



ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS INSTITUTION

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24MG208 – TOTAL QUALITY MANAGEMENT

CREDITS: 3

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Course objective: To learn the fundamental concepts, principles and practices of Total Quality Management.

SYLLABUS

UNIT I:

INTRODUCTION TO TOTAL QUALITY MANAGEMENT

TQM definition, Framework, Benefits, awareness and obstacles, Quality – vision, mission and policy statements. Customer Focus – customer perception of quality, Translating needs into requirements, customer retention. Dimensions of product and service quality. Cost of quality.

UNIT II:

TOTAL QUALITY MANAGEMENT PHILOSOPHIES AND PRINCIPLES

Overview of the contributions of Deming, Juran Crosby, Masaaki Imai, Feigenbaum, Ishikawa, Continuous Improvement- Kaizen, Concepts of Quality circle, Japanese 5S principles and 8D methodology.

UNIT III:

STATISTICAL PROCESS CONTROL

Meaning and significance of statistical process control (SPC) – construction of control charts for variables and attributes. Process capability – Meaning, significance and measurement – Six sigma - concepts of process capability. Reliability concepts – Definitions, reliability in series and parallel, product life characteristics curve. Total productive maintenance (TMP), Tero Technology.

UNIT IV

QUALITY TOOLS AND TECHNIQUES

Quality functions development (QFD) – Benefits, Voice of customer, information organization, House of quality (HOQ), building a HOQ, QFD process. Failure mode effect analysis (FMEA) – FMEA stages, design, process and documentation. Seven Tools (old & new). Bench marking and POKAYOKE.

UNIT V

QUALITY MANAGEMENT SYSTEMS

Introduction to IS/ISO 9004:2018 – Quality management systems – Guidelines for performance improvements. Environmental Management system, ISO 14000, Quality Audits. TQM culture, Leadership – Quality council, employee involvement, motivation, empowerment, recognition and Reward.

UNIT I: NOTES

Total quality management (TQM) is a term first used to describe a management approach to quality improvement. Since then, TQM has taken on many meanings but at its core it describes a management approach to long-term success through customer satisfaction.

TQM Meaning:

Total quality management (TQM) is the continual process of detecting and reducing or eliminating errors in manufacturing. It streamlines supply chain management, improves the customer experience, and ensures that employees are up to speed with training.

Total- Made up of the whole

Quality- Degree of excellence a product or service provides.

Management- Act, art, or manner of handling, controlling directing, etc,

Therefore, TQM is the art of managing the whole to achieve excellence.

DEFINITION OF TQM

- TQM is the management approach of an organization, centered on quality, based on the participation of all its members and aiming at long term success through customer satisfaction, and benefits to all members of the organization and to society. –(ISO)
- TQM is defined as both philosophy and a set of guiding principles that represent the foundation of continuously improving organisation. It is the application of quantitative methods and human resources to improve all the process within the organisation and exceed customer needs now and in the future.
- TQM is the control of all transformation processes of an organization to best satisfy customers needs in the most economical manner. (Leopald S. Vasin)

- Total Quality Management is defined as a customer-oriented process and aims for continuous improvement of business operations. It ensures that all allied works (particularly work of employees) are toward the common goals of improving product quality or service quality, as well as enhancing the production process or process of rendering of services. However, the emphasis is put on fact-based decision making, with the use of performance metrics to monitor progress.
- Total Quality Management (TQM) refers to management methods used to enhance quality and productivity in business organizations. TQM is a comprehensive management approach that works horizontally across an organization, involving all departments and employees and extending backward and forward to include both suppliers and clients/customers.

FRAMEWORK

The TQM framework explains how an organization can achieve continuous improvement and customer satisfaction through proper management practices.

System Thinking:

- At the foundation system thinking helps the organization understand that all departments and activities are interconnected.
- Decisions in one area affect all others.

Strong leadership and Top management commitment:

- Strong leadership and management commitment are essential because management sets the vision, mission, quality policy, and provides resources. Senior management must actively support and lead team. Without leadership commitment, TQM cannot succeed.

Strategic planning:

- Through strategic planning, quality objectives are aligned with the organizations, long-term goals.

Employee Empowerment and Teamwork:

- Employee empowerment and Teamwork encourage participation, problem-solving, and shared responsibility for quality.

Communication and Training:

It ensure employees have the skills and knowledge required to maintain quality standards. Continuous training builds skills and quality awareness.

