



## Characteristics of Quality Management Concepts in Construction Enterprises

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**Abstract:** The introduction of quality management systems is the main means of confirming the competitiveness of enterprises. As a result of the analysis of the existing concepts of quality management, this article presents the results of research on the selection of a quality strategy and an effective model in construction.

**Key words:** quality management, concepts of quality management, quality strategy of the enterprise.

Today, the number and level of certification of quality management systems based on ISO 9001 international standards is the goal and main indicator of the quality strategy in the field of construction in our republic.

According to the data of 2020, 218 enterprises in Uzbekistan were certified according to the ISO 9001:2015 standard.<sup>1</sup>This is 68 fewer than in 2018 (the number of certified enterprises was 286 in 2018)<sup>2</sup>

Speaking about modern concepts of quality management, it is possible to emphasize the priority of two methodological models of quality-based management.

Looking back at the history of quality management theory, it is possible to distinguish five recognized stages. Different interpretations of the term "quality" at each stage indicate that the scope of scientific research is increasing. These stages are expressed by scientists through the "five stars" approach. A "star" is a device that represents the top five principles of each stage.

The first stage is associated with the research of Winslow Frederick Taylor, in which quality is understood as conformity to the requirements of standards. The five main principles of this model include regulations, access control, fines, vocational training and job acceptance. That is, the creation of a quality product is primarily determined by written requirements, monitoring of their fulfillment, the order of incentives (punishment) and professional growth of employees. At this stage, the demand for quality was shown by setting the level of deviations (stakes) from the nominal size, and the quality assessment was assigned to special employees - inspectors.

The second stage is associated by many with statistical control methods created by Walter Schuhart and Edwards Deming. In this situation, the concept of "quality" embodies the fulfillment of standards and the stability of production. In this case, the control charts of U.Schuhart, G.Dodge, G.Roming are combined with the quality people of E.Deming and become the basis of the model of statistical quality management. The "star" of this stage consists of the following five principles:

<sup>1</sup><https://www.iso-9001-checklist.co.uk/iso-9001-statistics.htm#iso-9001-certificates-by-country-2020>

<sup>2</sup><https://www.statista.com/statistics/1266494/iso-9001-certs-globally-by-country/>

statistical input control, material incentives, statistical model training, statistical acceptance control, and statistical quality control.

The third stage is distinguished by the introduction of economic principles in quality management. Quality shows the conformity of products, processes and activities to market demand. Total Quality Control (TQC) focuses not only on quality assurance but also on cost management. Based on the model developed by the American scientist A. Feigenbaum, the structure of the "quality star" includes strengthening of access control with a certification system, involvement of all company employees in quality assurance, Total Quality Study (TQS), finished product quality control. In addition to doing so, principles such as introducing consumer control are embodied.

The fourth and fifth stages of the history of quality management are separate forms of the Total Quality Management (TQM) approach. In the fourth stage, the "quality" category refers to meeting the needs of consumers and company employees. The main principles of this approach, which was formed in the 80s of the 20th century, namely, certification of raw materials according to the ISO 9000 standard in the "quality star", compliance with the eight principles of total quality control, training of all employees, certification and guarantee of the enterprise's quality system are the main ones that occupy the rank.

Modern quality management approach, that is, in the fifth stage of quality management, the main emphasis is placed on filling the quality management system of the enterprise with the principles of product safety and environmental management. Accordingly, environmental management requirements are also included in the "quality star" in the certification of raw materials and finished products, in the training and involvement of employees, and in the certification of the enterprise's quality management system. Today's concept of "green economy" also shows the rise of the quality management system in enterprises to a new level.

If we analyze the stages of quality management from a methodological point of view, we can observe that there are two specific concepts in them.

Based on the first concept, the main source of quality management is the database of defects in production. According to its founders, U. Shukhart and U.E. Deming, quality management should be focused on the prevention of defects. Schuhart's control charts and Deming's four-stage model are the main elements of this model. Also, the quality cost management model of A. Feigenbaum, F. Crosby and G. Taguchi is of great importance in the concept.

