

ASSESSMENT OF PERFORMANCE OF PROCESSES OF QUALITY MANAGEMENT SYSTEM

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Annotation. *An important aspect of quality assurance and an adequate assessment of its effectiveness. A competent approach to assessing the effectiveness of the QMS and its processes is the key to the success of the functioning of the QMS.*

Introduction. The real state of the business, the requirements for ensuring guarantees of concluded transactions and contracts, the trust of partners and customers dictates the need for an independent assessment of the legal capacity of subjects of business relations by analyzing the existing system for organizing production or rendering services, including the current QMS and its effectiveness. The main task in this case is to assess its compliance with the requirements of regulatory legal acts of the Russian Federation, existing national standards, technical regulations, industry regulatory documents and organization standards, based on which measures are developed to improve processes and improve the quality of products (services). Currently, various methods proposed by foreign and Russian authors are used to evaluate the effectiveness of processes and QMS. In accordance with the requirements of GOST R ISO 9001, an organization should use appropriate monitoring methods and, where applicable, measure QMS processes that demonstrate the ability of the processes to achieve the intended results.

Main part. The article discusses the methodology that was successfully used in assessing the QMS as a whole, an important feature of which is the quantitative assessment by the consumer processes of the supplier processes in the organization, which allows process owners to actively participate in quality management. A requirement for such a methodology is the absence of contradictions to the accepted methods for evaluating the performance based on the results of internal audits, self-assessment of processes by their owners and satisfaction of external consumers, which allows us to obtain baseline data for evaluating the effectiveness of the QMS of the organization as a whole. In this case, a prerequisite for obtaining a numerical value of the effectiveness of the QMS is to determine the numerical values of the process quality indicators.

Based on this approach, the following private methods have been developed:

- assessment of the effectiveness of supplier processes by consumer processes within the organization;
- assessment of the effectiveness of the QMS processes based on internal audits;
- assessment of the effectiveness of the QMS processes based on the results of the self-assessment of their owners;
- assessment of the effectiveness of the QMS as a whole.

All methods in the organization's QMS are presented in the form of documented procedures. Evaluation of the effectiveness of supplier processes by consumer processes is to evaluate the fulfillment of the planned requirements of consumer processes agreed upon by suppliers for the reporting period. The assessment summary is issued in the form of a table containing requirements for input elements, quantity, quality and evaluation criteria for the supplied resources of the supplier processes of the process in question, as well as columns containing an assessment of the quality of these

supplies. The effectiveness of the process according to its customers is determined by the value of a comprehensive indicator of the quality of the process, which quantitatively characterizes the degree of fulfillment of the requirements of all consumers of this process and is calculated by the formula:

$$Q_{np} = \frac{\sum_{j=1}^N \frac{\sum_{i=1}^M q_i}{M_j}}{N},$$

where q_i — assessment of the process of individual consumers by i parameter;

$i = (1, M)$ — consumer requirements parameter number j ;

$j = (1 — N)$ — consumer number;

M_j — the number of individual consumer requirements for the j -th process;

N — number of consumers. Evaluation of the effectiveness of supplier processes by consumer processes for K periods is determined by the formula:

$$Q_{\Sigma\pi} = \frac{\sum_{k=1}^K Q_{\Pi PK}}{K},$$

where $Q_{\Pi PK}$ — performance evaluation of supplier processes by consumer processes in the K -th period;

K — is the number of evaluation periods. The assessment of the effectiveness of the QMS processes based on internal audits is carried out by the person responsible for the “Internal Audit” procedure at the end of the analyzed period on the basis of reports from the heads of structural divisions in which the internal audit was conducted. Process performance assessment based on the results of internal audits is carried out according to two main parameters:

- the number of inconsistencies identified in the process;
- the number of resolved nonconformities according to the approved plans. The effectiveness of the processes to eliminate inconsistencies in this process is calculated as the ratio of the number of resolved inconsistencies to the total number of identified inconsistencies according to the formula:

$$Q_{BA} = \frac{H_y}{H_B},$$

where H_y - the number of resolved discrepancies;

H_B - the number of detected discrepancies.

Evaluation of the effectiveness of the QMS processes based on the results of the self-assessment of their leaders is carried out to characterize the process by which records are kept for the analyzed time period.