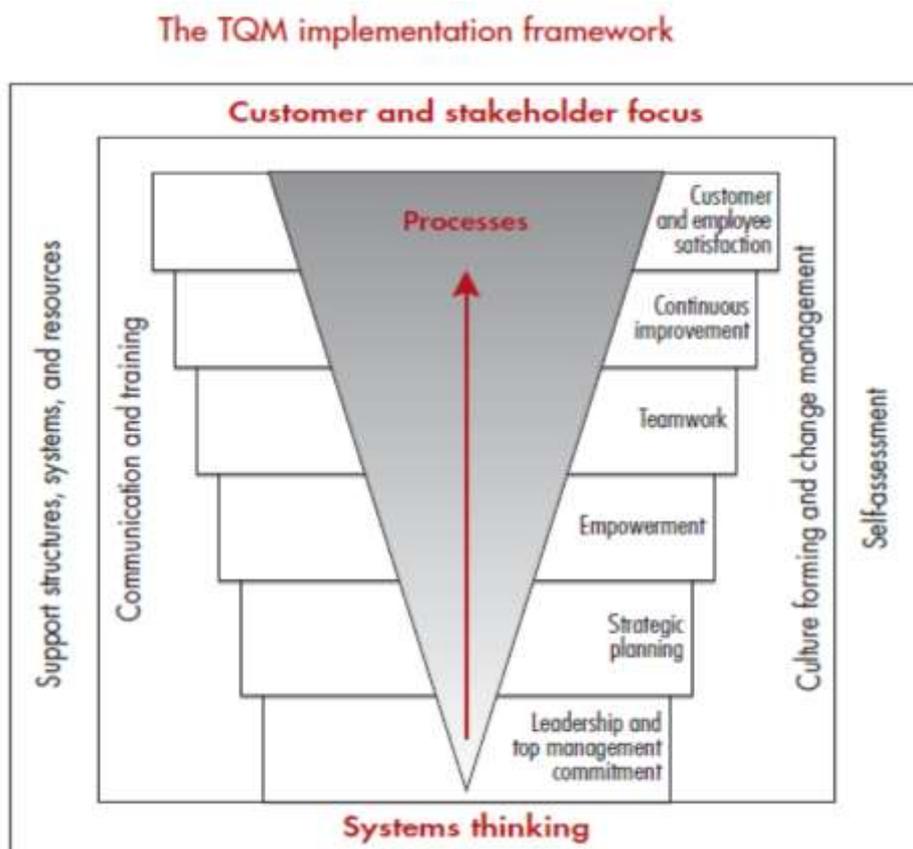
Continuous Improvement:

It is a key principle focusing on ongoing improvements in products, services, and processes. Supporting this are systems, structures and resources that enable effective implementation.

Culture Formation and change management:

To sustain TQM, culture formation and change management help create a quality oriented mindset across the organization.

The Total Quality Management (TQM) framework is built on principles like **customer focus, employee involvement, and continuous improvement**. It is an integrated system that involves all members of an organization in a strategic and systematic approach to meeting and exceeding customer expectations through process-oriented management and fact-based decision-making.



Core components of the TQM framework

- **Customer Focus:** The primary goal is to meet or exceed customer expectations by understanding their needs and providing value.
- **Employee Involvement:** All employees are empowered and trained to participate actively in quality improvement efforts, fostering a culture of accountability and ownership.

- **Process Approach:** Focuses on managing and improving an organization's processes to achieve desired results efficiently and effectively.
- **Continuous Improvement:** Strives for ongoing enhancements to processes, products, and services through both incremental changes and innovation.

This is often guided by the **PDCA (Plan-Do-Check-Act) cycle**:

Plan: The planning phase involves setting objectives based on the organization's policy, conducting risk assessments, and determining the processes needed to deliver the desired outcomes.

This is covered in the requirements of the ISO standards and if we take a **quality management system** (QMS) as an example, it should include:

- **Understanding the Context of the Organisation:** Identify internal and external factors that can impact the QMS's objectives and outcomes
- **Determining the Needs and Expectations of Interested Parties:** Recognise who the interested parties are and what their needs and expectations are
- **Determining the Scope of the QMS:** Define the boundaries and applicability of the QMS to establish its scope
- **Planning the QMS:** Establish quality objectives and plan how to achieve them, considering risks and opportunities
- **Quality Objectives and Planning to Achieve Them:** Set measurable quality objectives and plan the actions needed to achieve them
- **Planning of Changes:** Plan changes to the QMS in a controlled manner. It is almost always the most complex part of the cycle as it requires a thorough understanding of what systems may already be in place and what is the ultimate aim.

Do:

- The doing phase is about implementing the plan, executing the processes, making the product, and collecting data for the checking and the next act phase.
- Essentially this should become the routine working for the organisation, but it should be sufficiently flexible to allow for unforeseen circumstances and events. Ideally there would be a contingency plan for unusual situations that might occur.

Check: The check phase focuses on monitoring and evaluating the performance of the management system and according for a quality management system, it should include:

- **Monitoring, Measurement, Analysis, and Evaluation:** Organisations must determine what needs to be monitored and measured, the methods for monitoring, measurement, analysis, and evaluation, and when these should be carried out.
- **Internal Audit:** Conduct internal audits at planned intervals to provide information on whether the QMS conforms to the organization's own requirements and the ISO 9001 standard, and is effectively implemented and maintained
- **Management Review:** Top management must review the organisation's QMS at planned intervals to ensure its continuing suitability, adequacy, effectiveness, and alignment with the strategic direction of the organisation.
- These requirements ensure that the QMS is functioning as intended and provides a basis for identifying areas for improvement.

Act:

- The acting phase is where the organisation implements the changes needed to ensure that it is compliant with the standard and drive continual improvement. This could involve making adjustments to the plan and starting the cycle again.
- Actions like audits, management review and monitoring indicators can identify areas that need improvement and result in non-compliance (or non-conformance) reports being raised. It may be that there is a weak area in the processes that needs to be revised. These need to be addressed within a given time to close the non-conformity if discovered as part of the external audit by the certification body.
- Standardize the solution if successful, or refine the plan and repeat the cycle if not.

