KEEPING QUALITY UNDER CONTROL – AN IMPORTANT FUNCTION OF MODERN MANAGEMENT

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Abstract: *At the beginning of the twentieth century quality becomes a "lifestyle", a basic component of the management in an organization. Nowadays, quality is designed as a competitive strategy in relation to: satisfying the clients' needs, a continuous enhancing of the quality; making all the employees aware of the quality; preventing defects; the analysis of all the quality-centered activities and processes, in order to correct and adjust them. Obtaining products in accordance with quality requirements and minimal costs represent an operational objective of a firm. What costs money is non-quality. Therefore, using adequate scientific instruments to control the quality and prevent irregularities represents a major goal for an advanced modern management.*

Keywords: *Total quality (TQ), Total Quality Management (TQM), quality control, "zero defects", non-compliant product.*

JEL Classification: *L15.*

1. Introduction

From its manifestation as a phenomenon at the beginning of the 1930s up until the present, the evolution of quality was marked by four stages (Moldoveanu and Dobrin, 2016, p. 360):

- artisanal production;
- quality ensuring;
- quality management;
- total quality management.

In the modern economy of the 21st century, quality becomes the key factor in market regulation through the client, because he is the one who determines the quality and not the manufacturer. Kelada defines the *quality - client* relationship in a very clear manner, when referring to the concept of *total quality*. In his opinion, total quality represents satisfying the clients' needs regarding product or service quality (Q), the delivery of the requested quantity (V) at the required time (T) and place (L) at the lowest cost (C) for the client, in a cordial and efficient manner for him and in a flawless administrative system (A), starting with the preparation of the order up until the payment (Olaru, 1999, p. 123).

Western enterprises are convinced that quality is the sole decisive competition factor. Thus, they developed a *total quality strategy.*

While *total quality* (TQ) represents the aim, the *total quality management* (TQM) is the means of its realization. TQM integrates concepts related to *inspection, control, quality ensuring and management* (quality ensuring at large).

In Ph. B. Crosby's opinion, in order to ensure quality, the following principles should be taken into account: ensuring conformity with the specified requirements through a standard or some other legal act; ensuring quality through prevention; promoting the "*zero defects"* concept, by which "everything has to be done properly from the first try", therefore avoiding the costs generated by the control of the products' manufacturing process.

Industrial production determined the emergence of the "*compliance*" term which can be verified through *control.* A thorough control system allows the detection of *non-quality*. The costs generated by unmet requirements determine the extent of quality.

Therefore, competitiveness represents a goal which can be reached by implementing the TQM principle, under the conditions of the valorization of all the resources of the enterprise:

- customer orientation;
- internalizing the client-provider relationship;
- quality above all;
- "zero defects" and constant improvement;
- Systematic view;
- Data argumentation.

2. The characteristics of the quality control function

The quality control function deals with:

a) the body of surveillance activities for process conducting and evaluation results in the quality domain in each stage of the product's trajectory in connection with pre-established objectives and standards;
b) the disposal of recorded deficiencies and their subsequent prevention during a process.

The *SR ISO8402:1995* standard – "*Quality Management and ensuring quality. A Vocabulary*" defines a series of activities specific to keeping the quality of the process, product or work in check; *quality surveillance, quality inspection, quality verification.*

In order to be efficient, quality control must meet a series of characteristics:

- as a method of prevention, focusing on the analysis of the cause of the irregularities and taking appropriate measures, along with the integration of positive irregularities;
- impartial, fair;
- systematic, short duration and high-speed reporting;
- flexible, not excessive, clear, constructive, through a precise mentioning of corrective actions;
- focused on critical aspects in strategic points;
- executed by qualified people.

3. The analysis of statistical processes (ASP) – modern instrument for preventing irregularities.

In order to satisfy the customers' requirements, it is important to manufacture good-quality products, which are delivered under the required conditions and the appropriate time and by taking costs into consideration as well. From this perspective, production control does not only mean quality control, but also controlling the quantity of the products and the costs. Deviation in the negative sense from standardized quality leads to high costs, caused by reconditioning or throwing away non-compliant products. In order to avoid such situations, it is mandatory to comply to the following steps (figure no.1).

