

Total Quality Management
Mechanical Technology Chapter 1 Notes
By
Mansoor Ali Zaheer
Assistant Professor
University of Sargodha, Sargodha

Quality

What is Quality?

Quality means different to different people:

- 1. Customer-Based:** Fitness for use, meeting customer expectations.
- 2. Manufacturing-Based:** Conforming to design, specifications, or requirements. Having no defects.
- 3. Product-Based:** The product has something that other similar products do not that adds value.
- 4. Value-Based:** The product is the best combination of price and features.
- 5. Transcendent:** It is not clear what it is, but it is something good.

Quality Assessment Formula

$$Q=P/E$$

Where P is Performance and E is Expectations

- $Q < 1$ Performance does not meet expectations
- $Q = 1$ Performance equals expectations
- $Q > 1$ Performance is better than expectations

What is TQM?

- Total Quality Management (TQM) is an enhancement to the traditional way of doing business. It is a proven technique to guarantee survival in world-class competition. Only by changing the actions of management will the culture and actions of an entire organization be transformed.
- Analysing the three words, we have
 - *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.
- Thus TQM is the art of managing the whole to achieve excellence.

Six Basic Concepts of TQM

1. A committed and involved management to provide long-term top-to-bottom organizational support.
2. An unwavering focus on the customer, both internally and externally.
3. Effective involvement and utilization of the entire work force.
4. Continuous improvement of the business and production process.
5. Treating suppliers as partners.
6. Establish performance measures for the processes.

Basic Principles of TQM

- **Continuous improvement.** TQM is a long-term process that entails achieving improvements in the company's operations. This means that management should establish targets for improvement and measure progress by using reliable criteria. The quest for quality and better service to the customer should be a continual, never-ending one. Competitors will seek to provide better service and customers will come to expect it. Hence, to cease improvement efforts will likely lead to loss of competitive advantage and a decreased level of customer satisfaction.
- **Customer focus.** In TQM, the customer is believed to be the ultimate judge of quality. Therefore, the company must remain close to the customer and understand how he or she views and judges quality.
- **Strategic planning and leadership.** Achieving quality and market leadership requires a viable competitive strategy that outlines goals and desired outcomes. Moreover, senior executives should be responsible for introducing and supporting TQM programs
- **Competitive benchmarking.** This means identifying companies or other organizations that are the best at something and then modeling your own organization after them. The company need not be in the same line of business as yours.
- **Teamwork approach.** The use of teams for problem solving and to achieve consensus takes advantage of group thinking, gets people involved, and promotes a spirit of cooperation and shared values among employees. Further, teamwork creates opportunities for learning and exchanging ideas.
- **Employee empowerment.** TQM is based on humanistic management principles that suggest employee involvement and participation is essential for success. Giving workers the responsibility for improvements and the authority to make changes to accomplish them provides strong motivation for employees. This puts decision making into the hands of those who are closest to the job and have considerable insight into problems and

