ASPECTS OF TOTAL QUALITY MANAGEMENT IMPLEMENTATION

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Abstract. Total Quality Management is a concept by which management and employees can become involved in the continuous improvement of the production of goods and services. Elements, philosophies, and famous practical models of Total Quality Management (TQM) in this paper are studied.

Keywords: quality, TQM, TQM awards, TQM implementation

1. Introduction

Today the prosperity of each enterprise depends on the effectiveness of its activity and competitive power. The successes of companies have dramatically changed how they and other see both quality and business management today. The purpose of this paper is Total Quality Management Implementation's aspects analyzed. TQM is a collection of principles, techniques, processes and best practices that over time have been proven effective. Based on the TQM elements, a quality management method model is developed. This model describes the primary quality management methods which may be used to assess an organization's present strengths and weaknesses with regard to its use of quality management methods.

2. Theoretical Aspects

An extensive review of literature was carried out to identify the elements necessary for the successful implementation of TQM. It is a management approach that originated in the 1950's and has steadily become more popular since the early 1980's. Many of the concepts are now called "total quality". Many other terms have also been used such as "Business transformation", performance excellence, business excellence, and "six sigma".

The roots of TQM go back to the teachings of Drucker, Juran, Deming, Ishikawa, Crosby, Feigenbaum and countless other people that have studied, practiced, and tried to refine the process of organizational management [3, 5-9, 15]. Their insights into quality management provide a good understanding of quality management principles. An example of one such proposition is: Quality is a responsibility of the whole organization, rather than of the Quality Department. There are many such propositions covering different aspects of quality management practices.

Total Quality is a description of the culture, attitude and organization of a company that strives to provide customers with products and services that satisfy their needs [10].

TQM is a philosophy that involves everyone in an organization on continual effort to improve quality and achieve customer satisfaction [5].

Typical for an organization going through a total quality process would be a clear and unambiguous vision, few interdepartmental barriers, time spent on training, excellent supplier and customer relations and the realization that quality is not just product quality but also the quality of the whole organization, including sales, finance, personnel and other nonmanufacturing functions [10].

There are some common points which are shown below.

- Top management establishes a mid- and long-term vision and strategy.
- Top management determines the organization climate. It develops a quality culture by changing perception and attitudes towards quality.
- The importance of education and training is concerned in changing employees' beliefs, behavior and attitudes and enhancing their competencies in carrying out their duties.
- The emphasis is on prevention of product defects, not inspection after the event, and on the reduction of the costs of quality to improve competitiveness.
- There are broad agreements that all aspects of activities should be looked at for quality improvement, as these all contribute towards quality. Functional integration is considered to be an important ingredient of TQM. Quality is a company-wide activity.

In summary, TQM is an approach supported by fundamental organizational power such as core technology, speed and vitality. TQM requires that the principles of quality management be applied in every branch and at every level in an organization. Top management provides commitment, leadership, and the appropriate support to technical and human processes. It is imperative that management has a clear understanding of the process.

3. Review of Quality Awards Models

One of the most useful trends on TQM Implementation has been the self-assessment activities of many companies. World-wide, there are several Quality Awards, such as the Deming Prize in Japan, the European Quality Award in Europe, the Malcolm Baldrige National Quality Award in the United States of America.

The Deming Prize was established by the Board of Directors of the Japanese Union of Scientists and Engineers in 1951. Its primary purpose was to spread the quality gospel by recognizing performance improvements, issuing from the successful implementation of company-wide or total quality control, based on statistical quality control techniques. The Deming Prize proved to be an effective instrument for spreading quality management methods throughout the Japanese industries. There is also a checklist which is used to evaluate the performance. This checklist emphasizes the importance of top management's active participation in quality management activities and understanding of the main requirements of quality improvement programs. Also, the checklist provides the senior executives with a list of what they need to do [5].

The Excellence Model of the European Foundation for quality management (EFQM) is a management procedure for all companies in Europe, which leads to Excellence [10].

The model consists of nine criteria and can be used for the evaluation of the progress of an organization toward Business Excellence. The performance criteria are occupied with how the organization furnishes its main activities. With the result criteria it concerns, which results were obtained thereby.

In 1987, the US Congress passed the Malcolm Baldrige National Quality Improvement Act, and thus established an annual quality award in the USA. The aim of the award is to stimulate American organizations to improve quality, satisfy customers, and improve overall company performance and capabilities. The model framework may be used to assess an organization's current quality management practices, benchmark performance against key competitors and world-class standards, improve relations with suppliers and customers. These assessments can provide top managements with a clear baseline of current quality performance.

The broad aims of these awards are summarized as follows:

- Increase awareness of the importance of quality management because of its important contribution to superior competitiveness;
- They emphasize their performance need to focus on the results;
- Encourage systematic self-assessment against established criteria and market awareness simultaneously;
- Deployed quality strategies and on benefits derived from implementing these strategies;
- Promote understanding of the requirements for the attainment of quality excellence and successful deployment of quality management.

4. TQM Elements

Most quality experts divide TQM into a number of elements.

