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Digital traceability platforms in the field of creation and promotion of agricultural products as a factor in the competitiveness of agribusinesses

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Abstract. The article presents the results of research on the development of enterprises of the agro-industrial complex based on the introduction of modern systems in the field of identification of production, movement, and sale of agricultural raw materials and goods. The authors describe the economic effects that are created through the use of digital traceability platforms for agriculture. At the same time, the article also points out to the problem areas that impede the full-scale use of the described tool for digitization of agriculture. The description of the targets for creating digital platforms for agricultural traceability, formed by the expert community in the framework of the development of the departmental project “Digital Agriculture,” is also provided in the paper.

Global trends in the development of the world economy show that the projected increase in world population by 2050 will reach at least 9 billion people. Growing food consumption and the quality requirements of the population will require national governments and international organizations to create fundamentally new conditions and opportunities to assist food producers. This should be prepared and the agro-industrial complex of Russia, which is one of the most important sectors of the domestic economy, forming 12.6% of the country's gross domestic product.

Over the past few years, the dynamics of the volume of production in the Russian agro-industrial complex in Russia is growing steadily (Figure 1).

Thus, the volume of agricultural production in 2017 amounted to more than 5.6 trillion rubles, including 3.03 trillion rubles in the crop sector and 2.6 trillion rub. in the livestock industry. The food (processing) industry showed an increase up to 6.1 trillion rub. in manufactured products. This is a third more than in 2014, when a total of 4.3 trillion rub worth of products was created in agriculture.

No less important is the fact that the number of products produced per employee has also grown steadily over the years. If 676.3 thousand rubles were received per employee in terms of value products in 2014, then it was already 1,030 thousand rubles in 2017 (1.5 times higher).

Despite important positive changes in the agro-industrial complex, possible limitations in the future growth of the agro-industrial complex production should be taken into account, due to the fact that the saturation of the domestic food market with domestic products has a limit and for a number of product groups consumer preferences are often on the side of the imported products being replaced. In



addition, a number of infrastructure problems in the development of agriculture remain: an insufficiently developed network of wholesale distribution centers, low technical and technological security (especially for small businesses), high freight rates, technological import dependence, lack of accessible and convenient information services for product sales AIC, and other problems. In the context of the last identified problem, we note that, according to expert community estimates, up to 13% of the total volume of products sold is conducted through direct sales channels. Direct channels include direct sales of products by a manufacturing company to an end user (for example, through its own stores, in the market, fair, barter transactions, etc.). Through the use of indirect channels that are systemically important, 38% (single-level) and 49% (multi-level) products are sold. As a rule, indirect channels include the supply of agricultural products to retailers, for government needs, as part of consumer cooperation, as well as to processing enterprises.

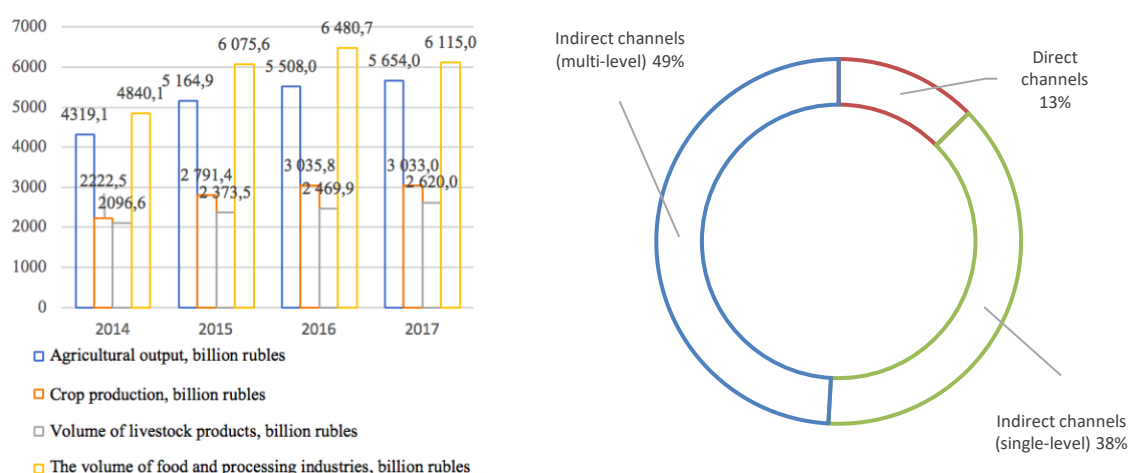


Figure 1. The dynamics of the development of sectors of the agro-industrial complex in Russia in 2014-2017 [1, 2, 6].

