

INTRODUCTION :-

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.

It is being increasingly recognized that a high quality of product and service and their associated customer satisfaction are the key to survival for any enterprise. The nature of the current world wide competition generally demands from any corporation the following four types of ability characteristics.

To understand what the customer wants and to provide it immediately on demand at the lowest cost.

To provide products and services of high quality and reliability consistently.

To keep up with the pace of change, technological as well as political and social.

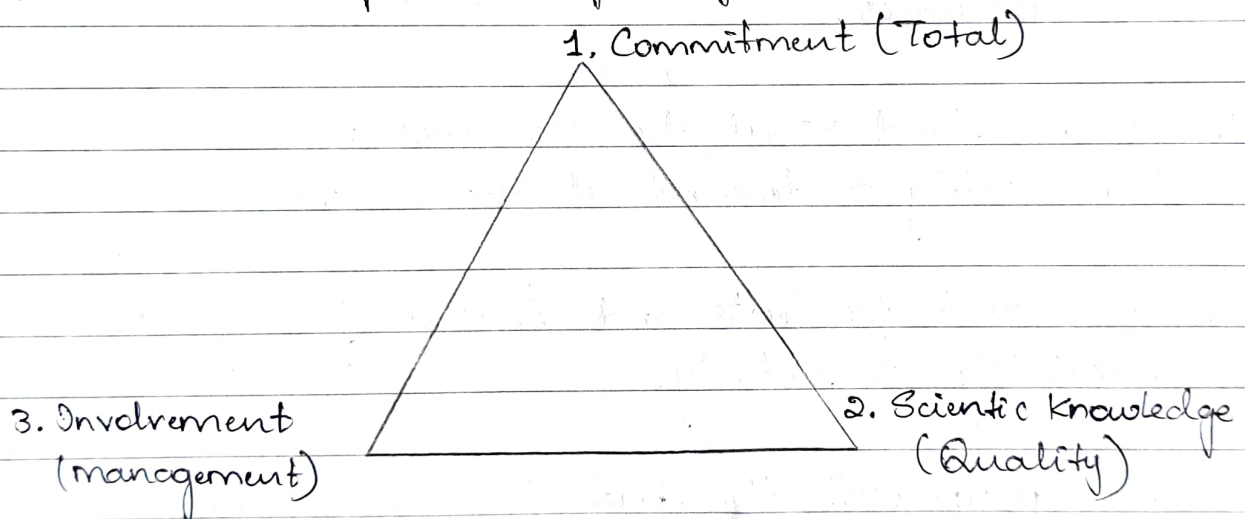
To be one step ahead of the customer's needs that is, to predict what the customer will want one year (or) ten years from now.

Quality → Fitness to use → Degree of excellence.
→ Fitness to standard
→ Fitness to cost
→ Zero defects

DEFINITION OF TQM :-

Total → Made up of the whole.
Quality → Degree of excellence a product (or) Service Provides.
Management → Act, art (or) manner of handling

∴ TQM is the art of Managing the whole to achieve excellence. TQM is defined as both a philosophy and a set of guiding principles that represent the foundation of a continuously improving Organisation.



"BASIC APPROACH TO TQM"

TQM requires Six basic Concepts.

1. A committed and involved management provide long-term top-to-bottom Organization 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 Process.
- These concepts outline an excellent way to run an Organization. A brief paragraph on each of them is given here.

1. Management must participate in the quality program. A quality council must be established to develop a clear vision. Set long-term goals, and direct the program. Quality goals are included in the business plan. An annual quality improvement program is established and involves input from the entire work frame. TQM must be communicated to all people.
2. The key to an effective TQM program is its focus on the customer. An excellent place to start is by satisfying internal customers. We must listen the voice of the customer and emphasize design, quality and defect prevention. The customer Satisfaction is the most important consideration.
3. TQM is an Organization wide challenge that is everyone's responsibility. All personnel must be trained in the TQM, Statistical process control and other appropriate quality improvement skills so they can effectively participate on Project teams.

