THE ANNALS OF "DUNAREA DE JOS" UNIVERSITY OF GALATI
FASCICLE XIV MECHANICHAL ENGINEERING, ISSN 1224-5615
2021

IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT

PhD. Assoc. Prof. Daniela Ghelase
PhD. Assoc. Prof. Luiza Daschievici
"Dunarea de Jos" University of Galati,
Romania

ABSTRACT

Total quality management (TQM) is a system of activities carried out with the aim of satisfying customers, increasing the power of employees while ensuring the lowest costs. The methods and techniques of total quality management must be applied throughout the organization, being equally useful for sales, financial, marketing, development, public relations services, as well as for the other sectors of the company. Total quality management is a method to save people from unnecessary efforts, involving everyone in the improvement processes; increasing work efficiency will lead to obtaining results in the shortest time.

KEYWORDS: total quality management, quality control, quality engineering, Deming, continuous improvement.

1. INTRODUCTION

As a result of the need to satisfy customers' needs, the concepts of "total quality" and "total quality management" appeared.

Total quality represents a global strategy aimed at obtaining product quality at a minimum cost.

Total quality management represents a system of activities designed to satisfy customers with high benefits and low costs.

This concept has the meaning of a management approach to obtain total quality, a management that involves all activities and all people at all levels of the enterprise's organizational structure. Therefore, the total qualifier means, first of all, that all company departments will be involved in obtaining the quality of the products (services).

Secondly, the total qualification means that all employees within each department become responsible for the quality of the work they perform.

Total quality management (TQM) is a new way of approaching the company in the field of quality. In this new approach, total commitment to quality issues and the involvement of all employees in the process of continuous improvement of processes or services in all departments of the company through the use of innovative scientific methods must be emphasized.

The implementation of total quality management can be ensured through the following phases (figure 1):

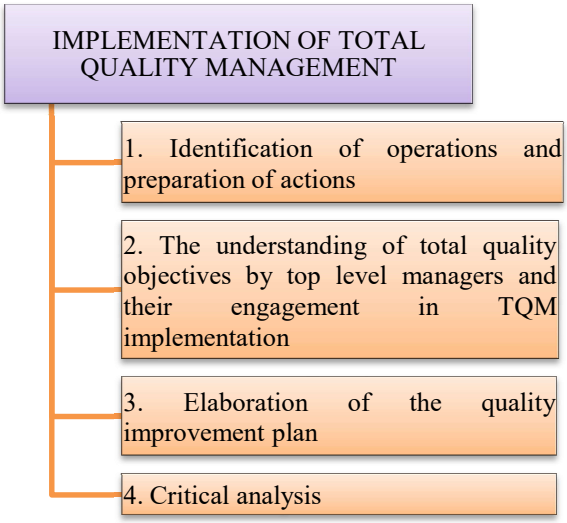

Fig.1 TQM implementation phases

In the first phase, information is identified and collected on quality improvement that can have a maximum impact on the company's

performance. It is necessary to understand the opinions of customers, suppliers, managers and employees.

All data and information must be identified and synthesized in such a way that managers have correct information for decision-making.

Also, detailed actions are being prepared to improve all the company's activities.

In the second phase, it is necessary for managers to be trained to understand the objectives and methodology of TQM, considering that significant changes must be made in managerial practices.

In order to develop the quality improvement plan, it is necessary to identify quality problems in each subunit, department and at the level of the entire company.

Once identified, quality problems must be resolved by involving all managers in a training scheme for improvement, which is the subject of the third phase of TQM implementation.

Through the critical analysis, which is carried out in the fourth phase, new initiatives are advanced after the achievement of the initial quality objectives, new objectives are promoted according to customer requirements, which will raise the level of the company's activity and maintain its competitive position on market.

Also, in this phase, information is obtained on the progress made and a consolidation of successes is carried out.

2. THE BASIC PRINCIPLES AND CONCEPTS OF TQM

Leading the continuous improvement process is done by using principles and concepts (Table 1).

