

Total quality management: Control of all activities right from top to bottom within the organisation for successful future

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Abstract

Quality comes not from inspection but from improvement of the process. Total Quality Management is the management of quality, totally and fully in all respects, small areas and all activities of organisation, right from top to bottom. Once an organisation decides to concentrate on quality of its products, it implements this decision by applying managerial efforts to change the entire approach to business and make quality a guiding factor in everything that an organisation does. The fact that managerial attention is focused on every organisational activity, howsoever small it may be, is the core of Total Quality Management. It aims at continuous improvement in organisations and focuses primarily on total satisfaction of consumers, both internal and external.

Keywords: Brainstorming, continuous improvement, PDCA cycle, quality circles, total quality management

Introduction

Total Quality Management (TQM) is defined as a tool for effective management. It refers to organisation's long-term commitment to the continuous improvement of quality-throughout the organisation, and with the active participation of all members at all levels-to meet and exceed customers' expectations. TQM is a marked shift from a process, driven by external control through compliance of procedures to a process of habitual improvement, where control is embedded within and driven by the culture of the organisation. TQM is not a onetime process; instead, it is a continuous long-term process that involves constant managerial efforts to be recognised and reinforced through continuous data collection, evaluation, feedback and improvement programmes. For TQM to be effective, an organisation has to be a 'learning organisation', that is, all organisational members, from top to bottom, both managerial and non-managerial have to endeavour for

continuous training and education, measurement, accountability, recognition and rewards, communication, teamwork and application of various tools and techniques. TQM is, thus, viewed as a continuous process of improvement for individual, groups as well as the entire organisation, whereby managers attempt to change the organisation's way of working by developing people's knowledge about what to do, how to do, doing it with the right methods and measuring the improvement of the process and the current level of achievement.

TQM, viewed as a collection of systems that aims at continuous improvement of the production processes to satisfy the present and potential requirements of internal and external customers, through management commitment, teamwork, participation, involvement, education and training, recognition and reward and application of quality tools and techniques can be represented in the TQM model is shown below:

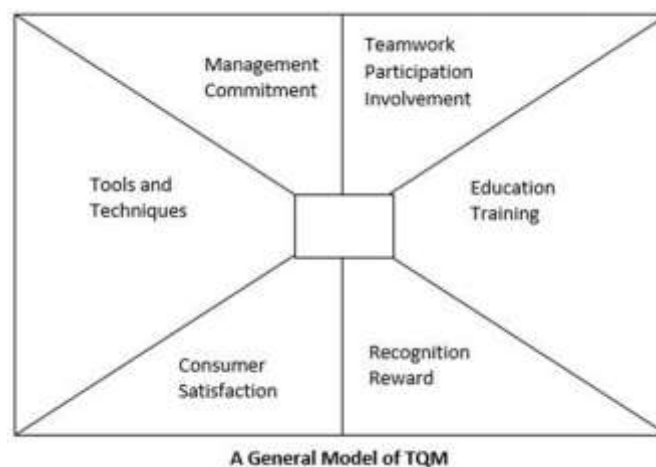


Fig 1

Principles of TQM

The task force set up for revising the ISO (International Organization for Standardization) 9000 series of standards

decided that organizations can continually improve their performance if they follow the below mentioned eight principles of quality management:

