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UNIT I
Introduction of Total Quality Management
Introduction, need for quality, evolution of quality; Definitions of quality, product quality and service quality; Basic concepts of TQM, TQM framework, contributions of Deming, Juran and Crosby. Barriers to TQM; Quality statements, customer focus, customer orientation & satisfaction, customer complaints, customer retention; costs to quality

First thing we should know that in any business CUSTOMER is alike GOD. Customer is a person who buys GOODS or SERVICES from us.

Here you are studying about TOM i.e Total Quality Management, Now there must be a question in your mind why TQM in engineering, So here we study so that we as engineers should also aware about the need and demand of our GOD i.e Customer .

Need for quality

The first thing that we need to consider, in any organization, is that quality is the most important thing. The quality of your work defines you. Whoever you are, whatever you do, I can find the same products and services cheaper somewhere else. But your quality is your signature.

Developing and delivering high quality products and services means that you are doing things correctly from the beginning. As a consequence, you are reducing the need for additional services, from verification to warranty.

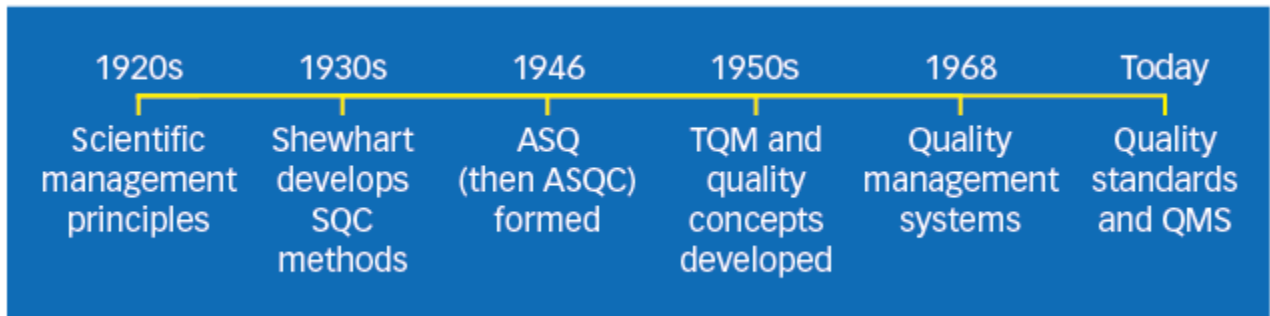
Quality is not an easy thing to achieve. First, you need to define what is quality. Quality for one organization is not the same as for another. Personally, if I want to buy a car, I am looking for a vehicle which will get me from A to B with minimum cost and problems, and allow me to transport the kind of things I usually transport. This definition of quality will rule out products such as Rolls-Royce and Lamborghini (too expensive), but it also excludes a number of tiny electric cars (no space for luggage)... If you want to create quality, you need to define it in your own terms, there is no common definition, there is no wrong definition: quality can be defined in terms of price, speed, defects or many other options.

Finally, you need to remember that quality is made by people. While technology, tools, processes, procedures and documentation may help in some way, it is only the people who really actively make the quality which represents you. If your people do not believe in your company, they will let you down. If your people are stressed or de-motivated, they will not deliver the quality you may desire.

Evolution of quality

The history of total quality management (TQM) began initially as a term coined by the Naval Air Systems Command to describe its Japanese-style management approach to quality improvement. An umbrella methodology for continually improving the quality of all processes, it draws on a knowledge of the principles and practices of:

- The behavioral sciences
- The analysis of quantitative and nonquantitative data
- Economics theories
- Process analysis



History of Total Quality Management (TQM)

