TOTAL QUALITY MANAGEMENT
ORIGIN, EVOLUTION, OBJECTIVES, SIGNIFICANCE AND REASONS FOR FAILURES

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• What is TQM?
• Evolution of TQM
• Objectives of TQM
• Importance of TQM
• Elements of TQM
• Benefits of TQM
• 7 important principles of TQM
• TQM Timeline
• Demmings 14 points on TQM
• INDIAN APPROACH TO TQM
• Western approach
• Japanese approach
• Reasons for Failure of TQM
• Conclusion
Quality

Quality is “fitness for use”

(Joseph Juran)

Quality is “conformance to requirements”

(Philip B. Crosby)

Quality of a product or services is its ability to satisfy the needs and expectations of the customer
QUALITY IS ….the QUALIFIER!

• Doing it right first time and all the time. This boosts Customer satisfaction immensely and increases efficiency of the Business operations.

• Clearing the bar (Specification or Standard stipulated) Excellence that is better than a minimum standard.

• Quality is excellence that is better than a minimum standard. It is conformance to standards and ‘fitness of purpose’.

• ISO 9000:2000 definition of Quality It is the degree to which a set of inherent characteristics fulfills requirements.
Quality and customer expectations

• Quality is not fine-tuning your product at the final stage of manufacturing, before packaging and shipping.

• Quality is in-built into the product at every stage from conceiving – specification & design stages to prototyping – testing and manufacturing stages.

• TQM philosophy and guiding principles continuously improve the Organization processes and result in customer satisfaction.
• Quality is also defined as **excellence** in the product or service that fulfills or exceeds the expectations of the customer.

• There are **9 dimensions of quality** that may be found in products that produce customer-satisfaction. Though quality is an abstract perception, it has a quantitative measure:

\[ Q = \frac{P}{E} \]

where

• **Q** = quality

• **P** = performance (as measured by the Mfgr.)

• **E** = expectations (of the customer)
TQM involves methodology for continually improving the quality of all processes, it draws on a knowledge of the principles & practices of:

- The behavioural sciences
- The analysis of quantitative & non-quantitative data
- Economics theories
- Process analysis
• **CRAFTSMEN & ARTISANS**: (e.g. Artists, Sculptors, working with metals & other materials who were very Quality-conscious.

- **TRADESMEN** (e.g. Masons, Carpenters etc.)

- **ENGINEERING TRADES & PRACTICES** (e.g. Foundry, Smithy, Die-making, Mould-making, Stamping, Forging, Turning, Milling, Drilling etc.)

- **CUSTOM-BUILT**: Articles/Products having considerable control over Quality.

- **MASS-PRODUCED**: Products with less control over Quality
• **QUALITY CONTROL**: Department in Factories.
• **TQM-BASED PRODUCTION**: facility – enhancing the Organization through Quality techniques to better achieve organization’s goals—eg. Productivity and Profitability with min. wastage.

• **ISO** Quality Management Systems.
What is Total Quality Management?

TQM is an approach to improving the effectiveness and flexibilities of business as a whole. It is essentially a way of organizing and involving the whole organization, every department, every activity and every single person at every level. TQM ensures that the management adopts a strategic overview of the quality and focuses on prevention rather than inspection.
Total Quality Management is a management approach that originated in the 1950's and has steadily become more popular since the early 1980's.

TQM is preferred method to increase the user satisfaction. It reduces the defects of organization and increases the productivity.

Competition is getting harder and becoming global. Companies now have to be more responsive, offer a better product and keep improving.

Total Quality management increases customer satisfaction by boosting quality. It does this by motivating the workforce and improving the way the company operates. In an increasingly competitive market, firm with a continuous improvement culture and external focus are more likely to survive and prosper. TQM is considered an important catalyst in the context.
The 4 Levels in the Evolution of Total Quality Management

1. Inspection
2. Quality Control
3. Quality Assurance
4. Total Quality Management


Inspection

• To salvage
• Sorting, grading, reblending

Corrective Actions

• Identify Sources of Non-conformance

Quality Control

• Develop Quality Manual
• Self-Inspection
• Product Testing
• Basic Quality Planning
• Use of Basic Statistics
• Paperwork Controls
Quality Assurance

• Advanced Quality Planning
• Quality Systems Development
• Focus on Design
• Quality Costs
• Failure Mode and Effects Analysis
• Statistical Process Control

Total Quality Management

• Policy Deployment
• Involve Suppliers and Customers
• Involve all operations
• Process Management
• Performance Measurement
• Teamwork
• Employee involvement and development
Objectives of TQM

- Meeting the customer's requirements is the primary objective and the key to organizational survival and growth.