When evaluating the effectiveness of processes, the following additional characteristics are possible:

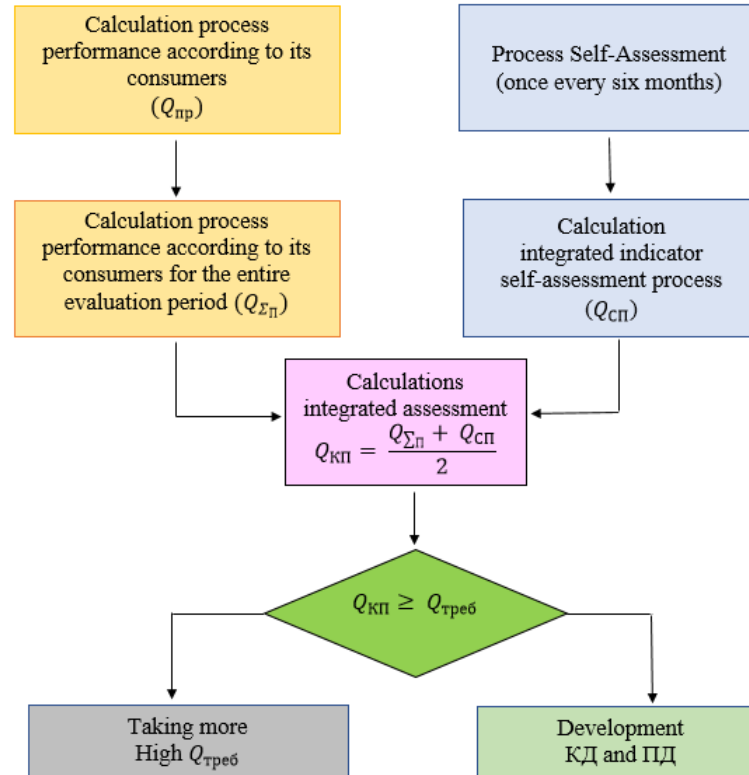
- empowerment;
- response time;
- cycle time;
- effectiveness and efficiency of employees;
- application of new technologies;
- the implementation of corrective and preventive actions;
- availability of improvements;
- distribution and cost reduction.

In order to collect the necessary data for self-assessment of the effectiveness of the process, monitoring of the process should be conducted. The frequency, methods and distribution of responsibility for monitoring the QMS processes should be developed for each specific organization [1-2]. The owner of the process or the person responsible for quality during the analyzed period shall keep records necessary to obtain numerical values of the process performance indicators at the end of the analyzed period. The performance indicators of the process are compared with the planned values that should be contained for the purposes of the structural units for the analyzed period. Its consumers compare process performance values obtained during the self-assessment of process owners with the assessment of process performance.

If the estimates do not coincide by more than 10%, an analysis and clarification of the reasons for the discrepancy are carried out. When conducting self-assessment for several indicators, a complex indicator of self-assessment of this process is calculated:

$$Q_{\text{СП}} = \frac{\sum_{i=1}^J Q_{\text{СП}i}}{J},$$

First Level of Assessment



where $Q_{\text{СП}i}$ — self-esteem indicator of the i -th process, J is the number of self-esteem indicators.

Evaluation of the effectiveness of the QMS as a whole is carried out by compiling comprehensive assessments of the effectiveness of the processes, the estimates obtained from the results of the internal audit, as well as evaluating the satisfaction of the external consumer, calculated as the ratio of the number of completed contracts for the supply of products (provision of services) without complaint to the total number of contracts. The definition and analysis of QMS performance assessments is carried out at two levels of management: process owners and those responsible for the processes that determine the effectiveness of specific processes (first level; Scheme 1), representatives of the quality management and director of the organization with decision-making on the organization's QMS management board (second level ; scheme 2).

