Innovation as a source of agribusiness development

A P Sokolova and G N Litvinenko
Kuban State Agrarian University named after I. T. Trubilin, Krasnodar, Russia

e-mail: prof.sokolova@mail.ru

Abstract. The Innovative development is a key element and the most important condition for the progressive development of organizations of any line of activity and of any scale. Modern global challenges, the emergence of breakthrough technologies, the penetration of digitalization in all spheres of economic activity make us use new mechanisms for doing business, and introduce new technologies and development at an accelerated pace. The increasing penetration rate of new technologies every year in all areas of economic activity creates not only new opportunities for business development, but also leads to new threats. Therefore, the integral introduction of innovations in the field of building a business model, developing, manufacturing and marketing new products, developing production processes becomes an integral condition for the sustainable development of companies and the growth of business competitiveness. In conditions of limited funding at the level of the state economy, it is necessary to highlight those areas of economic activity which can serve as a locomotive of innovative transformations. Their development is the most obvious and less risky. The agricultural sector is one of these areas in the economy of the Russian Federation, since the lag in the level of labor productivity from world leaders is the most significant here. The innovative development of agribusiness requires a focused integrated approach, including solutions in the field of productive interaction between science, the state, and entrepreneurial structures. To a large extent, the success of innovative development is determined by the ability of companies to attract financial resources for the implementation of innovative projects. For smaller companies like the majority of agricultural enterprises, the creation of productive partnerships is a promising direction to solve financial problems. An innovative approach to doing business requires restructuring the operating model of agricultural enterprises to create opportunities for a flexible response to the emergence of new opportunities and threats to business development.

The features of the modern economy development form a new understanding and attitude towards innovations as the most significant way to compete, increase business efficiency, and strengthen the sustainability of economic activity. Global trends in the development of key economic factors (labor, capital, technology) create both new opportunities and development threats for companies. In the field of agribusiness the influence of these factors is more significant due to the peculiarities of the development of this economy economy.

Demographic changes lead to significant transformations of the labor market. An increase in life expectancy causes a natural aging of the population, a change in the ratio between the number of working-age population and the population of incapable age (children and elderly people) in favor of the latter. In Russia, the proportion of citizens of working age has increased from 40% to 52% over the past 15 years and is projected to increase to 65% by 2030. The urbanization creates a critical situation
with labor resources provision in agricultural enterprises [1]. January 1, 2019, the population of Russia was 146.7 million people, including the rural population of 36.8 million people. According to UN forecasts, by 2025 the rural population will decrease by 14.7 million and amount to 22.1 million people. Such a reduction is a threat to the development of rural areas and the provision of agricultural enterprises with labor.

To some extent, the shortage of labor in agricultural companies is compensated by an increase in labor productivity, but its level, due to the relatively low provision of enterprises with material and technical resources, still does not allow organizing the agricultural business at a level corresponding to leading countries.

One of the barriers to the penetration of innovations into agribusiness is the lack of staff competencies necessary for their development [2]. Requirements for the quality of labor change significantly with changes in the labor process itself and confirm the need not only to restructure the education system in the agricultural business with a focus on innovative technologies, but also the requirements for accelerated retraining of workers, which will soon become unclaimed (table 1).

| Skills                  | Hours worked in 2018, mln hours | Change in the number of working hours by 2030, % |
|-------------------------|--------------------------------|-----------------------------------------------|
| Manual skills           | 9000                           | -11                                           |
| Basic cognitive skills  | 5300                           | -14                                           |
| Advanced cognitive skills | 6200                           | 9                                             |
| Socio-emotional skills  | 5200                           | 26                                            |
| Technological Skills    | 3100                           | 60                                            |

Most of the labor processes carried out today in agricultural companies require manual skills. By 2030, the need for these skills will decrease with a simultaneous increase in the demand, primarily for technological and socio-emotional skills. Automation, the introduction of artificial intelligence technologies will require advanced cognitive skills, since it is necessary to perceive, accumulate, process information at an accelerated pace, which becomes an important factor in production.

Capital has not lost its role in the technological development of agricultural enterprises, it is becoming more accessible, in particular due to a decrease in the Central Bank rate to 6.5% per annum. At the same time, the cost of acquiring and introducing innovative technologies requires financing that significantly exceeds the capabilities of agricultural enterprises, especially medium and small ones. As a rule, enterprises finance the restoration of worn-out fixed assets, focusing on more advanced and more productive models of equipment. If we are talking about a new approach to doing business, involving the introduction of production automation, the use of artificial intelligence, robotics, the use of alternative energy sources, etc., only large agricultural holdings can finance such projects.

