

# FUNDAMENTAL OF INDUSTRIAL MANAGEMENT

<b><u>Unit -1</u></b> <b>Concept of Quality</b>	<ul style="list-style-type: none"><li>• Quality: Definition, History, Importance</li><li>• Approaches to define Quality, Cost of Quality, Hierarchy of Quality Management</li><li>• Introduction to Quality Control.</li></ul>
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## **DEFINITION OF QUALITY:**

Quality has different connotations to different people at different time. People expect some performance from a product or service. When the performance meets the expectation, people feel they have achieved quality. Higher end car buyers are looking for much more luxury and control than the lower end car buyer whose main requirement could be mobility, negotiability, less initial cost and fuel efficiency. Through the features are different, both cars are of good quality.

Quality is fitness for use or purpose. - Joseph M Juran

Quality is conformance to requirement- Philip B. Crosby

A predictable degree of uniformity and dependability at the low cost and suited – W. Edwards Deming

But Clark has differentiated the definition of Quality in two contexts: product development and manufacturing:

- a) Quality for product Development is “Fitness for Use”
- b) Quality for Manufacturing “Conformance to Specification

In other words, Quality can be understood by the below Formula

$$Q = P/E$$

Where P is Actual Performance and E is Expectation of the Customer

## **A Futuristic Definition:**

*"Quality is a state in which value entitlement is realized for the customer and provider in every aspect of the business relationship without adversely affecting the environment and society".*

## **IMPORTANCE OF QUALITY**

- Lower costs (less labor, rework, scrap)
- Motivated employees
- Market Share
- Reputation
- International competitiveness
- Revenues generation increased

## **Attributes of quality**

Quality means the product has, preferably, all or most of the undermentioned characteristics as detailed below:

- ◆ It has the right quality.
- ◆ Is safe, reliable, and long lasting.
- ◆ It's economical to the customer to use it till it lasts.
- ◆ It's delivered on time.
- ◆ Its price is right.
- ◆ Its customer support is good, polite, quick and responsive.
- ◆ Its after-sales service is polite and competent with availability of genuine spare-parts and repair cost is affordable.
- ◆ Disposal of product/service presents no problem and is environmentally friendly.
- ◆ 'Buy-back' schemes of used items for new are user-friendly.
- ◆ The total life-cycle cost to the customer (the 'cradle-to-grave' cost) is optimum.
- ◆ Conforms to norms of ethics and does not infringe on any trademark or patent laws and is genuine. Its potential for pollution is within acceptable limits.
- ◆ No unethical practices like underhand dealings, employment of child labour, exploiting the employees/workers are used as business practices.

## **APPROACHES TO DEFINE QUALITY**

### **Transcendent Approach**

- Quality is absolute and universally recognisable.
- It is common notion used by laymen
- There is no subjective judgement and is estimated by looking at the product

### **Product Based Approach**

- Attributes of a particular product in a specific category
- These attributes are accepted as bench of quality by the industry
- Others in the same industry try to produce close to this quality

### **User Based Approach**

- Defined as "Fitness for use"
- Viewed from user's perspective and is dependent on how well does the product meet needs of the consumer.
- Also known as Customer Oriented Approach

