

**KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES**  
**BA 5107 TOTAL QUALITY MANAGEMENT**

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**UNIT I - INTRODUCTION**

Quality – vision, mission and policy statements. Customer Focus – customer perception of quality, Translating needs into requirements, customer retention. Dimensions of product and service quality. Cost of quality.

**Table of Contents**

INTRODUCTION .....	2
QUALITY .....	2
DEFINITIONS OF QUALITY:.....	2
IMPORTANT QUALITY TERMS.....	3
TYPES OF QUALITY: .....	3
VISION, MISSION AND QUALITY POLICY STATEMENT.....	4
VISION STATEMENT .....	4
MISSION STATEMENT .....	5
CUSTOMER FOCUS .....	7
CUSTOMER PERCEPTION OF QUALITY .....	9
FACTORS AFFECTING CONSUMER’S PURCHASING BEHAVIOUR .....	9
FACTORS AFFECTING CUSTOMER PERCEPTION .....	10
MANAGEMENT OF CUSTOMER’S PERCEPTION OF QUALITY:.....	11
CUSTOMER RETENTION .....	12
IMPORTANCE OF CUSTOMER RETENTION .....	12
CUSTOMER RETENTION PROGRAMMES.....	13
DIMENSIONS OF PRODUCT AND SERVICE QUALITY .....	15
PRODUCT QUALITY .....	15
SERVICE QUALITY .....	19
COST OF QUALITY .....	23
COST OF CONFORMANCE .....	23
COST OF NON CONFORMANCE .....	28
OTHER COSTS ASSOCIATED WITH QUALITY COST ARE .....	31
BENEFITS OF TQM.....	32
PRINCIPLES OF TQM.....	32

# KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES

## BA 5107 TOTAL QUALITY MANAGEMENT

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SIX BASIC CONCEPTS OF TOTAL QUALITY MANAGEMENT..... 33

### 1. INTRODUCTION

**Total Quality Management (TQM)** is a management strategy aimed at embedding awareness of quality in all organizational processes.

TQM is the application of quantitative methods and human resources to improve all the processes within an organization and exceed **CUSTOMER NEEDS** now and in the future.

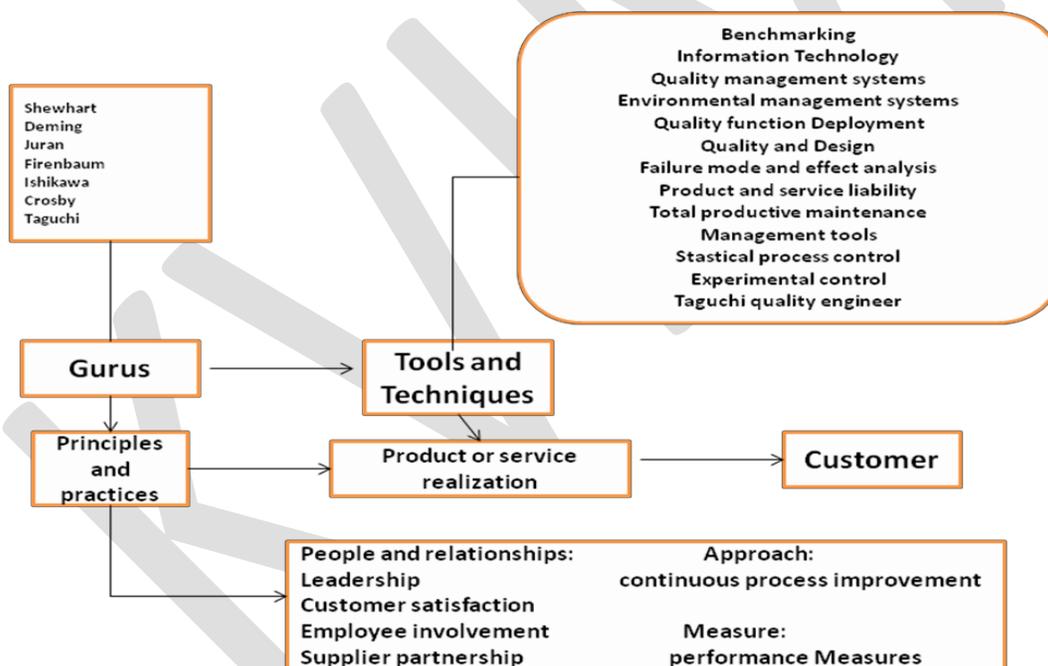
Or

**TQM** is the art of managing the whole to achieve excellence

TQM has being implemented in:

TVS Group, Boeing Aircraft, Reliance, Tata, L & T, HMT, ITI, etc.

### TQM Frame work



## QUALITY

### Definitions of quality:-

TQM is defined as both a philosophy and a set of guidance principles that represent the foundation of continuously improving organization. It is the application of qualitative

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---

methods and human resources to improve all the processes within an organization and exceed customer needs now and in the future.

Quality is a subjective term for which each person has his or her own definition. In a technical usage, quality can have two meanings (1) the characteristics of a product or service that bear on its ability to satisfy stated or implied needs and (2) a product or service free of deficiencies.

*-American society for quality*

Quality should be aimed at the needs of the customer, present and future

*-Dr Edward Deming*

### **Awareness**

- An organization will not begin in the transformation of TQM until it is aware that the quality of the product or service must be improved.
- Awareness comes about when an organization loses market share or realizes that quality and productivity go in hand-in-hand.
- It also occurs if the customers give indications towards TQM or the management itself realizes that implementing TQM is the better way to run a business in a successful way in local as well as global markets

### **Important quality terms:-**

**Quality improvement** can be distinguished from quality control in that quality improvement refers to purposeful change of a process to improve the reliability of achieving an outcome.

**Quality control** is the ongoing effort to maintain the integrity of a process to maintain the reliability of achieving an outcome.

**Quality assurance** is the planned or systematic action necessary to provide enough confidence that a product or service will satisfy the given requirements of quality.