4. There must be a continued striving of to improve all business and production process. Quality improvement projects, such as on-time delivery, order entry efficiently, billing error rate, customer satisfaction, cycle time, scrap reduction and supplier management, are good places to begin. Technical techniques such as SPC (Statistical Process Control), Benchmarking quality function development (QFD) ISO 9000 and designed experiments must be excellent for problem solving.
5. On the average 40% of the sales dollar is purchased product (or service). Therefore, the supplier quality must be outstanding. A partnering relationship rather than an adversarial one must be developed. Both parties have a much to gain (or lose) based on success (or failure) of the product (or service). Suppliers should be few in number so that true partnering can occur.
6. Performance measures such as uptime, ~~percent~~ ^{Percent} non-conforming, absenteeism and customer satisfaction should be determined for each functional area. These measures should be posted for everyone to see. Quantitative data are necessary to measure the continuous quality improvement activity.

GURUS OF TOTAL QUALITY MANAGEMENT.

Shewart

Walter. A. Shewart, PhD, spent his professional career at Western Electric and Bell Telephone Laboratories. Both divisions of AT&T. He developed control chart theory with control limits, assignments and chance causes of variation, and rational subgroups. In 1931, he authored. Economic Control of Quality of Manufactured Product.

Deming

W. Edwards Deming, Ph.D was a protege of Shewart. In 1950. he taught Statistical Process Control and the importance of quality to the leading CEO's of Japanese industry. He is credited with providing the foundation for the Japanese quality miracle and resurgence as an economic power. Deming is the best-known quality expert in the world. He authored a number of books including Out of the Crisis and Quality, Productivity and Competitive Position as well as 161 scholarly studies.

Juran

Joseph. M. Juran, Ph.D worked at Western Electric from 1924 to 1941. There he was exposed to the concepts of Shewart. Juran travelled to Japan in 1954 to teach quality management. He recommended projects improvements based on return on investment to achieve break through results. In 1951, the first edition of Juran's Quality Control Handbook was

Published.

FEIGENBAUM:-

Armand V. Feigenbaum, Ph.D. argues that total quality control is necessary to achieve Productivity, Market penetration and Competitive advantage. Quality begins by identifying the customers requirements and ends with Product (or) Service in hands of a Satisfied customer. In addition to customer Satisfaction. Some of feigenbaum quality principles are genuine management involvement, employee involvement, First-line supervision leadership and company wide quality control. In 1951, he authored total quality control.

ISHIKAWA

Kaoru Ishikawa, Ph.D, Studied under Deming, Juran and Feigenbaum. He borrowed the total quality control concept and adapted it for the Japanese. In addition, he authored SPC texts in Japanese and in english. Ishikawa best known for the development of the cause and effect diagram. He developed the quality circle concept in Japan where by work groups, including their supervisor, were trained in SPC concepts.

CROSBY.

Philip B. Crosby authored his first book quality is free, in 1979, which was translated into 15 languages. It sold

1.5 million copies and changed the way management looked at quality. He agreed that "doing it right the first time" is less expensive than the cost of detecting and correcting non conformities. In 1984 he authored quality without tears, which contained his four absolutes of quality management. These absolutes are quality is conformance to requirements, prevention of non conformance is the objective not appraisal, the performance standard is Zero defects.