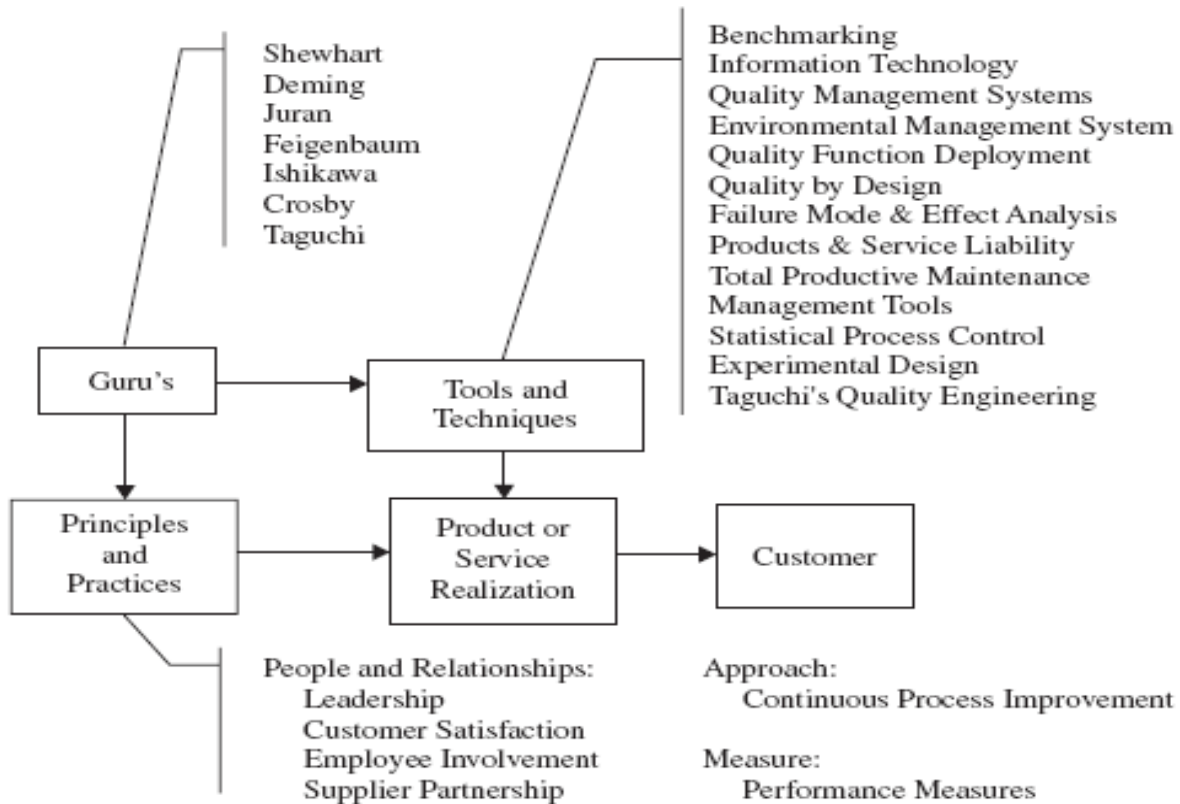
solutions. Empowered to bring about changes in their workplace, employees can creatively contribute to their company's well-being.

- **Knowledge of tools.** Everyone in the organization is trained in the use of quality control and improvement tools.

Quality Gurus and their major contribution

Shewhart	Statistical Process Control
Ronald Fisher	Design of Experiments
Deming	14-points for Management
Juran	Juran Trilogy
Taguchi	Robust Design
Ishikawa	Quality Tools, Fishbone Diagram
Crosby	Zero Defect, "Quality is Free", Cost of Poor Quality

TQM Framework



The Dimensions of Quality

- **Performance:** Primary product characteristics, such as the brightness of the picture
- **Features:** Secondary characteristics, added features, such as remote control
- **Conformance:** Meeting specifications or industry standards, workmanship
- **Reliability:** Consistency of performance over time, average time for the unit to fail
- **Durability:** Useful life, includes repair
- **Service:** Resolution of problems and complaints, ease of repair
- **Response:** Human-to-human interface, such as the courtesy of the dealer
- **Aesthetics:** Sensory characteristics, such as exterior finish
- **Reputation:** Past performance and other intangibles, such as being ranked first

Obstacles to apply TQM

- Lack of commitment from the management
- Inability or Resistance to change
- Improper planning
- Lack of continuous training and education

- Incompatible organization structure and isolated departments and individuals
- Ineffective performance measures and lack of visibility of data and results
- Inadequate use of Empowerment and teamwork

Benefits of TQM

- Improved quality and productivity
- Better employee participation and teamwork
- Better customer and employee satisfactions
- Increase in market share and profitability
- Improved communication
- TQM is a good investment according to study by Hendricks and Singhai
 - They studied 600 organizations and showed that there is strong linkage between TQM and financial performance