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Software Quality

Part6

(Cost of Quality)

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Cost of Quality

Basically, the costs of software quality are those costs incurred through both meeting and not meeting the customer's quality expectations. In other words, there are costs associated with defects, but producing a defect-free product or service has a cost as well. Calculating these costs serves the purpose of identifying just how much the organization spends to meet the customer's expectations, and how much it spends (or loses) when it does not.

Knowing these values allows management and team members across the company to take action in ensuring high quality at a lower cost.

While analyzing the cost of software quality at an organization may lead to the revelation of uncomfortable truths about the state of quality management at the company, the process is important for eliminating waste associated with poor quality. This often requires a mindset and culture shift from viewing software quality defects as individual failures to seeing them as opportunities to improve as a collective team.

Cost of Quality

DEFINITION

Cost of Quality is a measure that quantifies the cost of control/conformance and the cost of failure of control/non-conformance. In other words, it sums up the costs related to prevention and detection of defects and the costs due to occurrences of defects.

Cost of Quality

EXPLANATION

Cost of Control (Also known as Cost of Conformance)

Prevention Cost

The cost arises from efforts to prevent defects.

Example: Quality Assurance costs

Appraisal Cost

The cost arises from efforts to detect defects.

Example: Quality Control costs

Cost of Failure of Control (Also known as Cost of Non-Conformance)

Internal Failure Cost

The cost arises from defects identified internally and efforts to correct them.

Example: (Fixing of internal defects and re-testing)

External Failure Cost

The cost arises from defects identified by the client or end-users and efforts to correct them.

Example: (Fixing of external defects and re-testing) and any other costs due to external defects (Product service/liability/recall, etc)

Cost of Quality

Examples of costs of quality categories:

Prevention costs:

- quality planning
- formal technical reviews
- testing equipment
- training

Appraisal costs:

- inspection
- testing

Failure costs:

- **internal failure costs:**
  - rework, repair, and failure mode analysis
- **external failure costs:**
  - complaint resolution
  - product return and replacement
  - help line support
  - warranty work

Cost of Quality

FORMULA / CALCULATION

Cost of Quality (COQ) = Cost of Control + Cost of Failure of Control

where

- *Cost of Control = Prevention Cost + Appraisal Cost*

and

- *Cost of Failure of Control = Internal Failure Cost + External Failure Cost*

NOTES

❖In its simplest form, COQ can be calculated in terms of effort (hours/days).

❖A better approach will be to calculate COQ in terms of money (converting the effort into money and adding any other tangible costs like test environment setup).

❖The best approach will be to calculate COQ as a percentage of total cost. This allows for comparison of COQ across projects or companies.

❖To ensure impartiality, it is advised that the Cost of Quality of a project/product be calculated and reported by a person external to the core project/product team (Say, someone from the Accounts Department).

❖It is desirable to keep the Cost of Quality as low as possible. However, this requires a fine balancing of costs between Cost of Control and Cost of Failure of Control. In general, a higher Cost of Control results in a lower Cost of Failure of Control.

Cost of Quality

Cost of Quality (COQ)

=

Cost of Control

(Prevention Cost + Appraisal Cost)

+

Cost of Failure of Control

(Internal Failure Cost + External Failure Cost)

http://SoftwareTestingFundamentals.com/