

Total Quality Management



Dr. Vaishali P. Nagulwar

Assistant Professor,

Government College of Pharmacy, Amravati, M.S.

India-444 604

International Organization For Standardization

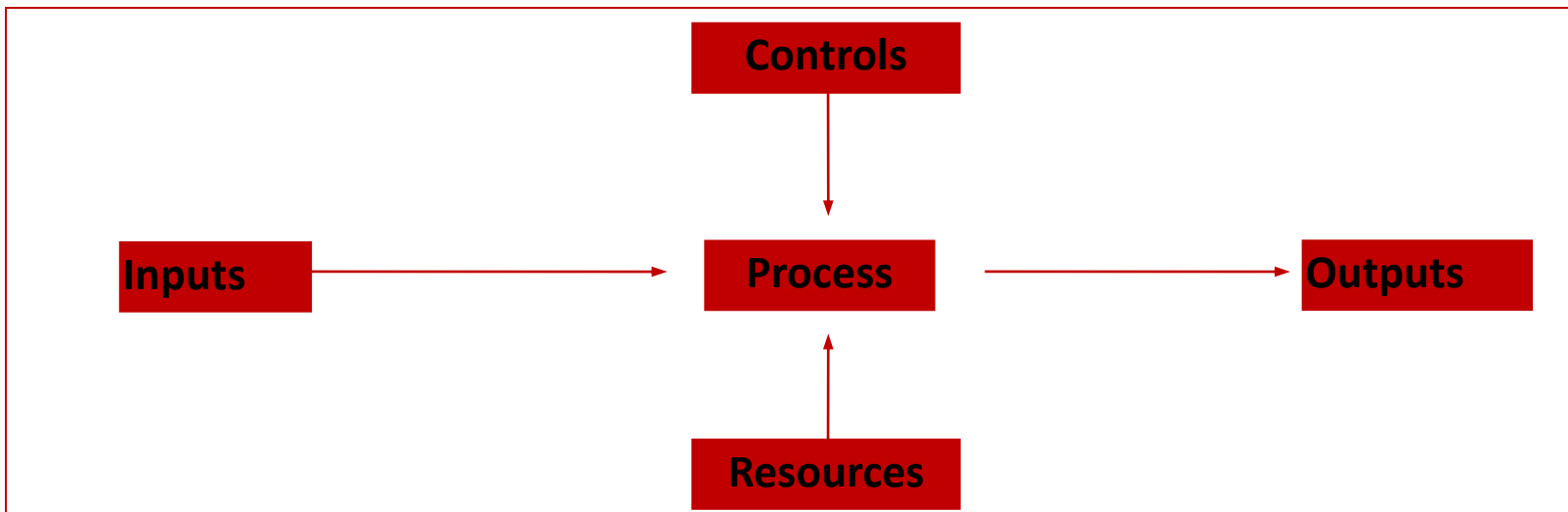
ISO 8402:1994

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 society.

A fundamental concept of TQM from BS 7850 –

A Process- *“A set of inter-related resources and activities which transform inputs into outputs.” (ISO 8402)*

The Simple Process- *“Any activity that accepts inputs, adds values to these inputs for customers, and produces outputs for these customers. The customers may be either internal or external to the organization.” (BS 7850)*



Recognizing and rewarding Quality

Promotion of high quality goods and services



- **Deming Prize** - **1951**(Japan)- aims to achieve organizational quality
- **Malcolm Baldrige National Quality Award (MBNQA)**-**1987** (United States)- aims to achieve organizational performance via business results, because American firms demand that TQM must have an impact on business results such as profit, market share, sales, and revenue
- **European Quality Award** -**1992**(European Union)- aims to achieve business excellence
- **ISO9000 certification** **1987** - aims to set up quality system in organizations

Baldrige Excellence Framework

In the United States, the Baldrige Award, created by Public Law 100–107, annually recognizes American businesses, education institutions, health care organizations, and government or nonprofit organizations that are role models for organizational performance excellence.