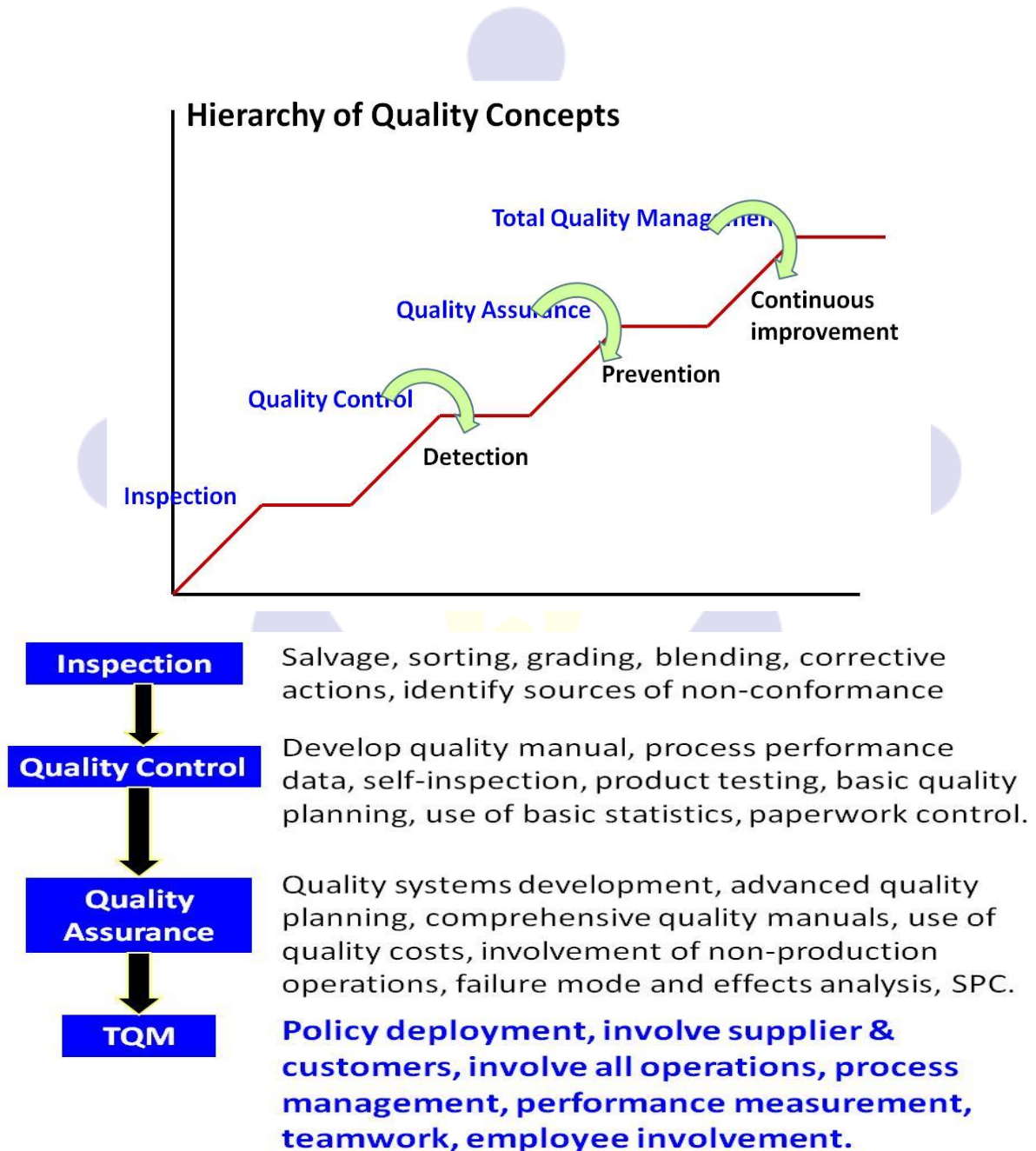
### **Production Based Approach**

- An outcome of engineering or operational excellence and is measured in terms of quality of conformance
- The producer has specifications and produces the product as per the specifications

## Value Based Approach

- Quality is viewed in context of price
- Quality is satisfactory, if it provides desired performance at an acceptable price
- Customer looks at the total value proposition and not the price alone
- Value = Benefits/ Price