### **Types of quality:-**

In order to produce goods and services of consistent quality and costs, three types of quality are recognized. They are as follows

### **First type of classification:-**

#### **1. Quality of design:-**

Quality of design of a product is the tightness of the specifications for

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## BA 5107 TOTAL QUALITY MANAGEMENT

---

manufacturing the product; this also refers to the difference in the specification for products which have the same use.

Example: cars of two different makes, though serving the same purpose differ with respect to their design.

### 2. Quality of conformance

Quality of conformance refers to the ability to maintain the specified quality of design.

### 3. Quality of performance

How well a manufactured product gives its performance is termed as quality of performance. It depends on the quality of design and quality of conformance. If the design is good and the conformance is poor, quality of performance will reduce. If the design is bad and conformance is good, then also quality of performance will be reduced.

### Second type of classification:-

1. **Indifferent quality:-**It is the quality that the customer does not notice or appreciate

2. **Expected quality:-**It is the quality that the customer expects and demands

3. **One-dimensional quality:-**It is the quality that the customer expects but that does not necessarily result in loss of the order or displeased customer when found lacking in the product.

4. **Exciting quality:-**It is the quality that exceeds customer expectations, attracting favourable attention

### **Vision, mission and quality policy statement**

#### **VISION STATEMENT:-**

A vision statement is an open declaration made by an organization stating what it wants to be and look like after a specific period of time in future. It should be noted that the vision statement is to be realistic and achievable, that is, it should not be an outcome of only a purely wishful thinking process.

The gap between a dream and action is filled with plan. How well we succeed depends on how well we plan. Planning sets the direction and the speed of the progress. Vision is not a state of being but the process of becoming. Vision should be something which is far fetching and not that which calls for a change every day. It should be borne in mind that the vision statement is organization specific.

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## BA 5107 TOTAL QUALITY MANAGEMENT

---

### Guidelines for vision statement :-

Involve as many employees as possible in the formulation of vision statement

- The statement should project your growth and development
- It should be short and realistic to the present situation.

### Characteristics of vision statement:-

- Future oriented
- Creative
- Reflecting the uniqueness
- Very clear and challenging.

### **STEPS IN VISION FORMULATION AND IMPLEMENTATION**

- Proprietor dreaming about how the organization should be in the next 10 to 20 years.
- Meeting with employees and motivating them to have visions giving them directions on the vision of the CEO
- The vision statement should be checked for its simple, easy to understand language and style

Examples:-

*We will be the preferred provider of safe, reliable and cost effective products and services that satisfy the electric related needs of all customer segments*

*FLORIDA POWER&LIGHT COMPANY*

To develop TATA into a world class Indian car brand for innovative and superior value vehicles. (Tata motors)

### **MISSION STATEMENT:-**

Mission identifies the roles or activities to which an individual is committed and provides the overall direction for achieving the vision. Mission focuses what you want to be and what to do-contributions and achievements, and on the values and principles upon which being and doing are based. A personal vision needs to be clearly developed for the organization so that the mission statement can be based on it.

Mission statements are prepared to make the employees, understand in clear terms, how to achieve the vision.

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Mission statements should clearly indicate to the methods to be followed for fulfilling the vision. It can be said to be a road map for achieving the vision.

### Characteristics of mission statement:-

- These statements should clearly indicate the important roles and the methods followed for fulfilling the vision
- Techniques and tools used for achieving it
- Mission statements should actualize the vision.
- These statements will carry information which need to be fulfilled in the near future.

Eg:- TATA motors:

- To be the most admired multi-national Indian car company producing vehicles that people love to buy
- Create an organization that people enjoy working for, doing business with and investing.

Canadian National Railways

To meet customer's transportation and distribution needs by being the best at moving their goods on time, safely and damage free.

### QUALITY POLICY STATEMENTS:-

Quality policy statement is a guide for all working in an organization with respect to how they should provide products and services to the customers

Quality policy statement is prepared as follows:

- The CEO of the organization gets information and feedback related to quality from the workforce
- Then the CEO prepares the quality policy statement.

### Common characteristics are:

- Quality is first among equals
- Meet the needs of the internal and external customers
- Equal or exceed the competition
- Continually improve the quality

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## BA 5107 TOTAL QUALITY MANAGEMENT

---

- Include business and production practices
- Utilize the entire work force.

### **CHARACTERISTICS OF TOM**

- TQM is customer oriented
- TQM required a long term commitment for continuous improvement of all processes
- TQM is a teamwork
- TQM requires the leadership of top management and continuous involvement
- TQM is a strategy for continuous improving performance at all levels and in all areas of responsibility.

### **CUSTOMER FOCUS**

Internal customers are people working with the organization who have to be served a motivating experience for them to replicate and carry out the same to the external customers. Changing the business focus to a customer-centred paradigm has a broad – reaching impact across the organization. It gives many companies an opportunity to revisit their company as a whole and improve business processes and achieve significant returns on investment.

The individual who buys the products of any manufacturing organization is the most important person. Without the buyer the whole manufacturing process becomes meaningless. Hence every organization should focus on

Attracting more customers

Making them happy

Retaining them

Customer is said to be the king in any business transactions. He needs to be treated with dignity. Satisfying or delighting the customer is a hard task, when there are many types of customers in the market. However tough it may be, quality warrants customer focus. How to deal with different types of customers may be a nightmare for many. But simple solutions are available.

There are four types of customers

### **TYPE1:-**

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---

‘A customer who knows not what he wants and knows that he knows not what he wants’. They are significant customers. Be gentle with him. It is relatively easy to satisfy him

### **TYPE 2:-**

‘A customer who knows not what he wants and knows that he knows not what he wants’. They are humble customers. Teaching and training will make them knowledgeable. Then satisfying will be easy.

### **TYPE3:-**

‘A customer who knows what he wants and knows not that he knows what he wants’  
‘They are sleeping customers. There may be only a few customers of this type.

However, to awake them, attractive, stunning advertisements will make them understand the reality.

### **TYPE4:-**

A customer who knows what he wants and knows that he knows what he wants’. They are masters of themselves. They will be the demanding types. Large percentage of customers falls in this category. The success of quality mainly depends on making this category of people satisfied. They will even assume the position of the king.

