

Total Quality Management – An Instrument for Improving Organizational Efficiency

Curpănaru Gabriela-Livia

¹PhD student at the “Gheorghe Asachi” Technical University in Iasi, Faculty of Industrial Design and Business Management, Doctoral School: Engineering and Management

ABSTRACT : The purpose of this paper is to analyze the characteristic elements of total quality management (TQM). TQM represents an integrated effort meant to improve the quality of each level of the organization. The historical evolution of the total quality management comprises four steps: quality inspections, quality control, quality assurance and, finally, the TQM process itself. Quality is obvious in human actions. During the Second World War, system production became a complex process and, thus, quality came to be analyzed by the means of inspections; the act was carried out much more efficiently when the workers' analysis was applied. The statistical control through inspections, the post-production effort of separating the functional and non-functional products, have led to a particular order of these steps. The selection should be carried out before beginning the development of the product. The development of control charts and the acceptance of survey methods in the period between 1924-1931 (Stewhart and Dodge-Roming) obviously helped, during the time, the inspection related prosperity of the field. In the third step, that of quality assurance, there is a strategy analysis with the precise purpose of offering enough trust that a particular product or service satisfies the needs of the customers. The next step brought quality workbooks in which quality is achieved with average costs, and the development of the control process has the purpose of passing from the quality assurance era to that of total quality management.

KEYWORDS: total quality management, quality inspections, quality control, quality assurance, organizational efficiency

Date of Submission: 27-04-2021

Date of acceptance: 11-05-2021

I. INTRODUCTION

The development of Total Quality Management (TQM) began in 1950 and is validated by the works of several experts such as Ed. Deming, Joseph Juran, Philip Crosby, who have significantly contributed to the continuous development of the subject matter. The TQM approach originates in Japan. It became popular in the West during the 1980s. TQM was initially applied in 1985 by the Naval Air Systems. The various specific models of applying the TQM philosophy can also be found in the works of Feigenbaum (1961, 1991), Juran & Qryna (1970), Crosby (1979), Ishikawa (1985), Deming (1986). TQM, by the means of multifunctional teams trained to use basic statistical instruments so as to collect and analyze data, professional staff and workers from every department, has highlighted the potential efficiency in solving the problems approached. There are different approaches concerning TQM, but most of them lead to some common points. They guide organizations to concentrate on satisfying the needs of the customers, to develop and put to use the whole potential of all of the employees, to engage all of the efforts in order to find better ways of managing business using reliable data and information targeting financial outcomes.

A. V. Faigenbaum is acknowledged in the U.S.A. for the increase of quality awareness. The ‘total quality management’ phrase stems from his book, ‘Total Quality Control’ (1961, cited in Basu, 2004). According to Faigenbaum, the impact of the total quality control on the organization involves the application of technical activities meant to implement a customer-oriented quality as a primary responsibility of general management and of the main marketing operations, engineering, production, industrial relations, finance and services, as well as of the quality control function itself. Thus, quality becomes a strategic instrument in business. Armand Feirenbaum (1961) defines total quality management as “an organization system which allows the coordination of the efforts of quality development, maintenance and improvement made by different groups from the company, so as to assure that the customer-oriented studies, commerce, production and service

are the least expensive, allowing, at the same time, the achievement of total customer satisfaction". The total quality approach is purely structural and economic and enables the factors required for its application.

Considering all this, it is necessary to define the concept of total quality management, as quality itself is a part of the domain. According to Christian Potié (2001), total quality management comprises "the ensemble of priorities and characteristics of internal and external quality, seeking all of the competitive advantages". The total quality management is seen as an additional competitive advantage for the enterprise by seeking customer satisfaction. This is even more appropriate as almost all companies apply, or at least pretend to apply total quality management. Thus, the customer satisfaction is not a discriminant factor, as long as it offers a competitive advantage. The quality assurance of a product is undertaken gradually, in well-established steps, in accordance with the advancements achieved in the process of its production. The quality of a system is created starting with the period of production and manifests during the period of usage. In software engineering, there is a reliance between the quality of the software development process, the project quality and the product.