- The second objective of TQM is continuous improvement of quality. The management should stimulate the employees in becoming increasingly competent and creative.

- Third, TQM aims at developing the relationship of openness and trust among the employees at all levels in the organization.
Significance of TQM

The importance of TQM lies in the fact that it encourages innovation, makes the organization adaptable to change, motivates people for better quality, and integrates the business arising out of a common purpose and all these provide the organization with a valuable and distinctive competitive edge.
Elements of TQM

- **Be customer focused**

  It requires the company to check customers' attitudes regularly and includes the idea of internal customers as well as external ones.

- **Do it right the first time**

  This means avoiding rework, i.e., cutting the amount of defective work.
- **Constantly improve**
  Continuous improvement allows the company gradually to get better.

- **Quality is an attitude**
  Every one has to be committed to quality. That means changing the attitude of the entire workforce, and altering the way the company operates.

- **Telling staff what is going on**
  This involves improved communication. Typically, it includes team briefing.
Educate and train people

An unskilled workforce makes mistakes. Giving more skills to workers means they can do a wider range of jobs, and do them better. It also means educating staff in the principles of TQM, which is a whole new style of working.

Measure the work.

Measurement allows the company to make decisions based on facts, not opinion. It helps to maintain standards and keep processes within the agreed tolerances.

Top management must be involved

If senior management is not involved, the programme will fail.
- **Make it a good place to work**
  Many companies are full of fear. Staffs are afraid of the sack, their boss and making mistakes. There is no point in running a TQM program unless the company drives out fear.

- **Introduce team work**
  Team work boosts employees' morale. It reduces conflict and solves problem by hitting them with a wider range of skills. It pushes authority and responsibility downwards and provides better, more balanced solutions.

- **Organize by process, not by function**
  This element of TQM seeks to reduce the barriers that exist between different departments, and concentrates on getting the product to the customer.
Benefits of Quality

• Higher customer satisfaction
• Reliable products/services
• Better efficiency of operations
• More productivity & profit
• Better morale of work force
• Less wastage costs
• Less Inspection costs
• Improved process
• More market share
• Spread of happiness & prosperity
• Better quality of life for all.
Effects of poor Quality

• Low customer satisfaction
• Low productivity, sales & profit
• Low morale of workforce
• More re-work, material & labor costs
• High inspection costs
• Delay in shipping
• High repair costs
• Higher inventory costs
• Greater waste of material
1. **Quality can and must be managed**

Many companies have wallowed in a repetitive cycle of chaos and customer complaints. They believe that their operations are simply too large to effectively manage the level of quality. The first step in the TQM process, then, is to realize there is a problem and that it can be controlled.

2. **Processes, not people, are the problem**

If your process is causing problems, it won’t matter how many times you hire new employees or how many training sessions you put them through. Correct the process and then train your people on these new procedures.

3. **Don’t treat symptoms, look for the cure**

If you just patch over the underlying problems in the process, you will never be able to fully reach your potential. If, for example, your shipping department is falling behind, you may find that it is because of holdups in manufacturing. Go for the source to correct the problem.
7 Important Principles of TQM

4. Every employee is responsible for quality

Everyone in the company, from the workers on the line to the upper management, must realize that they have an important part to play in ensuring high levels of quality in their products and services. Everyone has a customer to delight, and they must all step up and take responsibility for them.

5. Quality must be measurable

A quality management system is only effective when you can quantify the results. You need to see how the process is implemented and if it is having the desired effect. This will help you set your goals for the future and ensure that every department is working toward the same result.
7 Important Principles of TQM

6. Quality improvements must be continuous

Total Quality Management is not something that can be done once and then forgotten. It’s not a management “phase” that will end after a problem has been corrected. Real improvements must occur frequently and continually in order to increase customer satisfaction and loyalty.

7. Quality is a long-term investment

Quality management is not a quick fix. You can purchase QMS software that will help you get things started, but you should understand that real results won’t occur immediately. TQM is a long-term investment, and it is designed to help you find long-term success.
BASIC PRINCIPLES OF TQM

Approach: Management Led
Scope: Company Wide
Scale: Everyone is responsible for Quality
Philosophy: Prevention not Detection
Standard: Right First Time
Control: Cost of Quality
Theme: On going Improvement
1920: Some of the first seeds of quality management were planted as the principles of scientific management swept through U.S. industry.