### **Key to customer focus:-**

- The ability to anticipate the needs.
- Existing loyal customer.
- Potential customer
- Dissatisfied customer
- Competitor loyal customer.

### **Buyer-Supplier relationships:-**

Deming realised and suggested that a long term relationship between the purchaser and supplier is necessary for economy. Several guidelines will help both the supplier and customer benefit from a long term partnering relationship:

1. Implementation of TQM by both supplier and customer
2. Long term commitment to TQM and to the partnering relationship between the parties
3. Reduction in the supplier base

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4. Get suppliers involved in the early stages of research, development and design
5. Bench marking

### CUSTOMER PERCEPTION OF QUALITY

A customer's perception of quality is a judgment made by the customer about the overall excellence, or otherwise of the delivered product or service. Customer's perception is the main criterion by which a service provider can assess and measure the value of the quality

it delivers. Indeed, the service provider's decision making process would be incomplete without this information. However, the information contained within customer perception surveys is usually subjective and also likely to change over time with change in the industry structures, environment, technology, competitive activity and good or bad media commentary.

- Factors affecting consumer's purchasing
- behaviour Factors affecting customer perception
- Management of customer's perception of quality

### Factors affecting consumer's purchasing behaviour:-

One of the basic concepts of the TQM philosophy is continuous process improvement. This concept implies that there is no acceptable quality level because the customer's needs, values and expectations are constantly changing and becoming more demanding

An American society for quality (ASQ) survey on end-user perceptions of important factors that influence purchases showed the following ranking:

#### A. Performance:-

Performance involves "fitness for use". It indicates that the product and service is ready for the customers use at the time of sale.

**Availability:** it is the probability that a product will operate when needed

**Reliability:** it is freedom from failure over time, and

**Maintainability:** it is the ease of keeping the product operable

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## BA 5107 TOTAL QUALITY MANAGEMENT

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### **B. Features:-**

Features are secondary characteristics of the product or service. For example:

The primary function of a cell phone is for communication, whereas other facilities such as calculator and alarm are features of the cell phone

### **C. Service:-**

Customer service is an intangible in nature. Intangible characteristics are those traits that are not quantifiable, but it contributes greatly to customer satisfaction. Organizations objective is to provide good quality of the product to the customer at the right time, even though the customers are not complaining about their service.

### **D. Warranty:-**

The product warranty represents an organization's public commitment to guarantee a level of service sufficient to satisfy the customer. A warranty forces the organization to focus on the customer's definition of product and service quality. An organization has to identify the characteristics of product and service quality and the importance the customer attaches to each of those characteristics.

### **E. Price:-**

Nowadays customer is willing to pay a higher price to obtain value. Also customers expect high quality products at the lower price. Customers prefer the organizations that are providing the greatest value for their money. For this purpose, customers are constantly evaluating all the organizations.

### **Factors affecting customer perception:-**

#### **a) Perceived service quality:-**

The customer's perception about the quality of service provided by the service provider has a crucial impact on his behaviour. These four dimensions of customer-perceived service quality are:

- The customer's perception about the quality of service provided by the service provider has a crucial impact on his behaviour. These four dimensions of customer-perceived service quality are:
- **Customer-orientation:** The first factor, customer-orientation, is primarily related to the attitude and skills of the employees providing the service

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- **Competence:** The second factor, competence, is primarily associated with the concept of providing reliable services to customers
- **Tangibility:** The third factor, tangibles / tangibility, is primarily associated with the visual appeal of organizations physical facilities and communication materials to the customers.
- **Convenience:** Finally, the fourth factor, convenience, encompasses items related to the convenience of the organizations branch locations and the spread of its service networks

### **a) Perceived product quality:-**

Perceived product quality is the consumer's judgment about a product's overall excellence or superiority. The importance of perceived quality derives from its beneficial impact on purchase intentions. Consumers perceiving a product being of high quality have higher intentions to purchase the product than consumers perceiving a product being of low quality. Also, consumers perceiving a product being of high quality are more satisfied with the product than consumers perceiving a product being of low quality.

### **c) Brand image:-**

It is the perception of the product or the brand by the consumer. It is the impression in the consumer's mind of a brand's total personality. Brand image is developed over time through advertising campaigns with a consistent theme, and is authenticated through the consumer's direct experience. A positive brand image has a favourable impact on customer perception and buying behaviour

### **Management of customer's perception of quality:-**

The key issues to be addressed in the management of perceived quality are explained below:

#### **a) Measurement of customer perception:-**

The principal activities in the measurement of the customer perception may be grouped as follows:

- (i) Selection of service or group of services to be surveyed
- (ii) Choice of performance criteria to be surveyed
- (iii) Survey samples and size
- (iv) Questionnaire design and implementation
- (v) Publication of results

#### **b) Analysis of the perception gap:**

Perception gap is the 'gap' variation between customer's perception ratings and

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---

what one would expect from the level of delivered quality. One of the main activities in the management of customer's perception of quality is the analysis correlation of customer's ratings of delivered quality and perceived quality.

**c) Modification of the quality programme:**

In quality management, any modifications to the activities influencing quality must be evaluated before implementation.

### **Translating customer needs into requirements**

- Translating needs into requirements is another vital part of the quality management. Requirements management is concerned with meeting the needs of end users through identifying and specifying what they need.
- Requirements may be focused on where the main concern is to describe what is wanted rather than how it should be delivered. The important issue is that those specifying the requirement have an adequate understanding of what the users need and how the market is likely to meet that need; they also need to be able to keep any changes to the requirement to an appropriate minimum and to document the requirement in such a way that the market will be able to understand what is required
- Requirements are capabilities and objectives to which any product or service must conform and are common to all development and other engineering activities.
- In reality customer doesn't buy a specification; the customer buys the product or service to fulfil a need. Customers are loyal to whatever best helps them achieve their desired outcome. Just meeting the customer's needs are not enough; the organization must exceed the customer's needs.

### **CUSTOMER RETENTION**

Customer Retention is the activity that a selling organization undertakes in order to reduce customer defections. Successful customer retention starts with the first contact an organisation has with a customer and continues throughout the entire lifetime of a relationship. A company's ability to attract and retain new customers, is not only related to its product or services, but strongly related to the way it services its existing customers and the reputation it creates within and across the marketplace.

