BHARATHIDASAN UNIVERSITY
Tiruchirappalli- 620024,
Tamil Nadu, India

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Unit-I
Basics of TQM

Dr. T. KUMUTHAVALLI
Associate Professor
Department of Lifelong Learning (DLL)

TOTAL QUALITY MANAGEMENT

Basics of TQM

Meaning, definition, benefits of industry total quality, TQC “meaning”, factors quality challenges in industry- Technology management and society inter -relationship -TQM: meaning, definition, fundamentals, elements-Cost of Quality.

Meaning and definition

- 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.

Meaning and definition

- It is now being adopted as a management philosophy
- Total Quality management provides the concept that ensures **continuous improvement in an organisation**.
- The philosophy of TQM stresses on a **systematic, integrated and consistent** approach involving **everyone and everything** in an organisation.
- It aims at using all people in multifunctional teams to bring about **improvements** from within the organisation.
- Everyone associated with the organisation is fully involved in **continuous improvement**.

Meaning and definition

- “Total Quality Management (TQM) is an approach to improving the effectiveness and flexibility of business as a whole. It is essentially a way of organizing and involving the whole organisation, every department every activity, every single person at every level.”

—Oakland

- “Total Quality Management is a combination of socio-technical process towards doing the right things (externally), everything right (internally), first time and all the time with economic viability considered at each stage of each process.”

—Zaire and Simintiras

Meaning and definition

- TQM is a strategic approach to produce the best product and service possible through constant innovation."

—Atkinson

- "TQM is a management system, not a series of programs, it is a system that puts customer satisfaction before profit. It is a system that comprises a set of integrated philosophies, tools and processes used to accomplish business objectives by creating delighted customers and happy employees. "

—Price and Chel

Meaning and definition

- Dr. Frag Diwan of All India Management Association, New Delhi has very nicely concluded that TQM is “an all encompassing dynamic process in an organisation to promote never ending involvement in the effectiveness and efficiency of all elements of a business.”

TQM explains

- **By total we mean:**
- I. All areas/fields and functions in any unit/organisation.
- II. All activities.
- III. All employees/workmen.
- IV. All time.
- **By quality we mean:**
- i. Product or services that satisfy the consumer requirements and expectations completely on a continuous basis.
- ii. The above meaning of quality has completely changed its usual meaning that Quality means product produced exactly according to specifications.
- **By management we mean:**
- i. Quality does not come up at its own, it needs planning and management.
- ii. Quality is a management function and everybody in the organisation is responsible for it. It therefore needs systematic approach.
- Hence TQM is a people intensive activity.

- According to Feigenboum TQM is defined as **"effective system for integrating. The quality development, quality maintenance and quality improvement efforts of various groups in an organisation so as to enable production and service at the most economical level which allow for full customer satisfaction."**

Definition:
Total Quality Management

- Total Quality Management (TQ, QM or TQM) and Six Sigma (6σ) are sweeping "culture change" efforts to position a company for greater customer satisfaction, profitability and competitiveness.
- TQ may be defined as managing the entire organization so that it excels on all dimensions of products and services that are important to the customer.
- TQ is about conformance quality, not features.

Total Quality Is…

- **Meeting Our Customer's Requirements**
- **Doing Things Right the First Time; Freedom from Failure (Defects)**
- **Consistency (Reduction in Variation)**
- **Continuous Improvement**
- **Quality in Everything We Do**

A Quality Management System Is…

- A belief in the employee's ability to solve problems
- A belief that people doing the work are best able to improve it
- A belief that everyone is responsible for quality

TQM foundation activities

- Commitment by senior management and all employees
- Meeting customer requirements
- Reducing development cycle times
- Just in time/demand flow manufacturing
- Improvement teams
- Reducing product and service costs
- Systems to facilitate improvement
- Line management ownership
- Employee involvement and empowerment
- Recognition and celebration
- Challenging quantified goals and benchmarking
- Focus on processes / improvement plans
- Specific incorporation in strategic planning
- This shows that TQM must be practiced in all activities, by all personnel, in manufacturing, marketing, engineering, R&D, sales, purchasing, HR, etc

benefits of industry total quality

- **Total Quality Management Benefits**
- Strengthened competitive position
- Adaptability to changing or emerging market conditions and to environmental and other government regulations
- Higher productivity
- Enhanced market image
- Elimination of defects and waste
- Reduced costs and better cost management
- Higher profitability
- Improved customer focus and satisfaction
- Increased customer loyalty and retention
- Increased job security
- Improved employee morale
- Enhanced shareholder and stakeholder value
- Improved and innovative processes

