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Process approach in integrated quality and safety management system for poultry products

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Abstract. This article discusses the issues of the quality management system (QMS), which focuses on the process approach with the rationale for its benefits. The basic documents, legislative acts and the theory of quality management, which is a platform for developing an integrated QMS model, have been studied. The format of such a model with regard to poultry production is presented, which is an information map of the entire chain of processes operating in an economic entity of the industry in their interdependence. The expediency of developing a process approach within an integrated QMS in parallel with the traceability system, which will be of a prolonged nature for the future, has been substantiated.

1. Introduction

Nowadays, when choosing products that are on store shelves, buyers primarily look at the quality of these products, as well as their safety. This fact, in its turn, makes the food producers to take into account the opinion of the consumer during production and release stages [1]. After all, the consumer is one of the participants in the process that the manufacturer carries out, and therefore the consumer is interested in the final result of the production and is a judge of its evaluation.

Therefore, consideration of the quality that meets the needs of the consumer and concern about food safety is extremely important.

In this regard, the manufacturer has to understand the existing and future needs of the consumer, meet their requirements and strive to increase consumer expectations, which meets the requirements of ISO 9001 world standard. The purpose of the manufacturer is to focus on the consumer, and therefore, the release of high-quality safe products in accordance with the international HACCP system (Hazard Analysis and Critical Control Points) is a concept that provides for systematic identification, assessment and management of hazardous factors significantly affecting product safety.

The success of the poultry enterprise is based on the production of quality products. In order to meet the requirements of consumers, the quality of the entire organization activities must be organized. This quality should be planned and verified both at the end of the production cycle and systematically throughout the whole chain of the poultry production process.

To ensure this principle there is a need of QMS, covering all stages of the product life cycle, ensuring a systematic work approach to ensure quality and safe products [2].



2. Research results

A theoretical study of issues concerning the quality management system has been carried out, the basic concepts have been systematized, highlighting the basic principle, namely, the Total Quality Management System (TQM). This approach was carried out by Japanese and US companies, namely, by the method of continuous quality improvements of all organizational processes involving the continuous improvement of its components.

The main ones are as follows:

- the strategic direction of the leadership to achieve the quality of products;
- organization of activities to improve the quality of processes, affecting all departments;
- continuous staff development.

The core mechanism for achieving and ensuring the goals of the enterprise is the introduction of QMS. Modern QMS assumes that in order to work effectively on quality management, it must begin from the moment of setting long-term goals of an enterprise and encompass forecasting the best product that consumers need [3].

There are two main approaches to the implementation of the QMS: functional and process. The essence of the functional approach is that when the organization works, its structure is unchanged, built in accordance with the functions being performed strictly in hierarchical subordination, namely from top to bottom. This does not make it possible to react quickly to changes, since the company's employees are guided not by the consumer, but by the manager. The process approach considers the enterprise in the aggregate of all interrelated business processes, and their implementation is focused on the result.

The principle of the process approach is one of the important achievements of the doctrine of quality. In accordance with ISO 9000, the process approach is the main achievement of the international quality standard.

The implementation of processes within an integrated system involves the development of a model that provides input and output parameters for each process, the effectiveness of which is integrated in the production of safe food products. This model gives a clear idea of the interaction of business processes and considers the activities of the poultry enterprise, both in horizontal and vertical directions. This allows the analysis of processes by optimizing their regulatory procedures, applying corrective actions and choosing the strategy of an effective method for improving them. Such an approach makes it possible to assess the QMS in the context of each business process and the poultry enterprise as a whole.

The process approach is the application of process at enterprises, the definition of product quality, namely:

- systematization of processes;
- identification of process owners;
- documentation for each process;
- identification and interaction of processes;
- process management.

Focusing on the results of analytics of the studied theoretical material and the practice of implementing the process approach in individual business entities, we developed an integrated QMS process model in its interconnection and interdependence, shown in figure 1 [4].

As it can be seen from the diagram, 3 blocks of processes are allocated with the differentiation of each of them into sub-processes. In developing this model, the quality requirements of the processes were taken into account, with regard to the expectations of their effectiveness, which was generally integrated into customer satisfaction.

The clarity of the presented material allows us to state the capabilities of this model to provide various combinations of interaction within the framework of a system of separate processes.

In this regard, it is advisable to focus on the proposed model in the development of the QMS and take this process model into account when developing the QMS policy.