1920s	<p>Some of the first seeds of quality management were planted as the principles of scientific management swept through U.S. industry. Businesses clearly separated the processes of planning and carrying out the plan, and union opposition arose as workers were deprived of a voice in the conditions and functions of their work.</p> <p>The Hawthorne experiments in the late 1920s showed how worker productivity could be impacted by participation.</p>
1930s	<p>Walter Shewhart developed the methods for statistical analysis and control of quality.</p>
1950s	<p>W. Edwards Deming taught methods for statistical analysis and control of quality to Japanese engineers and executives. This can be considered the origin of TQM. Joseph M. Juran taught the concepts of controlling quality and managerial breakthrough.</p> <p>Armand V. Feigenbaum's book <i>Total Quality Control</i>, a forerunner for the present understanding of TQM, was published.</p> <p>Philip B. Crosby's promotion of zero defects paved the way for quality improvement in many companies.</p>
1968	<p>The Japanese named their approach to total quality "companywide quality control." It is around this time that the term quality management systems arises.</p> <p>Kaoru Ishikawa's synthesis of the philosophy contributed to Japan's ascendancy as a quality leader.</p>
Today	<p>TQM is the name for the philosophy of a broad and systemic approach to managing organizational quality.</p> <p>Quality standards such as the ISO 9000 series and quality award programs such as the Deming Prize and the Malcolm Baldrige National Quality Award specify principles and processes that comprise TQM.</p> <p>TQM as a term to describe an organization's quality policy and procedure has fallen out</p>

of favor as international standards for quality management have been developed. Please see our series of pages on quality management systems for more information.

Definitions of quality

Quality is how good something is. If the **quality** of a product is high then that means that it is fit for its purpose. If the **quality** of an item is low that means that the product may break easily or not work properly.(from Wikipedia)

the standard of something as measured against other things of a similar kind; the degree of excellence of something.

Quality is the degree to which an object or entity (e.g., process, product, or service) satisfies a specified set of attributes or requirements. ... **Quality** is the degree to which a set of inherent characteristics fulfils requirements. A subjective term for which each person or sector has its own **definition**.

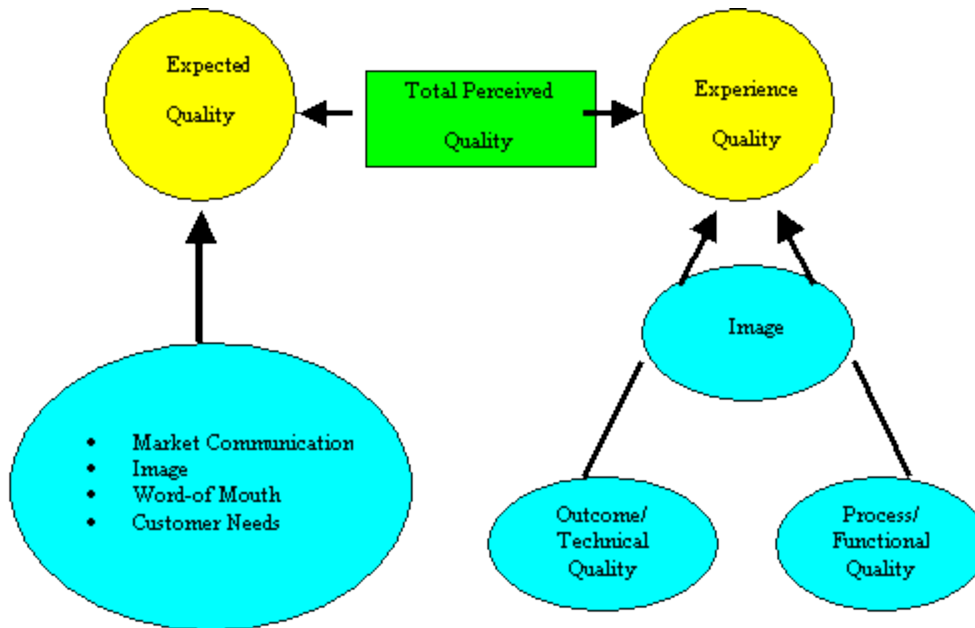
Product quality and Service quality

Products and Services that meet or exceed customer expectations result in *customer satisfaction*. Quality is the *expected* product/service being realized.. Before a customer makes a purchase (exchanges money for a product/service) he or she does a mental calculation: “Is the worth of the product/service (as I perceive and expect) equal to the money that I am about to exchange?”