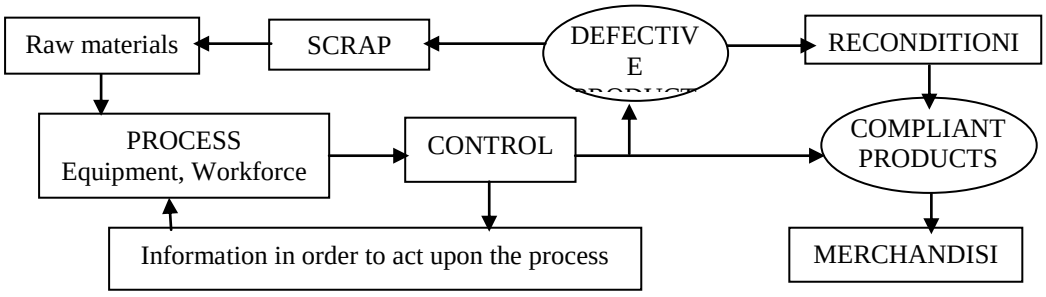


Figure no. 1. Quality process

Source: Moldoveanu G., Dobrin C. (2016), Management operaţional,Pro Universitaria, Bucharest, p. 363

Nowadays, a simple technical control is not enough, because it is not compatible with the modern idea of quality management ("zero defects") and its specific techniques and instruments. *Statistical analysis of the processes (SAP)* represents an adequate instrument for non-compliance prevention, which ensures reaching the "zero defects" target. It is a scientific instrument based on the use of statistical techniques, in the case of reaching mass production. In order to apply it, a few classic techniques and instruments of quality management are required: the Pareto diagram, the cause-and-effect diagram, the control diagram etc. There is an increasing number of big enterprises, especially those from the automotive industry, which request the consistent implementation of SAP by its providers.

A comparison in performance between quality and SAP is shown below (figure no. 2).

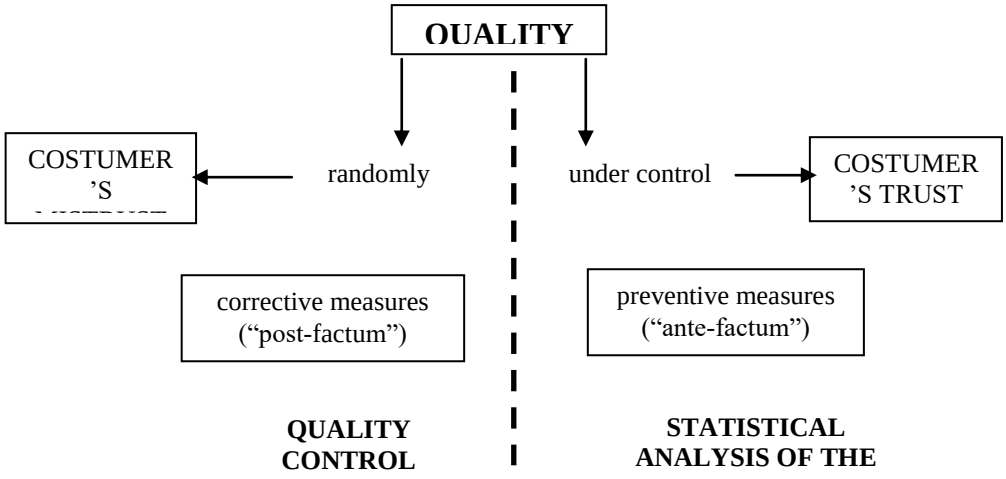


Figure no. 2. Comparison between „Quality control" and „Statistical Analysis of the Processes"

Source: Drăgulănescu N. (1999), Ghid practic de managementul calităţii pentru firmele performante, Niculescu, Bucharest, p. 56

4. Keeping possible non-compliances under control through quality procedures

The existence of a *non-compliance* practically means that a product or service realized by an organization does not meet a requirement (*SR EN ISO9000:2015*).

The process of keeping non-compliances under control is described by *"Deming's circle"* which encapsulates four infinitely chained sequential processes: **P** = *plan*; **D** = *do*; **C** = *check*; **A** = *action*[1].

