Legal Support of Digitalization of the Agro-Industrial Complex of Russia: Problems and Development Prospects

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Abstract. The article touches upon the problem of increasing the economic efficiency of the agro-industrial complex of Russia in the digital economy, presents the main directions of digitalization of agriculture, considers ways to automate modern agricultural production, reveals the advantages and disadvantages of equipping agricultural machinery with modern «smart» systems. Particular attention is paid to the legal reflection of the theory and practice of implemented digital technologies in the agricultural sector of Russia. The parameters of the general financial support of the State programs of the Russian Federation on digitalization of the agricultural sector are analyzed. It is concluded that by digitalizing the agro-industrial complex of Russia, it is possible to increase the exchange of information and open access to it to a wider range of agricultural producers; to form a modern competitive food market; improve vertical and horizontal agricultural integration; significantly reduce institutional risks by reducing the uncertainty in production decisions.

1. Introduction
As of today, in the scientific circulation and in the practical activities of a number of countries, the concept of «digital economy» has spread. The rapid development of computer technology amid the globalization of the economy served as the basis for the digital revolution and the transformation of the role of information from auxiliary to the main resource of activity of market entities [1]. Popular characteristics of the digital economy of Russia in their logical relationship are presented in Figure 1.

In the development strategies of large agricultural enterprises, digitalization and automation of all processes in agricultural production come first. To accelerate the growth of agricultural productivity, to ensure a stable result of the introduction of innovations and to increase the competitiveness of enterprises on a local and global scale, first of all, the huge volumes of collected information and advanced data management systems allow (data science и data management) [2].

Agriculture in Russia has reached a certain maturity, as evidenced by the stabilization of investment in agriculture and increased competition among agricultural producers. In the agro-industrial sphere, the volume and quality of the use of modern technologies, including data acquisition, storage and processing systems, is growing. This increases both the amount of data and the need for high-quality processing and reliable conclusions that you can rely on when making decisions. As a result, the demand for industrial analytical and navigation systems increases [3].
Despite this, the effectiveness of domestic agriculture is noticeably inferior to the largest economies. According to expert forecasts, 25% of the global economy will switch to the implementation of digitalization technologies by 2020. Smart farming and precision farming programs are available in dozens of countries. The pace of implementation of «artificial intelligence» technologies in the agricultural sector is growing by 22.5% annually. According to the «Markets and Markets» research company data, the size of this market will be $2.6 billion by 2025 [4-5].

2. Materials and research methods
The study is based on data from the Ministry of Agriculture of the Russian Federation, as well as regulatory and legal provisions of the Government of the Russian Federation (orders, decrees, development programs). The theoretical basis of the study was the publication of domestic and foreign economists and jurists on the problems of introducing innovations in the agricultural sector of Russia. Empirical materials are properly summarized and structured from the point of view of argumentation of the main provisions that reveal the means of achieving the goal of the study. The methodological basis of the study was general scientific methods of cognition, involving the study of agro-industrial laws and legal phenomena in development and the relationship: analysis, synthesis, deduction and induction, analytical comparisons.

3. Discussion and recommendations
The digital economy at the state level is defined as an economic activity, the key factor of production of which is digital data. It is based on the processing of large amounts of digitized data. The results of their analysis make it possible to increase the efficiency of production activities, improve technological solutions and equipment, and develop a system of production, distribution and consumption of products. The digital economy has many advantages [6].

Agriculture in Russia, being an integral part of agriculture, is rapidly forced to become high-tech and innovative, allowing detailed measurement of all the processes occurring on the land or farm. To achieve these objectives in the state program «Development of agriculture and regulation of markets of agricultural products, raw materials and food» resolution of the Government of the Russian Federation from 8.02.2019, No. 98 in the subprogram «Providing conditions for the development of agro-industrial complex» included the departmental project «Digital agriculture» [1]. Purpose of
which is to ensure the development of agriculture by means of introduction of digital technologies and platform solutions, including the creation of information system for the collection of industry data. Single window in 2020. Options total financial provision of State program for the period 2020-2025, are presented in table 1.

### Table 1. Parameters of financial support for the State program for the period 2020-2025 year.

| Period (year) | The amount of financial security (thousand rubles) |
|---------------|--------------------------------------------------|
| for 2020      | 746756600,8                                      |
| for 2021      | 753791231,2                                      |
| for 2022      | 841099996,1                                      |
| for 2023      | 852741888,8                                      |
| for 2024      | 850290117,7                                      |
| for 2025      | 767371185,9                                      |

Considering that its total amount of financial support is 8102921511.7 thousand rubles, it is not difficult to calculate that a significant part of the planned activities (since 2013) has already been implemented. Undoubtedly, this can only indicate a positive path for the introduction of digital technologies in the agricultural sector.

In addition, in order to implement the Strategy for the Development of the Information Society in the Russian Federation for 2017-2030, approved by Decree of the President of the Russian Federation dated May 9, 2017 No. 203 «On the Strategy for the Development of the Information Society in the Russian Federation for 2017-2030», by the Government of the Russian Federation The Federation developed the Digital Economy of the Russian Federation program (order of July 28, 2017 No. 1632-r). The goal of the program is to create such ecosystems of the digital economy of the Russian Federation, in which data in digital form would become a key factor in production in all areas of socio-economic activity; and in which effective interaction of business, the scientific and educational community, the state and citizens would be ensured. The implementation of this program in practice could serve to create new cross-cutting digital technologies in Russia [7] within the framework of agricultural management, namely the creation of: large electronic data; neurotechnologies and artificial intelligence; distributed registry systems; quantum technology; new production technologies; industrial internet; robotics and sensors; virtual and augmented reality technologies, etc. Digitization of agriculture management improves budget efficiency [8].