Organizations are judged on criteria from 7 categories:

- Leadership
- Strategy
- Customers
- Measurement, analysis, and knowledge management
- Workforce
- Operations
- Results

Total Quality Management (TQM) –

- It is a comprehensive and structured approach to organizational management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback.
- TQM requirements may be defined separately for a particular organization or may be in adherence to established standards, such as the International Organization for Standardization's **ISO 9000** series.
- As a current focus of **e- business**, TQM is based on quality management from the customer's point of view.
- There are approximately 350,000 ISO 9000-certified organizations in over 150 countries.
- The Technical Committee (TC) behind ISO 9000 is TC 176.



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Implementing TQM approach come from the teachings of such quality leaders as–

Philip B. Crosby

W. Edwards Deming

Armand V. Feigenbaum

Kaoru Ishikawa

Joseph M. Juran

History began initially as a term coined by the Naval Air Systems Command to describe its Japanese-style management approach to quality improvement.

1920s- Start of quality management as the principles of scientific management swept through U.S. industry.

1930s- [Walter Shewhart](#) developed methods for statistical analysis and control of quality.

1950s- [W. Edwards Deming](#) taught methods for statistical analysis and control of quality to Japanese engineers and executives.

[Joseph M. Juran](#) taught the concepts of controlling quality and managerial breakthrough.

[Armand V. Feigenbaum](#)'s book *Total Quality Control*, a forerunner for the present understanding of TQM, 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- Quality standards [ISO 9000 series](#) and quality award programs -Deming Prize and the [Malcolm Baldrige National Quality Award](#) specify principles and processes that comprise TQM.

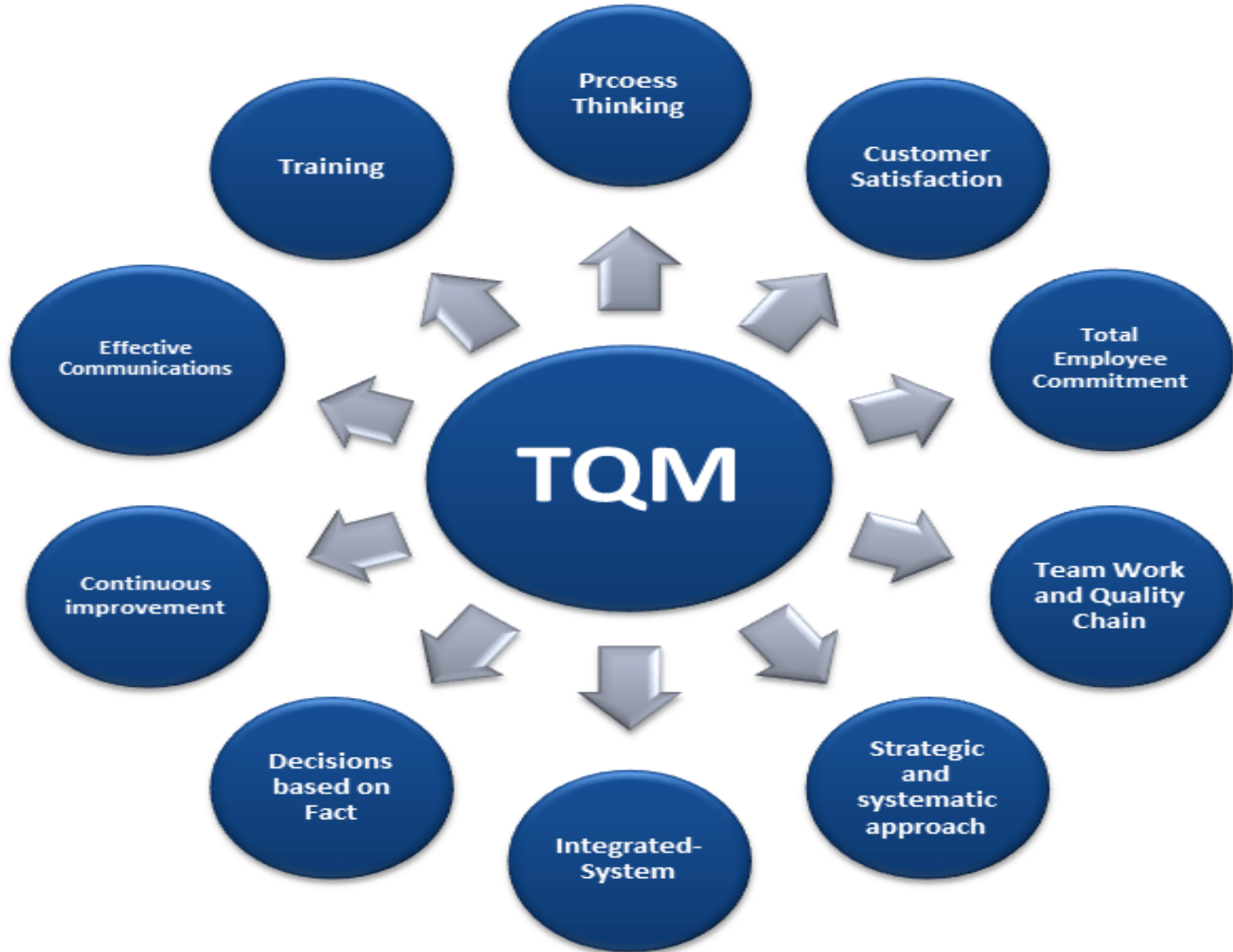
Deming's 14 Points on Quality Management