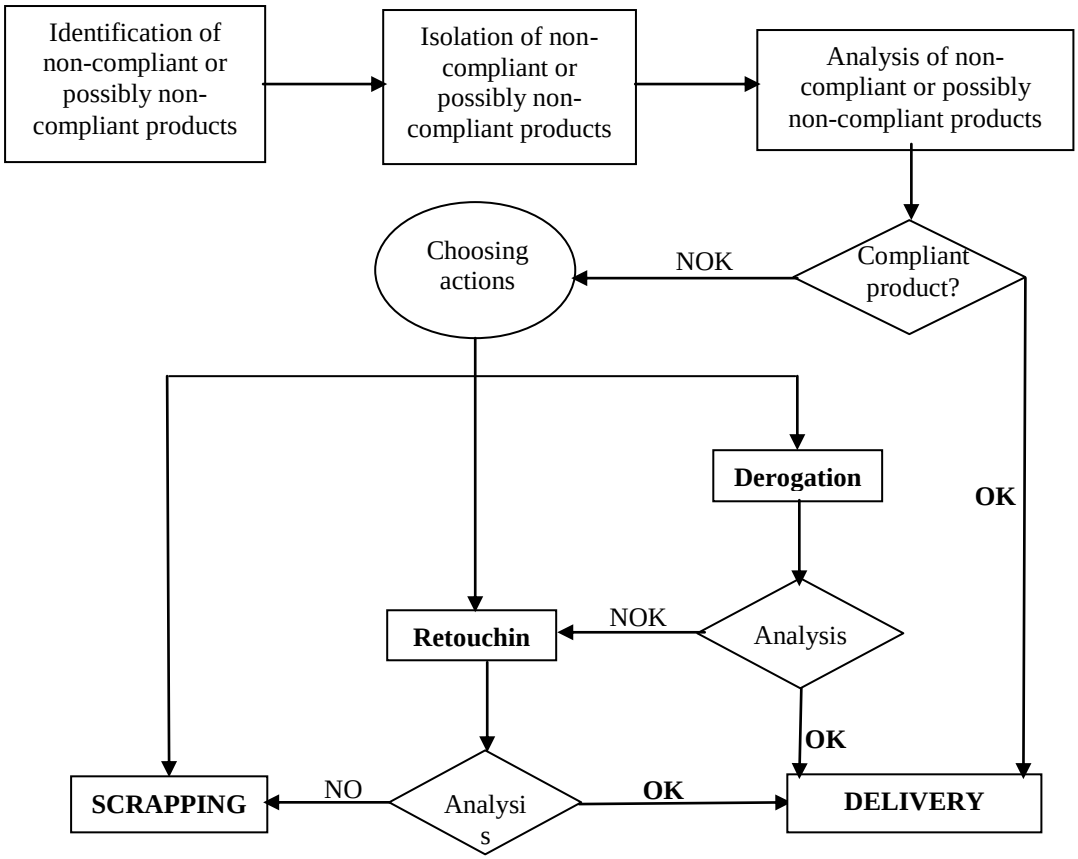
All the aspects which are related to non-compliant products (scrap, products that are subject to recycling/destroying; products which can be derogated; products that must be sorted/returned, products with discharge authorization) are mentioned in the "non-compliant product report" document. This must contain a series of elements, such as: non-compliance identification; a proposal regarding how to handle a non-compliant product; the decision on the determined actions (corrective / preventive).

The *SR EN ISO9001:2001* standard states that the identification and management of non-compliance shall be presented in a documental procedure called "*The control of the non-compliant product",* with reference to:

- the purpose of the keeping non-compliance in check;
- application domain;

[1] In this case, „action" has the meaning of applying corrective and preventive measures.

- terms, definitions, normative references;
- description of possibly non-compliant products;
- responsibilities;
- records;
- appendices etc.



Scheme no. 1. The logic of chaining activities for the identification and treating non-compliant or possibly non-compliant products

Adapted after: Quality Procedure S.C. „Automobile Dacia" S.A. (2019), *"Identificarea, izolarea, analiza şi tratarea produsului neconform" – RPIFDACIA20055022*

Starting from this premise, quality procedures are applied within the quality departments, which refer to:

- identifying, isolating, analyzing and treating the non-compliant product;
- corrective actions;
- preventive actions.

A rigorous methodology is applied in the manufacturing process in order to identify non-compliant or possibly non-compliant products (scheme no. 1).

