

Investment management in the dairy industry

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Abstract. Modern economic conditions are characterized by difficulties in the dairy industry. To solve the problem of import substitution and food security, serious financial investments are required by both the government and economic entities. The article presents the algorithm for investing in the dairy cattle industry. To account for uncertainty and risk, the process of investment design and management adoption should be based on a scenario approach based on the circumstances.

1 Introduction

Accelerated development of animal husbandry in Russia implies the creation of efficient production in a short time, capable of competing on the world market with leading producers of animal products. This issue is particularly acute in connection with Western sanctions, the necessity of solving the problem of import substitution and ensuring food security. In order to ensure high rates of qualitative changes in the dairy

cattle breeding industry and to form a highly productive herd of cattle, the process of replacing pedigree cattle with the best breeds of the world gene pool should be intensified in the farms of Russia and Ryazan region by means of constructing mega-farms [1]. The expediency of replacing the pedigree composition of the livestock of large pedigree cattle is an urgent task. This is due to a whole set of problems in the industry, the graphical interpretation of which is presented in Figure 1.

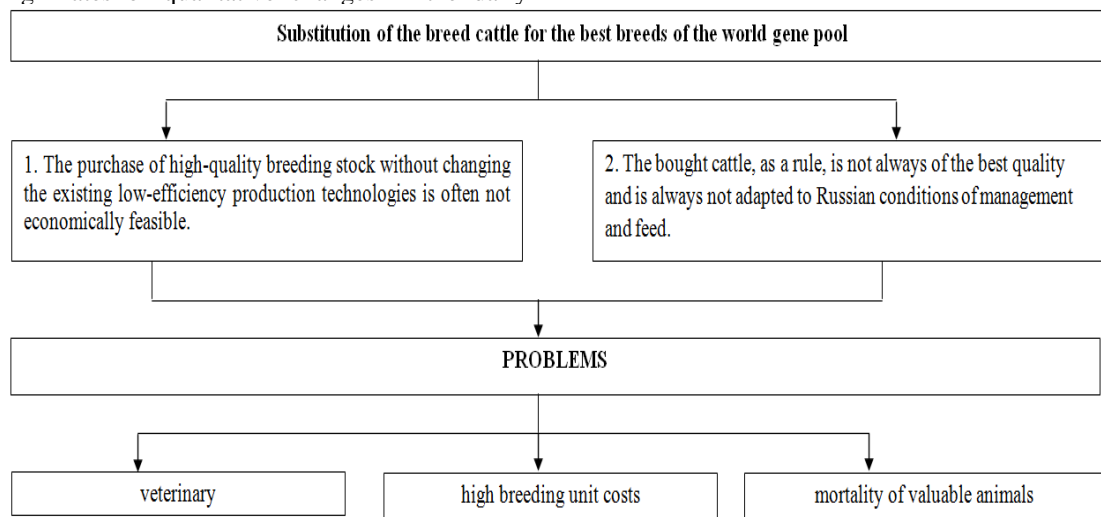


Fig. 1. The block diagram of the process of implementing the substitution of the breed cattle in agricultural enterprises.

2 Aim and tasks

It has been proved by science and practice that only the use of the best breeds of the world gene pool, adapted to industrial production technology, can ensure a quality renewal of the herd in a short time and, as a result, increase the competitiveness of domestic products.

Another important condition for the fullest realization of the genetic potential of cows and

increasing the competitiveness of the dairy cattle industry is the use of modern technologies for the production of livestock products that meet world requirements.

The choice of technologies for the production and sale of livestock products should be determined by the type of competitive behaviour of the agricultural enterprise. In accordance with the theory of P.F. Paramonov, the following types of competitive behaviour of agricultural organizations are distinguished:

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1. the leading one, according to which agricultural organizations implement innovations and introduce know-how;

2. the copying one, according to which the organization repeats the achievements of competitors;

3. the guarantee one, which ensures stable agricultural production and guarantees market share.

In the dairy industry, homogeneous and standardized products are produced (milk and cattle growth), therefore the first type of market behaviour is based on the implementation of innovative technologies (including foreign ones). The second and third types of competitive behaviour involve the use of traditional, evidence-based and adapted technologies. In our opinion, it is high-tech technologies for the production of livestock products that are the basis that ensures the implementation of the state program "Development of agriculture and regulation of agricultural products, raw materials and food markets for 2013–2020".