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.

Deming's 14 points on Quality Management

9. Drive out fear.
10. Break down barriers between staff areas.
11. Eliminate slogans, exhortations and targets for the workforce.
12. Eliminate numerical quotas for the workforce and numerical goals for management.
13. Remove barriers that rob people of pride of workmanship, and eliminate the annual rating or merit system.
14. Institute a vigorous program of education and self-improvement for everyone. Put everybody in the company to work accomplishing the transformation.

The Primary Elements of TQM



Seven principles - Gerald F. Smith 'Quality Problem Solving'-

- (i) Strive the quality in all things.
- (ii) The customer is the criterion of quality.
- (iii) Improve the process or system by which products are produced.
- (iv) Quality improvement is continuous and never ending activity.
- (v) Workers, involvement is essential.
- (vi) Ground decisions and actions in knowledge.
- (vii) Encourage team work and co-operation.



Five Principles of TQM to exceed customer expectations:

- Produce quality work the first time
- Focus on the customer
- Have a strategic approach to improvement
- Improve continuously
- Encourage mutual respect and teamwork



According to Certified Manager of Quality/Organizational Excellence Handbook following are the direct and indirect benefits , TQM can offer organizations:

- 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



How to Implement Total Quality Management?

1. **C**ommitment from Employees

2. Quality Improvement **C**ulture

3. **C**ontinuous Improvement in Process

4. **C**o-operation from Employees

5. Focus on **C**ustomer Requirements

6. Effective **C**ontrol shall be laid down

Five Strategies To Develop the TQM Process

Strategy 1: The TQM element approach(1980's)

Quality circles, statistical process control, Taguchi methods, quality function deployment

Strategy 2: The guru approach

Managers might study [Deming's 14 points](#)



Strategy 3: The organization model approach (Late 1980's)

Initial recipients of the [Malcolm Baldrige National Quality Award](#)

Strategy 4: The Japanese total quality approach

Florida Power and Light won the Deming Prize

Strategy 5: The award criteria approach

Deming Prize, European Quality Award,

or [Malcolm Baldrige National Quality Award](#), to identify areas for improvement

Total Quality Management (TQM) Tools-

- Help organizations to identify, analyze and assess qualitative and quantitative data that is relevant to their business.
- Each of which can be examined and used to enhance the effectiveness, efficiency, standardization and overall quality of procedures, products or work environment, in accordance with ISO 9000 standards (SQ, 2004).



TQM tools illustrate and aid in the assimilation of complicated information such as:

- 1) Identification of your target audience
- 2) Assessment of customer needs
- 3) Competition analysis
- 4) Market analysis
- 5) Brainstorming ideas
- 6) Productivity changes
- 7) Various statistics
- 8) Staff duties and work flow analysis
- 9) Statement of purpose
- 10) Financial analysis
- 11) Model creation
- 12) Business structure
- 13) Logistic analysis