- ***Cost reduction.*** When applied consistently over time, TQM can reduce costs throughout an organization, especially in the areas of scrap, rework, field service, and warranty cost reduction. Since these cost reductions flow straight through to bottom-line profits without any additional costs being incurred, there can be a startling increase in profitability.
- ***Customer satisfaction.*** Since the company has better products and services, and its interactions with customers are relatively error-free, there should be fewer customer complaints. Fewer complaints may also mean that the resources devoted to customer service can be reduced. A higher level of customer satisfaction may also lead to increased market share, as existing customers act on the company's behalf to bring in more customers.
- ***Defect reduction.*** TQM has a strong emphasis on improving quality within a process, rather than inspecting quality into a process. This not only reduces the time needed to fix errors, but makes it less necessary to employ a team of quality assurance personnel.
- ***Morale.*** The ongoing and proven success of TQM, and in particular the participation of employees in that success can lead to a noticeable improvement in employee morale, which in turn reduces employee turnover, and therefore reduces the cost of hiring and training new employees.

Total Quality Control

- Application of quality management principles to all areas of business from design to delivery instead of confining them only to production activities.

- Popularized by the US quality pioneer Armand Val Feigenbaum (1920-) in his 1951 book '**Total Quality Control**.

TQC

- TQC is about application of the quality management principles to the business processes from the designing stage to delivery of goods to the end users.
- It includes various Japanese techniques related with quality management such as Kaizen, 5S, Genbashugi which expresses various ways of increasing the productivity of the organization.

TQC

- **5S** is a very popular productivity improvement program in Japan and 5Ss stands for Seiri, Seiton, Seiso, Seiketsu and Shitsuke.
- **Seiri** is the sorting out and discarding of unnecessary items at workplace.
- **Seiton** is the arrangement of necessary items into good order so that they can be easily selected for use.
- **Seiso** is cleaning up one's work place completely so that there is no dust on floors, machines or equipments.
- **Seiketsu** is maintaining one's workplace so that it is productive and comfortable.
- **Shitsuke** is training people to follow good work habits and the strict observation of workplace rules.

TQC

- After the spirit and practice of a good 5S is installed as a platform, a company can then develop and implement a super 5S program which requires a higher level of creativeness and kaizen approaches.
- When the productivity improves by implementing the above programmes, the unnecessary cost incurring for reworks, delays, snags is reduced and ultimately the quality of production increases.

TQC

- **Genbashugi** is considered as a shop floor oriented principle or operation centered principle.
- When a problem happens in the operation work floor, workers know the best of it and how it has happened.
- They may not know how to solve it, but have some hints for solution.
- Therefore, managers or engineers must go down to the shop floor to see the actual work piece or machine and solve the problem based on the facts or data.
- These factors need to be considered in order to increase the productivity of the organization.

TQC

- TQM expresses about continuous improvement in the processes while TQC is about maintaining the quality standards throughout the process.

Main Differences between TQC Practices in Japan the West

Japan:
- deals with quality of people
- customer-oriented
- upstream
- process-oriented, aimed at improving the total performance
- company-wide, everybody's responsibility

The West:
- deals with quality of products
- manufacturer-oriented
- downstream
- product-oriented, aimed at detecting and eliminating defective parts
- responsibility of quality control managers

The Seven Main Features of the TQC Movement in Japan

1. **Company-wide** TQC, involving all employees, organization, hardware, and software
2. Emphasis on **education and training** for top management, middle management and workers
3. **Quality control (QC) circle** activities by small groups of volunteers
4. **TQC audits**
5. Application of **statistical methods**
6. Constant revision and **upgrading of standards**
7. **Nation-wide** TQC promotion

The Three TQC Goals at Japan Steel Works

1. To provide products and services that satisfy customer requirements and earn customer trust
2. To steer the corporation toward higher profitability through such measures as improved work procedures, fewer defects, lower costs, lower debt service, and more advantageous order filling
3. To help employees fulfill their potential for achieving the corporate goal, with particular emphasis on such areas as policy deployment and voluntary activities

Areas Targeted by TQC in Japan

Product Quality Improvement
- Quality assurance
- New product development

Improvements in the Workplace
- Cost reduction
- Safety
- Productivity improvement

Management
- Education and training
- Organizational / systems development
- Cross-functional management
- Policy deployment
- Quality deployment

Supply, Production, and Selling Chain
- Supplier management
- Meeting production quotas
- Meeting delivery schedules
- Marketing
- Sales
- Services

factors for quality challenges in industry

- Reluctance to implement performance-based scorecards.
- Inefficient, decentralized reporting.
- Lack of senior-level involvement in supply quality management.
- Constant battle between supply quality management and supply chain management.
- Lack of risk-based analysis for supplier quality.