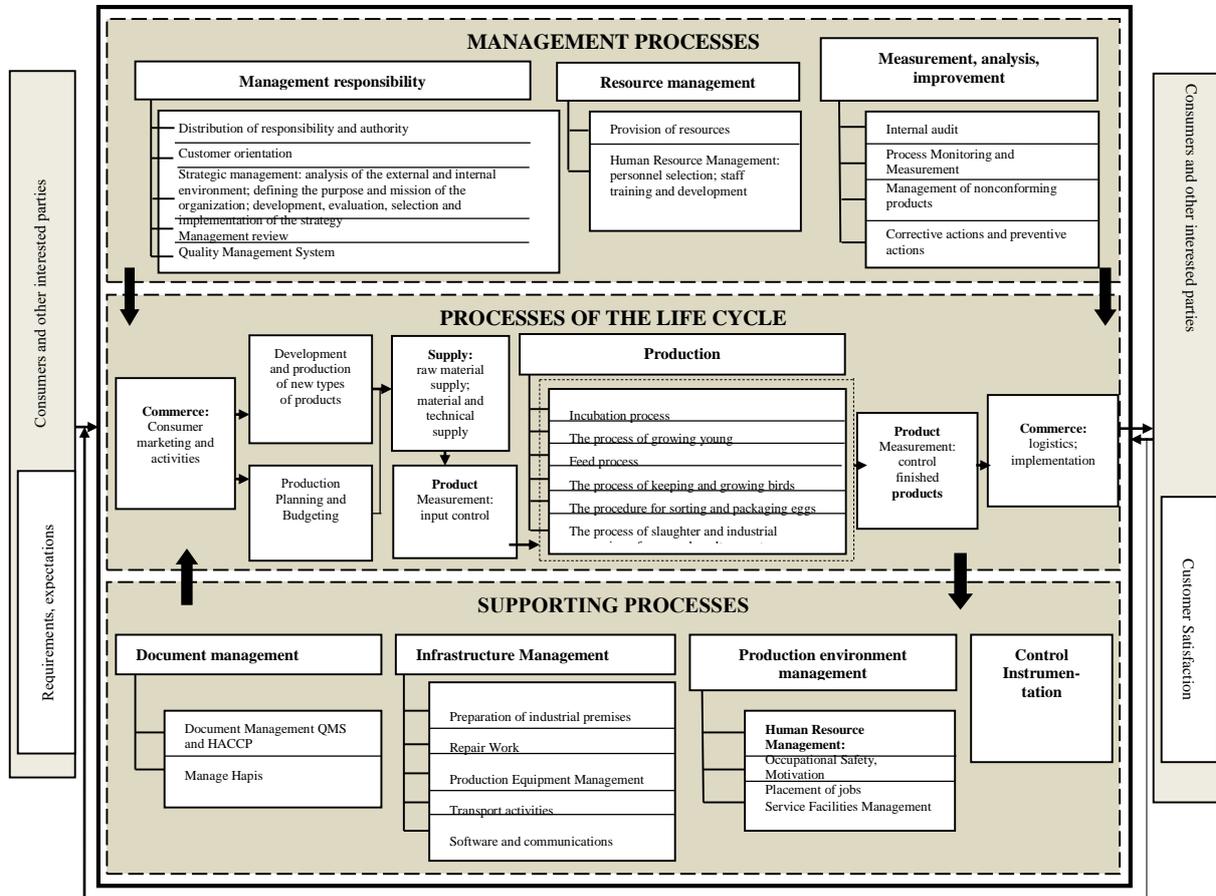


Figure 1. Scheme of QMS integrated process model of the poultry enterprise.

The importance of such an approach in the framework of the integrated QMS is in the continuous improvement of processes, understanding and compliance with the requirements, achieving results and their effectiveness in the production characteristics of the processes.

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The basic document of the QMS is the "Quality Policy", which includes the main directions and goals in the field of the quality of the enterprise, which are officially formulated by the management and measured in quantitative indicators. One of the elements of this policy along with ISO 9001 is a process approach to achieving quality.

For a complete and deeper understanding of the work of the process approach, we use the Deming-Shewhart cycle Plan - Do - Check - Act, using which in practice allows you to continuously improve processes, increasing the efficiency of the enterprise [5].