### **IMPORTANCE OF CUSTOMER RETENTION:-**

- To acquire a customer a company spends promotional costs like advertising, sales promotion etc. It is said that it costs five times more to attract a new customer than retaining one.
- Services being rich in experience and credence qualities, it takes some time for customers to get accustomed to it and once they are used to the service and are satisfied with the service provider ,they tend to purchase more over a period of time.

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## BA 5107 TOTAL QUALITY MANAGEMENT

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- As they remain satisfied with a service provider, they spread a positive word of mouth, which is very effective in case of services for attracting new customers. Longer the customer stays with an organization, more the organization knows about him, which enables it to offer customized services which make it difficult for the customer to defect.

### **CUSTOMER RETENTION PROGRAMMES**

#### **Step1: Review the mission statement**

The first step is to review the company's mission statement. Mission statement should be based on the needs of the customer and not just product or competition based. For example rather than saying about the mission. In other words changing the focus from internal to both internal and external quality.

#### **Step2: Research your customer base**

Research the customer base to identify the most profitable customers and customer segments. There is much focus today on "one-to-one" marketing. However many small companies cannot maintain the massive amounts of data required to market to a "segment of one".

#### **Step 3: Measure customer defection rate**

Measuring customer defection rates is essential to take steps to reduce customer defections. Set a goal for customer retention and and communicate that goal to the rest of the company. Making customer retention a focus may also require organizational changes. Companies that operate with separate functional departments have a hard time ensuring quality for each customer's individual needs.

#### **Step 4: Stay in front of the customers**

Develop contacts with the customer at least five to six times in a year .The contacts may be in the form of face to face meetings, electronic communications or direct mails.

#### **Step 5: Take the extra Mileage**

Take extra steps to learn about businesses run by customers. This is needed in order to help them become more profitable.

#### **Step 6: Create a proprietary way of communicating or servicing customers**

Customers should know whom to contact when they have a problem or question. Information should be provided on the internet or in customer service manuals.

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## BA 5107 TOTAL QUALITY MANAGEMENT

---

### **Economics of customer relationship management:-**

If buying customer is the biggest expense, then continually buying new customers (buying market share) is the most expensive way to do business.

Market share or a focus on new customers comes with an assumption that you are in the business of buying products or services and selling them to customers. There should be sustained focus on maximizing returns from the current customer. Some tips to ensure a good wallet share are discussed below:-

1. Customer should be fully aware of all the products and services on offer.
2. Focus on all needs of a customer. In case you cannot provide the service yourself, align with another company that can do so.
3. Set up a regular form of communication, this could be a newsletter, a direct mail piece are as simple as a monthly call.

### **Types of buyers:-**

#### ➤ **TRANSACTIONAL BUYERS:-**

Transactional buyers are concerned about today's purchase. They do a lot of research investigating the product they are considering buying and consider himself or herself a product expert. They are not concerned about service, trust or relationship. They are concerned primarily about price and terms.

#### **RELATIONSHIP BUYERS:-**

Relationship Buyers consider today's transaction as one in a series of many. They do not enjoy playing the "shopping game." They don't enjoy comparison shopping or negotiating. Low price offers will attract transaction buyer and You cannot make a profit from them.

### **Cross sales build retention:-**

Customers who have more than one product have a higher retention rate. There are two reasons for second product; profit from the new product and retain customers for existing one. The another techniques are

- Creating a club on the
- internet Cataloguer customer
- retention Retailer customer

retention

## **DIMENSIONS OF PRODUCT AND SERVICE QUALITY**

### **PRODUCT QUALITY**

The important characteristics of a product are specified when it is designed, prior to its manufacture. These characteristics are called the design specifications. After the product has been produced, one can observe the extent to which it conforms to or deviates from the design specification. Quality, or product quality, is the degree to which the design specifications for a product are appropriate to its function and use, and the degree to which the product conforms to its design specifications. Service quality is similarly defined, and one often generalizes and uses the term output quality to apply to either products or services.

#### **Product characteristics:**

The important product characteristics are determined by the specific market goals of the organization and by the technical requirements of the important stages of the conversion process. Often, one must compromise between these two sources of quality requirements

#### ➤ **Design:**

Design of two firms producing the same product, one may have to pay high costs to maintain an acceptable quality, while its competitor can maintain the same quality at a much lower cost.

The difference is often a result of the emphasis placed on quality in the design phase of product development, prior to full-scale production. The old adage, “quality is designed into the product”, holds true.

The number of stages in the conversion process the types of input resources needed, and the types of technical processes required to produce the output are all largely determined in the product design phase.

#### ➤ **Process capability:**

Process capability is the ability of a conversion process to produce a product that conforms to design specifications. Since the performance of machines and people used in a conversion process varies from day to day, process capability is described by a range of variation from the design specification-the variation expected under normal working conditions.

A statement about process capability is thus, a statement about product uniformity: instead of various parameters of the process-parameters of machines, workers and so on-process capability relates to various parameters of the product.

→ **8 Dimensions of Quality (D. Garvin 1986)**

*Jimena M. Calfa*



<http://onquality.blogspot.com>

### Dimensions of product

☐ **quality:-**

#### **PERFORMANCE:-**

It involves the various operating characteristics of the product. For a television set, for example, these characteristics will be the quality of the picture, sound and longevity of the picture tube.

Performance is often a source of argument between customers and suppliers, particularly when deliverables are not adequately defined within specifications. The performance of a product often influences profitability or reputation of the end-user. As such, many contracts or specifications include damages related to inadequate performance

☐ **FEATURES:-**

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*What additional benefits will be added to the product? Will they be they tangible or non-tangible benefits? For example this could be after sales service, or guarantees. Some features will be present in all products but other features will only be found in "quality" products. For example all cars have wheels, steering wheel, gears, windows and seats but only some cars have heated seats, assisted parking and Bluetooth.*

These are characteristics that are supplemental to the basic operating characteristics. In an automobile, for example, a stereo CD player would be an additional feature.