The frequency of evaluating the effectiveness of the QMS and analysis of the results is established by the organization. The nature of the issues considered depends on the activities of the unit, but in the general case, issues in the following areas may be included in the agenda of the meeting:

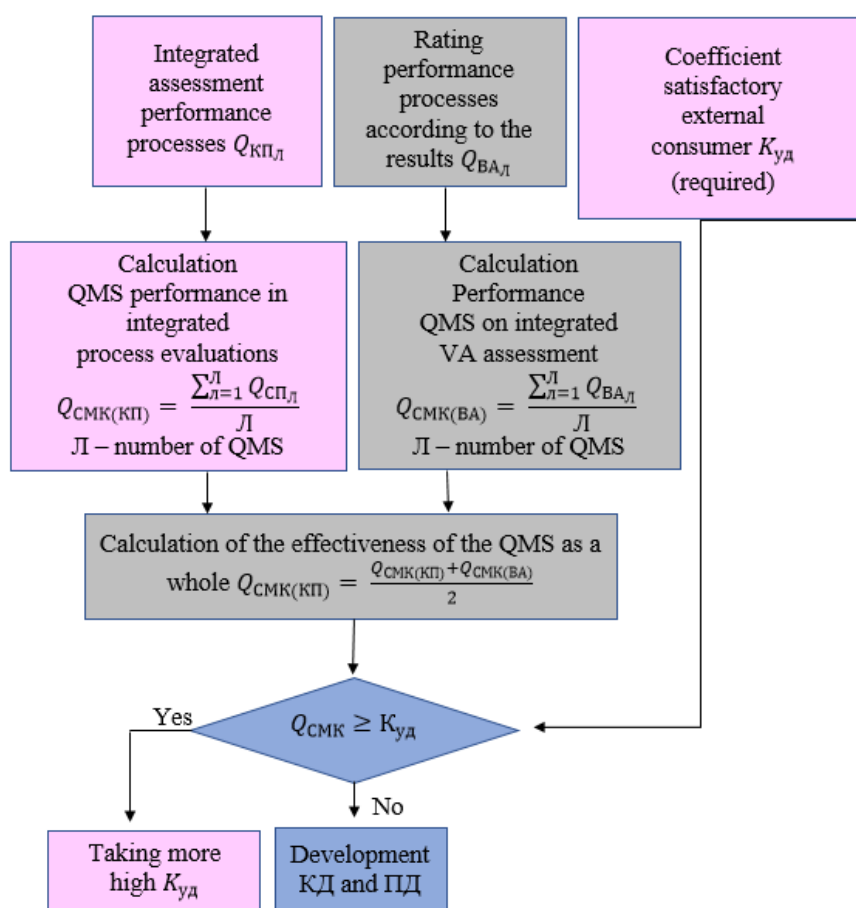
- analysis of the results of external evaluations of the effectiveness of the process, as well as the results of evaluations of the activities of structural units conducted by the heads of these units (self-assessments);
- analysis of the causes of discrepancies identified in all types of inspections, as well as discrepancies identified by the participants in the process;
- analysis of corrective and preventive actions taken on previously identified inconsistencies;

- assessment of the results of work performed on the facts of dissatisfaction of customers and internal consumers of processes and procedures;
- evaluation of the results of the implementation of the decision of the previous quality meeting;
- analysis of proposals for improving the QMS and its processes, products, services;
- assessment of the impact of proposals to change the organizational structure, procedures, documentation on the performance of the QMS.

It is possible to develop action plans for previously adopted decisions, which determine the responsible and timing of the activities. Responsibility for conducting the analysis at the first level of management lies with the owners of the QMS processes. Process managers providing quality data are responsible for their accuracy and timeliness.

At the level of effectiveness of the QMS as a whole below the level declared by the organization's goals for the current period, measures are being taken to improve the processes. Upon reaching the declared level of performance, higher QMS performance indicators are set. If it is difficult to establish the planned values of some indicators at the first stages of the QMS, the achieved results can be used.

Second Level of Assessment



In contrast to the analysis carried out at the first level, the analysis of the QMS at the second level examines activities throughout the organization for the year and verifies the implementation of decisions of previous meetings.

Conclusion. The proposed approach to assessing the effectiveness of the QMS allowed the authors of the article to quantitatively evaluate the effectiveness of the QMS of the organization as a whole and timely manage the organization's processes. The described methodology is used in a number of organizations of the Republic of Mordovia, it was approved during certification audits by domestic and

foreign certification bodies in the certification systems UKAS (Great Britain), TÜV International Certification (Germany), GOST R and Euro-Register (Russia).

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