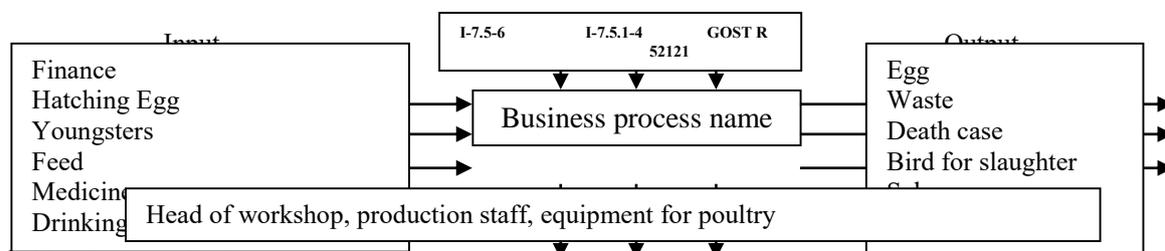
In order to identify the processes, its standardization has been implemented with the consolidation of managers, owners, who are responsible for its effectiveness. This is implemented through regulations and process maps that describe the process, standardize its activities, and then analyse the problem areas and bottlenecks, which are the basic basis for developing measures to improve them. With reference to the poultry industry, the process of "Keeping and growing poultry" is clearly presented in figure 2.

Business Process Assessment Map

Name of business process The process of keeping and growing poultry

Business owner Head of poultry keeping and breeding department

Control actions



1. Monitoring indicators:

I-7.5-6-2014

STP-QMS-6-2014

Resources

Customer satisfaction

2. Monitoring options:

Gross egg production (poultry meat)

Bird productivity

Bird livestock safety

Feed conversion

The cost of 1 dozen eggs, 1 kg of egg mass, 1 kg of poultry meat

3. Performance evaluation criteria:

No	Criteria name	Score, points	Weight coefficient, shares
1	Fulfilment of the plan for the production of eggs (egg mass) and poultry meat	3	0.17
2	Bird productivity	3	0.26
3	Bird livestock safety	3	0.20
4	Feed conversion	3	0.185
5	Implementation of the plan at a cost of 1 kg of poultry meat 1 kg of egg mass, 1 dozen eggs	3	0.185

Figure 2. Business process assessment map.

In relation to the poultry industry, the process of “Keeping and growing poultry” is clearly presented in figure 2. It provides input and output parameters of this process, its goals, control actions, resources, process owner, monitoring parameters and main criteria for evaluating performance [4].

The process approach within the integrated QMS is a forerunner or platform for the production of safe food products, such as in the process of developing corrective and preventive actions to neutralize problem areas, management solutions are developed to ensure the quality and safety of the products. The benchmarks are GOST R ISO 22000, based on the principles of HACCP and the traceability system.

The combination of these documents provides control at all stages of the food chain at any point of the production cycle, as well as storage and sale of products where there is a likelihood of a dangerous situation.

In the poultry industry, the QMS interacts in parallel with the traceability system. This approach allows not only to ensure the quality of business processes and products, but also to identify the manufacturer and owners of products that are in circulation, as well as the place of origin of food raw materials [6].

QMS effectiveness and the traceability system largely depends on the equipment and efficiency of using the technical and technological potential and professionalism of the workers of the poultry enterprise [7].

Consequently, the implementation of the process approach in the framework of the integrated QMS requires a preliminary study of the possibility of its adaptation in relation to a specific business entity in the industry. Otherwise, there is a shift of processes at different levels, incorrect definition of input and output processes and the technology for their implementation.

3. Conclusion

Fundamental document for the quality management system is the Total Quality Management System (TQM). It was the starting point for the development of the QMS in various countries, including Russia [8].

Along with this, all regulatory documents on this issue and practical experience of its implementation at various enterprises of the national economy were studied. The differentiation of approaches to the development of QMS with the subsequent allocation of the functional and process has been carried out.

Currently, the most promising approach is the process one in the framework of the integrated QMS, since it is more in line with the possibilities of producing quality products that meet the requirements of consumers, that is, we can state that it is customer-oriented. Proof of this is the interdependence of processes.

These prerequisites and conclusions were taken into account when developing a process integrated QMS model in the poultry industry, which includes the entire chain of processes with the allocation of sub-processes.

This model is an information map of the functioning of processes in the poultry industry, with the presence of similar information flows in the form of regulations and process maps. The effectiveness of the developed model is enhanced by the parallel implementation of the traceability system.

Such a symbiosis makes it possible to monitor the entire poultry production chain and, in the event of the identification of problem areas, eliminate them through the development of control, preventive and corrective actions.

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