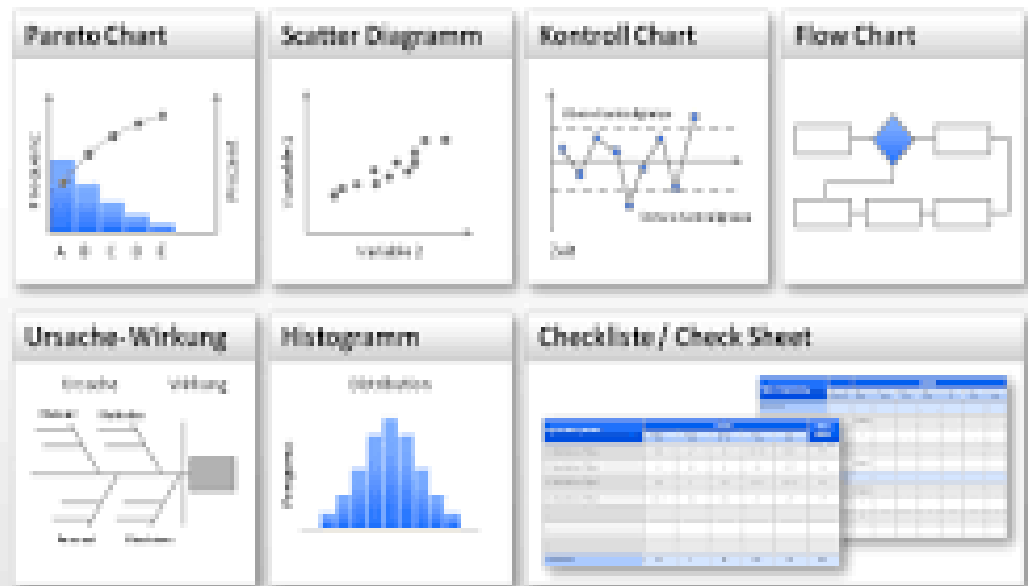


THE SEVEN CLASSIC QUALITY TOOLS

Die 7 klassischen Tools für Qualität

Die geläufigsten Qualitätssicherungshilfsmittel, die zur schnellen Behebung der meisten qualitätsverwandten Belange dienen

- 1- Pareto chart
- 2- Histogram
- 3- Fish Bone
- 4- Flow Chart
- 5-Check points
- 6- Scatter Diagram
- 7- Control Charts



Basic management & planning tools.