It is erroneous to believe that breakthrough technologies are the prerogative of small startups that are flexible and able to capture and implement new ideas. The development and implementation of ideas is possible only if significant resources are available that allow you to create the necessary scientific potential and accompany the implementation of innovative projects. In the agricultural business, in the absence of capital of the required size, only the union of agricultural enterprises into large holdings will attract finance of the appropriate level. In fact, initially small and medium-sized enterprises are less competitive when it comes to the introduction of innovative technologies.

The third factor in innovative development is the presence of the technologies themselves, which can create new opportunities for companies, increase labor productivity, and create new competitive advantages. Access to them is almost unlimited due to the lack of boundaries for the flow of information, the creation of new opportunities for communication and business cooperation. More than 80% of operations carried out in agricultural enterprises can be automated today. This creates
inexhaustible opportunities for more efficient use of the production potential of enterprises and for accelerated growth of the potential itself [3].

As a rule, innovations in the agricultural sector of the economy, as in other sectors, are seen as new directions for business development. However, their significance for state institutions and society as a whole is no less relevant. The effect of the development of innovation in general for various participants in the business system is as follows:

1. For private agricultural companies: the development of new areas of activity, the creation of new more useful products, increased labor productivity, access to new markets, increased profits, increased business stability, accelerated business growth. Granularity of Growth researches show that the shareholders profit of companies that are leaders in innovation are 15% higher than the industry average. In the agricultural business, this difference is significantly larger for reasons due to the characteristics of agricultural production. A significant part of operations in agriculture is carried out manually, and the introduction of mechanization and automation leads to quick returns. In agriculture, the risk of economic activity is much higher, and the introduction of innovative technologies can significantly reduce it. Agricultural enterprises are significantly more dependent on other market participants compared to enterprises of other areas of activity, since a significant part of their products is raw material for processing. Innovations can reduce this dependence, since their introduction helps to obtain either more popular products, or cheaper and more affordable products [4].

2. For society: raising the living standard and quality of life, improvement of the nutrition quality, the population income increase, improvement of working conditions, new job opportunities. Innovation for rural areas is much more significant for many reasons. The income level of employees of agricultural enterprises, the level of development of rural territories, and the availability of social benefits for rural residents are significantly behind the average level achieved in the country. Innovations are able to reduce the social inequality that has arisen, to reduce the level of social exclusion due to new forms of labor organization, an increase in the income of agricultural enterprises and, accordingly, income of the rural population.

3. For a state as a whole: the ability to meet the needs of the country’s population for quality food products, the increase of food exports, the improvement of the country's position in the global economic space, reducing inequality between different sectors of the population, the diversification and development of the economy.

The key effect for enterprises from the introduction of innovations is, of course, an increase in labor productivity. It is important to determine which sectors of the economy are the most attractive for using innovative projects. Traditional approaches to determining the most attractive areas of financing are usually based on the calculation of effective indicators of investment projects. However, such calculations are not always reliable, since they are based on forecasted cash flow indicators and depend on macroeconomic factors, actions of competitors, the state of the market environment and many other factors. This creates a high level of uncertainty and risk of investment in innovative projects. Agricultural enterprises are initially less attractive for investment in innovation compared to other participants in the business system for many reasons, primarily because of the increased risk of economic activity.

In our opinion, the approach based on the analysis of the level of labor productivity achieved in various sectors of Russia and the advanced countries of the world is more correct when choosing the most attractive areas of financing [5]. It is easier to reduce the significant gap in the level of labor productivity because progressive technologies are more affordable and obvious. Studies show that research, development, and agriculture have the greatest potential in the labor productivity growth, where the level of separation from the leaders in these areas of activity is the most significant (table 2).
Table 2. Labor productivity in the Russian Federation in comparison with the USA, European countries, and Australia.

| Sector of the economy            | GDP per one employed in the industry, taking into account the level of purchasing power, % of the leader country | Leader country |
|----------------------------------|-------------------------------------------------------------------------------------------------------------|----------------|
| Research and development         | 21                                                                                                          | USA            |
| Agriculture                      | 25                                                                                                          | Australia      |
| Hotels, restaurants and cafes    | 28                                                                                                          | Germany        |
| Manufacturing                    | 32                                                                                                          | USA            |
| Wholesale and retail trade       | 35                                                                                                          | USA            |
| Construction                     | 41                                                                                                          | Great Britain  |
| Financial activities             | 48                                                                                                          | Sweden         |
| Mining                           | 75                                                                                                          | Great Britain  |
| Economics as a whole             | 44                                                                                                          | USA            |

The lag in the level of labor productivity in agriculture of Russian enterprises from Australia, a leader in this field, as well as from other economically developed countries, makes this investment area really more attractive.