1. Regulation and traceability

- The manufacturing sector, like so many sectors, is facing increasing regulation and compliance measures. Everything from health and safety to waste management is surrounded in red tape. While it is undeniable some regulations are essential, other can be a massive burden to manufacturing companies – particularly when they vary from country to country.

- Now more than ever, manufacturers must ensure they have complete visibility throughout their supply chain for their own compliance and that of their suppliers. Regulations often require the ability to track items and materials used during the manufacturing process.
- Companies in highly regulated industries, such as medical devices, are facing new regulations including UDI (Universal Device Identification) and ePedigree requirements, while chemical and electronics manufacturers deal with REAC (Registration, Evaluation, Authorization, and Restrictions of Chemicals) and similar laws.
- Keeping abreast of regulations and managing compliance reporting is an ongoing challenge faced by the sector, and more and more companies are choosing to dedicate whole teams to stay ahead of new rules.

2. Product development and innovation

- We live in a consumer driven world and as such product development and innovation moving at a lightning pace – to stay relevant, manufacturers need to be able to keep up with the pace. As companies vie to be first to market with a new concept, the temptation to compromise on quality can be huge, however manufacturers need to be stringent and avoid cutting corners.

- Fast times to market mean that companies need to become more structured in their approach to managing innovation – great product ideas cannot be left to chance. Implementing procedures that keep a steady stream of new product ideas and innovations in the pipeline is essential to manufacturing success.

3. The manufacturing skills gap

- The baby boomer generation is reaching retirement age and leaving a considerable skills gap in the workforce. While manufacturing firms are doing what they can to inspire a new generation of manufacturing employees and experts, there is still a considerable void when it comes to skills and experience.

- Manufacturers need to work with schools and universities in their communities to ensure that manufacturing focused subjects are being well promoted and taught. In addition, manufacturers need to bridge the gap by encouraging their older employees to gradually slow down to retirement, passing on valuable skills to younger employees during a transition phase.

4. Healthcare costs

- The manufacturing sector is certainly not the only one to be hit, but rising healthcare costs for workers is putting a considerable strain on already fragile manufacturing cost structures. Manufacturers in the U.S. in particular face the burden of providing healthcare while their competitors in other countries are not required to. Manufacturers need to be aware of this rising cost, and managed budgets accordingly, to ensure healthcare doesn't push up the price of products beyond commercial viability – it can be a balancing act.

5. Environmental concerns and considerations

- While it is undeniably good news for the local environment and employee wellbeing, sustainability and environmental regulations can be expensive for manufacturing firms. Manufacturers need to be aware of these costs when outlining their quarterly budgets.

6. Balancing maintenance with throughput

- Keeping equipment functioning is an essential part of running a manufacturing facility. Regular preventive maintenance can help increase throughput and ensure customer satisfaction with delivery lead times.

challenges

- quality target product profile (QTPP)
- critical quality attributes (CQAs) of a product
- product design and product understanding
- process design and understanding
- product and process control strategies.

Elements of Total Quality Management:

- 1. Customers Satisfaction.
- 2. Employees involvement.
- 3. Morale of employees.
- 4. Quality Control Circles and suggestion system.
- 5. Higher revenue.
- 6. Lower cost.
- 7. Quality control.
- 8. Control of Production.
- 9. Quality planning.
- 10. Quality Improvement.
- 11. Quality implementation.
- 12. Quality Assurance System.
- 13. Vendor control and quality in procurement.
- 14. Customer relationship management.
- 15. Total organisation involvement.
- 16. Measurement information analysis.
- 17. Quality education and training.
- 18. Strategic quality management.
- 19. Leadership.

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Elements for Success

- Management Support
- Mission Statement
- Proper Planning
- Customer and Bottom Line Focus
- Measurement
- Empowerment
- Teamwork/Effective Meetings
- Continuous Process Improvement
- Dedicated Resources