The use of modern technologies for the production of livestock products determines the competitiveness of individual agricultural enterprises in the dairy industry, serves as the material basis for their development, and at the stage of design and implementation of agricultural technologies, the maximum possible economic efficiency of milk and dairy products is laid. In this regard, several types of innovatively active agricultural organizations are distinguished in the dairy cattle breeding industry:

1. strategic innovators are agricultural organizations implementing large long-term investment and innovation projects, which are the main resource for competitiveness. Agricultural organizations belonging to this group are a source of radical innovation for other producers of the industry;

2. intermittent (periodic) innovators are agricultural organizations that implement their own research and development (R&D) as necessary or under favourable conditions. At the same time, they do not consider the creation of innovative technologies as a strategic task of an agricultural enterprise;

3. technology modifiers are agricultural organizations that do not implement the full R&D cycle, but use new technologies and developments to improve their products and processes;

4. technology users - these agricultural organizations conduct innovative activities by adapting technological solutions to their specific business conditions developed by other organizations.

In order to solve the issue of import substitution quickly and form an effective livestock population, some adequate tools are necessary to evaluate the effectiveness of the development of investment projects for the acquisition of dairy cattle herds.

For the effective implementation of innovative technologies in the dairy industry, it is necessary that the following interdependent and complementary principles are implemented:

– adaptability, i.e. maximizing the use of the potential of natural resources and neutralizing the influence of adverse environmental and climatic conditions to increase animal productivity, reduce

material and energy intensity of production, and, as a result, the cost of dairy products;

– structural properties, which involve going through all stages of livestock production technology;

– hierarchy, according to which each element of milk production technology is considered as a separate system (feeding system, animal keeping system, milking system of cows, etc.);

– variability, suggesting the flexibility of individual elements of production technology under the influence of factors of the internal and external environment;

– development, which means that the agricultural organization moves to a new qualitative level as a result of the implementation of innovations and scientific and technological achievements;

– multivariance, involving the consideration of a variety of soil and climatic conditions and the use of alternative (including foreign) technology elements in milk production;

– optimal intensity when labor and capital investments (resource expenditure) provide the highest economic efficiency and competitiveness of agricultural production;

– conservation of elements of the natural environment, i.e. environmental safety of production.

By combining technology with rational organization and effective management, agricultural enterprises can implement a market strategy and ensure sustainable economic growth.

Effective implementation of investment projects in the dairy industry involves implementation of a certain algorithm that will achieve the goal - the minimum cost of milk and dairy products.

In order to promptly solve the issue of import substitution and form an effective livestock of cattle, some adequate tools are needed to assess the effectiveness of the development of investment projects for the acquisition of a milking cattle herd.

Effective implementation of investment projects in the dairy cattle industry involves the implementation of a specific algorithm that will achieve the goal - the minimum cost of producing milk and dairy products [2].

3 Methods and materials

The algorithm for analyzing and implementing an investment project contains a set of business processes, the implementation of which will ultimately increase the efficiency of agricultural organizations and ensure food security in the region as a whole. Description of the algorithm for the implementation of the investment project to increase the production of milk and dairy products and its decomposition into separate business processes provides high information richness to substantiate management decisions [3].

The first stage of the investment project involves the selection of the aim and a description of the relevant tasks. As part of our research, the aim of the investment project is to increase the scale of milk and dairy products production with minimal costs for their production and sale, which will solve the problem of competitiveness of

domestic products while ensuring food security. Since the investment project will be implemented by a specific business entity, the aims can be concretized and detailed. From the point of view of the agricultural producer, the purpose of its activity is to expand production and increase the efficiency of operations by reducing the cost of production and improving its quality.

The second phase of the investment project involves an analysis of the activities of the entity carrying out the investment process. The comprehensive analysis suggests:

- identification of possible risks;
- identification of specific features of an agricultural enterprise activity that have an impact on the investment process;
- determining the subject's specialization in terms of identifying promising areas of investment;
- analysis of the dynamics of financial parameters of the enterprise;
- evaluation of positive and negative factors affecting production;

- identifying potential opportunities for increasing milk production;
- identification of production reserves;
- determining the need for own and borrowed sources of financing.

