Management of an agricultural organization based on building a quality management system

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Abstract. In today's market economy, quality management at the enterprise is one of the priority tasks. High competition in the market encourages firms to develop new systems to improve the quality and increase the competitiveness of the product. The development of these systems requires clear criteria for evaluating their effectiveness. Quality standards in agriculture are especially important because this industry determines the economic and biological security of the country and the region.

1. Introduction
A feature of the modern agricultural enterprise management system is its orientation to the requirements of the market economy. The management system of an agricultural enterprise follows the general principles of management [1-3]. Agricultural production as an object of management has some features that are important for the work of the entire structure, have a direct impact on the methods and style of management, labor organization, etc.

2. Questions and purpose of the research
The scientific novelty of the research is to study the features in management of an agricultural organization (for example, JSC "Krasnoyarsk Pig Complex") and development of practical recommendations for its improvement based on building a quality management system.

In order to determine the directions for improving the management of JSC "Krasnoyarsk Pig Complex" and, consequently, the directions for its further development and improvement, we offer the company to periodically conduct a self-assessment of activities based on a functional management assessment model. The chosen research methodology will allow you to find out the opinion of employees and evaluate the organization by five generally recognized functions of management: planning, organization, motivation, control, coordination [4-7].

The starting point of the study was an analysis of the current situation at this enterprise in the industry. After analyzing the product quality control system and the quality management system at the enterprise of JSC "Krasnoyarsk Pig Complex", the following disadvantages can be noted:

- service control is not effective enough, the service does not have sufficient number of people to ensure all quality standards, some parameters checks are carried out only formally, among employees of the control service staff turnover is high, and the company experiences a shortage of qualified personnel.
• analyzing data to assess the impact of the processes in the quality management system of JSC "Krasnoyarsk Pig farm", we can conclude that some process in the past 4 years low efficiency rating is continuing that tells about the effectiveness of the corrective companies. In particular, the lowest rating is given to such processes as: production of by-product, pork production in live weight; sales, personnel management; maintenance and repair of machinery and equipment.

• analysis of production processes by-products and pork production in live weight showed that the targets for development of meat are not done, there is a growing number of defective products due to hardware failures, which affect the process of processing meat, the resulting pork of high quality is sent for technical processing or scrap [8-11].

• analysis of the sales process has shown that a large number of by-products productions are not sold on time, which leads to the end of their storage and disposal periods.

• analysis of staff management process revealed the following problems: lack of employee participation in company’s processes, greater employee turnover, which is associated with low motivation of employees, employees are not trained [12-15].

• analysis of maintenance and repair of machinery and equipment process showed that the company systematically occur breakage of equipment indicating a high degree of deterioration that entails the growth of defective and waste products in the result of violation of technological process of production and the disruption of the planned production figures.

3. Methods of research
The purpose of the research is to develop practical recommendations for management of an agricultural organization based on building a quality management system.
Thus, after the analysis, it is necessary to determine the directions for improving the management of an agricultural organization based on a quality management system.
Following the accepted methodology, a survey of management personnel and employees of the organization was conducted within four days. 137 employees took part in the assessment of the enterprise management system: 65 managers (this group includes the directorate, heads of departments and workshops, specialists of departments) and 72 employees (this group includes workers of the slaughterhouse).
Next, we will analyze the obtained indicators and calculate the coefficients in accordance with the chosen method. The results of evaluating managers separately for each evaluation criterion are shown in table 1.

| Table 1. Criteria for the functional management assessment model. |
|-----------------|---------------------|-----------------|
| Criteria        | The composition of indicators of the criteria | № indicator |
| 1 Planning      | 1 Setting goals and strategic objectives | 1 2 3 4 5 |
|                 | 2 Collecting and analyzing customer information | |
|                 | 3 Detailing the business process | |
|                 | 4 Collecting and analyzing information about competitors | |
|                 | 5 Resource planning | |
| 2 Organization  | 1 Formation of the organizational structure | 6 7 8 9 10 |
|                 | 2 Distribution of powers and establishment of responsibility areas | |
|                 | 3 Conditions for creating a self-learning organization | |
|                 | 4 Performing the main process | |
|                 | 5 Effectiveness of the process of creating new values for customers | |
| 3 Motivation    | 1 Leadership and corporate culture | 11 12 13 14 |
|                 | 2 Conditions for training and professional development of personnel | 15 |
|                 | 3 Level of employee needs | |
|                 | 4 Involving employees in the improvement process | |
|                 | 5 Employee satisfaction with the results of their activities | |
4 Control
1. Quality control system at each stage of the business process
2. Criteria for evaluating the results obtained
3. Measuring customer satisfaction
4. Rational use of resources
5. Compliance of the obtained results with the set goals