1. **Customer focus:** All organizational activities are directed towards producing goods and services that will satisfy the present and future customer requirements. Being aware of customer requirements, and always satisfying them is the integral part of TOM.
2. **Leadership:** Organization should have good and effective leaders who provide unity of action and direction to all those working within the organization. The leaders should strive the organizational efforts towards achievement of its overall goals.
3. **Involvement of people:** Structures, systems and technology by themselves do not provide quality unless people who run the organization fully exploit their abilities to work for the organization's progress and benefits: Unless people understand what to do, how to do and obtain feedback on their performance, they cannot be encouraged to take responsibility for quality of their work. Greater involvement of people will lead to greater customer satisfaction.
4. **Process approach:** Desired organizational goals can be achieved when resources and activities are managed as a process. "A process is a combination of methods, materials, manpower and machines that, taken together, produce a product". Quality improvement aims at reducing variations amongst different processes by removing the causes of variations and bringing the process under control.
5. **Systems approach to management:** An organization should be viewed as a system with interrelated sets of activities that link the internal organizational environment with its external environment and help it to achieve its goals with utmost efficiency in terms of quality products.
6. **Continual improvement:** TQM is not an end in itself. It is the road to achieving the end, the quality improvement. It is a continuous process of incremental change that aims at improving organization's operational efficiency according to improvement in the competitors' policies and customers' requirements.
7. **Factual approach to decision-making:** Managers must know their current quality standards in order to improve upon them. The decision to improve depends upon available information and its dissemination to all those concerned and, therefore, It is necessary that right and accurate information is available to managers through effective information systems.
8. **Mutually beneficial supplier relationships:** The organization and its suppliers should work for mutual benefit of each other to provide value to overall organizational activities.

Steps to Implement TQM

Dr. W.E. Deming, one of the famous American quality experts went to Japan after the World War II where he taught the Japanese the use of statistical techniques as a tool for quality improvement. The approach that he followed for implementation of the TOM was called the Plan-Do-Check-

Action cycle or the PDCA cycle. The steps in the PDCA cycle are implemented as follows:

1. **Plan:** It refers to product development. The team must lay down the objectives, policies, and procedures of TOM, determine customer requirements, adopt appropriate tools and techniques and educate and train the personnel to produce goods that meet customer requirements.
If a problem is detected in any area of product development, the team must find the causes of the problem by collecting data and information which must be based on facts and not mere judgment or thinking.
2. **Do:** It refers to working according to the plan. It starts manufacturing according to product development plans. The process of TOM must be implemented by introducing machines, material and men to the production processes. If any problem is detected in the planning phase, the team will take steps to solve that problem in the Do phase.
3. **Check:** Once the production process has started, Check refers to finding deviations in outputs or inputs, finding the causes of deviations and analysing their impact on the final product and market relationships. It checks the impact of company's sales on customer satisfaction. If any problem is detected in the plan stage, the solution to which was implemented in the do stage, the check phase aims to find out whether or not the improvement process was successful.
4. **Action:** If steps taken above prove to be successful, better quality level should be accepted and if steps have not proved to be successful, the PDCA cycle should be repeated. It, therefore, deals with market research and aims to prevent problems rather than correct them.

The Deming Wheel or the PDCA cycle which aims at developing teamwork with respect to product development, manufacturing, sales and marketing research has been shown diagrammatically as follows:

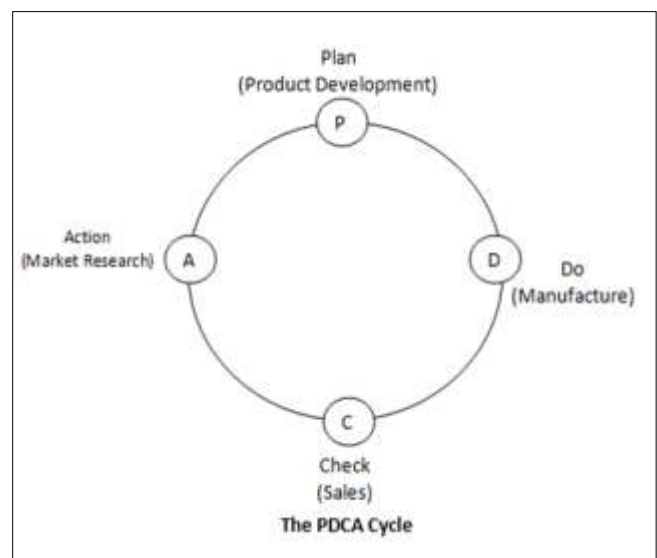


Fig 2

Techniques of TQM

TQM can be put into practice by adopting suitable TQM methods. Adopting the right method is important as success of TQM largely depends upon the knowledge and selection of the method, its suitability for quality management problems and its effective implementation by effective leaders. Some of the commonly adopted tools are discussed below:

- **Benchmarking:** The purpose of bench marking is to fill gaps in firms' performance by taking an independent look at it, comparing it with others and adopting the best practice being followed by the competitors in all areas of operations. Bench marking helps organisations move from introspective to externally focused areas of business operations.
- **Deming Wheel:** Aiming at full satisfaction of consumers, Deming, a famous TOM theorist, suggested a concept to satisfy the customer requirements by developing a cycle called PDCA cycle. It refers to Plan, Do, Check and Action and helps in developing a new product based on requirements of the customers.
- **ISO-9000:** It aims at providing an effective management system to firms and their customers so that tasks are standardised, that is, carried out in the same way irrespective of whosoever does them. It aims at providing consistent quality to customers.
- **Just-in-time:** When firms want to keep minimum stocks to avoid unproductive costs, this method aims at delivering the raw materials and components to the production line just in time when they are needed. This system is also known as 'zero inventory' and 'stockless production'.
- **Quality Circles:** These are small groups of people consisting of about 3 to 12 people who do similar work and meet voluntarily for about an hour every week to identify their problems and search for ways to tackle them. Once the problems are solved, they identify further problems and, thus, self-regulate their work. This method of TOM develops the quality of products and also the individuals.
- **Critical Path Analysis:** At the project design stage and later on a all subsequent major project reviews, critical path analysis is a project planning technique that separates the work to be done on a project into discrete elements, specifies the time and costs associated with completion of each element, allows the key elements that affect the overall project to be identified and determines the path that is most critical in terms of usage of time and cost. It is the path that takes the longest to complete the project and directs management's attention towards that path so that project does not take longer than the critical path for its completion.

The benefit of this method underlies the fact that it allows the effects of different courses of action to be determined at the planning stage thereby allowing the best overall approach to be decided about the completion of the project.

- **Failure Mode and Effect Analysis (FMEA):** This method helps in designing fool proof products and processes by detecting problems at an early stage in a structured manner. It provides a structure for analysing the problems identifies their possible causes and examines the product or service to look for possible causes of deviation. FMEA, thus, allows for planning the failures and their prevention.
- **Force-field Analysis:** As a means to implement change and allow organisation development, force analysis allows a team of individuals to identify forces that help and those that hinder in reducing the gap between where the firm is and where it wants to be. It helps managers identify the forces which have maximum impact on implementation of change and, therefore, to concentrate their efforts in those areas.
- **Brainstorming:** When managers want to find the cause of any problem or solution to any problem, they use the method of brainstorming where they try to generate as many ideas as possible by encouraging all organisational members to contribute to the solution. This method breaks barriers between the departments and the levels of hierarchy and encourages everyone to develop their collaborative behaviour which acts as a bond to strengthen their groups skills.
- **Nominal Group Technique:** At the end of the brainstorming session when the leader has a lot of ideas available with him, he brings together these ideas, concises them and reaches a conclusion for solving the problem. The nominal group technique is "a way of generating ideas". The group remains committed to the final outcome and accepts the decision and control exercised by the group leader.
- **Suggestion Schemes:** As the name suggests, suggestion schemes aim to generate new ideas for moving to continuous improvement through incremental changes. It provides substance to the quality improvement plan and generates ideas to keep it going.
- **C-Charts:** The control charts are graphic representations where managers set standards of expected normal variation due to chance causes which are acceptable within the range of upper quality level and the lower quality level. Any variation outside the acceptable limits is investigated for its causes and attempts are made to correct those deviations, whether they are with respect to wear and tear of the machine or poor quality of materials or obsolescence of machines or disharmony in superior-subordinate interaction etc. A sample control chart is represented as follows:

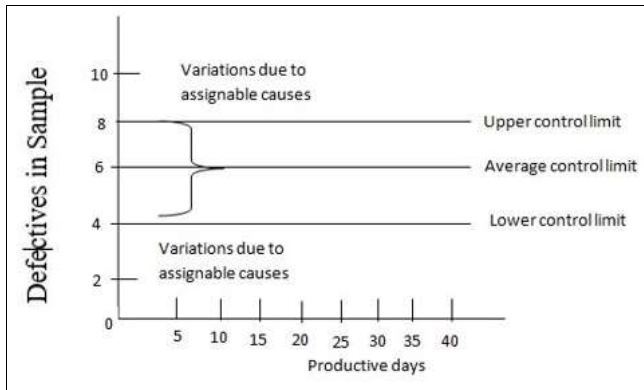


Fig 3

A Simple Control Chart

- **Histograms:** At the early stages of problem-solving, when the team tries to find the progress of work, it displays continuous data collected by check sheets so that patterns of regularity or non-regularity can be displayed. Histograms are visual representations of data that highlight the problem areas which pinpoint to the team the need for corrective action or analysis of data.
- **P-Charts:** Similar in content to C-charts, P-charts help in identifying the percentage of defective items in a sample of variable size which varies by more 25 per cent of the mean sample size.
- **Pie Charts:** It is a pictorial representation of data where the relative size, in terms of percentage, of each individual part is shown to the total.
- **Tally Charts:** While defining a problem or implementing a solution, when the team needs to collect data to find out what is happening or to monitor the new situation, it collects data and presents it in the form of tally bars. These bars depict the value of defects or failures and help the team to identify the causes of failure and search for ways to remove them Tally bars is a simple method of data collection and interpretation which can be applied in office and work areas and help people of all areas to deal with problems related to quality improvement.

Effective TQM

As TOM is a necessity for any business organisation and its effective implementation cannot be overlooked for successful achievement of organisational goals through customer satisfaction, the following guidelines will help in its successful implementation

- It should aim at customer satisfaction through active involvement of all people across the functional areas and organisational hierarchy
- Not only involvement, it must also aim at commitment on the part of all those who are associated with the TOM programme to implement it successfully.
- Education, training, measurement, accountability, recognition, reward, teamwork and communication are the backbone of effective TQM.
- It should be considered as a way to achieve the end and not an end in itself.
- It should not view anything as the best, Continuous improvement needs sustenance for effective TQM.
- Quality is the prime motive of TQM. This can be achieved by good intentions, moral ethics and humanity.

- The firms should concentrate on quality followed by quantity and not vice versa.

Key Elements to be Successful in Implementing TQM in an Organisation

TQM has been coined to describe a philosophy that make quality the driving force behind leadership, design, planning, and improvement initiatives. For this, TQM requires the help of eight key elements. These elements can be divided into four groups according to their functions. The groups are:

1. Foundation- Ethics, Integrity and Trust
2. Building Bricks- Training, Teamwork and Leadership
3. Binding Mortar- Communication
4. Roof- Recognition.

Foundation

TOM is built on a foundation of ethics, integrity and trust. It fosters openness, fairness and sincerity and allows involvement by everyone. These three elements move together, however, each element offers something different to the TQM concept.

1. Ethics: Ethics is the discipline concerned with good and bad in any situation. It is a two-faceted subject represented by organizational and individual ethics. Organizational ethics establish a business code of ethics that outlines guidelines that all employees are to adhere to create the performance of their work. Individual ethics include personal rights or wrongs.

2. Integrity: Integrity implies honesty, morals, values, fairness, and adherence to the facts and sincerity. The characteristic is what customers (internal or external) expect and deserve to receive. People see the opposite of integrity as duplicity. TOM will not work in an atmosphere of duplicity.

3. Trust: Trust is a by-product of integrity and ethical conduct. Without trust, the framework of TQM cannot be built. Trust fosters full participation of all members. It allows empowerment that encourages pride ownership and commitment. It allows decision making at appropriate levels in the organization, fosters individual risk taking for continuous improvement and helps to ensure that measurements focus on improvement of process. Trust is essential to ensure customer satisfaction. So, trust builds the cooperative environment essential for TOM.