TAGUCHI

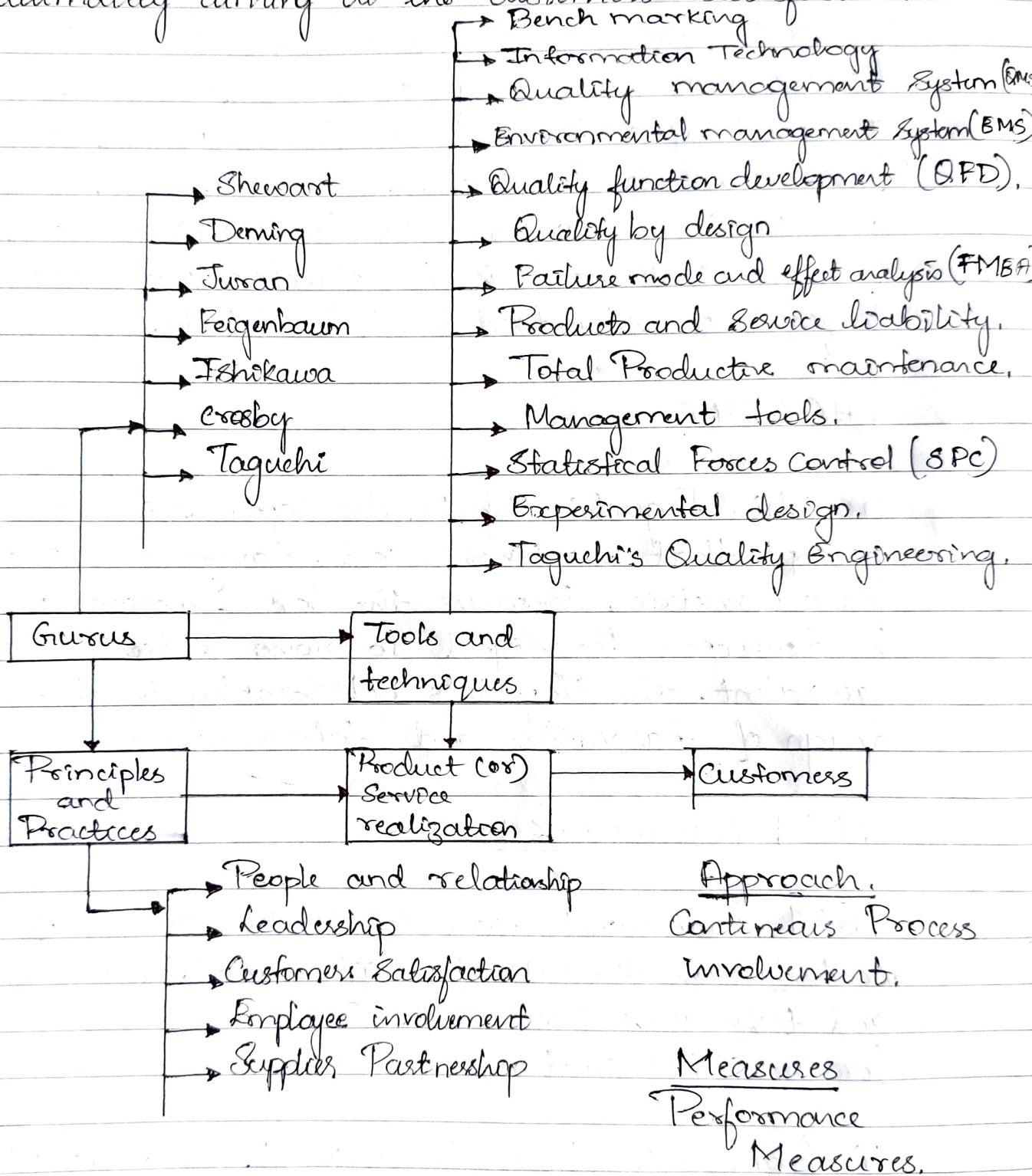
Genichi Taguchi, Ph.D, developed his loss function concept that combines, cost, target and Variation in to one metric. Because the loss function is reactive, he developed the signal to noise ratio as a proactive equivalent. The Taguchi's philosophy is the robust design of parameters and tolerances.

TQM Framework :-

TQM framework consists of the gurus of TQM, their contributions towards principles and practices and tool and techniques for TQM. Figure shows the framework for the TQM system.

The framework shows the principles and practices of TQM in the form of people and relationship. The framework also contains different tools and techniques developed by these gurus. The principle and practices and tools

and techniques are for product (or) service and realization ultimately aiming at the customers Satisfaction.



Obstacles / Barriers for TQM :-

a. Lack of management Commitment.

The purpose must be clearly and continuously communicated to all personnel. Management must consistently apply the principles of TQM.

b. Inability to change over to new culture.

Individual resist change - they become accustomed to doing a particular process and it becomes the preferred way. Management must understand and utilize the basic concepts of change.

c. Improper Planning :-

All constituents of the Organization must be involved in the development of the implementation plan and any modifications that occur as the plan evolves.

Customer Satisfaction should be the goal rather than financial (or) Sales goals.

d. Lack of continuous Training and Education:

Training and education is an ongoing process for everyone in the Organization.

Training and education are most effective when senior management conducts the training on the principles of TQM.

e. Incompatible Organizational Structure and isolated Individuals and departments.

Differences between departments and individuals can create implementation problems. The use of multi-functional team will help to break down long-standing barriers.

f. Ineffective Measurements Techniques and Lack of Access to data and Results.