The third stage is associated with the calculation and justification of the planned parameters of the investment project, taking into account the prevailing macro and micro economic conditions. At this phase of investment design, dynamic prediction of basic parameters is carried out with the possibility of modeling various development scenarios (optimistic, pessimistic and realistic).

The economic justification of the investment project should be based on the current economic parameters of the agricultural producer with their prolongation for the forecast period. All this will ensure the comparability of planned parameters and their continuity as a result of the development and adoption of specific management decisions. The fourth stage of the investment project implementation involves obtaining concrete results and deciding whether to implement the investment project or to reject it [4].

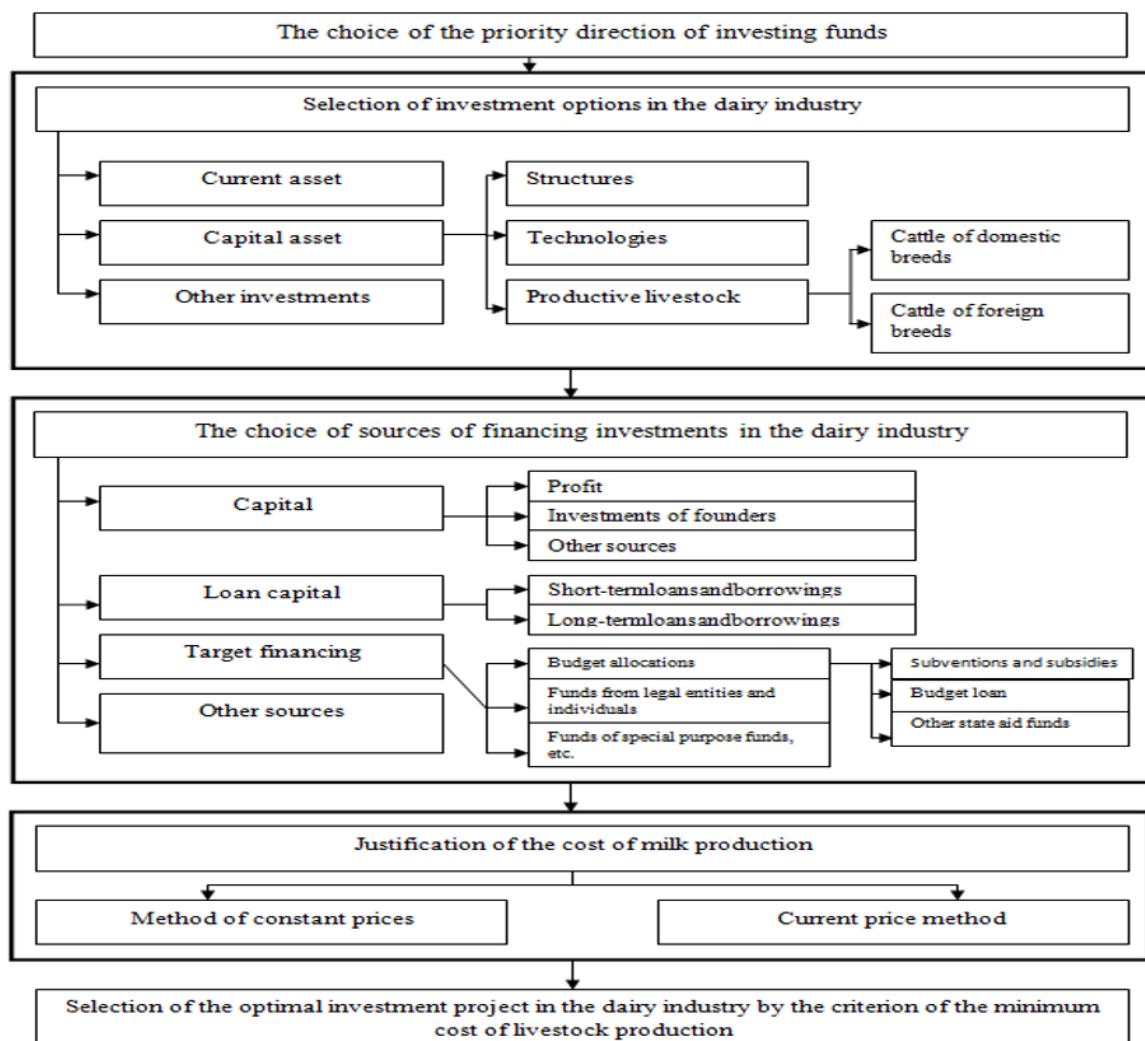


Fig. 2. Algorithm of investment design in dairy cattle breeding

At the same time, regardless of the stage of implementation of the investment project in the dairy

