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**INNOVATIVE DEVELOPMENT MANAGEMENT IN
AGRIBUSINESS**

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Abstract

Nowadays, the Russian agribusiness faces many global challenges and threats, including economic, social, political, technological, and others. The activation of innovative activities should resolve the problems. The study of the state and dynamics of the innovative activities development at agricultural enterprises is undoubtedly important. The authors of the paper hypothesized that the innovative development management of the Russian agribusiness industry involves the effective use of scientific and technical potential, integration of science, education and production, and technological modernization based on innovative technologies. The purpose of the study is to analyze the factors that caused the dynamics of innovative development at enterprises and companies of the national agribusiness industry, in order to develop ways to improve the efficiency of innovative processes management. Using the methods of theoretical analysis, the authors identified the development characteristics of innovative activity at Russian agricultural enterprises and food factories. Economic and statistical methods of analysis allowed the authors to determine the trends and factors in the innovative activity development. The authors came to the conclusion that innovative development management in agribusiness is possible when building conditions to create competitive scientific and (or) scientific and technical results, as well as implement scientific results in production and involve them in economic turnover. Increasing the innovative and scientific and technological potential of the Russian agribusiness industry will allow to gradually reduce Russian dependence on imported technologies and other resources.

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Keywords: Agribusiness industry, food, innovations, management, science, technologies.



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1. Introduction

Innovative development management of the Russian agribusiness industry involves the effective use of scientific and technical potential, integration of science, education and production, and technological economy modernization based on innovative technologies. As digitalization changes agriculture, it is necessary to consider the consequences of cumulative innovation processes in order to reduce risks and benefit from opportunities (Fielke et al., 2019). The solution of this complex task requires arrangement of appropriate conditions: adequate infrastructure for innovation activities or a set of material, technical, legislative and other means that provide information, expert, financial, personnel and other services for innovation activities.

2. Problem Statement

In the near future, Russia intends to strengthen its position on the world food market by increasing production volume of competitive goods, that cannot be achieved without innovative activity increase at agricultural enterprises, and share augmentation of food products of upstream manufacturing. Innovative activity development in the agribusiness industry is one of the strategic development directions in the Russian Federation. To stimulate this development, the Federal Scientific and Technical Program for Agricultural Development 2017-2025 has been adopted. The program expected results are:

- Reduction of the import dependence level, due to the implementation and use of technologies in producing highest categories seeds (original and elite) of agricultural plants and pedigree stock (material);
- Increase of the competitive domestic technologies;
- Augmentation of the companies that provide services for scientific, technical, and innovative activities in agriculture.

3. Research Questions

To determine the possibilities for innovative development management of the Russian agribusiness industry, it is necessary to identify:

- Trends and factors that determine the innovative development dynamics;
- Factors that help achieve innovative activity growth in agribusiness;
- Direction to develop innovative activities of the Russian agricultural enterprises and companies in order to ensure the strengthening of Russian manufacturers' competitive advantages on the domestic and foreign markets.

4. Purpose of the Study

The purposes of this study are:

- To analyze innovative activity indicators of the agribusiness industry;
- To identify the reasons for the low rate of new technologies increment in the Russian agribusiness industry;

- To assess the mechanisms to manage innovative development in the Russian agribusiness industry.

5. Research Methods

The authors of the study used a wide range of general scientific and special methods and techniques of the economic research. The theoretical analysis allowed to assess the innovative development characteristics of the Russian agribusiness industry. Trends in the innovative development in the main agribusiness branches were identified with the help of economic and statistical methods, and the dynamics of innovative activity indicators at agricultural enterprises and their innovative activity was analyzed. The research was based on official statistics of the Federal State Statistics Service of Russia (Rosstat), the Ministry of Agriculture of the Russian Federation data, as well as on scientists and practitioners' works, which are dedicated to innovative development management in the agribusiness industry.