Joseph M. Juran, PhD, significantly contributed, in the 1920s, to the development of the methods of statistical quality control. He was mostly an engineer in the corporate industry, but was particularly concerned with the topic of quality, thus publishing the "Quality Control Handbook" (cited in Condrea, 2006). The author was the first to highlight the achievement of quality through communication (Basu, 2004). Through his approach, he offered an annual plan of quality improvement and cost reduction, as well as a form of continuous education in quality achievement. During the 1950s, Japanese companies started to notice the benefits of organization quality acknowledgment and, thus, resorted to W. Edwards Deming; he gave the Japanese companies a vigorous start in the quality movement. The researcher's methods included a process of statistical control and a step of technical problem solving, all concentrated within 14 input points necessary to obtain the stimulus needed to change the mentality of the organizations in need when offering high quality products and services.

Deeming's opinion on quality is strictly related to the field of management. In accordance with his theory, buyers are responsible with the understanding and assessment of the quality of all products and services, since they are the ones who should completely understand the quality requirements, while being also capable of communicating these requirements to the provider. Unlike Deming, Juran does not ask for major cultural changes in the organization; instead, he suggests to the American managers to improve quality within their familiar system. The evolution of the development of TQM on a time axis is shown in Figure 1.

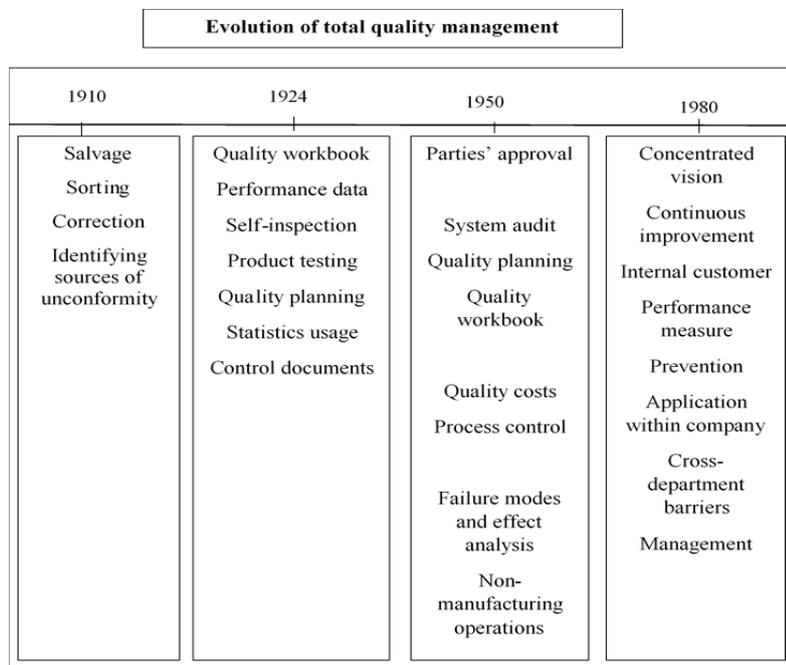


Figure 1. The characteristics of different steps in total quality management (according to Casas, 2011)

The programme presented by Deming (cited in Pop, 2009) comprises the following 14 aspects determining the framework of quality improvement:

- Assure the continuous improvement of product and service quality, on a planned basis, in order for the business to resist.
- Adopt a new philosophy, while giving up the "acceptable quality level".

- Drop the whole control of products and processes, by introducing statistical control methods meant to establish the accordance with the specified requirements.
- Ask the provider for proof concerning the statistical quality evidence.
- Discover the problems. The management has to deal with the continuous improvement of all of the processes from every step of every process of the product trajectory, from the design to the assurance of service usage.
- Provide, for all of the employees, the instruments necessary for the appropriate performance of activities.
- Eliminate fear, encourage communication, so that every employee can openly express his/her viewpoint.
- Eliminate the barriers between the departments of the enterprise. Form groups containing persons from different departments so as to identify problems and prevent them in future processes.
- Eliminate posters and slogans connoting forced labor. Before seeking a productivity increase, make sure the measures do not go against quality, which has to be continuously improved.
- Review the standard working hours, so as to prevent them from becoming an obstacle in the way of productivity or quality.
- Eliminate all of the obstacles impeaching people to be proud of their work.
- Establish a rigorous staff training programme in accordance with the development of procedures, methods and techniques used in all of the company departments.