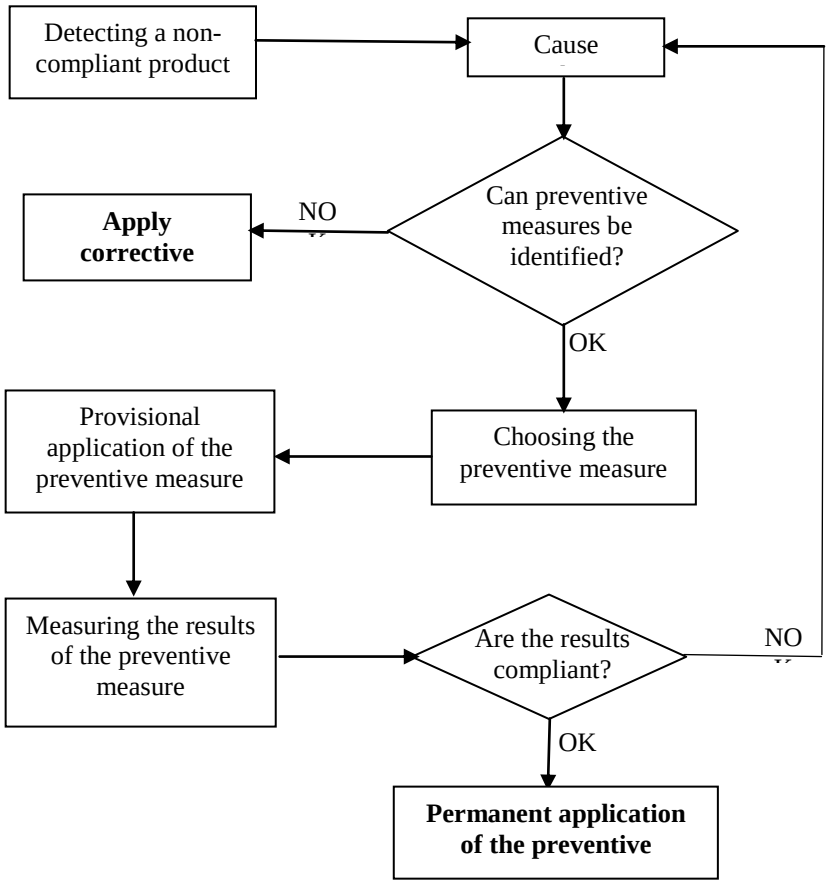
After identification, depending on well-defined criteria, they are classified as follows:

- compliant products, which can be delivered without any intervention;
- products with minor defects, which can be delivered through derogation, after an analysis which shall mention the conditions under which these parts are used;
- products with reparable defects, which can be delivered after applying some additional operations (retouching);

- products with irremediable defects, which cannot be delivered (scrap).

The above-mentioned handling process falls in the "post-factum" mode of action. In this case, we can see that the enterprise must invest additional resources for retouching operations (highly qualified operators; additional analysis and control operations) or for eliminating non-compliant products (recycling, eliminating environmentally harmful products).

In the context of highly qualified workforce shortage and the raise of constraints for environment protection, reducing the number of non-compliant products is an objective with an important positive impact on profitability. In order to solve this problem, the enterprise shall take *preventive measures* to reduce the number of manufactured non-compliant products. This is how is entering in the logic of "ante-factum" action.



Scheme no. 2. The logic of chaining the activities of preventive measures application
Adapted from: Quality procedure S.C. „Automobile Dacia" S.A. (2019), *"Acţiuni preventive" – RPIFDACIA20065177*

From the analysis of manufacturing products and processes, various causes for non-compliance can be identified:

- incorrectly executed adjustments;
- accidental stoppages caused by ineffectiveness or inadequate execution of a work;
- using inadequate tools;
- non-compliance with the manufacturing technological process or the storage and transport conditions;
- assigning jobs to people with the wrong qualification;
- using non-compliant commodities and materials;

- using the wrong technical documentation;
- the wrong control procedures;
- non-complaint control measures.

The identification and application of preventive measures upon the causes are made to prevent their apparition in the future.

In order to identify and apply preventive measures, shall be applied procedures whose logic chaining is shown in the scheme no. 2.

5. Conclusions

Interest in quality experienced an evolution marked by several stages: quality regarded as an integrated element in the manufacturing production; quality inspection, statistical control of quality; ensuring quality; implementing and development of integrating concepts for quality ensuring – Quality Management (QM), Total Quality Management (TQM). Quality becomes "a competitive strategy originally applied to industrial processes" (Moldoveanu and Dobrin, 2016, p. 360)

The new concept based on TQM puts forward the satisfaction of costumers inside and outside the enterprise, promoting accountability and including all the members of the organization in achieving, ensuring and improving quality. Emphasis is laid upon prevention, so that everything is done "properly from the first try".

As a function of modern management, *keeping quality in check* contributes to the optimization of all the activities and processes in an enterprise.

The function of the quality control is that of measuring the results, with implications for other management functions: prevention, organization, training, coordination and command.

By analyzing non-compliance, managers will be able to find efficient solutions to their own production process and to the formation of a pro-quality attitude and culture.

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