6. Findings

In the last few years, Russia pays more attention to the problem of innovative activities stimulation. Innovations play a major role in the national economy shift to a higher development level and strengthening the domestic producers' competitive advantages on the domestic and foreign markets. In order to stimulate innovation activity, various public and private organizational forms are being created: technology parks, business incubators, technology transfer centers, venture funds, specialized training systems for innovative entrepreneurship, and others (Shchutskaya, 2017). According to the Global Innovation Index (2019), Russia is in the TOP 50 and ranks 46th in 2019 with the innovation development level index of 37.6 in the world countries ranking. However, this indicator cannot be considered satisfactory, since it is significantly lower than the leaders' indicators: Switzerland (index 67.2), Sweden (index 63.7), the United States (index 61.7), the Netherlands (index 61.4), and the United Kingdom (index 61.3).

In order to increase the innovative potential and improve the results of its use, a systematic approach to solve the problem that affects all sectors of the economy is necessary. Enterprises that belong to the industries with high competition level have the greatest innovation activity. To maintain their competitive position on the market, these companies have to use various innovations, both in production and sales activities, and produce improved and new products that best meet the customers' needs. One of these activities is food production.

Analysis of innovative activity indicators of Russian companies allowed to conclude that, in general, food factories have the most innovative activity among agribusiness industries. According to the official data of the Federal State Statistics Service of the Russian Federation, the indicator of the innovative activity level of the companies that produce food is significantly higher than that one at agricultural enterprises, and it was 14.2% in 2018. It also exceeds the same average indicator for all types of economic activity in the Russian Federation (12.8%). The innovative products share in the food industry is slightly higher than the average one in the economy, and more than 3 times higher than the indicator in agriculture (Table 01). The food industry development is an important task of the State in the context of the import substitution strategy (Glinskiy, Serga, Alekseev, Samotoy, & Simonova, 2018).

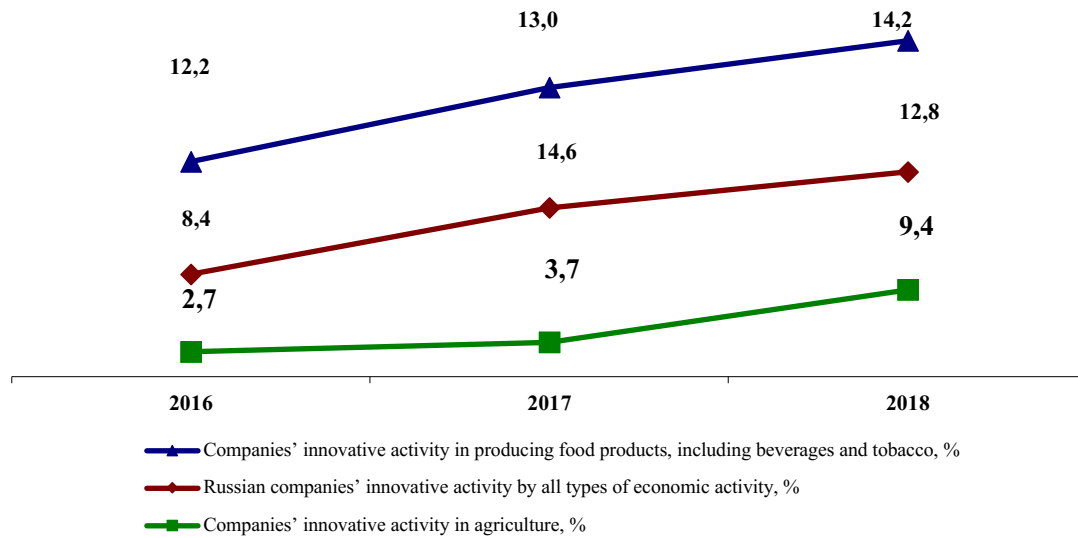
Table 01. Comparative analysis of innovative activity indicators of agribusiness industries in the Russian Federation in 2016-2018