The importance granted to quality is highlighted by the global existence of several quality awards, such as the Malcolm Baldrige National Quality Award (MBNQA) in the USA (1988), the European Quality Award (EQA) in Europe (1984), the Deming Prize in Japan (1996) and the Canadian Award for Excellence. Peleska and Zahlten (2008) emphasized the TQM traps: quality costs, threats concerning other management models, inaccurate quality indicator measurement, as well as the incompatibility between the TQM measures and the cultural background.

II. TOTAL QUALITY MANAGEMENT

TQM is a management concept which has initially evolved from the Japanese management processes and stems from the industrial experience. TQM is a management philosophy and practice meant to valorize the human and material resources, basic resources of every organization, which lead, when most efficiently used, to the achievement of the organizational objectives. According to Ojo (2006), this is a quality-centered management style: customer-oriented, fact-based, team-directed; all of these factors target the achievement of organizational objectives.

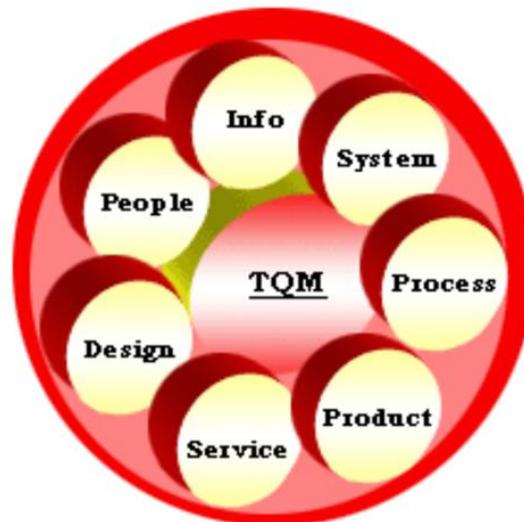


Figure 2. Total quality management (TQM)

TQM is a permanently evolving concept, which changes with new concepts and new models of development. According to Strickland and Wither, TQM is both a philosophy and a set of governing principles which provide the fundament of continuous organization improvement. The meaning of each of the TQM words is:

- Total – Every person from the organization is involved (including the customer and the provider);
- Quality – The customers' requirements are faithfully addressed;
- Management - The managers are fully committed.