1930: Walter Shewhart developed the methods for statistical analysis and control of quality.

1950:
- W. Edwards Deming taught methods for statistical analysis and control of quality to Japanese engineers & executives
- Joseph M. Juran taught the concepts of controlling quality and managerial breakthrough
- Armand V. Feigenbaum’s book *Total Quality Control* was published
- Philip B. Crosby’s promotion of zero defects paved the way for quality improvement in many companies
1968: Kaoru Ishikawa’s synthesis of the philosophy contributed to Japan’s ascendancy as a quality leader.

Today:
TQM is the name for the philosophy of a broad and systemic approach to managing organizational quality. Quality standards such as the ISO 9000 Series and quality award programs such as the Deming Prize and the Malcolm Baldridge National Quality Awards specify principles and processes that comprise TQM.
W. Edwards Deming’s 14 Points

1. Create constancy of purpose towards improvement of product and services.

2. Adopt the new philosophy. We can no longer live with commonly accepted levels of delays, mistakes, defective workmanship.

3. Cease dependence on mass inspection. Require, instead, statistical evidence that quality is built in.

4. End the practice of awarding business on the basis of price tag.
5. Find problems. It is management’s job to work continually on the system.

6. Institute modern methods of training on the job.

7. Institute modern methods of supervision of production workers. The responsibility of foremen must be changed from numbers to quality.

8. Drive out fear that everyone may work effectively for the company.
10. Eliminate numerical goals, posters and slogans for the workforce asking for new levels of productivity without providing methods.
11. Eliminate work standards that prescribe numerical quotas.
12. Remove barriers that stand between the hourly worker and his right to pride of workmanship.
13. Institute a vigorous programme of education and retraining.

14. Create a structure in top management that will push everyday on the above 13 points.
Deming’s view of a production as a system

Receipt & test of materials → Design & redesign → Consumer Research

Suppliers, materials & equipment → Production, assembly, inspection → Distribution → Consumers

Test of processes, machines, methods, cost
Deming’s Chain Reaction

**Improve Quality**
- Cost decreases because of less rework, fewer mistakes, fewer delays, snags, better use of machine time and materials

**Productivity improves**

- Capture the market with better quality and lower price

**Stay in business**
- Provide jobs and more jobs

**Capture the market with better quality and lower price**
The Deming Cycle or PDCA Cycle

**PLAN**
Plan a change to the process. Predict the effect this change will have and plan how the effects will be measured.

**DO**
Implement the change on a small scale and measure the effects.

**ACT**
Adopt the change as a permanent modification to the process, or abandon it.

**CHECK**
Study the results to learn what effect the change had, if any.
INDIAN APPROACH TO TQM

HISTORICAL PERSPECTIVE
After independence 1950 - 1990 Business scenario
Industrial growth was very slow and sluggish, Insignificant market share in world market. Thrust was towards

1) Self Reliance
2) Protection from competition
3) Nationalization

ECONOMIC REFORMS OF THE 1990s
The country’s door was opened towards foreign investments and the thrust was towards:

1) Globalization
2) Competition
3) Privatization
CRITICAL ISSUES FACED BY INDIAN INDUSTRIES

• GLOBAL MARKET SCENARIO
• TOTAL QUALITY MANAGEMENT
• PRODUCT INNOVATION
• HUMAN RESOURCE DEVELOPMENT
• NEW MARKETING STRATEGIES
DEMING PRIZE

• It was established in December 1950 in honour of W. Edward Deming
• It was originally designed to reward to Japanese companies for major advances in quality improvement
• Over the years it has grown, under the guidance of Japanese Union of Scientists and Engineers (JUSE) and it is now available to non-Japanese companies as well
INDIAN COMPANIES WINNER OF THE DEMING APPLICATION PRIZE

• Sundram Clayton brakes division (Sundaram Brake Linings), the world's first friction material company to win.
• TVS Motor Company
• MAHINDRA & MAHINDRA Ltd., the world's first tractor company to win.
• Rane Brake Lining Ltd.
• SRF limited
• Rane Engine Valve Ltd
• Rane TRW Steering Systems Ltd. (SGD)
• Krishna Maruti Ltd., Seat Division
• Rane (Madras) Ltd.
• TATA STEEL, the first integrated steel plant in Asia to win Deming award in 2008
• NATIONAL ENGINEERING INDUSTRIES LIMITED, part of the 150-year-old, multi-billion CK Birla Group. The first bearing manufacturing company to win.
MAHINDRA AND MAHINDRA