Indicators	2016	2017	2018	Change in 2018, +/-	
				by 2016	by 2017
Volume of innovative goods, works, and services, bln, rubles	4,364.3	4,167.0	4,516.3	152	349.3
Including agribusiness sectors:					
- agriculture	22.2	28.4	33.8	11.6	5.4
- food industry	228.8	291.8	272.3	43.5	-19.5
Share of innovative goods, works, and services as a percentage of total volume of goods shipped, works performed, and services, %	8.5	7.2	6.5	-2.0	-0.7
Including agribusiness sectors:					
- agriculture	1.4	1.8	1.9	0.5	0.1
- food industry	5.1	7.6	6.6	1.5	-1.0
Expenditures on technological innovations, bln, roubles	1,284.6	1,405.0	1,472.8	188.2	67.8
Including agribusiness sectors:					
- agriculture	15.0	15.8	22.0	7.0	6.2
- food industry	22.9	43.8	40.8	17.9	-3.0

Source: authors based on (Rosstat, 2019; Gokhberg et al., 2019).

It is important to note that the dynamics of innovative activity indicators in agribusiness in 2017-2018 had a different focus: indicators growth continues in agriculture, but there is an increase in innovative products share, as well as in expenses for technological innovations in food production. Technological innovations increase an agricultural mechanization and make a significant contribution to solve social problems such as climate change or food security (Gremmen, Blok, & Bovenkerk, 2019; Kernecker, Knierim, Wurbs, Kraus, & Borges, 2020).

Technological innovations require the greatest amount of investment. In the total amount of innovation costs (technological, marketing, and organizational), technological costs are about 99%. Among the technological innovations costs, investments in process innovations prevail in comparison with product ones. In 2018, the cost ratio for these types of technological innovations were distributed as follows: 72.6% to 27.4% in agriculture and 50.4% to 49.6% in the food industry. Thus, in agriculture, more attention is paid to the introduction of process innovations (technologically new or technologically improved production methods). The purchase of machinery and equipment, and engineering is the most popular technological innovations in agribusiness industries. 66.3% and 14.2% of the total costs of technological innovations were spent on these types of innovations. However, the innovative activity of enterprises and companies in agriculture remains lower than that one in the food industry and in all types of economic activity (Figure 01).



Source: authors based on (Rosstat, 2019).

Figure 01. Innovative activity of Russian enterprises and companies across all types of economic activities in agriculture and food production including beverages and tobacco, in 2016-2018, %

The share of innovation-active enterprises in the Russian economy increased from 8.4% to 12.8% in 2016-2018. The change in the share of innovation-active enterprises in agribusiness industry is indicative of the all-Russian dynamics. The share of such enterprises in food production increased from 14.2%, and in agriculture from 2.7% to 9.4%. The growth of enterprises innovative activity is accompanied by the new technologies implementation (technical achievements) acquired by companies, and innovative products that have been re-introduced or significantly changed in the last 3 years (Table 02).

Table 02. Efficiency of innovative activity of enterprises and companies in the Russian Federation by the types of economic activity

Indicator	2016	2017	2018	Change in 2018, +/-	
				by 2016	by 2017
Innovative products that have been re-introduced or significantly changed in the last 3 years, mln, roubles	3,210,574.9	3,014,435.1	3,006,565.0	-204,010	-7,870.1
- agriculture	618.9	-	213.6	-405.3	213.6
- food production	187,720.4	240,423.8	223,993.3	36,272.9	-16,430.5
Number of new technologies (technical achievements) and software purchased by companies, units	64,914	20,042	22,678	-42,236	2,636
- agriculture	422	1,161	431	9	-730
- food production, including beverages and tobacco	750	641	757	7	116
Number of developed advanced production technologies in food and beverage production, units	33	23	34	1	11
Number of developed advanced production technologies new to Russia in food and beverage production, units	32	23	32	0	9
Number of fundamentally new developed advanced production	1	-	2	1	2

technologies in food and beverage production, units					
Number of advanced manufacturing technologies used in food and beverage production, units	15,558	16,675	18,024	2,466	1,349

Source: authors based on (Rosstat, 2019; Gokhberg et al., 2019).

The cost of innovative products, newly introduced or significantly changed in the last 3 years at Russian enterprises and companies by type of economic activity, decreased. Moreover, the prevailing cost of modified innovative products in food production fluctuated, but had a positive trend. It confirms the conclusion of innovative leadership of food industry in the Russian agribusiness. In agriculture, the cost of such goods remains insignificant and shows a downward trend. At the same time, the number of new technologies (technical achievements) and software tools, acquired by companies, is growing in agriculture and the food industry.