Products/services that are produced and manufactured to specifications that are appropriate to the price (money to be given in exchange by the customer) of the product/service is an operational or manufacturing view of quality. Here, the customer receives the value that he or she expects since operations has built quality standards into the product. An operations view of quality is a common view of the concept of quality.

However, quality is a function of how the customer views the product/service that he or she receives. The customer view always compares what they expect with what they actually receive regardless of how operations conceives quality. How do customers arrive at their expectations?

Marketing, especially sales, has a major effect on how the customer views quality. As mentioned earlier, customer satisfaction is based on receiving the actual product/service as expected. When marketing and sales enthusiastically promises a product/service that manufacturing or operations (in the case of a hospitality service) cannot deliver, then expectations are not met, the customer is dissatisfied, and quality (in the customers’ eyes) is not realized.



TQM (TOTAL QUALITY MANAGEMENT)

A core definition of total quality management (TQM) describes a management approach to long-term success through customer satisfaction. In a TQM effort, all members of an organization participate in improving processes, products, services, and the culture in which they work.

PRIMARY ELEMENTS OF TQM

TQM can be summarized as a management system for a customer-focused organization that involves all employees in continual improvement. It uses strategy, data, and effective communications to integrate the quality discipline into the culture and activities of the organization. Many of these concepts are present in modern quality management systems, the successor to TQM. Here are the 8 principles of total quality management:

1. **Customer-focused:** The customer ultimately determines the level of quality. No matter what an organization does to foster quality improvement—training employees, integrating quality into the design process, or upgrading computers or software—the customer determines whether the efforts were worthwhile.
2. **Total employee involvement:** All employees participate in working toward common goals. Total employee commitment can only be obtained after fear has been driven from the workplace, when empowerment has occurred, and when management has provided the proper environment. High-performance work systems integrate continuous improvement efforts with normal business operations. Self-managed work teams are one form of empowerment.
3. **Process-centered:** A fundamental part of TQM is a focus on process thinking. A process is a series of steps that take inputs from suppliers (internal or external) and transforms them into outputs that are delivered to customers (internal or external). The steps required to carry out the process are defined, and performance measures are continuously monitored in order to detect unexpected variation.
4. **Integrated system:** Although an organization may consist of many different functional specialties often organized into vertically structured departments, it is the horizontal processes interconnecting these functions that are the focus of TQM

Contributions of Deming, Juran and Crosby

W. EDWARDS DEMING'S 14 Points for Total Quality Management

1. Create constancy of purpose for improving products and services.
2. Adopt the new philosophy.
3. Cease dependence on inspection to achieve quality.
4. End the practice of awarding business on price alone; instead, minimize total cost by working with a single supplier.
5. Improve constantly and forever every process for planning, production and service.
6. Institute training on the job.
7. Adopt and institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations and targets for the workforce.
11. Eliminate numerical quotas for the workforce and numerical goals for management.
12. Remove barriers that rob people of pride of workmanship, and eliminate the annual rating or merit system.
13. Institute a vigorous program of education and self-improvement for everyone.
14. Put everybody in the company to work accomplishing the transformation.

J.M. Juran

Juran was one of the first to point out the cost of poor quality. He illustrated this concept in “Juran trilogy,” a cross-functional management approach, constituted of three managerial processes: quality planning, quality control, and quality improvement. He pointed out that without change, there will be a constant waste. However, margins will be higher and the increased costs are recouped after the improvement.