This dimension may seem clear, performance specifications rarely define the features required in a product. Thus, it is important that suppliers designing product or services from performance specifications are familiar with its intended uses, and maintain close relationships with the end-users.

#### □ **RELIABILITY:-**

Reliability of a product is the degree of dependability and trustworthiness of the benefit of the product for a long period of time.

Reliability may be closely related to performance. For example, a product specification may define limit for up-time, or acceptable failure rates. Reliability is a major contributor to brand or company image, and is considered a fundamental dimension of quality by most-end users

#### **CONFORMANCE:-**

It is the degree to which the product conforms to pre- established specifications. All quality products are expected to precisely meet the set standards.

Conformance answers several questions like if a product development is based on a performance specification, does it perform as specified? If its development is based on design specification, does it possess all of the features defined?

#### **DURABILITY:-**

It measures the length of time that a product performs before a replacement becomes necessary. The durability of home appliances such as a washing machine can range from 10 to 15 years.

Durability is closely related to warranty. Requirements for product durability are often included within contracts and specification

#### **SERVICEABILITY:-**

Serviceability refers to the promptness, courtesy, proficiency and ease in repair when the product breaks down and is sent for repairs.

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---

As end users become more focused on total cost of ownership than simple costs, serviceability is becoming an increasingly important dimension of quality.

□ **AESTHETICS:-**

Aesthetic aspect of a product is comparatively subjective in nature and refers to its impact on the human senses such as how it looks, feels, sounds, tastes and so on, depending upon the type of product. Automobile companies make sure that in addition to functional quality, the automobiles are also artistically attractive.

The way a product looks is important to end-users. The aesthetic properties of a product contribute to a company's or brand's identity. Faults or defects in a product that diminish its aesthetic properties, even those that do not reduce or alter other dimensions of quality, are often causing for rejection.

□ **PERCEPTION:-**

Perception is reality. The product or service may possess adequate or even superior dimensions of quality, but still fall victim to negative customer or public perceptions.

An equally important dimension of quality is the perception of the quality of the product in the mind of the consumer. Honda cars, Sony Walkman and Rolex watches are perceived to be high quality items by the consumers.

### Examples of Quality Dimensions

Dimension	(Product) Automobile	(Service) Auto Repair
Performance	Everything works, fit & finish	All work done, at agreed price
Aesthetics	Ride, handling, grade of materials used Interior design, soft touch	Friendliness, courtesy, Competency, quickness Clean work/waiting area
Special features	Gauge/control placement Cellular phone, CD player	Location, call when ready Computer diagnostics
Reliability	Infrequency of breakdowns	Work done correctly, ready when promised
Durability	Useful life in miles, resistance to rust & corrosion	Work holds up over time
Perceived quality	Top-rated car	Award-winning service department
Serviceability	Handling of complaints and/or requests for information	Handling of complaints

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9-6

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### Service quality

Service quality characteristics are more difficult to define than those for physical products. This is because they include many important subjective elements. The causes of poor quality and quality failure are materially different for services and products. Products often fail because of faults in raw materials and components. Their design may be faulty or they may not be manufactured to specification. Poor quality services, on the other hand, are usually directly related to an organization's behaviour or attitudes.

They often result from lack of leadership, care or courtesy, indifference, lack of training or concern are the principal reasons for a breakdown of service. Service differs from production in a number of important ways. There are major differences between delivering a service and manufacturing goods.

1. The first difference between the two is that services usually involve direct contact between the provider and the end-users.
2. Services are delivered directly by people to people.
3. There is a close relationship between the customer and the person who delivers the service.
4. The service cannot be separated from the person delivering it or from the person receiving it. Every interaction is different, and the customer in part determines the quality of the interaction.
5. The quality of the service is determined both by the person delivering and the person receiving the service.
6. Time is the second important element of service quality.
7. Services have to be delivered on time, and this is as important as their physical specification.
8. Additionally, as a service is consumed at the moment of delivery, the control of its quality by inspection is always too late.
9. The third difference is that, unlike a product, a service cannot be serviced.

Lastly, it is very difficult to measure successful output and productivity in services.

### **Dimensions of Service Quality (examples)**

Dimension	Examples
1. Tangibles	Were the facilities clean, personnel neat?
2. Convenience	Was the service center conveniently located?
3. Reliability	Was the problem fixed?
4. Responsiveness	Were customer service personnel willing and able to answer questions?
5. Time	How long did the customer wait?
6. Assurance	Did the customer service personnel seem knowledgeable about the repair?
7. Courtesy	Were customer service personnel and the cashier friendly and courteous?

### **DIMENSIONS OF SERVICE QUALITY:**

Service providers want to know what customers (internal or external) care about. Service quality is a good guess. Price, and to a minor degree product quality, also count.

#### **The 5 Dimensions Defined**

After extensive research, Zeithaml, Parasuraman and Berry found five dimensions customers use when evaluating service quality. They named their survey instrument SERVQUAL.

In other words, if providers get these dimensions right, customers will hand over the keys to their loyalty. Because they'll have received service excellence. According to what's important to them.

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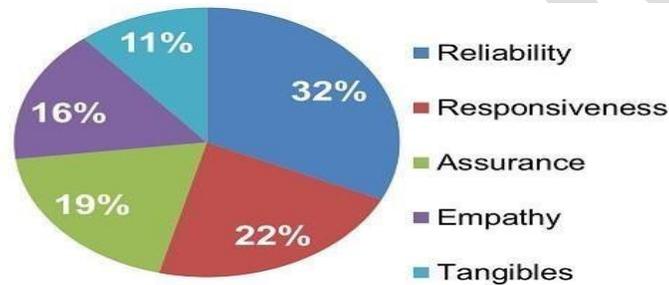
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The five SERVQUAL dimensions are:

- **TANGIBLES – Look Sharp**
  - Appearance of physical facilities, equipment, personnel, and communication materials
  - Even though this is the least important dimension, appearance matters. Just not as much as the other dimensions.
  
- **RELIABILITY – Just do it**
  - Ability to perform the promised service dependably and accurately
  - Do what you say you're going to do when you said you were going to do it.
  
