field of program control of the processes of spraying and soil cultivation, fertilizer treatment for crops. [38]

Today several Russian agricultural complexes successfully use new farming technologies that are highly competitive with the foreign ones [55-56]. For example, the reconstruction of farms with the introduction of new technologies for the maintenance, milking and feeding of animals, as well as the introduction of conservation agriculture is used. Due to high technology loafing became possible. Some farms of the Krasnodar Territory, Tatarstan, Belgorod, Rostov, Kursk, Lipetsk, and some other regions have succeeded in the so-called no-till farming; they are building high-level animal husbandry complexes [57].

Recently, the advisory services market in Russia is gaining popularity in the agrarian sector. This can be explained by the growing interest in the introduction of information technology, and the need for practical experience in this area. Farmers need consulting since they hardly track the latest technological advances; the quantity and quality of their products are of greater importance to them. Consulting is a project focused activity for supporting business processes, which allows having an independent assessment of the effectiveness of using new information technologies [41; 57]. In this context, a consultant can be rather helpful. He or she sometimes visits the farm and makes recommendations on how to improve production and introduce innovative technologies [58]. Such support helps farmers to spend money on resource-saving information technologies instead of conventional ones. Moreover, there are several consulting, management and organizational centers. They are willing to help agricultural enterprises through their financing and implementation of investment projects [59-60]. In Russia, network technologies form the basis for creating a single information space. These technologies are new but they are rapidly developing, the enterprises are being equipped with high-tech developments.

The agro-industrial complex needs stable state support and supply of workers. Innovations, discoveries, and new ideas will require hiring a younger generation of employees [61-64]. Besides, there are still no economic and legal fundamentals defining the rights and obligations of individuals in the formation of information resources and their stimulating regulators.

"Kuban" agricultural complex can serve as an example of the digital economy development. The multidisciplinary team from sectorial crop-producing national research universities and research institute of Cybernetics of the AIC has implemented various information management system (IMS) of organizations (offline) within the framework of the program "Electronization of agriculture". The need for integrated solution of information issues, its processing modes, as well as the requirement of their functional completeness served the basis for formation of the list of objectives and their classification (340 tasks were allocated for automation), and for developing a logical database structure (DB) (151 types of records) typical for all horticultural enterprises in Russia [38; 65-67].
In the current context, when creating a typical website of an agricultural enterprise, this logical database structure can become an integrator of all systems of precision farming, space monitoring of lands and other IMSs. This will allow implementing standard solutions that will be almost free for a producer. This logical structure and classification of these tasks for automation can serve as the basis for standardization of the digital platform for the plant production. There is a similar approach for other industries, including livestock; when you create the corresponding database in a certain "cloud environment" [68], for example, a provider who has a large database management system (DMS) will expand the digital platform to all branches of agriculture. These databases will be integrated with each other.

According to Russian and the world’s practice, with the implementation of a typical website of an agricultural enterprise and an obligation to submit statistical information to the integrated "cloud environment" Rosstat [42] should change significantly.

5. CONCLUSION

Therefore, the integration of web information for agricultural knowledge with typical websites of agricultural enterprises, agricultural research institutes and universities, standard IMSs and primary accounting systems implemented using Internet technologies are the basis of a digital platform, the logical structure of which is ready for integration with various digital devices in future. Digital economy in agriculture will allow forming a new structure of the digital ecosystem of the agricultural sector. Together with the digital assets of the agricultural sector, innovative projects will be placed on technological platforms. Development and functioning of the digital agrarian sector of the Russian Federation in the twenty-first century require coordinated actions of all participants, experts, high financial costs, developed IT structure, methodological and legal framework. Digitalization of business processes will allow the Russian agro-industrial complex take a quantum leap and provide it with competitive advantages.

REFERENCES


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