Bricks

Based on the strong foundation of trust, ethics and integrity, bricks are placed to reach the roof of recognition. It includes:

1. Training: Training is important for employees to be highly productive. Supervisors are solely responsible for implementing TQM within their departments, and teaching their employees the philosophies of TQM. Employees require training to improve their interpersonal skills, the ability to function within teams, problem solving, decision making, job management performance analysis and improvement, business economics and technical skills. During the creation and formation of TOM. employees are trained to become effective employees of the company.

2. Teamwork: To become successful in business, teamwork is also a key element of TOM. With the use of teams, the business will receive quicker and better solutions to problems. Teams also provide permanent improvements in processes and operations. In teams, people feel more comfortable ringing up problems that may occur and can get help from other workers to find a solution and put into practice. There are mainly three types of teams that TOM organizations adopt:

(a) Quality Improvement Teams or Excellence Teams (OIT): These are temporary teams with the purpose of dealing with specific problems that often re-occur. These teams are set up for a period of three to twelve months.

(b) Problem Solving Teams (PSTs): These are temporary teams to solve certain problems and also to identify and overcome causes of problems. They generally last from one week to three months.

(c) Natural Work Teams (NWTs): These teams consist of small groups of skilled workers who share tasks and responsibilities. These teams use concepts such as employee involvement teams, self-managing teams and quality circles. These teams generally work for one to two hours a week.

3. Leadership: It is possibly the most important element in TQM. It appears everywhere in organization. Leadership in TQM requires the manager to provide an inspiring vision, make strategies directions that are understood by all and to in still values that guide subordinates. For TQM to be successful in the business, the supervisor must be committed in leading his employees. A supervisor must understand TQM, believe in it and demonstrate his belief and commitment through his daily practices of TQM. The supervisor makes sure that strategies, philosophies, values and goals are transmitted throughout the organization to provide focus, clarity and direction. A key point is that TQM has to be introduced and led by top management. Commitment and personal involvement are required from top management in creating clear quality values and goals consistent with the objectives of the company and in creating well defined systems, methods and performance measures for achieving those goals.

Binding Mortar

Once the organisation reaches the roof, mortar binds everyone in the organization together. It includes:

1. Communication: It binds everything together. Starting from foundation to roof of the TQM house, everything is bound by strong mortar of communication. It acts as an important link between all elements of TQM. Communication means a common understanding of ideas between the sender and the receiver. The success of TQM demands communication with and among all the organization members, suppliers and customers. Supervisors must always keep open where employees can send and receive information about the TQM process. Communication coupled with the sharing of correct information is vital. For communication to be effective, the message must be clear, and receiver must interpret in the way the sender intended.

Roof

It allows everyone to remain at the top and achieve fame.

1. Recognition: Recognition is the last and final element in the entire system. It should provide both suggestions and achievements for teams as well as individuals. Employees strive to receive recognition for themselves and their teams. Detecting and recognizing contributors is the most important job of a supervisor. As people are recognized, there can be huge changes in self-esteem, productivity, quality and the amount of effort exerted to the task at hand. Recognition comes in different ways, places and time such as

- **Ways:** It can be by way of personal letter from top management or by way of awarding bouquets, plaques, trophies etc.
- **Places:** Good performers can be recognized in front of departments, on performance boards and also in front of top management.
- **Time:** Recognition can be given at any time like in staff meeting, annual award banquets, etc.

Conclusion

Quality improvement is necessary for achieving the overall organisational goals and also carries with it some costs, like prevention costs (acceptance planning, quality audit, preventive maintenance), appraisal cost (product acceptance, inspection) and failure costs (redesign, scrap, corrective action). Minimising these costs and achieving the desired goals requires strategic commitment by top management. In order to improve quality and remain competitive in the global economy, firms must adopt the right improvement tools, techniques and methodologies.

TOM principles and benefits are not restricted to any one company or nation. They are globally applicable and positively affect the business environment. The Indian economy has experienced a marked shift towards the open market system since its liberalisation and is open to TOM principles similar to companies in the West. More and more companies in India are adopting the TOM principles to derive benefits like low cost and customer satisfaction. Continuous top management support is necessary to make TQM a success and reality in the Indian corporate world. It promotes employees' commitment and results in customer satisfaction -the ultimate goal of any company.

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