• It is one of the largest automobile manufactures in India by production and a part of the Mahindra Group Conglomerate

• It has about more than 1,44,000 employees across more than 100 countries in the world

• It was originally set up as a steel company in Ludhiana in the year 1945

• Tractor division was sellers market

• Focus was more on quality

• No emphasis on development of new models
• Manufacturing activity was more inspection oriented detection
• Interaction with suppliers purely need based
• Sales and service activity lacked standardization
• Rework rejection percentages were high
• Employee involvement in improvement activity was very limited

OTHER MAJOR TQM INITIATIVES IN INDIA

• Quality in Manufacturing – RANBAXY
• Quality in Marketing – HINDUSTAN UNILEVER
• Quality as service – HDFC
• Quality in HRD – INFOSYS
• Quality in Hospitality – OBEROI GROUP OF HOTELS
Since 2000 organizations based in India have received the most Deming Prizes; Japan is second, and Thailand is third.

Distribution of winning organizations since 2000 (including prizes for 2016)

- India – 22
- Japan – 16
- Thailand – 12
- China – 2
- USA – 2
- Singapore – 1
- Taiwan – 1

Here companies were awarded the Deming Prize this year:

- Ashok Leyland, Pantnagar Plant (India)
- Toyota Motor Kyushu (Japan)
- Maruwa Electronic & Chemical (Japan)
LEARNING AND TQM

Learning

Process Improvement

Quality Improvement

Customer Satisfaction
Shareholder Satisfaction
Employee Satisfaction
BASIC PRINCIPLES OF TQM

1. Management Commitment
2. Employee Empowerment
   - Training
   - Suggestion scheme
   - Measurement and recognition
   - Excellence teams
3. Fact Based Decision Making
   - SPC (statistical process control)
   - TOPS (Team Oriented Problem Solving)
4. Continuous Improvement
   - Systematic measurement
   - Cross-functional process management
   - Maintain and improve standards
5. Customer Focus
   - Supplier partnership
   - Service relationship with internal customers
   - Never compromise quality
Process of TQM
GROWTH OF TQM

- Japanese industries followed the path & guidance of Joseph Juran & Edward Deming for TQM, and by mid-1970s became a world leader in most industries & consumer product segments, for eg., Sony in Consumer Electronics, Toyota & Honda in 4-wheeler automobile industry, Honda & Yamaha in 2 wheeler industry etc.

- Gradually TQM spread to most of the world’s industries in Korea, Europe and USA and it was accepted as universal mantra for world class performance and excelling in individual fields of operations.
OBSTACLES FOR TQM

- LACK OF MANAGEMENT COMMITMENT
- LACK OF EMPLOYEE MOTIVATION
- INABILITY TO CHANGE ORGANISATION CULTURE
- IMPROPER PLANNING
- LACK OF CONTINUOUS TRAINING & EDUCATION
- INADEQUATE USE OF EMPOWERMENT & TEAMWORK
TQM fails because:

- Top management sees no reason for change.
- Top management is not concerned for its staff.
- Top management is not committed to the TQM programme.
- The company loses interest in the programme after six months.
- The workforce and the management do not agree on what needs to happen.

- Urgent problems intervene.

- TQM is imposed on the workforce, which does not inwardly accept it.

- No performance measure or targets are set, so progress cannot be measured.

- Processes are not analyzed, systems are weak and procedures are not written down.
What is ISO 9001:2008?

➢ ISO = International Organization for Standardization
➢ ISO has representation from 162 countries and has issued many standards
➢ ISO 9001:2008 is a model for a quality management system.
Who created the standard?

- International Organization for Standardization - Geneva
- Standards created in 1987
  - To eliminate country to country differences
  - To eliminate terminology confusion
  - To increase quality awareness
ISO 9000:2005 Consists of 3 Areas


Management responsibility  Resource management  Product/service realization
Measurement, analysis, improvement

ISO 9001 is a generic standards. **Generic** means that the same standards can be applied:

- to any organization, large or small, whatever its product or service,
- in any sector of activity, and
- whether it is a business enterprise, a public administration, or a government department.
Generic also signifies that
➢ no matter what the organization's scope of activity
➢ if it wants to establish a quality management system, ISO 9001 gives the essential features
Certification and registration

- **Certification** is known in some countries as registration.
- It means that an **independent, external body** has audited an organization's management system and verified that it conforms to the requirements specified in the standard (ISO 9001).
- **ISO does not carry out certification** and does not issue or approve certificates,
Accreditation

➢ **Accreditation** is like certification of the certification body.