5 Coordination
1. Connecting and coordinating the first four functions
2. Establishing internal relationships of the organization
3. Conflict resolution system
4. Current deviation analysis: revision and adjustment of plans
5. Information management

An analysis of the results obtained allows us to note that the spread of ratings by criteria is quite large. The highest indicators for the "organization" criterion are 64.3%. The most problematic criteria "motivation" is 39.1% and "control" is 45.8%. The overall rating of the management system was 49.05 points, which corresponds to the third level of development in the organization's management (out of 5 possible): the management system as a whole has been formed, but the management is not effective enough. It is necessary to focus on optimizing the business process, improving quality at each stage, and improve the management system, taking into account the importance of consumers and the importance of personnel. Figure 2 shows the results of evaluating the management system by managers in JSC "Krasnoyarsk Pig Complex".

![Figure 1](image1.png)

**Figure 1.** Results of evaluating the management system by managers.

Figure 2 shows the results of evaluating the employee management system by individual criteria in JSC "Krasnoyarsk Pig Complex".

![Figure 2](image2.png)

**Figure 2.** Results of evaluating the employee management system by individual criteria.
Employee ratings for all model criteria have disparate values with a maximum gap of 28.3%. As well as according to managers' estimates, the most problematic indicators are motivation, control, and a low score scored by the planning criterion. The overall rating of the employee management system was 31.91 points, which corresponds to the second level of maturity in the organization's management: management has the potential to develop into a harmonious management system, but these opportunities are poorly implemented. Management needs to demonstrate leadership qualities, clearly define goals and create a development strategy based on the principles of universal quality management. The results of the overall evaluating (both managers and employees) in JSC "Krasnoyarsk Pig Complex" are shown in figure 3.

Figure 3. General results of the overall evaluating the management system.

Figure 3 shows that the final scores for the five main criteria are uneven: from 29.8 to 56.6 points - a spread of less than 26.8%. The overall rating of the management system was 40.48 - the third level of management development. The analysis of indicators allows us to conclude that this level was achieved due to the high rating of the organization's managers.

The method also calculates the management adequacy ratio (MAR), which can be used to assess how the managers’ view of the state of affairs at the enterprise corresponds to the opinion of employees. The results of calculating this coefficient are shown in figure 4.

Figure 4. Management adequacy ratio (MAR).

Most of the criteria fell into the zone of management capabilities revaluation. In this case, management decisions in these areas will face internal resistance from the team, and all sorts of transformations initiated by management will be absolutely ineffective. Criteria “distribution of powers
and establishment of areas of responsibility” and criteria “satisfaction of employees with the results of their activities” fell into the zone of underestimation. There are potential opportunities for improvement in these areas - employees rate their activities higher than managers. The adequacy ratio is on average 0.17, which indicates that managers overestimate the capabilities of the system.

First of all, it should be noted that the current model of the enterprise requires improvement, taking into account the specifics of agriculture and in particular animal husbandry [16-19]. In general, the quality management system model based on the ISO 9001 standard covers the processes of product planning and production, distribution and use of necessary resources, production process and its monitoring, analysis, improvement, as well as management responsibility. The adapted model is shown in figure 5.

![Figure 5. Quality management model of management processes in animal husbandry.](image)

This model allows you to identify processes in a general way for better management of them in the enterprise. Thus, the model allows you to meet the requirements of ISO 9001 regarding the definition of processes necessary for a quality management system, their sequence and interaction.

4. Results
Summing up the overall results of the self-assessment, we can note the following: overall ratings for 5 criteria were distributed as follows: organization -56.6%; coordination - 43.1%; planning - 36.9%; control - 36.1%; motivation-29.8%. Thus, out of 100% possible, only 1 criterion (organization) scored more than 50%. All other criteria did not even cross the average 50% mark. This indicates a low level for development of the management system in the organization and makes the question of further improvement relevant [20-23].

The introduction of quality control management at all stages of the production process will help to increase production efficiency and increase the reliability of the equipment in use. It will lead to lower production costs.
5. Conclusion
JSC "Krasnoyarsk Pig Complex" started implementing ISO 9001:2000 in 2016, and only in December 2017 received a certificate of approval for the new version of the standard. Already at the stage of implementation and certification of the quality system, the benefits of reducing the number of defective products have increased, total costs have significantly decreased, and the current rate of profit has a clear tendency to increase.

The management of the company's quality service plans to develop quality cost accounting forms in 2020 in accordance with the requirements of ISO 9000:2000 series. The results of the study were taken into account by the company and will be used by the company for further improvement of management based on quality management.

The economic efficiency of the proposed measures was also calculated. Based on the assessment, this project can be considered successful, since its implementation will reduce the cost of 1 ton of pork from 67700 rubles to 64200 rubles. The company's profitability will increase to 12.1%, which will increase the company's competitiveness in the pork markets.

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