- **RESPONSIVENESS – Do it Now**
  - Willingness to help customers and provide prompt service.
  - Respond quickly, promptly, rapidly, immediately, instantly.
  
- **ASSURANCE – Know what you are doing**
  - -Knowledge and courtesy of employees and their ability to convey trust and confidence
  - Service providers are expected to be the experts of the service they're delivering. It's a given.
  
- **EMPATHY- Care about customers as much as the service**
  - Caring, individualized attention the firm provides its customers
  
- Services can be performed completely to specifications. Yet customers may not feel provider employees care about them during delivery. And this hurts customers' assessments of providers' service quality.
  
- 
- **Not All Dimensions Are Equal**
  - All dimensions are important to customers, but some more than others.
  - 
  - Service providers need to know which are which to avoid majoring in minors. At the same time they can't focus on only one dimension and let the others suffer.
  -
  
- **The 5 Service Dimensions Customers Care About**

## KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES BA 5107 TOTAL QUALITY MANAGEMENT

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- **Responsiveness:-** Willingness to help customers and provide prompt service.

Responsiveness is the willingness to help customers and to provide prompt service. This dimension emphasizes alternatives and promptness in dealing with customer requests, questions, complaints and problems. Responsiveness is communicated to customers by length of time they have to wait for assistance, answers to questions or attention to problems. Responsiveness also captures the flexibility and ability to customize the service to customer needs. To excel on the dimension of responsiveness, a company must be certain to view the process of service delivery and the handling of requests from the customer's point of view.

- **Assurance:-** Knowledge and courtesy of employees and their ability to convey trust and confidence.

The extent to which the service provider and the staff is able to inspire trust and confidence. For example the customer dining in a restaurant may not be able to directly judge the level of hygiene maintained by the restaurants. Here it is not only important to actually provide hygienic food but also to inspire confidence that the food is hygienic.

- **Tangibles:-** Appearance of physical facilities, equipment, personnel, and communication materials.

This is the parallel of physical characteristics of quality of goods. This refers to the physical characteristics of facilities, equipments, consumable goods and personnel used in or associated with the service provided. However here also the quality is judged not by some uniform specifications in terms of physical characteristic, but by the impact these physical characteristics have on customer assessment of the service quality.

- **Empathy:-** Caring, individualized attention the firm provides its customers.

This is being able to understand the needs of the customer as an individual and meet the special requirements of the customer. This is more about customizing the

## KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES BA 5107 TOTAL QUALITY MANAGEMENT

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service and the general service provider behaviour for each customer, rather than providing a uniform high quality treatment to all.

➤ **Reliability:-** Ability to perform the promised service dependably and accurately.

The extent to which the service performed matches implicit or explicit promises made by the service provider regarding the nature of service. For example, the basic quality of room decoration, food, and facilities provided in a hotel.

### **COST OF QUALITY**

A quality cost is defined as 'The expenditure incurred by the producer, by the user and by the community, associated with the product or service quality'. And a quality related cost is defined as 'The expenditure incurred in defect prevention and appraisal activities plus the losses due to internal and external failure'.

Cost of quality is the amount of money a business loses because its product or service was not done right in the first place. From fixing a warped piece on the assembly line to having to deal with a lawsuit because of a malfunctioning machine or a badly performed service, businesses lose money every day due to poor quality. For most businesses, this can run from 15 to 30 per cent of their total costs. A quality cost is considered to be any cost that the company would not have incurred if the quality of the product or service were perfect.

Any cost associated with correcting failures or waste comes under quality costs, as do any assurance or approval activities built into cushion customers from the effects of such failures. A further set of activities are those in which organization attempts to prevent such failures from occurring at all. Cost of quality is, therefore, the sum of all costs a company invests into the release of a quality product/Service.

$$\text{Cost of quality} = \text{Cost of conformance} + \text{Cost of non-conformance}$$

As defined by Philip Crosby, cost of quality (COQ) has two main components:

- 1) **Cost of conformance**
- 2) **Cost of non-conformance**

### **COST OF CONFORMANCE**

Any product produced or serviced is done according to some specified norms. It needs to be checked whether the finished goods and the completed services conform to the specifications. Different methodologies are adopted to do the checking. The costs involved for this are classified as costs of conformance. It includes

## KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES BA 5107 TOTAL QUALITY MANAGEMENT

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- Appraisal cost
  
- Prevention Cost

### **Appraisal cost:-**

Any defective parts and products should be caught as early as possible in the production process. **Appraisal costs**, which are sometimes called *inspection costs*, are incurred to identify defective products before the products are shipped to customers. Unfortunately performing appraisal activates doesn't keep defects from happening again and most managers realize now that maintaining an army of inspectors is a costly and ineffective approach to quality control. Appraisal costs relate to inspection, testing, and other activities intended to uncover defective products or services, or to assure that there are none.

Employees are increasingly being asked to be responsible for their own quality control. This approach along with designing products to be easy to manufacture properly, allows quality to be built into products rather than relying on inspections to get the defects out.

This includes costs of:

- Inspection
- Checking
- Auditing
- Reminders
- Operations Appraisal Costs
- External Appraisal Costs
- Review of Test and Inspection Data
- Miscellaneous Quality

Evaluations These are

#### **Costs incurred in preproduction verification**

- Cost of testing and measurement during preproduction stage
- Cost of verifying conformance of the design features

#### **Costs incurred in receiving inspection**

- Cost of inspection and testing of incoming parts

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**BA 5107 TOTAL QUALITY MANAGEMENT**

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- Cost of inspection and testing of incoming materials
- Cost of inspection at the supplier's premises

**Costs incurred in laboratory acceptance testing**

- Costs of testing and evaluating the quality of purchased materials in the laboratory

**Costs incurred in inspection and testing**

- Cost of inspection and testing during the process of manufacture o cost of inspection and testing at the delivery point
- Cost of conducting product quality audits
- Cost of man-hours spent in supervision, clerical assistance, production operation etc.
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**Costs incurred for inspection and test equipments**

- Costs of depreciation of the equipment and associated facilities
- Cost of setting up of equipment
- Cost of maintenance of such equipments

**Costs incurred for materials consumed during inspection and testing**

- Cost of materials destroyed during the course of destruction tests

**Costs incurred in performance testing**

- Cost of the activity conducted prior to the release of the ownership in order to establish whether the quality requirement has been met.
- 

**Costs incurred for approval and endorsements**

- Cost of fees levied for mandatory approvals and endorsements by the concerned authorities
- 

**Costs incurred for stock evaluation and storage**

- Cost of inspecting and testing the stocks of products and spares which have limited shelf life

**Cost of storage of quality control**

**results Cost of storage of reference standards**

**Prevention costs:-**

Prevention costs related to attempts to prevent defects from occurring. They include costs such as planning and administration systems, working with vendors, training, quality control procedures, and extra attention in both the design and production phases to decrease

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the probability of defective workmanship.

