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PRINCIPLES OF CLASSIFICATION OF COSTS TO ENSURE PRODUCT QUALITY IN PRODUCTION

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Abstract: This article about the development of methods for optimizing quality costs in production enterprises in a market-oriented management system, ensuring product quality in the production process and choosing the right types of costs.

Keywords: Costs, quality, standards, textile enterprises, internal costs, external costs, organizational and technological features.

Introduction. In order to develop quality cost optimization methods, all types of costs must be combined into groups. The classification should cover the types of costs to ensure product quality at all stages of the product life cycle. It is determined by the correctness of the principles underlying it. In this context, we analyze certain approaches to the classification of quality costs. British Standard BS 6143 Cost Classification, Guide to the Determination and Use of Quality Costs. The classification proposed by A. Feigenbaum was adopted as the basis for cost reporting in the BS 6143 standard.

Methodology and empirical analysis. In 1990, BS 6143 was revised and issued as one of the standards in the Quality Economics Guidelines. The title of this standard is BS 6143 "Guide to the Economics of Quality". "A Model of Alerting, Evaluation, and Failure." The standard provides a revised version of the traditional method of estimating quality costs in industries.

Cost classification according to BS 6143:1990 divides all costs into two groups:

- compliance costs are the costs of quality control preventive measures and quality standards (norms);
- the costs of failures that reduce profits, regardless of the cause.

These two broad groups of costs are classified in turn as:

- preventive costs,
- estimated costs,
- costs due to internal failures,
- costs incurred as a result of external failures.

Preventive costs (costs of preventive measures) - costs of the manufacturer for any actions to prevent the occurrence of inconsistencies and defects. These costs are estimated and used to reduce failure costs.

Estimated costs (inspection costs) - costs of the manufacturer to identify inconsistencies and defects that occurred during the design and production of products

or services before the products reach the consumer or before the services are completed. These costs are incurred during the initial determination of product compliance with quality requirements.

Costs associated with internal failures (costs of internal defects) are the costs of eliminating defects identified by the manufacturer during the production process, taking into account the costs of producing high-quality products to replace rejected ones.

External failure costs (external defect costs) are costs incurred after product delivery because the product does not meet quality requirements. These include, in particular, product returns, direct costs and discounts for costs related to legal liability for product quality.

In 1992, the second was published - British Standard BS 6143 "Guide to the Economics of Quality Part 1."Cost Process Model". This standard is already suitable for any field of activity. According to him, quality costs are divided into two main categories - costs of conformity and costs of non-conformity.

The peculiarity of this classification is that the costs of prevention and assessment are equated to losses. With this approach, it is not possible to evaluate the cost-effectiveness of costs. After all, an increase in the cost of quality assurance should lead to an increase in losses due to complaints and the elimination of deviations and inconsistencies detected in the production process.

The list of quality costs in this standard is not complete, and in practical application it will be difficult to separate them from the total costs of product production and sales and divide them into "Prevention, Evaluation, Failures" groups. For example, should one hundred percent technical control be considered evaluative, or is it due to internal failures? If such control is implemented to improve the unsatisfactory quality level, it is part of the costs due to internal failures. If the quality level is satisfactory, but 100% control is carried out according to the customer's request, it is possible to estimate these costs.

It should be added that in addition to the obvious (visible) costs, in practice there are a large number of costs that, for one reason or another, do not actively remind the manufacturer of their existence as the aforementioned quality costs. These hidden costs are often not recorded by the manufacturer and therefore not accounted for, giving the manufacturer a false idea of his true quality costs. Hidden producer costs can include:

- excess stocks of materials and finished products in warehouses due to errors in forecasting;
- the cost of buildings and labor costs to ensure their maintenance;
- late payments - costs included in invoices, but not paid on time due to consumer oversight, invoice inaccuracies, defects or discrepancies between consumer expectations of product value;
- Obsolete inventory is the manufacturer's costs related to inventory that has not been used for a long time. These costs are associated with errors in marketing, sales and purchasing, product design and manufacturing;
- overtime - the cost of additional payment for overtime, which in turn is the result

of improper planning or control;

- additional capacity - the cost of capacities required for processing and storage of defective products;

- losses due to unsatisfactory employee morale associated with inefficient use of labor resources, for example, as a result of a discrepancy between the expected remuneration by the employee for his work and what he actually received;

- excessive employee turnover;

- loss of market share;

- insufficient information about competitors;

These costs should be added to the group "Failures that lead to a decrease in profit" and, if possible, they should be taken into account in the enterprise.

The international working group that prepared the first editions of the ISO 9000 standards studied and used military and national standards, among other documents, in their work. As a result, ISO 9004, which serves as a reference for quality management, includes Section 6, Economics - Accounting for Quality Costs. Please note that this issue is not included in the ISO 9001-9003 standards for which certification is carried out. In other words, the requirement to account for quality costs is not mandatory and should not be considered in third-party certification of systems. Accounting for the cost of quality is a matter of concern for the company's management and its quality specialists.

A Japanese Approach to Classifying Quality Costs. The Japanese approach is based on the principle: utilities and all quality costs are divided into two groups:

- utility costs, including defect prevention costs;

- losses - appraisal costs and costs related to defects.

The Japanese approach to the classification of quality assurance costs is fundamentally different from the previous classification, because it is based on the concept of quality assurance activities and their evaluation, rather than on products. results. Therefore, the calculation of the cost of quality assurance represents the determination of the cost of works, the purpose of which is to reduce the total costs by planned increase in the cost of activities aimed at preventing non-conformities and defects.