Manno and Kehoe identify in TQM following elements: supplier improvement, process control and improvement, internal customer focus, measurement and reporting, leadership, quality system, participation, recognition, education, training and external customer focus [4].

Saraph et al. propose the following factors of quality management, which are the role of management leadership and quality policy, the role of the quality department, training, product/service design, supplier quality management, process management, quality data and reporting, employee relations [11].

After a comprehensive review of quality researches, quality award models, and other existing literature are identified as the most primary TQM elements (figure 1). These elements can be distinguished as:

- Customer Focus;
- Leadership;
- Vision and plan statement;
- Supplier quality management;
- Evaluation;
- Process control and improvement;
- Quality system improvement;

- Employee participation,
- Recognition and reward;
- Education and training;
- Communication.

Figure 1. TQM elements

Although the number of elements often varies, as do the terms used to describe them, the actual constituents of these elements remain more or less similar.

5. Aspects of TQM Implementation

The elements of TQM have been identified. The next question is how the the elements can be made for practical use within an organization. The figure 2 shows a simple model for a TQM Implementation [15].

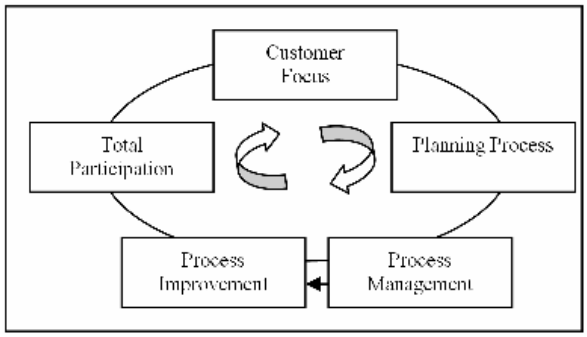

Figure 2. Model for TQM Implementation

The self-evaluation serves as basis for the strategic discussion for the advancement. Usually management and high-level personnel participate in the self evaluation and evaluate the own enterprise achievement on the basis the performance criteria.

All of the TQM model's elements work together to achieve results. The model begins with understanding customer needs. TQM organizations have processes that continuously collect, analyze, and act on customer information. Activities are often extended to understanding competitor's customers. Developing an intimate understanding of customer needs allows TQM organizations to predict future customer behaviour. TQM organizations integrate customer knowledge with other information and use the planning process to orchestrate action throughout the organization to manage day to day activities and achieve future goals. TQM organizations understand that all work is performed through people.

This is concerned with leadership. In TQM organizations, top management takes personal responsibility for implementing, nurturing, and refining all TQM activities. The planning process is the glue that holds together all TQM activity. The next elements in the TQM Implementation are process management and improvement, total employee participation and communication.

An organization is a dynamic system consisting of many activities. Some quality management methods and tools may be used in different areas in an organization, who are with practical aspects of TQM concerned. These quality management methods and tools range from a basic tool, such as control charts, statistical quality control, to ISO 9000, and to total quality management.

Figure 3 show the systematization of the quality methods based of TQM Elements by TQM Implementation. This can be used to assess an organization's present strengths and weaknesses with regard to the use of quality management methods.

This model can also be used as a tool for evaluating the quality management maturity in an organization.

6. Conclusion

Total quality management appears to be a concept which is difficult to summarize in a short definition. From an extensive review of total quality management literature from quality award models, and other quality management results are TQM elements represented. Based on the primary TQM elements, an TQM model has been developed.

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TQM Phases	TQM Elements	Management Methods and Tools
Customer Focus	Customer focus	Customer complaint, Investigation, Market investigation, Customer Satisfaction survey, After sales service, Formally feedback system, Customer day
Planning Process	Leadership	Top management commitment, Policy, Corporate quality council, Division and Site quality council, Cross functional quality council
	Vision and Plan statement	Vision/ Mission statement, Quality policy, Quality goals, Quality planning
Process Management	Supplier quality management	Supplier audit, Training, Potential supplier evaluation, Supplier certification
	Product Design	Concurrent engineering, Reliability engineering, Designing for manufacturability, Design of Experiments (DOE), Quality Function deployment (QFD), Value engineering, Computeraided Design (CAD)
Process Improvement	Evaluation	Strategic evaluation, Business evaluation, Quality costs, Department evaluation Benchmarking, Employee performance evaluation, Quality audit, Team evaluation
	Process control and improvement	PDCA Cycle, 7 QC tools, SPC, FTA, FMEA, Process capability, Equipment maintenance/ improvement, Sampling Inspection,Selfinspection
Employee Participation	Recognition and reward	Condition improvement, Salary promotion, Bonus system, Moral award, Award ceremony
	Education and training	Quality awareness education program, Quality Management method education, Training for job Requirements, Individual training plan, Education promotion
	Participation	Within functional delegated team, Cross functional delegated team, Information communication, Quality control circle, Voluntary team, Job rotation, Improving employee, Establishing, Quality culture, Suggestion activities
	Communication	Information communication, News letter, Poster, Slogan, Quality day

Figure 3. TQM methods implementation

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