In order to improve a process it's required to measure the effect of improvement ideas. Access to data and quick retrieval is necessary for effective processes.

g. Paying Inadequate attention to internal and external Customers.

Organizations need to understand the changing needs and expectations of their customers. Effective feedback mechanism that provide data for decision making are necessary for this understanding.

h. Inadequate Use of Empowerment and Teamwork.

Teams need to have the proper training and individuals should be empowered to make decisions that effect the efficiency of their process or the satisfaction of their customers.

i. Failure to Continually Improve.

A lack of continuous improvement of the processes, product, and/or service will lead to failure.

Benefits of TQM:-

Implementation of TQM has two types of benefits to the Organization. They are.

- a) Tangible (or) direct benefits.
- b) Intangible (or) indirect benefits.

Tangible Benefits :-

- a. Better quality product
- b. Improvement in productivity
- c. Reduced quality costs.
- d. Increased market
- e. Increased profitability
- f. Reduced employee grievances.

Intangible Benefits :-

- a. Effective team work.
- b. Enhancement of job interest
- c. Improvement in human relation and work area morale.
- d. Participation culture of the employees.
- e. Customer Satisfaction.
- f. Enhanced problem Solving Capacity.
- g. Better image of the Organization.

Quality Management System (QMS)

Quality System is defined as "the collective plans, activities and events that are provided to ensure that a product, process (or) service will satisfy the given needs."

ISO 9000 : International Organization for Standards.

To standardize quality requirement a common organization called "International Organization for Standards" was founded in 1946 in Geneva, Switzerland. The purpose of this Organization is to promote the development of international standards for quality to facilitate exchange of goods and services worldwide.

The ISO Technical Committee developed a series of international standards for quality system which were first published 1989. This technical committee originally issued six series of internationally agreed-upon standards. They are ISO 9000, ISO 9001, ISO 9002, ISO 9003, ISO 9004 and ISO 8402. Each of the above standards contains specific guidelines pertaining to a certain segment of quality-related activities.

The above standards are a minimum acceptable level of standards that an organization should meet in order to receive the "ISO 9000 accreditation (or) certification".

Objectives of ISO 9000

1. To achieve, maintain and seek to continually improve product quality (including services) with reference to the requirement.
2. To improve quality of operations and process to meet the customer's and stakeholders stated or implied need.
3. To provide confidence to internal management and employee of the organization, that quality requirements are being fulfilled and that improvement is taking place.
4. To provide confidence to customers and other stakeholders that quality requirements are achieved in product delivered.
5. To provide confidence that quality system requirements fulfilled.

Structure of ISO quality Standards ISO 9000 Series

ISO 9000-2000 - Quality Management System (QMS) - deals with fundamental and vocabulary - Discusses fundamental concepts related to the QMS and provides the terminology used in other standards.

ISO 9001-2000 - Quality Management System (QMS) - requirements is the standard used for registration by demonstrating conformity of the QMS to customers regulatory and the organization's own requirement.

ISO 9004 - 2000 - Quality Management System (QMS) guidelines for performance improvement - provides guidelines that an Organization can use to establish a QMS focused on improving performances.

ISO 9002 - 2000 - Guidelines for production and installation and servicing of products and services.

ISO 9003 - 2000 - Guidelines for final inspection and test.

Implementation of ISO 9000

The steps involved to implement a quality management system ISO 9000 are:

1. Top Management Commitment.
2. Appointment of Management Representative (MR)
3. Awareness
4. Appointment of implementation team.
5. Training
6. Time schedule
7. Selection of element owners
8. Review of current system
9. Writing of documents
10. Installing of new system.
11. Internal audit
12. Management review
13. Reassessment
14. Registration.

1. Top Management Commitment :-

Top management knowledge and support, is required to implement because top management is assigned with some specific responsibilities in the standard.

2. Management Representative (MR) :-

The MR can be a member of the top management group or one from the employee. Management representative is responsible for co-ordinating the implementation of the quality system and the contact person for all involved in the process, both external and internal.

3. Awareness :-

It is necessary that everyone in the organization should be aware of the implementation of the system and understand the same, since the process is going to effect and require their inputs.

4. Implementation team :-

The implementation team will identify the QMS processes and their sequence and interaction.