The experience of countries with developed agricultural production shows that the improvement of production technology and marketing of agricultural products is possible through the use of the latest achievements based on modern technologies, including those having a digital basis. The use of modern digital technologies throughout the entire life cycle of the production and sale of agricultural products (“food processing chains”) can significantly increase the yield per unit of invested funds or resources spent, reduce total costs, thereby increasing the marginality of the agricultural business. According to the calculations of the Analytical Center of the Ministry of Agriculture of Russia, the effects of digitalization in the case of an integrated approach can reduce the cost of crop production by 23%.

At the same time, from the point of view of the process approach, before the final stage of the life cycle of any product, its implementation is direct to the consumer, with previously known and guaranteed quality indicators meeting the safety standards on the “just-in-time” principle. The absence of both the manufacturer and the consumer of tools (information or digital systems) that could ensure digital traceability of the movement of agricultural products reduces the impact of the entire business process at the level of an individual economic entity, and in terms of the total effect of all manufacturing enterprises and related with them adjacent enterprises-contractors leads to a tremendous loss of resources, time, affects the quality of products. In addition, product consumption suffers, since the lack, incompleteness or impossibility of verifying the authenticity of information on products of the agro-industrial complex always limits the ability of consumers to satisfy their consumer needs while minimizing the likelihood of acquiring counterfeit products.

Thus, already for the majority of agricultural producers, the provision of digital traceability of agricultural raw materials (or, more broadly, agricultural products) is a new factor in the value chain, which ensures a sharp increase in the competitiveness of enterprises.

Analysis of the scientific and practical literature on the issues under consideration allows us to conclude that the use of digital traceability technologies in the production and sale of agricultural products generates a number of economic effects [3].

First, digital traceability reduces the volume of purchases of poor-quality raw materials (feed, seed, livestock products, semi-finished products, etc.), including the so-called “gray” schemes. According to estimates of the Federal Tax Service of the Russian Federation, the annual budget losses from “gray” export operations with grain alone amount to more than 65 billion rubles [4]. The manufacturer has an opportunity to understand the following: in which batch of manufactured products there was a problem and to identify and localize problem batches of products (in their warehouses or in a batch already shipped to customers). Then, it becomes possible to restore information from which batches of raw materials and materials a problem batch of products was produced, through which equipment and through which employees the products “passed” during production.

Second, digital traceability affects the increase in sales of agricultural products due to the growing consumer confidence on the part of consumers in the domestic market and especially in foreign markets. The consumer knows in which locality the product was produced, what are the conditions of storage and its transportation. In general, this will allow the consumer to make a more objective choice when purchasing products.

Third, digital traceability reduces transaction costs for all participants in the distribution chain by creating alternative, “objective digital trust”.

Meanwhile, it is necessary to recognize that the implementation of these technologies for a particular agricultural enterprise is currently a difficult problem in the technological, organizational, economic, and legal aspects.

This is due to the fact that there is a lack of an authoritative number of digital platforms in the field of traceability that are attractive to potential users. In addition, there is a shortage of information in an accessible form about existing technologies, methodological, technical and informational support, as well as the positive practice of introducing such technologies. There is no relevant and reliable information on domestic and foreign sales markets, not to mention the segmentation existing in the context of specific product groups, subregions, and potential niches for the creation and promotion of agricultural products.

Available catalogs of regulatory information, legislative, and regulatory acts that ensure the legality of such technologies (platforms), protect the confidential data of participants, as well as reduce the risk of loss of commercial information by market relations subjects are under development and do not always have time to be updated according to technological changes.

A major problem is the historically established non-transparency of the movement of agricultural products in the logistic space in the process of implementing trade and procurement relations between counterparties both in the domestic and foreign markets. From the point of view of many commodity producers, the use of digital platforms of traceability entails risks associated with the inappropriate use of platform users' information by platform operators, often containing a trade secret.

