

COST OF QUALITY PRACTICES AMONG INDIAN INDUSTRIES

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Abstract: *Quality cost system has the potential to become an excellent tool in the overall management of a business. It can provide an indication of the health of management performance in many areas of a company. The implementation of quality costing can produce significant benefits. However, Cost of quality tracking was not as widespread as some would believe. Companies which failed to use significant opportunities to reduce their costs of quality lost money. A survey of north Indian industries was conducted to find out various cost of quality practices followed by them.*

Keywords: *Quality Engg., Cost of quality, CoQ survey, quality cost practices, Indian industries*

1. INTRODUCTION

In a globally competitive market, manufacturers are forced to design and manufacture highly reliable and quality products with competitive pricing to fulfill customer expectations (Mukhopadhyay 2004). The Indian Industries, which will have to compete with internationally, established manufacturing organizations needs to produce their products very economically (Singh et al., 2009). As the volume, sources and types of business rules continue to grow, so do the needs of organizations to accurately, consistently and effectively manage their resources. Under these conditions, the role of quality management has expanded.

Total quality costs represent the difference between the actual cost of a product or service and what the cost would be if the quality was perfect. It should also be understood that the cost of quality is a comprehensive system, not a piecemeal tool (Chiadamrong 2003). Companies can lose money because they fail to use significant opportunities to reduce their costs of quality. (Rodchua 2006). Organizations should consider Cost of quality (CoQ) as an integrated approach and long-term process, and focus on the cost factors in order to improve customer satisfaction. (Kiani et al 2009). The Cost of Quality had a directly impact on the overall financial goal of a company. Even a small reduction in CoQ may boost the profitability of a company by a significant amount. Cost of quality technique resulted in cost cutting as well as quality improvement (Desai 2008; Kajdan, 2007; Vujović *et al.*, 2010). Hence, efforts should be made to reduce the CoQ as much as possible (Srivastava 2008).

Four important factors and measures contributing to a successful quality cost program implementation. The same were; management Support and Commitment, understanding Concepts of Cost of Quality, Effective Systems and Application, and Cooperation from other

departments (Rodchua 2006). Organizations should develop an appropriate quality cost system according to their need. Measuring the cost of quality requires both technical knowledge and accounting know-how and was a joint effort of many, including quality control, accounting, engineering, production, marketing, and service (Yang 2008).

COQ tracking was not as widespread as some would believe. Only a small proportion of the industries systematically tracked quality costs. (Sower et al 2007). Very few firms had included all quality cost categories (prevention, appraisal, internal failure and external failure costs) in total quality costs and made attempt to estimate value for all quality cost categories. The concept of reporting quality costs data was not widely accepted by firms (Shah & Mandal 1999).

Hence the researcher conducted a survey of north Indian industries to find out status of cost of quality (CoQ) practices. A primary survey was conducted to find out the industries which calculate cost of quality within their industries. Later on a secondary survey was conducted on those industries which calculate CoQ. The responses of both surveys were analyzed to find out status of various CoQ indicators.

2. METHODOLOGY FOR STUDY

The objective of this study is to investigate the status of cost of quality practices in north Indian industries. The study is conducted in following two steps.

Step-1

- Conducted primary survey on north Indian industries to find out status of quality cost practices in those industries.
- Questionnaire sent to 120 industries.

- Analyzed responses / findings of primary survey

Step-2

- Conducted secondary survey to find out in depth status of various parameters/indicators/variables related to CoQ
- Questionnaire sent to those 31 industries which calculate/ estimate cost of quality in their organizations.
- Analyzed responses/ findings of secondary survey

3. PRIMARY SURVEY RESULTS

A primary survey was conducted (Karapetrović *et al.*, 2010) to find out factual position of quality cost practices in industries of these states in following type of industries in north India.

- Textile Industries
- Automobile Industries
- Scientific Instruments Industries
- Cutting Tool Industries

Questionnaire was sent to a total of 120 industries (30 from each type of industry). Out of 120 industries, only 55 industries responded. Response rate of industries was found to be 45.83%.

3.1 Classification of Respondents with regard to their awareness about cost of quality term

Further it has been observed that only 25.45% of respondents are fully aware about cost of quality term, 41.82% of respondents are partially aware and of about 32.72% of respondents are least aware as shown in Figure 1.

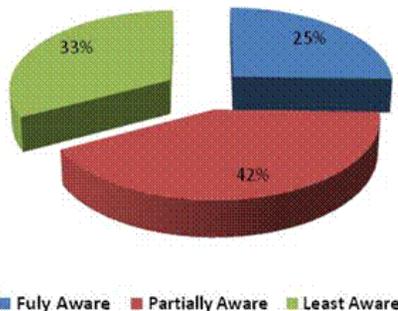


Figure 1: Response about awareness of cost of quality

3.2 Classification of Respondents with regard to their awareness about benefits of cost of quality

It was found that only 9% of respondents were fully aware about benefits of cost of quality, 56% of

them were partially aware and 35% of them were least aware as shown in Figure 2.