These are the costs of prevention of the production of bad quality output. Thus, these include costs of activity such as quality planning which tries to ensure that proper precautions have been taken to avoid wrong sampling plans being made or bad quality or raw material entering into plant or improper methods and processes being followed in the plant.

Generally the most effective way to manage quality costs is to avoid having defects in the first place. It is much less costly to prevent a problem from ever happening than it is to find and correct the problem after it has occurred.

Prevention costs support activities whose purpose is to reduce the number of defects. Companies employ many techniques to prevent defects.

Prevention costs include activities relating to quality circles and statistical process control.

- Quality circles consist of small groups of employees that meet on a regular basis to discuss ways to improve quality. Both management and workers are included in these circles.
- Statistical process control is a technique that is used to detect whether a process is in or out of control. An out of control process results in defective units and may be caused by a miscalibrated machine or some other factor. In statistical process control, workers use charts to monitor the quality of units that pass through their workstations.

With these charts, workers can quickly spot processes that are out of control and that are creating defects. Problems can be immediately corrected and further defects prevented rather than waiting for an inspector to catch the defect later.

This includes costs of:

- Conducting training programmes, Quality awareness programmes.
- Planning
- Quality circles
- Quality manual preparation
- Quality cell-recurring , non-recurring
- Quality pamphlets, booklets etc
- Activities that set the foundation for future.

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## BA 5107 TOTAL QUALITY MANAGEMENT

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- Marketing / Customer / User.
- Product / Service / Design Development.
- Purchasing
- Operations (Manufacturing or Service)
- Quality Administration.

### Prevention costs:

- Costs incurred in quality planning for the overall quality plan for the inspection plan for the reliability plan.
- Costs incurred in design and development,
  - Cost of designing and developing
  - Cost of documenting
  - Cost of design inspection.
  - Cost incurred for quality review
    - Cost of design review
      - Cost of verification activities
      - Cost of design approval tests
      - Cost of tests to demonstrate reliability and maintainability
  - Costs incurred for calibration of test equipments
    - Cost of calibration and maintenance of templates, fixtures etc
    - Cost of calibration of other test equipments / instruments
  - Costs incurred for the calibration and maintenance of product equipments used to evaluate quality
    - Cost of calibration of measurement and evaluating devices
  - Costs incurred for supplier assurance
    - Cost of audit of suppliers
    - Cost of surveillance audit of suppliers
  - Costs incurred in providing quality training

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## BA 5107 TOTAL QUALITY MANAGEMENT

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- Cost of attending training programme
- Cost of developing and conducting training

programmes Costs incurred in quality auditing

- Cost of appraisal of entire systems of quality

Costs incurred for acquisition analysis and reporting of quality data

- Cost of data collection and analysis
- Cost of processing and storing data

Costs incurred for the conduct of quality improvement programmes

- Cost of developing and organizing programmes, such as
- Defect prevention programmes and quality motivation programmes, etc.

### **COST OF NON CONFORMANCE:-**

When a product or service does not conform to norms or specifications, they are defective. They have to be either thrown away or considered to be waste or rework has to be done and make it conform to norms. In either case it involves cost. These are classified as costs of non conformance.

It includes

#### ➤ **Internal failure cost (IFC):-**

- Rework
- Scrap
- Design changes during process
- Obsolete inventory
- Product or Service Design Failure Costs (Internal)
- Purchasing Failure Costs
- Operations (Product or Service) Failure Costs

**Internal failure costs** result from identification of defects before they are shipped to customers. These costs include scrap, rejected products, reworking of defective units. The more effective a company's appraisal activities the greater the chance of catching defects internally and the greater the level of internal failure costs. This is the price that is paid to avoid incurring external failure costs, which can be devastating.

Internal failure are those discovered during the production process; internal failures occur for a variety of reasons, including defective material from vendors, incorrect machine settings, faulty equipment, incorrect methods, incorrect processing, carelessness and faulty or

## KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES BA 5107 TOTAL QUALITY MANAGEMENT

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improper material handling procedures.

➤ **External failure cost (EFC):-**

This includes cost of:

- Actual expenditure
- Man hours lost
- Warranty cost
- Unplanned field service
- Complaint Investigations of Customer or User Service
- Returned Goods
- Retrofit and Recall Costs
- Warranty Claims
- Liability Costs
- Penalties
- Customer or User Goodwill
- Lost Sales

When a defective product is delivered to customer, external failure cost is the result. **External failure costs** include warranty, repairs and replacements, product recalls, liability arising from legal actions against a company, and lost sales arising from a reputation for poor quality. Such costs can decimate profits. External failures are those discovered after delivery to the customer.

External failures are defective products or poor services that go undetected by the producer.

Resulting costs include warranty work, handling of complaints, replacements, liability, payments to customers or discounts used to offset the inferior quality, loss of customer goodwill, and opportunity costs related to lost sales. External failure costs are typically much greater than internal failure costs on a per unit basis. External failure costs usually give rise to another intangible cost. These intangible costs are hidden costs that involve the company's image. They can be three or four times greater than tangible costs.

## KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES BA 5107 TOTAL QUALITY MANAGEMENT

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Missing a deadline or other quality problems can be intangible costs of quality.