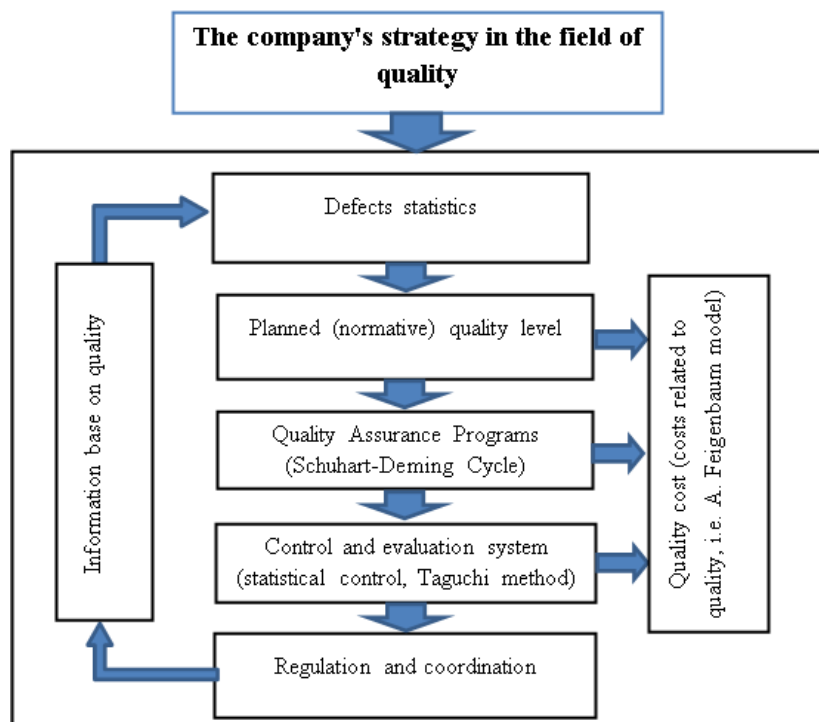
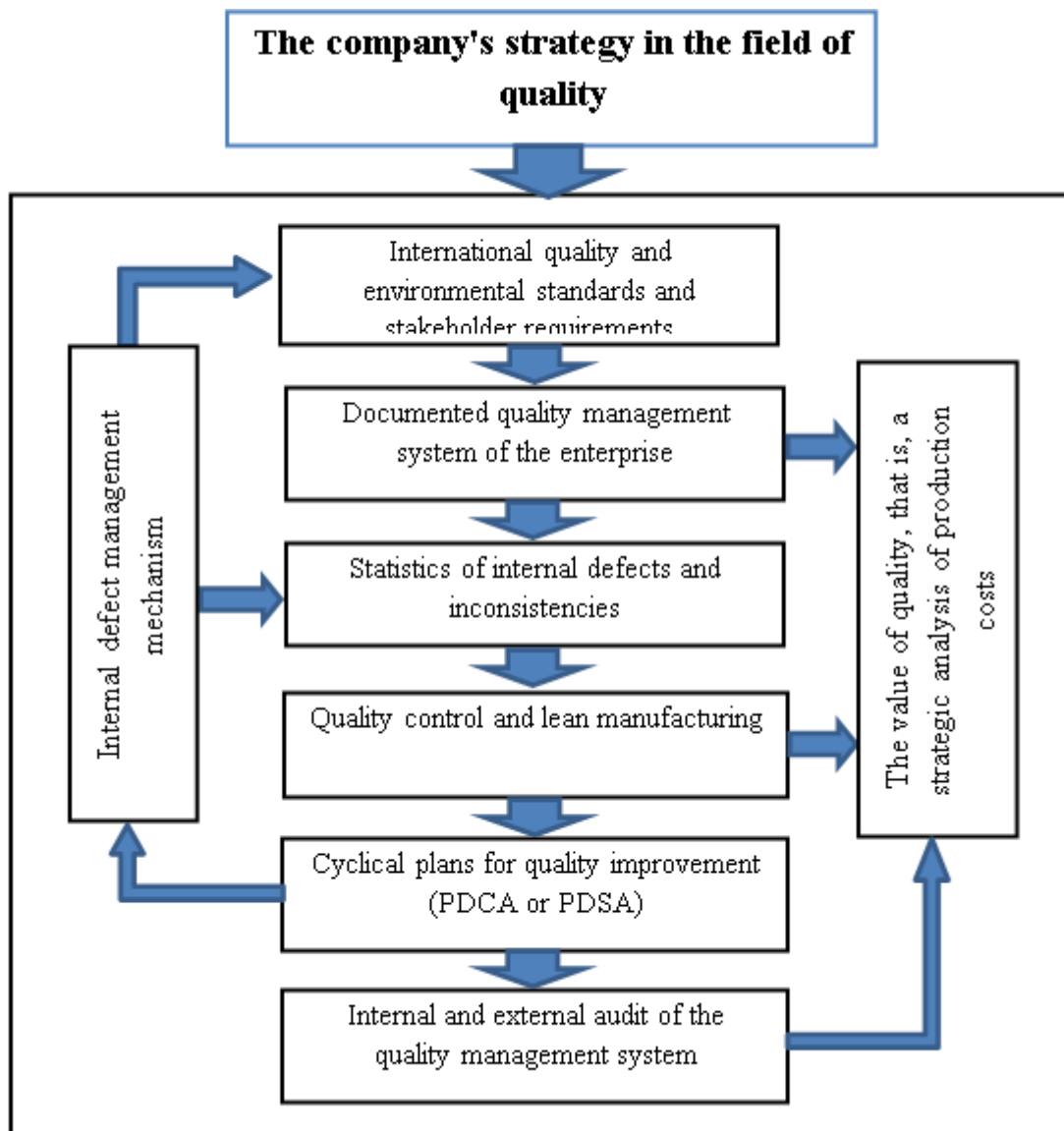