To solve these problems and satisfy consumer requests for the creation by the state of conditions and opportunities to increase the production of agricultural products for the supply of high-quality and safe food to the domestic market and agro-export, a number of initiatives are formed by the Ministry of Agriculture of Russia, including the creation of a digital traceability infrastructure in the “From Field to Port” mode. In particular, within the framework of the Departmental project “Digital Agriculture”, a platform is planned to be created that ensures the digital traceability of the production and movement of agricultural products and goods in Russia.

According to the results of the discussion of the initiatives of the Ministry of Agriculture of Russia with the expert and scientific community and directly with the producers themselves, a number of

targets have been developed that are aimed at implementing the initiative to create a digital traceability platform in the field of production and promotion of the agro-industrial complex.

From the point of view of the state, the following can be identified as the most important targets [6, 7]:

- Ensuring the growth of agricultural commodity turnover both within the country and on the foreign market between the closest trading partners in the CIS or the EEU;
- Ensuring the growth of efficiency in the collection of customs duties, excise taxes, and tax payments for the circulation of agricultural products and goods;
- Reducing the risks and negative uncontrollable consequences in the functioning of the national (local) information system for tracking agricultural products and goods;
- Promptly providing all participants in the distribution chain with reliable and verified information on the movement and storage of agricultural products and goods;
- Reducing the time required for quality control, determining the country / region / producer of agricultural products and goods;
- Reducing the volume of paper documents and generated reports, documentation on the operations of import / export of agricultural products and goods;

At the level of commercial structures, the following proposals were received on the formation of targets for a digital traceability platform [8]:

- Reducing the laboriousness of the procedures for collecting and processing reliable, verified data on the manufacturer of products and goods, and promptly providing the indicated data to internal and external consumers;
- Reducing the time for customs clearance of agricultural products and other inspection points;
- Reducing the cost of reporting and documentation for the purposes of customs clearance of agricultural products and goods, as well as examining the quality of products and goods;
- Increasing the rating of “respectable” producers with a stable quality and a confirmed reputation of agricultural products;
- Minimizing the risks of acquiring counterfeit agricultural products, as well as products that have been subject to unacceptable conditions of storage, transportation (temperature, storage time, transportation, etc.);
- Obtaining additional guarantees of fulfilling obligations by suppliers, carriers, and custodians of agricultural products and goods (due to the possibility of using the digital verified data on the shelf life of products, temperature conditions, etc.).

During the analysis of expert assessments, targets for the digital platform of traceability are aggregated from the point of view of the interests of end users:

- Reducing the prices of agricultural products and goods by reducing costs (reducing transport downtime, reducing the share of low-quality, counterfeit goods, reducing the labor-intensiveness of collecting and processing verified producer data) of manufacturers, wholesale and retail companies of agricultural products, transport companies;
- Purchasing high-quality, proven, and confirmed (by the manufacturer's reputation) agricultural products and goods [5].

The initiative to create digital traceability platforms in the production and promotion of agricultural products has been supported by many major manufacturers, processors, educational and government agencies, experts, and the scientific community (Moscow State University named after M. V. Lomonosov, National Research University Higher School of Economics, RSAU-Moscow Agricultural Academy named after K. A. Timiryazev, Sberbank PJSC, Moscow Exchange PJSC, Skolkovo Foundation, Rostekh GC, Mobile TeleSystems PJSC, Rusagro Group OJSC, AFG National LLC, UK EFKO JSC, Agrofirma Trio LLC, AK BARS JSC Holding Company, AGRICO LLC, Agrosila JSC,

BIOTON LLC, AgroGard JSC, AgroPromkomplektatsiya GC, National Movement of Saving Agriculture NP, Public Council of the Ministry of Agriculture Russia, and others).

Thus, already for the majority of agricultural producers, the provision of digital traceability of agricultural raw materials or, more broadly, agricultural products, is a new factor in the value chain, which ensures a sharp increase in the competitiveness of enterprises. The achievement of multiplicative effects from the introduction and application of digital platforms of traceability in the field of production and promotion of agricultural products requires, in turn, to overcome the above-mentioned problems, which should be solved synchronously with the interests of the state, industry, technology companies and, of course, end-users of products of the agro-industrial complex.

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