## HIERARCHY OF QUALITY MANAGEMENT



## COST OF QUALITY

**Cost of Quality = Cost of Nonconformance + Cost Prevention**

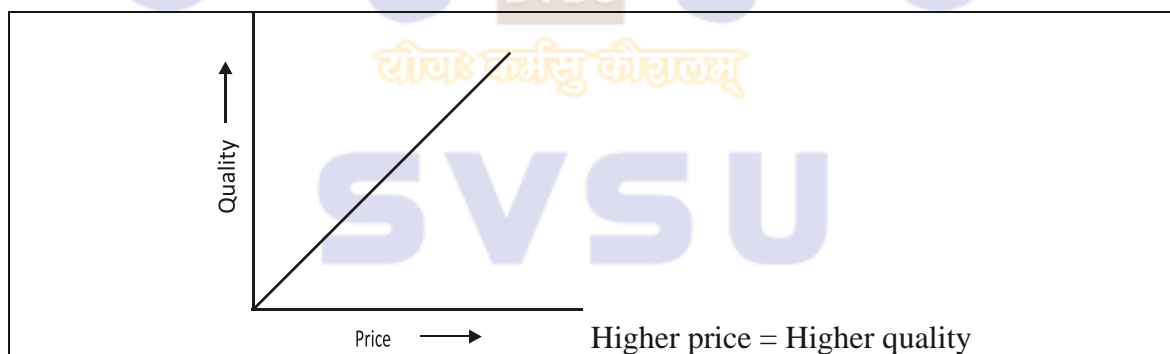
Cost of Nonconformance includes rework, recalls, expediting, time extensions, Increased insurance cost etc.

### **Types of Quality Cost**

- **Prevention cost:** All costs associated with error prevention in a product, process or service.
- **Appraisal cost:** All costs associated with the assurance to conformance of quality standards/requirements, inspection, testing, observation, etc.
- **Internal failure cost:** All costs associated with the evaluation and correction of the design before it is released for construction, and all costs for rework on a project before it is turned over to the owner.
- **External failure cost:** Similar to internal failure costs except that they occur after the “output” has been turned over to the next processor or user. External failure costs often include significant intangible costs of lost reputation

## CUSTOMER AND QUALITY

Quality is what a customer expects in the product/service he/she is buying. If a customer expects ‘excellence’ in everything he/she purchases, then his/her expectations are high. However, this could prove to be elusive to a customer when he actually gets a product/service that he has paid for. For instance, a passenger travelling in an economy class on a flight cannot expect service like a passenger who is travelling in the first class. We should appreciate the fact that a first class passenger has paid two to three times more for the fancy first class and that person has every right to be pampered on the flight. The relation between quality and price might be seen from Fig



## DIFFERENCE BETWEEN QUALITY CONTROL AND CONTROL ASSURANCE

### 1. Definition:

Quality control is a set of activities for ensuring quality in products. The activities focus on identifying defects in the actual products produced

Quality Assurance is a set of activities for ensuring quality in the processes by which products are developed.

## **2. Focus**

Quality Assurance aims to prevent defects with a focus on the process used to make the product. It is a proactive quality process.

Quality control aims to identify and correct defects in the finished product. Quality control, therefore is a reactive process.

## **3. Goals**

The goal of QA is to improve development and test processes so that defects do not arise when the product is being developed.

The goal of QC is to identify defects after a product is developed and before its release.

## **4. How**

QA establishes a good quality management system and the assessment of its adequacy. Periodic conformance audits of the operating system

QC helps to find and eliminate source of quality problems through tools and equipment so that customer requirements are continually met.

## **5. What**

QA is prevention of quality problems through planned and systematic activities including documentation.

QC: The activities or techniques used to achieve and maintain the product quality, process or services.

## **6. Responsibility**

QA: Everyone on the team involved developing the product is responsible for quality assurance

QC: Quality control is usually the responsibility of a specific team that tests the product for defects.

## 7. Example

QA: Verification is an example of QA

QC: Validation / software testing is an example of QC

## 8. As a tool

QA: is a managerial tool

QC is a corrective tool

## QUALITY CONTROL

Quality Control (QC) - “the operational techniques and activities that are used to fulfill requirements for quality”.

- The purpose of quality control is to uncover defects and have them corrected so that defect-free products will be produced.
- Quality control is limited to looking at products.
- Quality control is testing the final product against product quality standards.
- Quality control is operational techniques that are used to fulfill requirements for product quality.

## Quality Control

It is that part of Quality Management focused on fulfilling requirements of the Customers for the quality products.

A Simplest Form of Quality Control is: -