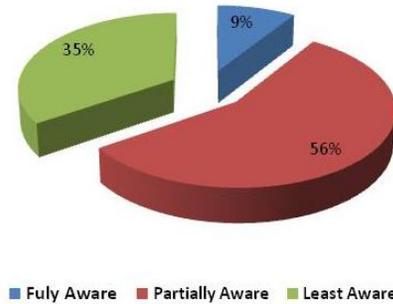


Figure 2: Response about awareness of benefits of cost of quality

3.3 Classification of Respondents according to calculating cost of quality

It is found that 31 industries out of 55 industries did calculate cost of quality in their organizations as shown in Figure 3.

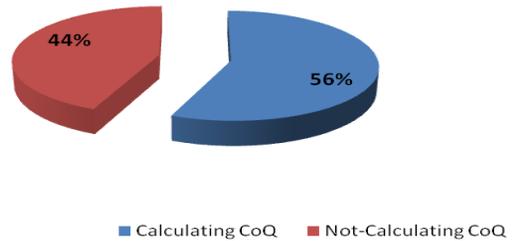


Figure 3: Percentage of respondents calculating and not calculating CoQ

4. SECONDARY SURVEY

A secondary survey was conducted on those 31 industries which calculate cost of quality in their organizations. This survey was conducted to find out in depth status of various parameters/indicators/variables related to 'Cost of Quality'. Their response with regard to four sections (General Status of Cost of Quality, Data Collection of Cost of Quality, Analysis of Cost of Quality data and Benefits of Cost of Quality) were documented by survey questionnaire through mail and personal interviews. For scoring purposes, a five-point Likert scale from 1-5 was used.

Results of secondary survey were analyzed by following three methods

- Analysis of results using Scores
In this method average score of each sub part of part 1 to part 4 and average score of each part and their standard deviation were calculated for each industry group.
- Analysis of results using *t*-test

3. ANOVA Test
- 4.

Analyzing the secondary survey results:

a) By Average Score Method:

The average composite scores obtained by all industries on different cost of quality aspects for Part-1, Part-2, Part-3 and Part-4 are summarized under Table 1:

Table 1: Average Composite Score of various Costs of Quality Aspects

Costs of Quality Aspects	Average Composite Score of all Industries
Part-1 (About General Status of Cost of Quality)	15.72
Part-2 (About Data Collection of Cost of Quality)	18.50
Part-3 (About Analysis of Cost of Quality data)	11.66
Part-4 (About Benefits of Cost of Quality)	14.38

The above table concluded that:

- The industries were not analyzing the costs of quality data properly. This point was reflected from the poor average composite score of Part-3. Hence there is a dire need of using proper methodology to do analysis work.
- With regard to potential benefits of cost of quality practices, the industries were not fully conversant with CoQ benefits. The industries should create awareness among its employees about the benefits of CoQ practices so that they can take full advantages of same.

b) By t-test Method:

The *t-test* conducted on various industry combinations on different cost of quality aspects concludes that:

- With regard to Part-1, difference in means of all industry group combinations except Automobile and Cutting Tool Industry were not significant. This means more or less all industry knows about cost of quality basics.
- With regard to Part-2, difference in means of Automobile and Scientific Instruments Industry were significant. Some other industry group combination values were on border line. This means there is need for giving proper knowledge to industries to include all four types of costs of quality while calculating costs of quality.

- With regard to Part-3, difference in means of Automobile and Cutting Tool Industry were significant. This means all industry houses pay almost equal attention to analysis part.
- With regard to Part-4, difference in means of industry group combinations was significant. This means there is difference in knowledge about benefits of costs of quality. Hence, the employees of these organizations should be educated about the advantages of cost of quality programs.

c) By ANOVA Test Method:

The ‘p’ values obtained from ANOVA Test method on all cost of quality aspects for all industries are as under:

Table 2: Results of ANOVA TEST on various CoQ aspects

Costs of Quality Aspects	‘P’ value of ANOVA TEST
Part-1 (About General Status of Cost of Quality)	0.003
Part-2 (About Data Collection of Cost of Quality)	0.01
Part-3 (About Analysis of Cost of Quality data)	0.049
Part-4 (About Benefits of Cost of Quality)	0.0038

The results of above test concluded that:

- The awareness of employees about CoQ and level of support of top management about CoQ implementation were not consistent within all responding industry groups.
- No proper data collection methods were followed while collecting /estimating data of CoQ related activities. There is a need for developing a proper model for CoQ calculation/ estimation.
- Employees of industries were not fully aware about benefits of CoQ programs. There is a dire need for creating awareness and to give proper knowledge /training to them about benefits of cost of quality program.

5. CONCLUSIONS

Following conclusions can be drawn from this work that:

- From the primary survey, it has been observed that only 25.45% of respondents are fully aware, 41.82% of them are partially aware and

- of about 32.72% of them are least aware about CoQ term.
- Further only 9% of respondents are fully aware, 56% of them are partially aware and 35% of them are least aware about benefits of CoQ program.
 - Only 56% of respondents have calculated/estimated cost of quality in their organizations.
 - From the secondary survey, it has been observed that the awareness of employees about CoQ and level of support of top management about CoQ implementation are not consistent within all responding industry groups.
 - No proper data collection methods are followed while collecting /estimating data of CoQ related activities. There is a need for developing a proper model for CoQ calculation/ estimation.
 - The industries are not analyzing the costs of quality data properly.
 - Employees of industries are not fully aware about benefits of CoQ programs. There is a dire need for creating awareness and to give proper knowledge /training to them about benefits of cost of quality program.

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