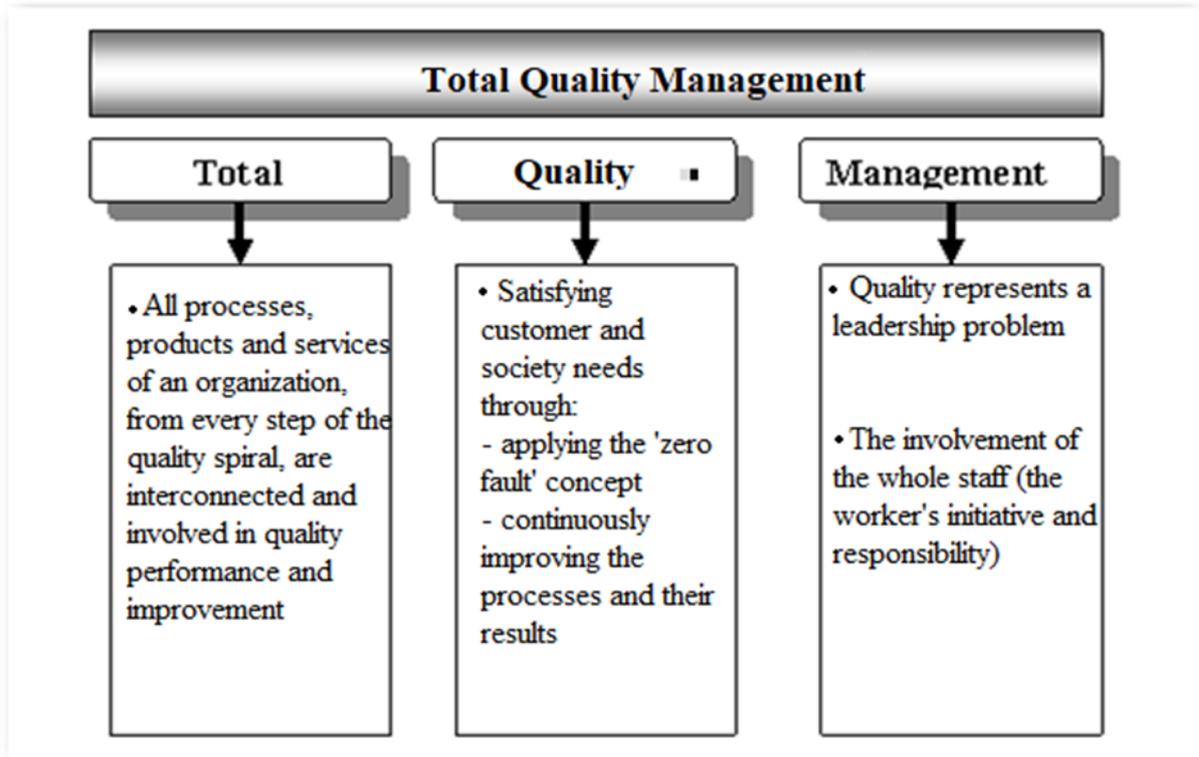


Figure 3. Total Quality Management

The model shows a set of practices which allows an organization to deliver quality products and services. The term total from the total quality management phrase highlights the fact that everybody from the organization should be involved in the efforts of continuous improvement in all of the departments. The term quality is used, in its usual meaning, while the term management refers to the system of leadership which involves planning, organizing, leading and quality assurance.

The basic instrument of total quality management is the PDCA (plan-do-check-act, see Figure 4) cycle, (a.k.a. the Deming Wheel), a method of organizing management activities oriented towards the continuous improvement of quality management. This quality improvement method was devised by W. E. Deming (1993).

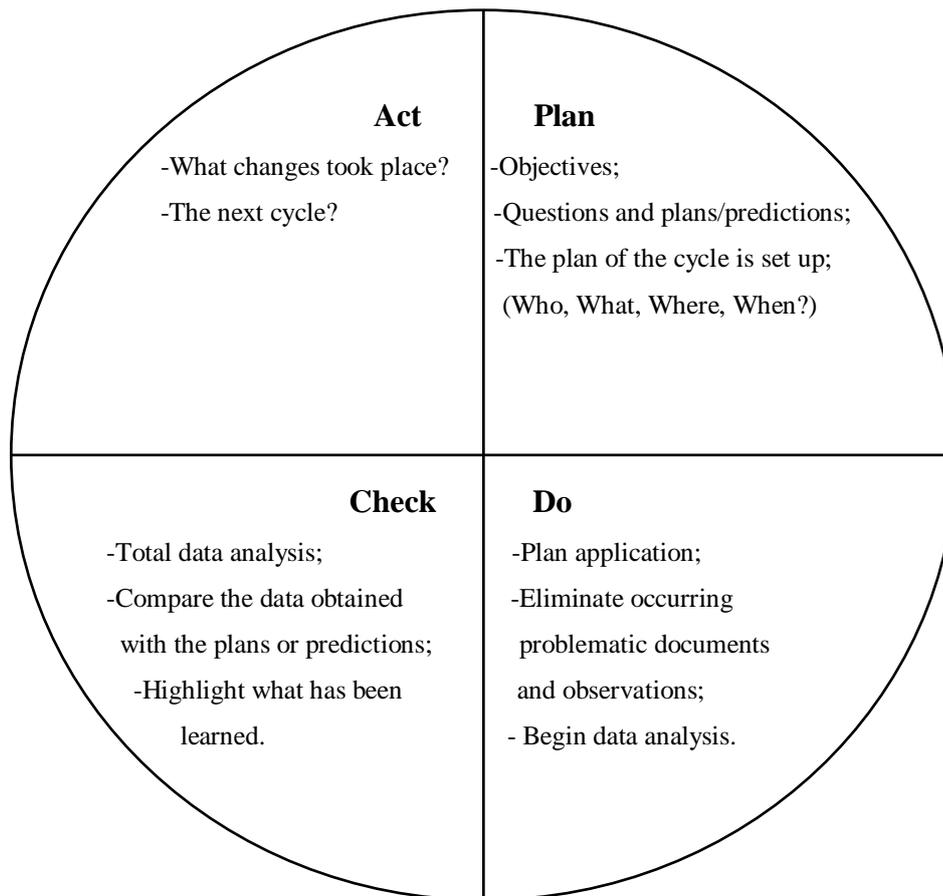


Figure 4. *The PDCA Cycle* (after Chină, 2015)