cattle breeding industry, the feedback function must be effectively implemented, since this will allow an

objective evaluation of the dynamics of the main parameters of the project in order to promptly adjust the investment and production measures of the planning period to reflect the changes that have occurred.

4 Results and discussion

Naturally, every investment project that is being implemented in agriculture has unique properties that arise from the specific features of the project initiator’s management. At the same time, our task is to single out typical factors that make it possible to transfer this methodology to other agricultural enterprises.

In our opinion, a universal way to scale up the production of milk and dairy products significantly and quickly at minimal cost (due to scale effect) is possible at the expense of the construction of dairy mega-farms.

In order to prevent typical mistakes that are usually made during the implementation of investment projects in animal husbandry by most agricultural organizations, in our opinion, the entire investment design algorithm should be completely revised (Figure 2).

As the algorithm in Figure 2 shows, the main purpose of investment design is to produce milk at minimal cost. This goal is the starting point of the investment design mechanism. Since modern conditions suggest alternative

investment opportunities, the first stage is to choose investment options in the dairy cattle industry.

And here the decision maker (DM) determines which means and objects of labor should be acquired in order to improve the condition of the dairy industry in the enterprise both in quality and quantity. In addition, within this stage, it is necessary to determine what cattle population is necessary and possible to purchase and what ratio between domestic and foreign breeds will be optimal.

The second stage of investment design assumes that based on the selected investment objects, sources of financing are chosen. Based on the current financial condition, the DM determines how much equity and debt funds can be allocated to a project and in what ratio.

Next, the DM proceeds to the third stage, during which the costs of milk production are calculated for various investment options and sources of financing.

To justify the costs two main ways can be used - the method of constant prices and the method of current prices. The use of two methods is appropriate for a comprehensive analysis of the investment idea, both in terms of efficiency and modernity [5].

When using the method of constant prices, cash flow forecasting takes place without adjustment for inflation. As a result, the selection of projects is made without taking into account the influence of environmental factors, but from the point of view of its innovativeness.