Polls show that most of the leaders of Russian agricultural enterprises understand that the introduction of innovations in their business activities can bring their companies to a new level of development and strengthen their competitive position. However, a large part of the innovation budget, about 75%, is directed not to the introduction of innovative technologies, but to the improvement and modernization of already used technologies and a small part - to incremental innovations [6]. Their low global investment activity is primarily associated with the need to adapt the operating model of companies to provide the necessary flexibility and speed of adoption and implementation of innovative solutions. This requires a restructuring of the organizational structure, investment portfolio, resource potential, processes, communications for a quick reaction to changes in the macro and microenvironment, accelerated restructuring of the company with a constant focus on developing partnerships and using the achievements of other market participants.

The experience of leading domestic agricultural companies allows us to highlight the main factors that determine their success in the field of innovation:

1. Formation of a strategy with a focus on the accelerated implementation of innovations as the main factor that allows to increase the competitiveness of company products.

2. Regular search for innovative solutions, identifying and analyzing industry and market trends, creating partnerships with other companies in the production chain, agricultural research centers, and educational institutions.

3. Formation of an innovative infrastructure in the company, including an organizational structure with a focus on the development and implementation of innovations, the resource potential of an appropriate level of quality, the availability of financial resources and the ability to gain access to additional financing in a short period to maintain flexibility.

4. Development and implementation of an innovation process management system focused on the formation of a portfolio of investment projects aimed at implementing an enterprise’s innovative strategy taking into account the level of risk, the availability of necessary competencies, the state of the business environment, etc.

5. Formation of a corporate culture focused on maintaining and developing innovations in all functional departments of the company, stimulating the development of skills in the field of innovation. Studies conducted by CB Insights show that the culture of innovation culture among
effective innovators was present five times more often than among less successful companies in the field of innovative development [6].

The directions of the innovative activity of agricultural enterprises directly depend on the level of their efficiency [7]. Highly effective innovative companies are more willing to introduce breakthrough technologies aimed at obtaining a cardinal advantage in the market. Low-performing companies are more focused on maintaining their current competitive market position (table 3).

### Table 3. The structure of the investment portfolio into areas of innovation, % of the cost of research.

| Innovation directions                                      | High efficient innovation companies | Low-efficient innovation companies |
|------------------------------------------------------------|------------------------------------|-----------------------------------|
| Development and use of breakthrough technologies in order to obtain more competitive position in the market | 29                                 | 9                                 |
| Development and use of revolutionary technologies to increase market share | 39                                 | 22                                |
| Gradual innovative transformations to maintain a competitive position in the market | 32                                 | 69                                |

The most significant barriers to revitalization of innovation activities are the following:
1. The company's strategy does not envisage the use of innovation as the main vector of the development, a key factor in its success.
2. The company adheres to traditional methods of solving financial and economic problems, does not carry out a systematic search for new areas of business development.
3. The organizational model of the company does not allow the inclusion of innovative processes into current operating activities; low level of material and technical support of agricultural companies, insufficient level of financing, lack of qualified personnel are serious barriers to innovation.
4. The modern approaches to managing the investment portfolio of the company and individual innovative projects are not used; the instability of the external environment, typical for the agricultural business, does not allow the full use of modern tools for innovation management.
5. The corporate culture of agricultural companies, the motivation system used do not ensure the development of innovations, the use of an innovative approach to decision-making as the main target element; the increased risk of the agricultural business forces them to make more cautious decisions that are not associated with innovation.

The problems of modern agricultural business can be solved only through the systematic professional use of an innovative approach to solve strategic goals and objectives, and to current technological decision-making. This requires overcoming significant barriers, but there are no other ways for the development of the agrarian economy in the Russian Federation.

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