4.4 COST OF QUALITY

In Total Quality Management (TQM), the cost of quality (COQ) is a methodology that helps organizations calculate the costs associated with ensuring product quality:

What it is

The COQ is the sum of the cost of good quality (COGQ) and the cost of poor quality (COPQ):

COQ = COGQ + COPQ

What it includes

- The COQ includes all costs associated with product quality, including:
- Preventive costs to reduce failures
- Process controls to maintain quality
- Costs of internal and external failures

Why it's important

The COQ helps organizations understand how quality impacts the bottom line. It also helps organizations:

Assess how resources are used for quality

Determine where to allocate resources to improve product quality

Analyze and improve quality operations

How to implement it

To implement the COQ in project management, you can:

- Gather input data
- Develop a project quality management plan
- Analyze data
- Establish quality metrics
- Perform quality assurance and control
- Devise an improvement plan

TYPES OF QUALITY COST:

Appraisal costs

Appraisal costs are associated with measuring and monitoring activities related to quality. These costs are associated with the suppliers' and customers' evaluation of purchased materials,

processes, products, and services to ensure that they conform to specifications. They could include:

- Verification: Checking of incoming material, process setup, and products against agreed specifications
- Quality audits: Confirmation that the quality system is functioning correctly
- Supplier rating: Assessment and approval of suppliers of products and services

Internal failure costs

Internal failure costs are incurred to remedy defects discovered before the product or service is delivered to the customer. These costs occur when the results of work fail to reach design quality standards and are detected before they are transferred to the customer. They could include:

- Waste: Performance of unnecessary work or holding of stock as a result of errors, poor organization, or communication
- Scrap: Defective product or material that cannot be repaired, used, or sold
- Rework or rectification: Correction of defective material or errors
- Failure analysis: Activity required to establish the causes of internal product or service failure

External failure costs

External failure costs are incurred to remedy defects discovered by customers. These costs occur when products or services that fail to reach design quality standards are not detected until after transfer to the customer. They could include:

- Repairs and servicing: Of both returned products and those in the field
- Warranty claims: Failed products that are replaced or services that are re-performed under a guarantee
- Complaints: All work and costs associated with handling and servicing customers' complaints
- Returns: Handling and investigation of rejected or recalled products, including transport costs

Prevention costs

Prevention costs are incurred to prevent or avoid quality problems. These costs are associated with the design, implementation, and maintenance of the quality management system. They are planned and incurred before actual operation, and they could include:

- Product or service requirements: Establishment of specifications for incoming materials, processes, finished products, and services
- Quality planning: Creation of plans for quality, reliability, operations, production, and inspection
- Quality assurance: Creation and maintenance of the quality system
- Training: Development, preparation, and maintenance of programs

How to Calculate Cost of Quality in Projects

Calculating the COQ in projects is an important step towards improving quality and reducing costs. While the calculation may differ across organizations, a comprehensive overview of all quality costs is essential for better understanding.

- The basic equation for Cost of Quality is the sum of Cost of Good Quality (COGQ) and Cost of Poor Quality (COPQ).
- To calculate the COGQ, add the Prevention Cost (PC) and Appraisal Cost (AC) (COGQ = PC + AC).
- To calculate the COPQ, add the Internal Failure Cost (IFC) and External Failure Cost (EFC) (COPQ = IFC + EFC).
- By combining the COGQ and COPQ equations, the COQ can be more clearly defined as follows:
- COQ = COGQ + COPQ = (PC + AC) + (IFC + EFC).

How to Interpret and Optimize Cost of Quality in Projects

To interpret and optimize COQ in projects, businesses must understand the different components of the cost of quality. Moreover, they must identify areas for improvement, and implement strategies to reduce costs while maintaining quality standards. Here is a breakdown of the key points to keep in mind for interpreting and optimizing the cost of quality in projects:

Analyze Data

Start by gathering and analyzing data on the different costs of quality, including prevention, appraisal, internal failure, and external failure costs.

Identify Areas of Improvement

Use the data analysis to identify areas where quality can be improved and expenses can be reduced.

Set Quality Metrics

Establish quality metrics that can help you track progress towards achieving your quality goals.

Conduct Quality Control

Put a system in place for monitoring quality and conducting quality control checks to ensure that products and services meet standards.

Continuous Improvement

Develop a plan for continuous improvement that involves identifying and addressing the root causes of quality issues and implementing strategies to prevent future problems.

Optimize Costs

Use the data you have gathered to optimize expenditure by reducing waste, improving efficiency, and streamlining processes.