Plan signifies the planning of the objectives and processes required to obtain the results according to the customer needs and organization policies. Do refers to process execution and implementation. Check deals with the actions of control, monitoring and measurement of processes, according to the policies, objectives, requirements, as well as result announcing. Act involves action seeking procedures meant to improve process performance. The PDCA method involves a methodical approach to problem solving and solution implementing. Each step requires specific operations. Step 1, plan, involves the exact identification of the problem and its correlation with the information necessary to find solutions. This step requires the collection of useful data for the current situation assessment and for the development of the improvement plan. An analysis is needed to find out what can be improved, so as to determine the areas of change opportunities. Step 2, do, consists in the following key activities: generate possible solutions, choose the best solutions and implement the pilot project. Change needs to be planned and implemented afterwards. When possible, it is preferred to implement change on a lower scale first, in order to prevent and correct certain difficulties. Step 3, check, requires the assessment of the pilot project efficiency and the collection of information necessary for its improvement. The success of the generated solution and of the pilot project implementation determines the way of applying the whole initiative, although it may be necessary to repeat the steps related to development and checking and incorporate the needed modifications. Step 4, act, targets the total implementation of the solution. The PDCA cycle does not stop here, as the steps can be repeated, since the initiatives of improvement must be an unceasing process.

The Deming cycle can be successfully implemented when three basic elements are taken into account: the leadership agreement and the consideration of the Deming cycle implementation as a compulsory policy of change; the consideration of the concept as a circular plan, and the implementation of the concept in every department of the organization.

III. CONCLUSION

Total Quality Management (TQM) constitutes a way of leading an organization centered on quality through the participation of all of its members. Through this model, constant improvement is sought, along with the gradual introduction of the new processes, so as to obtain a higher degree of excellence in organizations.

Continuous improvement has been one of the important factors of organization development, as total quality management supports the development of good actions and results within organizations.

REFERENCES

- [1]. Basu, R., *Implementing Quality, A Practical Guide to Tools and Techniques*. Cengage Learning EMEA (2004).
- [2]. Casas, A. M., *Total Quality Management, Quality Culture, Leadership and Motivation*. Dissertation thesis: Polytechnic University of Milan (2011).
- [3]. Condea, E., *Quality management in production, trade and services*. Contața, Ex Ponto (2006).
- [4]. Crosby, P.B., *Quality Is Free: The Art of Making Quality Certain*. McGraw-Hill, New York (1979).
- [5]. Deming, W.E. *Out of the Crisis*, Cambridge University Press, Cambridge (1986).
- [6]. Feigenbaum, A. *How to apply total quality management in your enterprise*, Skill Files Collection. Company Editions (1961).
- [7]. Feigenbaum, *Total Quality Control*, Published by McGraw-Hill Education / Asia, ISBN 10: 0071126120 ISBN 13: 9780071126120 (1991).
- [8]. Ishikawa, K., *What Is Total Quality Control? The Japanese Way*. Translated by Lu, D.J., Prentice-Hall, Englewood Cliffs, New Jersey (1985).
- [9]. J. E. Ross, *Total quality management: Text, cases, and readings*. Routledge (2017).
- [10]. Jan Peleska and Cornelia Zahlten, *Integrated Automated Test Case Generation and Static Analysis*. Power Point presentation slides (256KB) In Proceedings of the QA+Test 2007 International Conference on QA+Testing Embedded Systems, Bilbao (Spain) 17th - 19th October 2007. Best Paper Award (2007).
- [11]. Joseph M. Juran, Frank M. Gryna, *Quality Planning and Analysis: From Product Development Through Usage*, ISBN 0070331715, 9780070331716 (1970).
- [12]. Ojo, L.B., *Total Quality Management and productivity improvement amongst teachers and learners in private secondary schools in Lagos state, Nigeria*, a post-educational management, University of Ibadan, Nigeria (2006).
- [13]. Pop, C., *Quality management, from concept to implementation*. Iasi: Type Moldova (2009).
- [14]. Potié, C., *Quality diagnosis. Methods of expertise and investigations*. Bucharest: Technical Publishing House (2001).

Curpănaru Gabriela-Livia, et. al. "Total Quality Management – An Instrument for Improving Organizational Efficiency." *American Journal of Engineering Research (AJER)*, vol. 10(5), 2021, pp. 105-110.