1- Activity Network Diagram

2- Affinity diagram

3- Interrelationship Diagram

4- Matrix Diagram

5- Priorities Matrix

6- Process Decision

7- Tree Diagram

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Process Improvement Tools

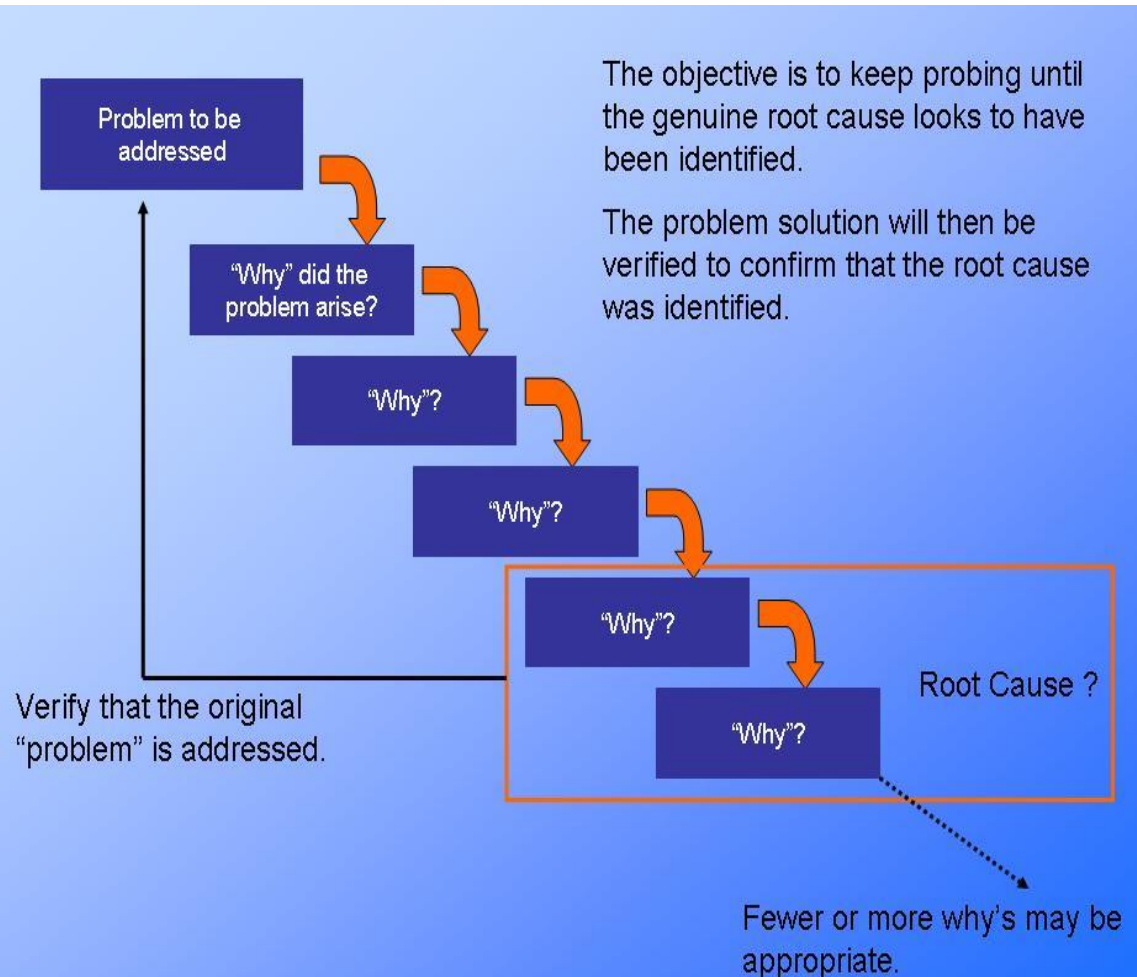
1- Root cause analysis

2- Five Whys

3- PDCA-PDSA

4- SIPOC

5- FMEA



Innovation & creativity tools

- 1- Creative thinking
- 2- Brainstorming
- 3- Mind Mapping
- 4- Analogies
- 5- Lateral thinking
- 6- Triz
- 7- SCAMPER