➤ **Cost of exceeding requirements (CER):-**

Unnecessary or unimportant services or information (i.e.) redundant copies of documents, reports that are not read, giving details when not necessary, conducting huge analytical study.

➤ **Cost of lost opportunity:-**

Costs due to the loss of customers (both existing and potential)

Category	Description	Examples
Appraisal costs	Cost related to measuring, evaluating And auditing materials, parts, products and services to assess conformance with quality standards	Inspection equipment, testing, labs inspectors and the interruption of production to take samples
Prevention costs	Costs related to reducing the potential for quality problems	Quality improvement programs, training, monitoring, data collection and analysis, and design costs
Internal failure costs	Costs related to defective products or services before they are delivered to customers	Rework costs, problem solving, material and product losses, scrap.
External failure costs	Costs related to delivering sub-standard products or services to customers	Returned goods, reworking costs, warranty costs, loss of goodwill, liability claims and penalties

Cost of quality, poor quality cost and cost of poor quality are all terms used to describe the costs associated with providing a quality product or service. A quality cost is considered to be any cost that a company incurs to ensure that the quality of the product or service is perfect. Quality costs are the portion of the operating costs brought about by providing a product or service that does not conform to performance standards. Quality costs are also costs associated with the prevention of poor quality.

# KV INSTITUTE OF MANAGEMENT AND INFORMATION STUDIES

## BA 5107 TOTAL QUALITY MANAGEMENT

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Cost to remedy a problem is a major consideration in quality management. The earlier a problem is identified in the process, the cheaper the cost to fix it. It has been estimated that the cost to fix a problem at the customer end. Poor quality increases certain costs incurred by the organization.

### 3 OTHER COSTS ASSOCIATED WITH QUALITY COST ARE:

#### Cost of Exceeding Requirements (CER)

- Unnecessary or unimportant services or information i.e. redundant copies of documents, reports that are not read, sales calls that are not required, giving details when not necessary, conducting huge analytical study etc.,

#### Cost of lost opportunity (CLO)

Costs due to the loss of customers (both existing and potential)

#### How to reduce the cost of quality

The total cost of quality can be minimised by observing the relationship between cost of quality and the degree of conformance to customer requirements. When the degree of conformance is very high (low defects), the cost of failure are low but the costs of control are quite high. When the degree of conformance is low (high defects), the opposite situation exists. Thus there is, between the two extremes, an optimal level of conformance where total quality costs are minimised.

#### **The cost of quality**

The following explains about the costs associated with poor quality:-

#### **1. Failure cost (External and Internal):-**

**Measure of quality:** Scrap, rework, labour, sorting, downtime, slowdown

Complaints, investigations, travel, recall, unpaid invoices, lost sales

#### **2. Mapping of quality costs: Operating costs, Operating expenses (labour), variable expenses, Losses Appraisal cost**

**Measure of quality:** Receiving, in-process and final inspection, test equipment, test

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## BA 5107 TOTAL QUALITY MANAGEMENT

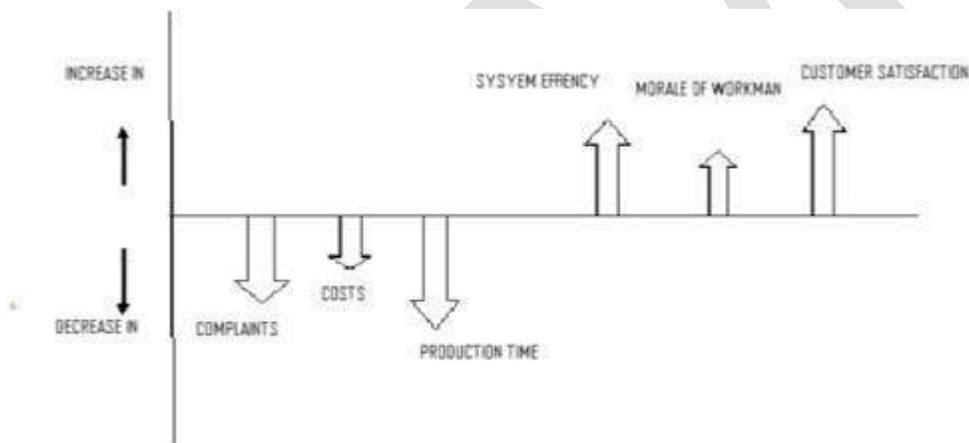
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technicians, special tests, laboratory maintenance, quality control, quality control overheads  
Mapping of quality costs: operating expenses, Fixed expenses, Depreciated assets (equipment), fixed asset(technicians)

### 3. Prevention costs

Quality planning, design tolerance, training, housekeeping, Packaging, Special sourcing, lifecycle tests, field tests, pre-production tests, shelf-tests, inventories, cash flow

Measure of quality: Operating expense, fixed expense, variable assets (cash flow), Inventory.



### **BENEFITS OF TQM:**

- Reduction in complaints from customers, both internal and external.
- Reduction in cost of the product.
- Reduction in production time.
- Increased system efficiency.
- Increased morale and workman.
- Increased customer satisfaction.

### **PRINCIPLES OF TQM:-**

- Customer's requirements must be met the first time, every time.

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- There must be agreed requirements, for both internal and external customers.
- Everybody must be involved, from all levels and across all functions.
- Regular communication with staff at levels is must. Two way communication at all levels must be promoted.
- Identifying training needs and relating them with individual capabilities and requirements is must.
- Top management participation and commitment is must.
- A culture of continuous improvement must be established.
- Emphasis should be placed on purchasing and supplier management
- Every job must add value.
- Quality improvement must eliminate wastes and reduce total cost.
- There must be a focus on the prevention of problems.
- Performance measure is a must at organization, department and individual levels. It helps to asses and meets objectives of quality.
- There should be focus on team work.
- A culture of promoting creativity must be established.

### **SIX BASIC CONCEPTS OF TOTAL QUALITY MANAGEMENT**

1. Management Commitment
2. Customer Focus
3. Involvement and utilization of entire work force
4. Continuous Improvement
5. Treating Suppliers as Partners
6. Establish Performance Measures for the processes