

CHAPTER ONE



INTRODUCTION TO TOTAL QUALITY

Definition

- Quality is one of the four key objectives of operations.
- Operations has special responsibility to produce a quality product for the customer.
- Quality is meeting, or exceeding, customer requirements now and in the future.
- This means product/services are fit for the customer use.

- Fitness for use is related to benefits received by the customer.
- It will lead to customer satisfaction.
- Producer view point, variation from specifications cannot be tolerated.
- Producers should continuously strive to improve quality by doing a better job.
- Quality is divided into qualitative and quantitative.

Quality is important:

- Quality can be improved directly and logically to enhance revenue within one's company.
- Higher quality allows companies to obtain higher
- margins.
- Satisfying customers.
- Enhancing to be a market leader.

Quality

- Is not negotiable
- Is all pervasive
- Increases productivity
- Leads to better performance in the marketplace
- Means improved business performance
- Is a way of life



Quality evolution

- Early 1900s: quality meant inspection, which was the primary method used to ensure quality products.
- 1940s: took on statistical connotation as statistical methods were first used to control quality within the natural variation of the process.
- 1960s: was expanded to include the entire organization helped in designing the quality.


Dimension of quality

1. Quality of design is determined before the product is produced.
- Quality of design is determined by market research, concept and specification.
2. Quality conformance and quality of design represent two different terms of quality.

Abilities of quality

1. Availability: defines the continuity of service to the customer.
 - It is operational readiness
 - Measured by,

$$\text{Availability} = \frac{\text{uptime}}{\text{uptime} + \text{downtime}}$$

2. Reliability: is the length of time that a product can be used before it fails.
- Is the probability that a product will function for a specified period of time without failure.
 - Is related to mean time between failures (MTBF) which is just the average time that the product functions from one failure to the next.
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3. Maintainability: restorations of a product or service once it has failed.

- High degree of maintainability is desired so that a product can be restored to use quickly.
- It can be measured by the mean time to repair (MTTR).

$$\frac{\text{MTBF}}{\text{MTBF} + \text{MTTR}}$$

THE KEY ELEMENTS OF TQM

- Commitment and leadership of the operation manager.
- Planning and organizing
- Using tools and techniques
- Education and training
- Involvement
- Teamwork
- Measurement and feedback.

Summary:

- TQM is a key component for a operation department because it:
 - a. Helps operation to make innovation and continuous improvement to attract customers
 - b. Creates revenue