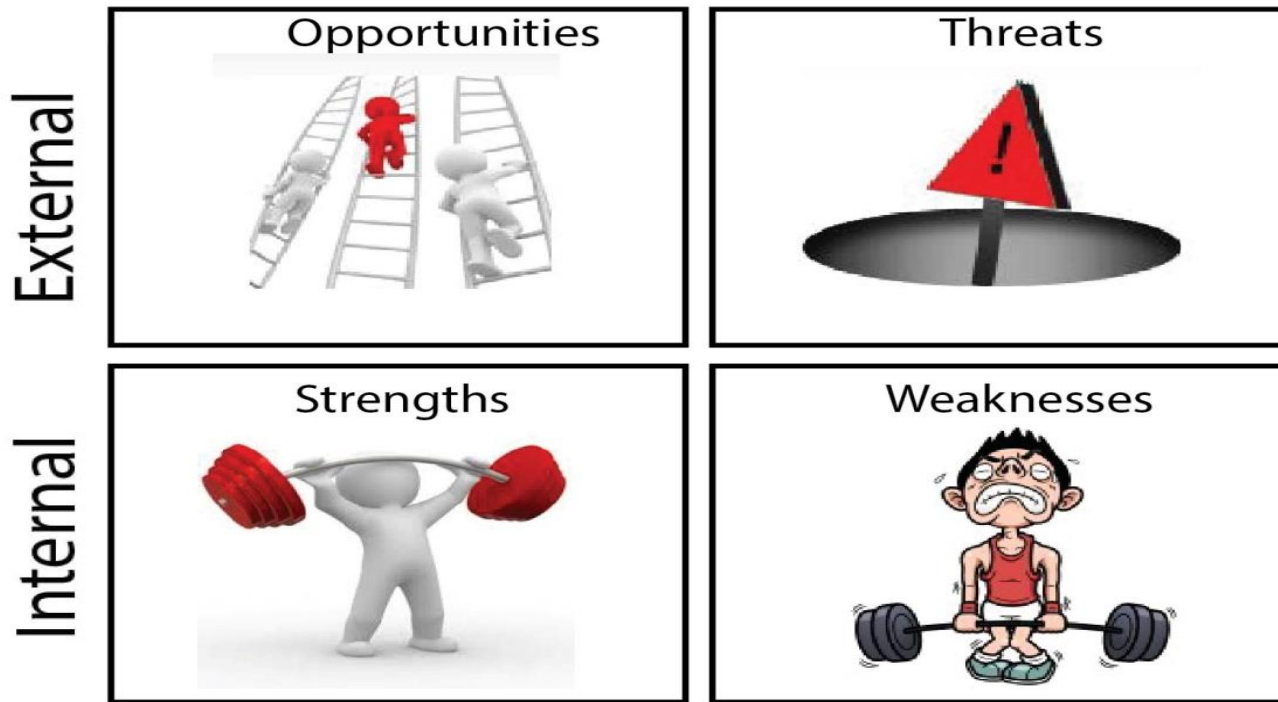


Lean Six Sigma Tools



- 1- Anova
- 2- balanced-scorecard
- 3- Capability
- 4-Chi-Square
- 5-Kanban
- 6-Level-Mix
- 7-Mistake-proofing
- 8-OEE
- 9-One-Piece-Flow
- 10-Priorities-matrix
- 11-Quick-Changeover
- 12-project-selection
- 13-Regression
- 14-SMED
- 15-Spaghetti
- 16-Standard-Work
- 17-Statistical-Process-Control
- 18-Takt-Time
- 19-Total-Productive-Maintenance
- 20- value-stream-mapping
- 21- CAPA

SWOT-



- It focuses on the internal strengths and weaknesses of you, your staff, your products, and your business
- At the same time, it looks at the external opportunities and threats that may have an impact on your business, such as market and consumer trends, changes in technology, legislation, and financial issues
- It is a good way to better understand a business and its markets

The essence of the SWOT analysis is to discover

- What you do well
- How you could improve
- Whether you are making the most of the opportunities around you
- Whether there are any changes in your market such as -
 - Technological developments,
 - Mergers of businesses,
 - Unreliability of suppliers—that may require corresponding changes in your business.

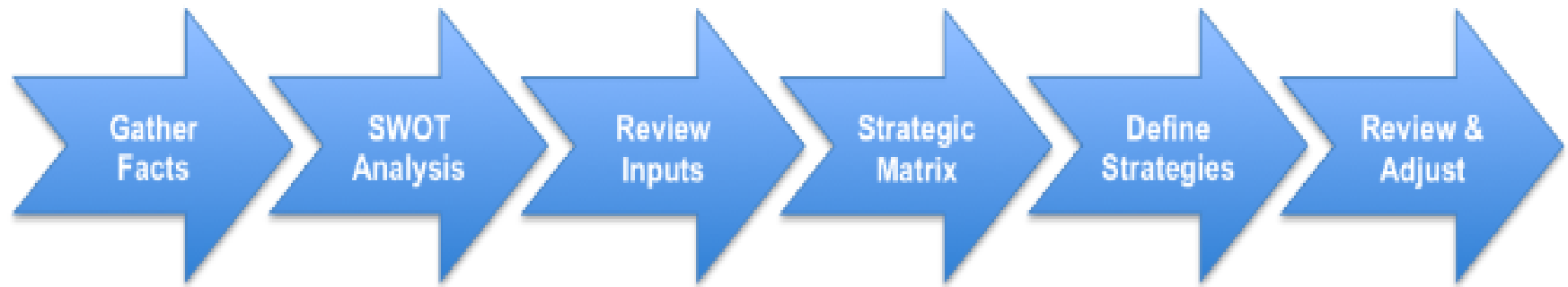


Benchmarking

- It is the process of comparing the cost, cycle time, productivity, or quality of a specific process or method to another that is widely considered to be an industry standard or best practice.
- It provides a snapshot of the performance of your business and helps you understand where you are in relation to a particular standard.
- Also referred as "best practice benchmarking" or "process benchmarking"-process used in management and particularly **strategic management**, in which organizations evaluate various aspects of their processes in relation to best practice, usually within a peer group defined for the purposes of comparison.
- This then allows organizations to develop plans on how to make improvements or adopt best practice, usually with the aim of increasing some aspect of performance.
- Benchmarking is often treated as a continuous process in which organizations continually seek to challenge their practices.