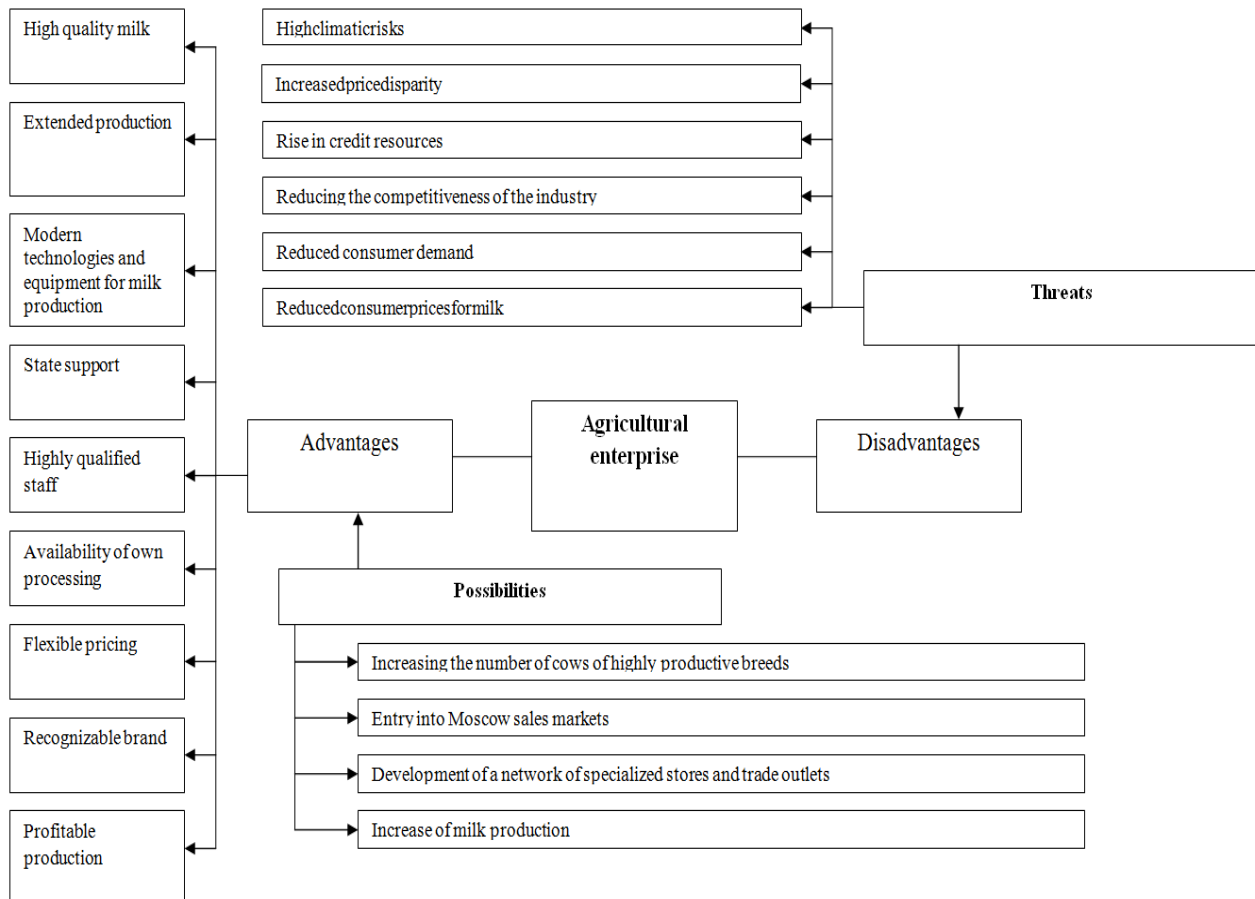


Fig. 3. Risk management of the dairy cattle industry in an agricultural enterprise.

Unlike the first approach, the current price method is based on adjusting the cash flows for inflation. As a result, the DM can adequately assess the economic efficiency of the investment project. And only after that a justified decision is made which project should be chosen and what changes will it bring to the economic entity.

To substantiate the expediency of investments in the dairy cattle industry, risk management should also be carried out, the results of which can be presented graphically (Figure 3). Naturally, the results of risk analysis are adjusted on the basis of the external and internal organizational characteristics of a particular agricultural enterprise.

As it can be seen from Figure 3, in general, the dairy cattle breeding industry is promising for investment to generate additional income. This activity has a set of competitive advantages, which include high quality milk, the possibility of its own processing, the presence of highly productive livestock, etc. The competitive advantages are enhanced by the factors of the internal and external environment – the possibility of entering large markets, increasing the number of cows, etc. Comprehensive management of the reproductive cycle in full-volume and full-feeding conditions contributes to a high lactation uniformity throughout the months of the year, which guarantees a steady sale of dairy products. Finally, as a result of a complex of organizational and technical measures, a high quality of raw milk is maintained, which allows it to be sold according to the class of Euro variety.

Meanwhile, there are risks that can reduce the effectiveness of the industry.

5 Conclusion

The final stage of investment design is the evaluation of financial results, which allows to make a final conclusion about the feasibility of the investment project.

Thus, the intensification of investment activity in the dairy industry is a necessary impetus for development. However, this management activity is connected with serious risks. Our study makes it possible to formulate the basic prerequisites for the successful implementation of an investment project in the dairy industry:

- the use of modern equipment;
- targeted scaling up of livestock production;
- high quality of products.

The implementation of these design solutions will provide a high level of capital savings, a reduction in the cost of livestock products, the achievement of an optimal mode of reproduction and livelihood of the livestock.

Thus, the developed mechanism for the realization of investments in the dairy cattle breeding industry is universal in nature and makes it possible to improve the investment process both as a whole in the Russian Federation and in individual business entities. The application of the developed algorithm in practice contributes to the elimination of typical errors for the industry at the implementation stage, which, in turn, makes it possible to ensure a high genetic potential of agricultural animals, increase the scale of dairy production, improve its quality, and minimize the impact of natural and climatic risks.

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