Table 1

The principles of TQM	The basic concepts of TQM
Customer requests	Customer satisfaction
	Internal customers are real
Management by "facts"	The whole activity is done through a process
	Quality assessment
Employee-based management	Teamwork
	Employees make quality
Continuous quality improvement	The cycle of continuous improvement
	Prevention

In the following, the general principles of TQM will be detailed.

Customer requests

The first principle focuses on external customers and involves understanding their desires for the products or services offered.

The basic concepts of TQM that correlate with this principle are:

- Customer satisfaction;
- Internal customers are real.

Management by "facts"

This principle consists in knowing the information regarding the current level of performance of one's own products or services, information generically called "facts".

To increase quality, decisions need to be based on these "facts".

The basic concepts that are correlated with this second principle of TQM are:

- All activity is carried out through a process;
- Quality assessment.

Employee-based management

The third principle of TQM highlights the vital role of employees in the quality issue.

They must know very well "what to do", "how to do it", have the appropriate tools to "do it", be able to measure performance.

The basic concepts related to this principle are:

- Teamwork;
- Employees make quality.

Continuous quality improvement

The goal of those who want to successfully implement total quality management must be continuous improvement of products or services.

Total quality is not a short-term goal that ceases to be a priority when the goal has been achieved. Total quality is a management process that must take into account the fact that no matter how much we improve quality, our competitors will continue to take measures to improve.

The basic concepts related to this last principle are:

- The continuous improvement cycle;
- Prevention.

The practical translation of TQM principles is possible by applying the basic concepts mentioned above and which will be detailed in the following.

Internal customers are real

The requirements of internal customers are just as real and important as those of external customers, whether they are supplied with goods, services or software.

To identify the requirements of internal customers and how these requirements could be met by internal suppliers, we need to have discussions with each internal customer and internal supplier.

The whole activity is done through a process

A process represents a combination of methods, materials, labor and equipment that, as a whole, lead to obtaining products or

providing services. In any process an inherent variable will be present. Therefore, improving quality means progressively reducing variations. This can be done as follows:

a) By removing variations due to special causes (sporadic, not chronic);

b) By reducing the variations due to chronic, frequent causes.

Quality assessment

Evaluations can be carried out on the satisfaction of the requirements of internal customers or on the fulfillment of the requirements of external customers. Thus, the evaluation of external customer satisfaction can refer to:

- The percentage of fulfilled requirements;
- Customer complaints (number, severity);
- Loss of some customers;
- New customers attracted.

Teamwork

This concept is used in two senses in companies that implement total quality management:

1. Spirit of loyalty and collegiality in a company;

2. Wider use of work teams for participative processes in improving the management practiced by the company.

If the common goal of those working in a team is to improve quality, then all team members must commit to improving work methods and procedures and solving local problems, without restrictive interventions from managers.

Employees make quality

Deming states that management is responsible for 80% of quality problems and only 20% of these problems are due to workers.

The role of management in an enterprise is to ensure everything necessary to enable employees to obtain quality products or services.

This creates the possibility for employees to take responsibility for the quality of their own work, thus contributing to quality improvement.

The cycle of continuous improvement

The continuous cycle of establishing customer requirements, satisfying these requirements, evaluating successes and improving quality can be used for both external and internal customers (figure 2).

All conditions must be ensured so that all employees at all levels can make suggestions for improvement. Based on the suggestions of the employees, it is necessary:

• To make a quick decision;

• To explain why the decision was taken;

• To send a quick feedback to the employee who makes the quality improvement suggestion.