Strategic Plan Process



Gather Inputs

- From all Stakeholders
- Customer analysis
- Competitor analysis
- Industry analysis
- Environmental
- Company performance
- Company

SWOT Analysis

- External Analysis
 - Opportunities
 - Threats
- Internal Analysis
 - Strengths
 - Weaknesses
- Strategic Questions
- Strategic Issues

Review Inputs

- All Stakeholders
- Review Inputs
- Review SWOT Analysis
- Define 3-4 key statements

Strategic Matrix

- All Stakeholders
- Define Strategies to address SWOT combinations:
 - Opportunities vs Strengths
 - Opportunities vs Weaknesses
 - Threats vs Strengths
 - Threats vs

Define Strategies

- Objectives
- Key Strategies
- Short and Long Term Goals
- Operational Plans

Final Reviews

- All Stakeholders
- Review Strategies
- Review Goals
- Review Plans
- Adjust as necessary

Types of benchmarking

- 1) Process benchmarking
- 2) Financial benchmarking
- 3) Performance benchmarking
- 4) Product benchmarking
- 5) Strategic benchmarking
- 6) Functional benchmarking



The 5 requirements for effective leadership



- Developing and publishing corporate beliefs, values and objectives, often as a mission statement
- Personal involvement and acting as role models for a culture of total quality
- Developing clear and effective strategies and supporting plans for achieving the mission and objectives.
- Reviewing and improving the management system
- Communicating, motivating and supporting people and encouraging effective employee participation

Advantage of TQM:

- 01.Improves reputation- faults and problems are spotted and sorted quicker.
- 02.Higher employee morale- workers motivated by extra responsibility, team work and involvement in decisions of TQM
- 03.Lower cost –decrease waste as fewer defective products and no need for separate.
- 04.Quality control inspector

Disadvantage of TQM:

- 01.Initial introduction cost.
- 02.Benefits may not be seen for several years.
- 03.Workers may be resistant to change.



Total Quality Management in Pharmaceuticals

- Implementation of an effective quality assurance policy is the most important goal of pharmaceutical industry.
- The concept of quality assurance and quality control together develops towards assuring the quality, safety and efficacy of pharmaceutical products.
- Thus, quality is critically important ingredient to organizational success today which can be achieved by total quality management (TQM), an organizational approach that focuses on quality as an over arching goal, **aimed at the prevention of defects rather than detection of defects.**
- It is a philosophy and practice of integrative quality management system adopted worldwide in pharmaceutical industries along with other regulatory requirements.



Eight dimensions of quality → Organizational success

1. **Performance**: Product's primary operating characteristics.
2. **Features**: Supplements to a product's basic functioning characteristics.
3. **Reliability**: A probability of not malfunctioning during a specified period.
4. **Conformance**: The degree to which a product's design and operating characteristics meet established standards.
5. **Durability**: A measure of product life.
6. **Serviceability**: The speed and ease of repair.
7. **Aesthetics**: How a product looks, feel, tastes and smells.
8. **Perceived quality**: As seen by a customer.





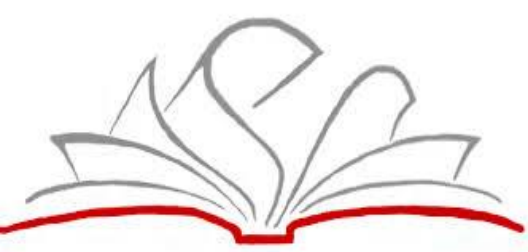
TQM- Review of Pharmaceutical Industries

1. Sudhanshu Bala Singh & Dr. R. S. Dhalla-

- Surveyed and reviewed various Quality Management practices including ISO implementation in Indian pharmaceutical industries to explore the relationship between Total Quality Management practices & performance of the company.
- It also attempts to identify and analyze the significant factors affecting Total Quality Management implementation in Indian Pharmaceutical Industries.
- Another concept of TQM is continuous improvement or **KAIZEN**- A regular habit of thinking new ideas.

There are two approaches adopted by the companies for continuous improvement:

- a. The PDCA cycle: Plan-Do-Check-Act and
- b. Benchmarking



2. *Motwani et al. (1994)* conducted a study-

- To identify the degree to which quality management practices were present in Indian manufacturing organizations.
- The study showed that the modern concepts of quality management were practiced by the large Indian manufacturing organizations.
- Quality certification is becoming an acceptable way of enforcing quality concepts in India.
- According to a 1995 survey (Confederation of Indian Industries, 1995) among ISO 9000 certified companies, 54 % of 330 respondents stated that there had been an improvement in their product and process quality after obtaining certification.



