

# SUBJECT- OPERATIONS MANAGEMENT

## TOPIC- COST OF QUALITY

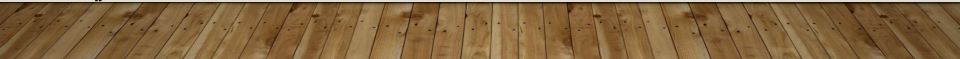
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LECTURE NOTES

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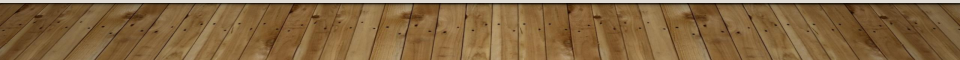
# COST OF QUALITY

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- Cost associated with NOT creating quality product or service.
- Cost of quality is the cost of doing things wrong.
- Expenses of non conformance.

- Quality Glossary Definition: Cost of quality
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Cost of quality (COQ) is defined as a methodology that allows an organization to determine the extent to which its resources are used for activities that prevent poor quality, that appraise the quality of the organization's products or services, and that result from internal and external failures.



# MEASURE OF COQ

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- The Cost of Quality can be represented by the sum of Cost of Good Quality and the Cost of Poor Quality.

$$\text{COQ} = \text{COGQ} + \text{COPQ}$$

COGQ- cost of good quality

COPQ- Cost of poor quality



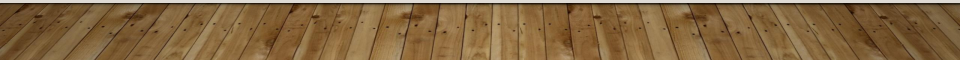
# COST OF GOOD QUALITY (COGQ)

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COGQ consists of-

1. Prevention costs
2. Appraisal costs

1. Prevention Costs – costs associated with failure prevention. It includes quality planning, employee training, NPD, testing etc.
2. Appraisal Costs – costs incurred to maintain acceptable product quality levels. Appraisal costs can include quality audits, inspection, supplier assessment ,etc.



# COST OF POOR QUALITY (COPQ)

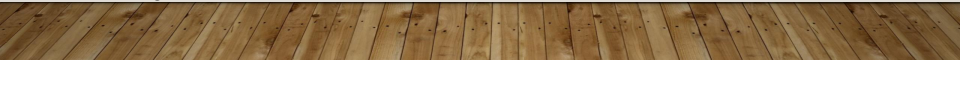
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COPQ consists of

1. Internal failure costs
2. External failure costs

1. Internal Failures costs- associated with defects found before the product or service reaches the customer.
2. External Failures costs- Incurred with defects found after the customer receives the product or service.

Average COPQ is about 15-20% of sales.



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Cost of good quality= Prevention costs+ Appraisal costs

$$\mathbf{COGQ= PC+AC}$$

Cost of poor quality= internal failure costs+ External failure costs

$$\mathbf{COPQ= IFC+ EFC}$$

So,

Cost of quality( COQ) = COGQ + COPQ

$$\mathbf{COQ=(PC+AC)+(IFC+EFC)}$$

# Cost of Quality

## Cost of Good Quality

## Cost of Poor Quality

### Prevention

- APQP
- FMEA
- FTA
- Process Capability
- Variation Reduction
- Lessons Learned
- Education / Training

Problem / Cause  
Preventive Action

### Appraisal Costs

- Incoming Inspection
- In-process Inspection
- Final Inspection
- Calibration
- Auditing
- Registration Costs

Problem / Cause  
Detection

### Internal Failure

- Process Delay
- Rework
- Scrap
- Retest / Validation
- 8D / RCA / CAPA
- Downtime
- Loss of Capacity

Problem Solving /  
Corrective Action

### External Failure

- Customer Returns
- Warranty
- Loss of Customer Sales
- Sort & Repair at Customer
- Lower Quality Scores

Problem Solving /  
Corrective Action



# Cost of Quality

Traditional quality cost

- Tangible
- Easy to measure

Visible



Not Visible



Hidden cost

- Difficult to measure
- Intangible