➢ It means the formal approval by a specialized body - an accreditation body - that a certification body is competent to carry out ISO 9001:2008 certification in specified business sectors.

➢ Certificates issued by accredited certification bodies - and known as *accredited certificates* - may be perceived on the market as having increased credibility.

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Certification is not a requirement of ISO 9001.

- The organization can implement and take benefit from an ISO 9001 system without having it certified.
- The organization can implement them for the *internal benefits* without spending money on a certification programme.
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Certification is a business decision

- Certification is a decision to be taken for business reasons:
  - if it is a contractual, regulatory, or market requirement,
  - If it meets customer preferences
  - if it will motivate staff by setting a clear goal.
Ten Steps to ISO Registration

1. Set the registration objective
2. Select the appropriate standard
3. Develop and implement the quality system
4. Select a third-party registrar and apply
5. Perform self-analysis audit
6. Submit quality manual for approval
7. Pre-assessment by registrar
8. Take corrective actions
9. Final assessment by registrar
10. Registration!
What is a Quality Management System?

➢ A Quality Management System is a web of interconnected processes that are used to manage a business.
Operating Cycle of ISO.

➢ The Plan – Do – Check – Act (PDCA) cycle is the **operating principle** of ISO's management system standards

➢ **Plan** – establish objectives and make plans (analyze your organization's situation, establish your overall objectives and set your interim targets, and develop plans to achieve them).

➢ **Do** – implement your plans (do what you planned to).

➢ **Check** – measure your results (measure/monitor how far your actual achievements meet your planned objectives).

➢ **Act** – correct and improve your plans and how you put them into practice (correct and learn from your mistakes to improve your plans in order to achieve better results next time).
ISO 9001:2008

CONTINUAL IMPROVEMENT OF THE QUALITY MANAGEMENT SYSTEM

- Measurement, analysis and improvement
- Product realization
- Resource management
- Management responsibility

Clause 5
Clause 6
Clause 7
Clause 8

Customers
Satisfaction
Input
Output

Value adding activities
Information flow
PROCESS REQUIREMENTS

- With What? (Materials / Equipment)
- Objectives and Targets
- WHO? Special Skills? / Competence?
- Inputs
- Outputs
- How? (Methods / Procedure)
- Process Linkages
- Measure
A Quality Management Principle is a comprehensive and fundamental rule or belief, for leading and operating an organization, aimed at continually improving performance over the long term by focusing on customers while addressing the needs of all stakeholders.
8 Management Principles

➢ Principle 1 : Customer Focus
➢ Principle 2 : Leadership
➢ Principle 3 : Involvement Of People
➢ Principle 4 : Process Approach
➢ Principle 5 : System approach to management
➢ Principle 6 : Continual Improvement
➢ Principle 7 : Factual approach to decision making
➢ Principle 8 : Mutually beneficial supplier relationships
Principle 1 : Customer Focus

➢ Organizations depend on their customers & therefore should understand current & future customer needs, should meet customer requirements & strive to exceed customer expectations.
Principle 2 : Leadership

- Leaders establish unity & direction of the organization. They should create & maintain the internal environment in which people can become fully involved in achieving the organization's objectives.
Principle 3: Involvement Of People

➢ People at all levels are the essence of an organization and their full involvement enables their abilities to be utilized for the organization's mutual benefit.
Principle 4 : Process Approach

➢ The application of a system of processes within an organization, together with the identification and interaction of these processes, and their management to produce the desired outcome, can be called “Process Approach”
Principle 5 : System approach to management

- Identifying, understanding & managing interrelated processes as a system contributes to the organization's effectiveness & efficiency in achieving its objectives.
Principle 6: Continual Improvement

Continual Improvement of the organization's overall performance should be the primary driver of the organization's Quality Management System.
Principle 7: Factual approach to decision making

➢ Effective decisions are based on the analysis of data & information
Principle 8: Mutually beneficial supplier relationships

- An organization & its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value
Clauses of ISO 9001-2008

- 1. Scope
- 2. Normative References
- 3. Term & Definitions
- 4. Quality Management System
- 5. Management Responsibility
- 6. Resources Management
- 7. Product Realization
- 8. Measurement, Analysis and Improvement
Quality is a Journey, not a Destination