

# Cost of Quality

## Definition of cost of Quality

It's a term that's widely used – and widely misunderstood.

The “cost of quality” isn't the price of creating a quality product or service. It's the cost of NOT creating a quality product or service.

Every time work is redone, the cost of quality increases. Obvious examples include:

- The reworking of a manufactured item.
- The retesting of an assembly
- The rebuilding of a tool
- The correction of a bank statement

The reworking of a service, such as the reprocessing of a loan operation or the replacement of a food order in a restaurant.

## Historical Views of Quality Gurus about cost of quality

Historically, business managers have assumed that increased quality is accompanied by increased cost; higher quality meant higher cost.

This concept was questioned by quality pioneers like Juran and Feigenbaum. Juran examined economics of quality and concluded the benefits outweighed the costs. Feigenbaum introduced “total quality control” and developed the principles that quality is everyone's job, thus expanding the notion of quality cost beyond the manufacturing function. In 1979 Crosby introduced the new popular concept that “quality is free”.

## Three different views held by the management professionals about Cost of Quality

Today's view of quality cost among practitioners seems to fall into three categories:

***Higher quality means higher cost:*** Quality attributes such as performance and features cost more in terms of labor, material, design, and other costly resources. The additional benefits from improved quality do not compensate for the additional expenses.

***The cost of improving quality is less than the resultant savings:*** Deming promoted this view, which is still widely accepted in Japan. The savings result from less rework, scrap, and other direct expenses related to defects. This paved the way for continuous process improvement among Japanese firms.

*Quality costs are those incurred in excess of those that would have been incurred if product were built or service performed exactly right the first time:*

This view is held by adherents of the TQM philosophy. Costs include not only those that are direct, but also those resulting from lost customers, lost market share, and many hidden costs and foregone opportunities not identified by modern cost accounting systems.

### **Categorization of Quality Costs**

The cost of quality is generally classified into four categories:

1.	External	Failure	Cost
2.	Internal	Failure	Cost
3.	Inspection	(appraisal)	Cost
4.	Prevention Cost		

**1. External Failure Cost:** Cost associated with defects found after the customer receives the product or service. Example: Processing customer complaints, customer returns, warranty claims, product recalls.

**2. Internal Failure Cost:** Cost associated with defects found before the customer receives the product or service. Example: Scrap, rework, re-inspection, re-testing, material review, material downgrades

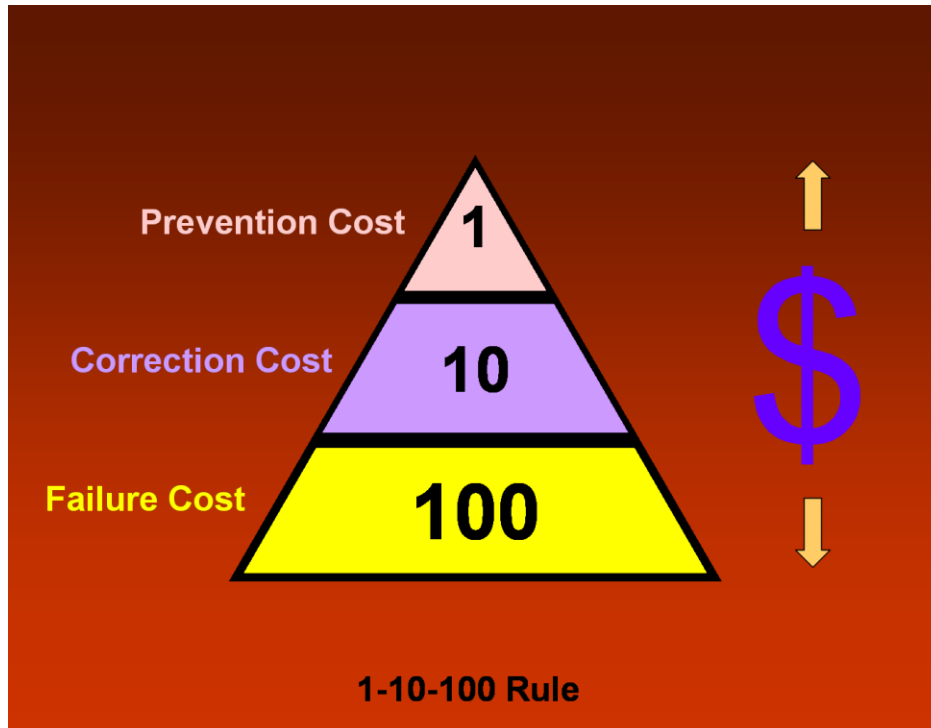
**3. Inspection (appraisal) Cost:** Cost incurred to determine the degree of conformance to quality requirements (measuring, evaluating or auditing). Example: Inspection, testing, process or service audits, calibration of measuring and test equipment.

**4. Prevention Cost:** Cost incurred to prevent (keep failure and appraisal cost to a minimum) poor quality. Example: New product review, quality planning, supplier surveys, process reviews, quality improvement teams, education and training.

### **What is 1-10-100 Rule?**

The rule explains how failure to take notice of one cost escalates the loss in terms of dollars. There are many costs of non-quality such as: (1) prevention, (2) appraisal, (3) internal failure, and (4) external failure. Of these types of costs, prevention cost should probably take priority because it is much less costly to prevent a defect than to correct one.

The principle is not unlike the traditional medical axiom: “An ounce of prevention is worth a pound of cure.” The relationship between these costs is reflected in 1-10-100 rule as depicted in the following illustration:



In the above illustration it is attempted to show that one dollar spent on prevention will save 10 dollars on correction and 100 dollar on failure costs. As one moves along the streams of events from design to delivery or “dock-to-stock,” the cost of errors escalates as failure costs becomes greater.

### **What is it?**

The cost of poor quality is a technique that has been developed to identify the need and opportunities for quality improvements in a language we all understand ... money.

### **When to use it**

The cost of poor quality indicates 'how it is today' and in particular it can be used:

- To size problems and focus attention for need for improvement
- As a useful tool in Step 1 of the Problem Solving Process
- As an output from step 4 of Department Purpose Analysis
- As a source of improvement/project opportunities

### **What does it achieve?**

The immediate benefits of conducting a cost of poor quality exercise will be:

- A greater degree of awareness of quality problems

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- The association of day to day failure with costs and in consequence a desire to improve
- The identification of improvement opportunities
- To give managers a new set of 'mental tools' and perspective to get underneath the realities of their operations

## Summary

**Basic work** - is as it suggests, the essential/unavoidable activities required to do a job of work.

**Prevention** - is any activity aimed at preventing getting things wrong ... eg. training, planning and analysis data for improvement purposes.

**Appraisal** - is checking that the requirements have been met, for example, such as verification, inspection and audit..

**Failure** - is any activity created as a result of not meeting the requirements first time ... eg. scrap, correcting, customer complaints, lost opportunities and exceeding requirements

**The cost of poor quality = appraisal costs + failure costs**