3. **Gupta A.** conducted study on-

- Quality Management Practices of *ISO vs non-ISO* organizations in India suggest that ISO and non-ISO organizations do differ in their quality management practices.
- ISO 9000 registered manufacturing organizations in this study had formal commitment to quality management.



4. Relationship of Total Quality Management With Company's performance in Indian Pharmaceutical Industries- (Sudhanshu Bala Singh & Dr. R. S. Dhalla)

An attempt has been made to survey and review the Quality Management Practices including ISO implementation, and further analyze the significant factors affecting the implementation of TQM in Indian pharmaceutical industries.

1. The questionnaire used in the works of *Kakkar and Narang (2007)* was modified and customized to the specific requirements of the Indian Pharmaceutical Industry.
2. This questionnaire was circulated to select respondents in the Indian pharmaceutical industry as part of the pilot study.
3. Based on the responses received in the pilot study, **the main factors affecting the implementation of TQM were:**
 - Top Management Commitment**
 - Leadership**
 - Quality Management**
 - People Management and Training**
 - Customer Focus**
 - Supplier Quality**



5. S. Poongothai et al's survey –

- Two generic drug manufacturing companies situated within Chennai (Orchid chemicals and Pharmaceuticals Ltd & Madras Pharmaceuticals Ltd.) on the road to TQM implementation were chosen and responses from 100 employees from top management to the lowest level were collected.
- Pearson's correlation- to study the effect of TQM principles on some of its well known recompenses.
- On analysis of the views of the respondents, it was shown that the **TQM principles and its effects have direct correlation with each other.**

Conclusion was –

- TQM encourages participation amongst all the employees and customers.
- Using quality management, rework reduction to nearly zero is an achievable goal.
- The negative cost of quality, which includes errors, delays, rework, etc., is estimated to be 30 % of the cost of construction, not including dissatisfied customers who do not come back.
- There is high correlation between TQM principles such as training for process improvement, supplier management with reduced number of defects, cost of production and employee morale.

Total Quality Management Resources

BOOKS

[The Certified Manager of Quality/Organizational Excellence Handbook, Fourth Edition](#)

[From Quality to Business Excellence: A Systems Approach to Management](#)

[Juran, Quality, and a Century of Improvement](#)

[Insights to Performance Excellence 2013-2014](#)

STANDARDS

[ANSI/ISO/ASQ Q9001-2008: Quality management systems — Requirements](#)

[ANSI/ISO/ASQ QE19011S-2008: Guidelines for management systems auditing — U.S. Version with supplemental guidance added](#)

CERTIFICATION

[Manager of Quality/Organizational Excellence Certification — CMQ/OE](#)

COURSES

[Quality 101](#)

[Introduction to Quality Management](#)

[Certified Manager of Quality/Organizational Excellence Certification Preparation](#)

ARTICLES

[A Comprehensive Approach to Quality Aims at Inclusive Growth: Continual Improvement as a Management Imperative](#) **OPEN ACCESS**

[Adapting TQM to Change Indian Bureaucracy: A View From Inside](#)

[Guru Guide](#) **OPEN ACCESS**

[Total Quality, Total Commitment](#) **OPEN ACCESS**

[TQM and Teamwork Effectiveness: The Intermediate Role of Organizational Design](#)

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1. <http://asq.org/Knowledge-centre>
2. Principles of Total Quality Management in Small Business Environment, John T. Williams, Demand Media
3. Sudhanshu Bala Singh , Dr. R. S. Dhalla, Effect of Total Quality Management on Performance of Indian Pharmaceutical Industries, Proceedings of the 2010 International Conference on Industrial Engineering and Operations Management. Dhaka, Bangladesh, January 9 –10, 2010.
4. Asian Journal of Biochemical and Pharmaceutical Research Issue 2 (Vol. 1) 2011, Total Quality Management: The Path for Continuous Quality Enhancement In Pharmaceutical Sector, S. Poongothai R. Ilavarasan L. Karthikeyan S.Arul

Thank you!