5. Training :-

Training will be imparted to implementation team, supervisors and internal audit team. Training can be imparted by sending team leaders for training and they in-turn train others.

6. Time Schedule :- A time frame should be made for implementation and registration of the system. This time

frame depends on the type and size of the Organization and the extent of its existing quality System.

7. Selection of element owners :-

The implementation team selects owners for each of the System elements. Many of the owners will be members of the implementation team.

8. Review of the present System :-

The performance of the present System is reviewed by collecting the quality manuals, procedures, work instruction and teams presently in use.

9. Writing the documents :-

Appropriate work instruction will be written to maintain the quality of specific function by involving every employee.

10. Install the new System :-

The policies, procedures and work instruction are integrated into the day-to-day working of the Organization.

11. Internal audit :-

This activity is necessary to ensure that the System is working effectively and to provide the management with information for the comprehensive management review.

12. Management Review :-

Management review will be carried out to determine the progress and effectiveness of the System in achieving the stated quality goals.

13. Reassessment :-

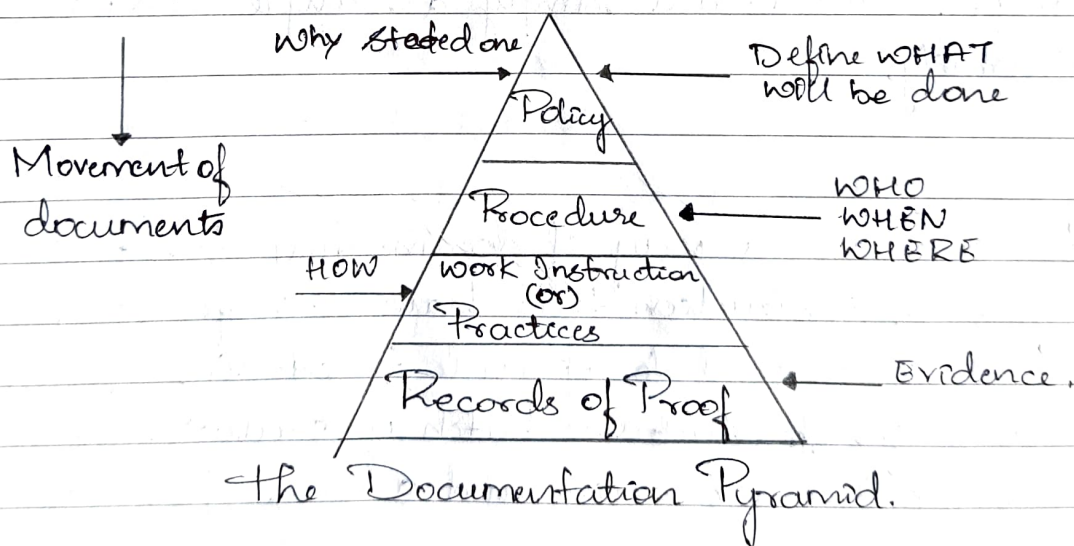
This activity is to assess where exactly the organization stands in the implementation of the quality system.

14. Registration :-

Registration is a certification procedure to certify the correct implementation of the quality system by an organization.

Documentation of ISO 9000.

A quality system is adopted into an organization to ensure that the quality level of product (or) service is maintained. The quality system documentation is an important process and can be viewed as a hierarchy containing four levels as shown.



Policy :-

This document defines that will be done and why it will be done. A quality policy manual should be written so as to be clear, precise, practical and easy to understand.

Procedure:-

These procedures describe the methods that will be used to implement and perform the stated policies. The procedure defines who should perform the task, when it should be done and where documentation will be made showing the task has been performed. Procedure should be oriented in such a way that they apply to all areas within the organization.

Work Instruction:-

Work instructions are usually department, machine, task (or) product oriented and indicate how the work will be done. These instructions are the most detailed of the documentation hierarchy. Work instructions may be in the form of detailed drawing, routing sheet, recipe specific job function, photography, video (or) simply a sample comparison of conformity.

Records:-

Records are a way of documenting the policies, procedures and work instructions that have been followed.

Records are used to provide traceability of actions taken on a specific product (or) batch of products. They provide data for corrective action and a way of recalling product if necessary.