Philip Crosby

Crosby gave 14 steps for process improvement. They are as follows:

1. Management’s commitment towards quality should be clear to all in the organization and those outside it.
2. Creation of quality improvement teams with senior representatives from all departments.
3. Continuous measurement of processes to determine current and potential issues related to quality.
4. The cost of poor quality has to be calculated.
5. Quality awareness has to be raised in the organization.
6. Corrective actions should be taken to address quality issues.
7. Establishment of a Zero Defect committee to monitor the progress of quality improvement.
8. Quality improvement training to all the employees.
9. Organize “zero defects” days in the organization.
10. All employees should be encouraged to set their own quality improvement goals.
11. Obstacles to quality should be discussed with employees in an open communication.
12. Participants’ efforts should be recognized.
13. Quality councils should be created.
14. Quality improvement is a continuous process. It keeps going.

A comparison of Deming, Juran, and Crosby

	<u>W. Deming</u>	<u>J.M. Juran</u>	<u>P. Crosby</u>
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Basic orientation toward quality	Technical	Process	Motivational
What is quality?	Nonfaulty systems	Fitness for use; freedom from trouble	Conformance to requirements
Who is responsible for quality?	Management	Management	Management
Importance of customer requirements as standard	Very important	Very important; customers at each step of product life cycle	Very important
Goal of quality	Meet/exceed customer needs; continuous improvement	Please customer; continuous improvement	Continuous improvement; zero defects
Methods for achieving quality	Statistical; constancy of purpose; continual improvement; cooperation between functions	Cost of quality; quality trilogy: planning, control, improvement	14-point framework;
Chief elements of implementation	<u>14-point program</u>	Breakthrough projects; quality council; quality teams	<u>14-step program</u> ; cost of quality; quality management "maturity grid"
Role of training	Very important for managers and workers	Very important for managers and employees	Very important for managers and employees
For additional details, see web site:	<u>The W. Edwards Deming Institute</u>	<u>Juran Institute</u>	<u>Philip Crosby Associates II</u>

The barriers to TQM implementation

- Lack of management commitment
- Inability to change organizational culture
- Improper planning
- Lack of continuous training and education
- Incompatible organizational structure and isolated individuals and departments
- Ineffective measurement techniques and lack of access to data and results.
- Paying inadequate attention to internal and external customers.
- Inadequate use of empowerment and teamwork

Quality statements

A **quality statement** lays out your firm's working practices and commitment to providing a good service. It should explain how effective and efficient your methods for carrying out the project will be.

The **quality policy** is a guide for everyone in the organization as to how they should provide products and services to the customers. It should be written by the CEO with feedback from the workforce and be approved by the **quality council**. A **quality policy** is a requirement of ISO 9000.

Customer focus

When you understand what your **customer** wants or needs, you have a better chance of figuring out how to get the right materials, people, and processes in place to meet and exceed their expectations. To implement this **TQM** principle: Research and understand your customers' needs and expectations

Customer orientation & satisfaction

With **TQM**, everything comes down to **customer satisfaction**. **Customer satisfaction** determines the success of your company's **TQM** project or strategy. If **customers** are happy, your improvements worked. If they're dissatisfied, it's time to reevaluate your strategy

Customer complaints

The term complaint management describes the handling of customer complaints within a company. Criticism is supposed to be evaluated in a way that is systematic and orderly, and used to create a positive impact. It is also supposed to resolve the issue that prompted the customer's criticism.

Customer retention

Customer retention refers to the activities and actions companies and organizations take to reduce the number of customer defections. The goal of customer retention programs is to help companies retain as many customers as possible, often through customer loyalty and brand loyalty initiatives

Cost of quality

Cost of quality (COQ) is defined as a methodology that allows an organization to determine the extent to which its resources are used for activities that prevent poor quality, that appraise the quality of the organization's products or services, and that result from internal and external failures

Reference Links

<https://peterleeson.wordpress.com/2013/04/24/the-need-for-quality/#:~:text=The%20first%20thing%20that%20we,of%20your%20work%20defines%20you.&text=But%20your%20quality%20is%20your,things%20correctly%20from%20the%20beginning.>

<https://asq.org/quality-resources/total-quality-management/tqm-history>

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