Examples of the Cost of Quality in Project Management

Lost Time: When a project has quality issues, it can result in delays, causing the project to go over budget and miss deadlines. Moreover, the cost of lost time can be significant as team members may need to spend additional hours on the project. Or work overtime to catch up, resulting in increased labor spends

Rejected Deliverables: If project deliverables do not meet quality standards, they may need to be redone, causing additional spends. Moreover, this can include expenses related to materials, labor, and time spent. This can also be on the rejected deliverables, as well as the cost of redoing the work

Training Costs: If the project team lacks the necessary skills or knowledge, it can lead to quality issues that can increase project spends. Moreover, investing in training can help prevent quality issues by ensuring that team members have the necessary skills and knowledge to complete their tasks effectively. Also, while training may seem like an added expense, they can

ultimately save the project money by reducing the need for rework and improving the overall quality of the project.

BUSINESS PROCESS RE-ENGINEERING (BPR)

Business process re-engineering (BPR) is a business management strategy, originally pioneered in the early 1990s, focusing on the analysis and design of workflows and business processes within an organization. BPR aimed to help organizations fundamentally rethink how they do their work in order to improve customer service, cut operational costs, and become world-class competitors.

BPR seeks to help companies radically restructure their organizations by focusing on the ground-up design of their business processes. According to early BPR proponent Thomas H. Davenport (1990), a business process is a set of logically related tasks performed to achieve a defined business outcome. Re-engineering emphasized a holistic focus on business objectives and how processes related to them, encouraging full-scale recreation of processes rather than iterative optimization of sub-processes. Business process reengineering is also known as business process redesign, business transformation, or business process change management.

Business process can be defined as "a set of logically related tasks performed to achieve a defined business outcome." It is "a structured, measuredset of activities designed to produce a specified output for a particular customer or market." Improving business processes is important for businesses to stay ahead of competition in today's marketplace. Over the last 10 to 15 years, companies have been forced to improve their business processes because customers are demanding better products and services. Many companies begin business process improvement with a continuous improvement model. The BPR methodology comprises of developing the business vision and process objectives, identifying the processes to be redesigned, understanding and measuring the existing processes, identifying IT levers and designing and building a prototype of the new process. In this context it can be mentioned that, some of the biggest obstacles faced by reengineering are lack of sustained management commitment and leadership,

unrealistic scope and expectations, and resistance to change.

Business Process Reengineering (BPR) and Total Quality Management (TQM)

Total Quality Management and BPR share a cross-functional relationship. Quality specialists tend to focus on incremental change and gradual improvement of processes, while proponents of reengineering often seek radical redesign and drastic improvement of processes. Quality management, often referred to as TQM or continuous improvement, means programs and initiatives, which emphasize incremental improvement in work processes, and outputs over an open-ended period of time. In contrast, reengineering, also known as business process redesign or process innovation, refers to prudent initiatives intended to achieve radically redesigned and improved work processes in a specific time frame. In contrast to continuous improvement, BPR relies on a different school of thought. The extreme difference between continuous process improvement and business process reengineering lies in where you start from and also the magnitude and rate of resulting changes.

In course of time, many derivatives of radical, breakthrough improvement and continuous improvement have emerged to address the difficulties of implementing major changes in corporations. Leadership is really important for effective BPR deployment, and successful leaders use leadership styles to suit the particular situation and perform their tasks, giving due importance to both people and work. Business process is essentially value engineering applied to the system to bring forth, and sustain the product with an emphasis on information flow. By mapping the functions of the business process, low value functions can be identified and eliminated, thus reducing cost. Alternatively, a new and less costly process, which implements the function of the current process can be developed to replace the present one.

The Role of Consultants in BPR projects

New reengineering teams typically employ the assistance of a consultant fortheir project. Consultants can play a valuable role in BPR projects. They are objective and immune to internal politics. Having followed the processes before, they provide valuable information and best practices from a wide range of experience.

Consultants can also serve as good communication bridge between the team and management, write project documentation, lead the project and facilitate meetings, make presentations to stakeholders and associates, and last but not the least, contribute subject-matter expertise in your organization's work processes.

BPR and Information Technology

Business Process Re-engineering has rapidly developed towards a new management philosophy. The inherent business process orientation changes the perspective of international management from a structural to that of a process view. The re-engineering of business processes is only one aspect of the management of business processes. In particular, the re-engineering of international business processes needs special attention, because the multi- faceted structure of multinational corporations increases the complexity of business processes, there by influencing the options for redesign. Business Process Re-engineering has rapidly developed towards a new management philosophy based upon predecessors like Total Quality Management, Overhead Value Analysis, Kanban or Just-In-Time-Management. Business processes can be re-engineered by redesigning the steps, by changing the logical and temporal sequence of the steps, or by changing any other characteristics of the process. The role of IT is discussed in contradictory way. Advocates of information systems favor the view that the new technology is an enabler of process re-engineering. IT has to be monitored constantly to determine whether it can generate new process designs or contribute to the performance of a business process. The breakthrough of BPR is closely connected with IT, which opens new dimensions of process reorganization. Moreover, those who take the initiative in process improvement/redesign, influence the role of IT. If the data processing department initiates the process change, then IT will have more of a generator function for new process redesigns. If on the other hand, the top management sets off the change process, then the process will be first restructured and later optimized through IT.