In this regard, a positive development is seen and ratification of the Treaty on the Eurasian economic Union, which envisages the creation of integrated information system of the Union and cross-border space of trust. But if you consider that as of today, agricultural producers (citizens-farmers, for example, your leading private farms) do not have the digital competences and the level of use of personal computers and information and telecommunications network «Internet» in Russian villages still wants the best, would not be bad, first of all, to expand in the education system the use of basic digital technology. In the future they could apply this knowledge in practice, for example, in crop production for this category of citizens, it would be possible to offer, for example:

- put branched sensor networks (a complex monitoring system equipped with sensors and analyzers of contact and contactless action) as the basis of their production;
- actively use microscopic sensors (sensors and chips) of contact action and non-contact laser-optical sensors in their activities;
- localize monitoring and phytodiagnosis of fruit-bearing plants, which will allow to take into account its need for moisture, nutrients, to determine the presence of pathogens and viruses;
- introduce 3D scanning of crops by placing sensors in various parts of their plantations;
• use robotic mobile platforms and manipulators, which will allow them to switch to automation of technological processes of their industrial production [9].

To develop farming and increase their potential production capabilities, for example, we can offer a new innovative automatic driving system for any equipment developed by «John Deere» (Figure 2). This is a new universal set for automatic driving Auto Trac 200, which is installed not only on previous «Jonh Deere» models, but also cars from other manufacturers. Such technologies provide more accurate driving of the unit in the field and an objective assessment of the work, which favorably affects the increase in productivity, improved product quality and reduced costs of means of production.

![Figure 2. Combine Harvester John Deere s650 combine.](image)

And the company «Deutz-Fahr» (Germany) has developed a new, fairly innovative automatic driving system for any vehicle: a new universal kit for automatic driving ISOBUS and TIM, which is installed not only on previous models «Deutz-Fahr», but also cars from other manufacturers. Reliable high-precision automatic control systems with one of the highest ISOBUS and TIM standards on the market (additional tractor control). Partial sectional closing of sprayers, as well as fully automated Deutz-Fahr precision farming systems not only increase the efficiency of working equipment, but also increase the level of working comfort. All Deutz-Fahr precision farming systems operate using a single monitor.
4. Research results

In practice, a modern commodity producer quite often during storage, processing or transportation of agricultural goods is faced with a situation of partial loss (both in kind and in processed form). This is easy to determine by looking at and analyzing the annual reports of agricultural enterprises and the data of the budget survey of the population [10]. Undoubtedly, such losses cause a reduction in the cost per unit of agricultural products and contribute to increased competitiveness, including the economic efficiency of agricultural production.

Agriculture occupies a special niche, being mainly a supplier of raw materials for food production (in the initial form, according to various estimates, only 4-8% of agricultural products are consumed), which determines the specifics of the digital transformation model of the agricultural sector [11].

In this regard, the most optimal solution to this problem seems to be the use of new digital techniques for agricultural work. For example, GPS navigation will help minimize the costs of at least the maintenance of agricultural machinery and increase the efficiency of the main production. Together with GPS trajectories, provide important information on vehicle fuel efficiency and environmental impacts in the real world road network contexts [12]. And if we take into account that in this way it is possible to achieve a reduction in the cost of working time, then the use of modern digital technologies will allow the Argars to focus all their attention on strict observance of the requirements of relevant technological processes and the norms of legislation governing their activities.

If we turn to the foreign experience of researching this issue, on the whole, the opinion of scientists comes down to the fact that the most effective digital technologies applicable specifically in the agricultural sphere will be: development and genetic modification of the seed stock using modern means and methods of measuring, displaying and transmitting information on it; precision farming, by applying the management of crop productivity, taking into account the state and changes in environmental factors of crops; monitoring the quality of agricultural products through the use, for example, of sensors and analytics to prevent and prevent diseases and spoilage of food products [13, 14], etc.

Agriculture as an independent sector of the economy has a number of features that predetermine the need to take them into account in the process of implementing the state economic policy [15]. Having completely digitalized the agro-industrial complex of Russia, the main thing that we can achieve is:
• increase the exchange of information and open access to it to a wider circle of agricultural producers;
• create a modern competitive market for food products, based on lower transaction costs and lower losses «from field to counter»;
• improve vertical and horizontal agricultural integration;
• significantly reduce institutional risks by reducing uncertainty in making production decisions, while increasing their own preparedness for climate change and natural disasters.

In order to achieve a stable and effective trend in the development of the agro-industrial complex, states should first of all pay more attention to the development of new generation technologies, which are based on the high quality of products, resource conservation, environmental safety and competitiveness in the world market [16].

5. Conclusion

Summing up on the completed study, we can add that the only effective use of the achievements of the digitalization and automation of agricultural processes will allow us not only to ensure the creation of high-tech jobs, but also to minimize the negative impact of human factor on the environment and increase the quality of the products.

Looking through the Russian experience we can say that intelligent solutions are actively introduced in the domestic agricultural sector. Therefore, agricultural producers, it is important to closely monitor market players engaged in the development of «smart» solutions for agriculture, and actively implement these developments in their production. Again, pay attention of our farmers that the digitalization of their activities will reduce the level of costs, which automatically affect the reduction in the cost of agricultural products and raw materials, including the formation of market prices for the final consumer.

Unfortunately, as of today, the issue of creating a unified information space on agriculture and, respectively, agricultural science, remains open [17].

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