Results. As a result, costs must be reduced - costs due to quality assessment and defects. The concept proposed by Japanese experts allows solving the problem of quality costs, because it answers the fundamentally important questions: how does product cost differ from quality costs, what share of quality costs belongs to quality costs? Quality costs etc.

It is also important that the Japanese model conforms to the content of the ISO 9000 family of standards, which regulate the requirements for activities within the framework of the quality system. Therefore, the "management" direction of determining the costs of quality assurance requires further development. Poor quality pricing can be considered a new step in this regard.

J. Jurai: define quality costs as "non-quality costs" or "non-quality costs" (primarily the costs of identifying and correcting defective work). The same approach was used in

the development of the TASIS program "Guide to improving production organization and reducing costs" developed for the countries of Central Europe within the framework of the Regional Program for Quality Assurance (RPQA) of the European Committee for Standardization (CEN).

In this manual, "quality" refers not only to product quality, but also to the quality of organization of all company activities. Non-quality costs mean the costs of all activities that do not directly serve the final goals of the company. When using this approach, the main focus is on internal and external losses due to poor quality, which are represented by five characteristic groups:

- non-quality internal costs - costs that occur before the product reaches the consumer. They appear because one of the workers did not or could not do his job correctly the first time;
- poor quality external costs are costs that occur because the current system is not able to prevent all errors and defects before the product or service is provided to the consumer;
- mud costs are costs associated with unnecessary or ill-conceived investment decisions. As a result of such decisions, some equipment is not being used or is not being used at full capacity;
- costs related to damage to the environment - costs arising as a result of the shortcomings of technical means of protection against harmful effects of production processes on the environment;
- The cost of indirect (intangible) losses from poor quality includes events such as the loss of the company's reputation and low morale of its employees, which can lead to high staff turnover, loss of consumer confidence.

The TASIS program offers a methodology for determining these costs and explains how to practically organize cost reduction activities within the existing organization and management system.

Undoubtedly, identifying only poor quality costs will significantly increase the efficiency of the organization and significantly increase the results. However, only the determination and evaluation of these costs does not allow to determine the amount of investments to improve the quality and efficiency of these activities. Thus, the scope of management influence on quality assurance costs is narrowed.

The international organization ISO has evaluated and taken into account the advantages of the quality cost classifications discussed above in the development of its 9000 series of standards. The classification and costing methods recommended by ISO 9004-1 mainly represent the quintessence of world experience in the theory and practice of quality assurance costing. The methods defined by ISO are today accepted as a methodological basis not only by manufacturing enterprises implementing a systematic approach to quality assurance, but also by consulting and certification organizations, each of which strives to have a well-developed classification and methods tested in practice. To estimate quality costs.

In the recommendations of MS ISO 9004-1 "Financial aspects of the quality system"

section, three methods of accounting and evaluating quality assurance costs are proposed for practical use, which were developed based on the previously discussed cost classification.

- first, the PAP classification method is "Warning, Assessment, Failures". This cost accounting method is based on the cost classification of British Standard BS-6143:1990;
- secondly, the cost accounting method based on the Japanese approach to their classification. It is used to analyze the cost of compliance and the cost of non-compliance of any process, both of which can be a source of cost savings. The concepts of "compliance value" and non-compliance value are defined as follows:
- Compliance cost is the cost incurred to meet all stated and implied customer requests with the reliability of the existing process;

An attempt to scientifically substantiate the classification of quality costs for Russian enterprises was made by Professor EM Karlik and his students of the Leningrad School of Economists. Based on the need to distinguish costs to increase the quality level and ensure the required quality, they developed requirements for the classification of costs and proposed a number of its features. The research and development carried out by the Leningrad School on the accounting of quality costs made a significant contribution to the scientific and methodological basis of quality economics.

KM Rakhlin and LE Skripkolar developed a classification of costs according to economic characteristics, based on the summarization of publications of local and foreign experts on the issues of accounting for quality costs. According to this classification, cost groups are formed in different aspects depending on specific conditions and requirements. These groups can be considered as cost structure models.

Current costs include all quality costs that are reproduced in the production of the product (for example, quality control and testing, equipment maintenance and repair costs, etc.).

The considered classification groups indicate the possibility of a different approach to the formation of the composition of costs to ensure product quality (depending on specific conditions). In addition, these groups can be used in cost planning to ensure quality and optimize them.

Given the specificity of accounting for the costs of quality assurance, MZ Svitkin, KM Rakhlin and others offer their generalized classification. According to this classification, the costs of quality assurance are considered both from the point of view of the producer and from the point of view of the consumer.

Thus, the analysis of domestic approaches to the classification of quality costs and their comparison with the above-mentioned foreign classification shows that the approaches proposed by Russian experts are not fundamentally different from those used in foreign practice.

Evaluating the main classification directions of quality costs and the target structure of costs in these areas, presented in domestic and foreign publications, allows us to conclude that experts in the USA, Europe and Japan believe that this is theoretically and practically possible. Using classification criteria created mainly by A. Feigenbaum. It

should be noted that there is no single, generally accepted, classification of quality costs.

Conclusion. In conclusion, in the development of the methodology for the management of quality assurance costs, the classification principles defined in ISO should be used, because they summarize the accumulated experience in the methods of accounting for quality costs and can be used in costs.

Let's consider the content of the classification groups in connection with the organizational and technological characteristics of textile enterprises. Quality assurance costs from the manufacturer's point of view include two groups:

- quality assurance in the production process;

- the part after production costs for quality assurance (manufacturer's costs for ensuring the level of quality when using the product).

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