Figure 1. Concept of quality management based on defect statistics.

Therefore, this concept of quality is based on the statistics of defects in the production process of the enterprise. This concept combines production possibilities and economic and social necessity and reflects the internal needs of the enterprise. The quality management model will be accordingly (Figure 1).

The following principles of quality management are reflected in this concept:

- ✓ existence of an objective and complete information collection system on external and internal defects in the enterprise;
- ✓ the existence of a mechanism of quality requirements that is always increasing in the enterprise;
- ✓ -use of an effective statistical control system at all levels of management in the enterprise;
- ✓ having an orderly, analytical database of costs related to quality in the enterprise;
- ✓ existence of a clear quality strategy of the enterprise.



**Figure 2. Quality management concept based on quality, safety and environmental requirements.**

The second concept is based on international quality management standards, taking as a starting point the needs and expectations of consumers and stakeholders (Figure 2). In this case, the economic efficiency of the enterprise is transferred from the field of production to the field of market relations.

The transition to a quality management system that meets international standards requires a lot of preparation from enterprises.

Based on the principles of this concept, a unique system of quality management is formed in organizations and enterprises.

The following principles are reflected in the concept of quality management based on ISO 9000 international standards in this scheme:

The priority of international quality, product safety and environmental requirements, that is, the quality management system of the enterprise should be formed based on these requirements:

- Respecting the quality interests of stakeholders, that is, consumers, shareholders, partners, etc.;
- existence of a documented system of quality management in the enterprise, maintenance of quality statistics;
- The existence of a quality control system that reflects the uniqueness of the enterprise and provides accurate and complete information, the introduction of the idea of economical production;
- The existence of an excellent organizational and technical mechanism capable of carrying out quality improvement tasks;
- Organization of internal and external audit of the quality management system in the enterprise;
- The presence of a clear quality strategy of the enterprise.

The quality strategy of the enterprise serves as the most important factor when making a decision on the introduction of quality management systems in enterprises. Within the framework of this issue, the methodology of creating a quality strategy by the enterprise, that is, an organizational-economic mechanism suitable for the attitude of the surrounding environment to quality, is formed.

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