

Chapter 8: Cost of Quality

- The common misconception about Quality is that it is often uneconomical to make quality improvements since it brings down productivity and increases cost. The reality, however, is that It is possible to improve quality continuously without reducing productivity and without increasing cost.,
- As Deming says, productivity goes up and cost comes down as quality goes up. This fact is known, but it is known only to a selected few.
- **Quality cost** is defined as the expenditure incurred in defect prevention and appraisal activities plus the losses due to internal and external failures. It is also defined as the expenditure incurred by the producer, by the user, and by the community associated with the product or service quality.
- **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. The costs of this include prevention costs and appraisal costs.
Prevention costs:
 - Cost incurred for activities, processes, and infrastructures introduced in order to prevent or reduce and investigate cause of risk of non-conformity or failures in the system.**Appraisal costs:**
 - Costs incurred to determine and ensure conformance with quality standards.
- **Cost of Non-conformance:**
 - When the product or service does not conform to norms or specifications, they are defective.
 - Internal Failure costs
 - External Failure costs
 - Cost of exceeding requirements:
- **Cost of lost opportunity**

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- Costs due to loss of customers (both existing and potential)
- Costs due to loss of confidence in the customers' minds.
- if TQM implementation is proper, if automation is done, and if all possible preventive measures have been taken, then the quality cost will decrease and reach a minimum value and still it is possible to get 100% quality. It is also possible to continually reduce the costs of quality.



- **Taguchi Loss Function** explains that the implications of poor quality run deeper and include social costs, and that such costs are a function of quality standards.
 - Taguchi suggests that every process have a target value (i.e. middle of the tolerance) and that as the product moves away from target value, there's a loss incurred by **society**. This loss may involve delay, waste, scrap, or rework.
 - Taguchi's loss function explains that quality does not suddenly plummet and private and social costs do not rise suddenly when products are not in conformance to specifications. Instead, the losses to the manufacturer and the society are a function of the deviance or variability from the target value or best quality level.
 - If there is a fluctuating process variation, the customer might have to reset their production machines several times to accommodate the changes in specifications. It is a loss to the customer! And the loss isn't linear. Taguchi theorized that the loss is proportional to the square of the distance from the target value.
- So, what should be your strategy? You have to:
 - Stabilize your process

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- Reduce variation
- Reduce the loss

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