It should be noted that advanced production technologies, which are new and fundamentally new to Russia, are developed only in food and beverage production. The number of advanced production technologies increased from 33 units in 2016 to 34 units in 2018, and most of them are new to Russia. In 2018, the food industry developed 2 fundamentally new advanced production technologies, and the number of advanced production technologies being in use increased by 15.9%.

The reasons for the low rate of new technologies increment in agriculture are reduction in the number of companies that perform research and development in agricultural sciences, insufficient volume and low growth rates of agricultural science investment, lack of close interaction between the state and private business in financing innovative development, low investment opportunities of agricultural producers, poor specialists training, insufficient motivation of employees to develop innovations, and others (Litvinenko & Kijanova, 2017). Well-designed and supported innovation areas can facilitate the transition to a sustainable agricultural future (Pigford, Hickey, & Klerkx, 2018).

In general, over the period 2010-2018, the dynamics of internal expenditures on research and development for all types of economic activity in the Russian Federation increased almost 2 times (from 523,377.2 mln rubles in 2010 to 1,028,247.6 mln rubles in 2018) (Rosstat, 2019). In agriculture, these costs are extremely uneven and grow at a lower rate. Their value has increased by only 40% (in current prices). The presented data indicate a constant underfunding of agricultural science and limits to use domestic technologies, based on the latest science achievements in agricultural production.

To manage innovative development and resolve existing problems of agribusiness scientific support, it is necessary to provide conditions for development of scientific and (or) scientific and technical results, as well as scientific results implementation in production, and their subsequent involvement in economic turnover. This includes innovative platforms development to interact and distribute ideas, people, and resources, in order to solve problems and realize opportunities under complicated conditions (Davies et al., 2018). An innovative platform can stimulate and provide a basis for many-sided cooperation in order to implement the concept of a climate-smart agriculture at the local level (Osorio-García et al., 2020).

The Federal Scientific and Technical Program for Agricultural Development 2017-2025 (approved Government decree Russian Federation dated August 25, 2017 No. 996) promoted to solve the problems of innovative development in agribusiness. Its purpose is to ensure stable growth of agricultural production,

obtained through the use of seeds of new domestic varieties and pedigree stock (material), high-quality feed production technologies, animal feed additives and veterinary medicines, biogenic pesticides and agrochemicals, processing and storage of agricultural products, raw materials and food, modern diagnostic tools, methods of quality control of agricultural products, raw materials and food, and genetic material examination.

Implementation of this program will allow to minimize technological risks caused by the lag in the technological development level of domestic production base in comparison with the production facilities in developed countries, that is especially important under the conditions of the food exports increase, and improve the quality of domestic agricultural products on the basis of scientific and technological development of agribusiness in the long term. Increasing the innovative and scientific and technological potential of the Russian agribusiness will gradually reduce its dependence on imports of technologies, seeds, diagnostic and plant protection tools, veterinary medicines, and other resources. This will be accompanied by increase in standards of living, as a scientific approach to control system and quality management of agricultural products, raw materials, and food produced in the Russian Federation will be provided.

7. Conclusion

Innovative development management in agribusiness industry is currently becoming particularly relevant due to the need to build conditions for formation of competitive scientific and (or) scientific and technical results, as well as for implementation of scientific results in production, and their subsequent involvement in economic turnover. Richard Cooper proves conclusively that at the beginning of the twenty-first century, technical changes and innovations became the dominant characteristic of our time, and when paired with the social order and trained people, who generate and apply them, they are the basis of modern economic prosperity (López-Claros & Mata, 2009). Today, under the conditions of economic restrictions, the Russian Federation policy is aimed at agribusiness developing and strengthening in order to ensure the country's food security and implement the import substitution policy. Economic sanctions have become an accelerator for the active innovation and technological development in agriculture, and an incentive for the innovative activities development in agribusiness. Innovation management efficiency is a necessary condition to strengthen Russian position on the global food market and increase domestic products competitiveness.

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