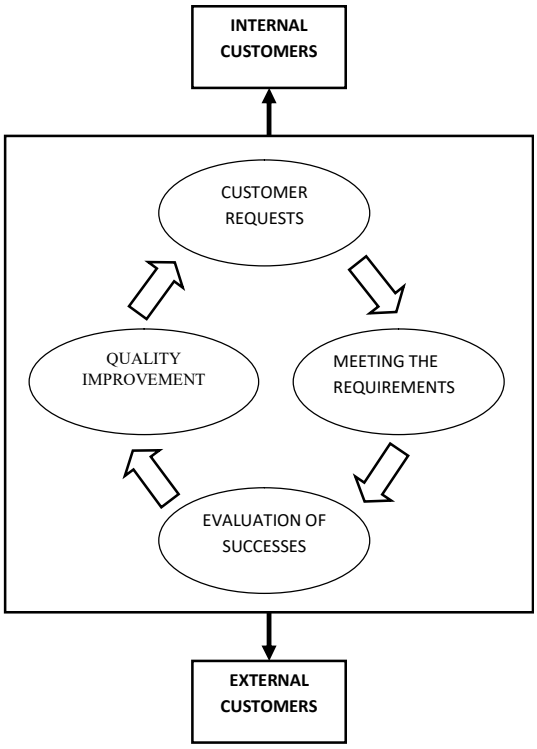

Fig. 2 The cycle of continuous improvement

As a guide, managers at lower levels of authority should be able to make decisions in 95% of the suggestions made.

Prevention

This basic concept is central to total quality and continuous improvement. It refers to taking measures to prevent the occurrence of quality-related problems.

There are two ways to eliminate possible defects in the system:

a) Focus on the product project;

b) Concentration on the production process.

As tools that can be used for this purpose, we can mention the methods of failure mode analysis, their effects and their criticality applied either to the product design or to the process.

For each possible malfunction, preventive measures are identified and applied.

By applying the basic principles and concepts of TQM, high quality products or services are obtained. Consequently, the number of customer complaints and the costs for repairs of products under warranty will be reduced. Also, a higher profit will be recorded; the company's reputation will improve, succeeding in penetrating new markets.

To obtain the prescribed quality, the following categories of instruments can be used:

1. Management tools for quality, these

being useful for managers;

2. Statistical tools for the technical improvement of processes, being recommended for technicians or operators involved in the technical part of processes.

W. E. Deming developed a theory of quality management and specific rules through the application of which it is possible to transform any type of management into total quality management. Based on this theory of management, Deming created the "14-point program".

The 14 principles define the necessary steps for implementing total quality in a company.

3. CONCLUSIONS

Total quality management TQM) must be implemented throughout the company, starting with the CEO, general managers and all senior management, who must demonstrate total commitment to product quality.

Middle management has a particularly important role in this action, as they must not only implement TQM principles, but must also explain them to subordinates and ensure that their own commitment has been conveyed and perceived by subordinates; only then will TQM encompass the whole company.

Employees understand that keeping their job depends on increasing the level of sales, which means gaining a good position on the market in competitive conditions.

This position cannot be achieved and maintained without reducing costs and increasing product quality, the relationship between quality and costs being a real catalyst for the TQM program.

A conclusive example is the fact that on average 10-15% of sales returns represents quality costs (costs for rejects, errors, losses, rework, corrections and replacement of defective goods). Thus, there is a direct link between quality and productivity, because there is no better way to improve productivity than by increasing the quality that will cancel the losses.

REFERENCES

[1] **Ghelase, D.,** *Sisteme de Asigurarea Calitatii,* Braila, Editura Ceprohart, 2002.

[2] **Ghelase, D., Daschievici, L.,** *Quality Management Tools,* The Annals of "Dunarea de Jos" University of Galati, Fascicle XIV Mechanical Engineering, ISSN 1224-5615, Vol. 2, pg. 33-38, 2019.

[3] **Ghelase, D., Daschievici, L.,** *New Quality Management Tools,* The Annals of "Dunarea de Jos" University of Galati, Fascicle XIV Mechanical Engineering, ISSN 1224-5615, Vol. 1, pg. 15-18, 2020

[4] **Niculita, L.,** *Managementul si Ingineria Calitatii*, Bucuresti, Editura Academieie Romane, 2005.

[5] **Paraschivescu, A.O.,** *Managementul Calitatii,* Editura Tehnopress, 2020.