

# What is calculation the Quality Costs Using the ABC Method the order Application inTQM

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**Abstract:** The calculation of quality costs is an objective for many institution . Generous principles of TQM are an attraction for many institution . The possibility of calculating quality costs under TQM implementation is a challenge. The purpose of this paper is to present a quality costing methods under TQM implementation. The solution proposed for calculating the cost of quality is the ABC method. To apply ABC method entity must meet certain conditions that are presented in the paper. To implement TQM entity must meet certain specific condition, management entity must decide a certain way of collecting and synthesizing data and compartments entity to assume certain responsibilities. ABC method required additional work from the accounting department and accounting department collaboration with the department of quality. The paper presents the main categories of quality costs to be considered when calculating the cost of quality and how these costs can be calculated using the ABC method. The content of the application presents a detailed example of quality costing and are specified by cost drivers used. The implementation of TQM and quality costing allows managers savings and better allocation of resources.

**Key words:** quality cost, Total Quality Management (TQM), ABC Method

## Introduction:

Quality is a set of characteristics of a product that meet customer needs and therefore make the product to be satisfactory on market. Total quality is a set of principles and methods of organization in the context of an overall strategy aimed at mobilizing the entire organization to achieve better customer satisfaction at lowest possible cost.

One difficulty faced by entities today is a lack of quality cost accounting / non-quality, cost accounting quality currently being achieved in the stock. After studying and analyzing various models for calculation of quality costs, I have identified the probable solution for costing quality / non-quality, ABC method. Because traditional accounting systems can not provide quality cost calculation / non-quality, I tried to achieve an analytical model of TQM implementation, using as a starting point for an entity that has adopted TQM. In my opinion, the solution using the ABC method is motivated

by the belief that traditional accounting information are useful to managers, who are more interested in evaluating the effectiveness of resource allocation in their entity. ABC method can provide managers (Ravignon, L., Bescos, P.L., Joalland, M., Le Bourgeois, S., Maléjac, A. (2003)) a better visibility of business process and the cost drivers , being able to eliminate costs that do not bring value to existing processes and to improve its efficiency. Raise the profile information may also enable development of quality initiatives by identifying activities that are associated with poor quality products and cost associated drivers. Total Quality Management (TQM) is a concept which attempts to identify the root causes that produce defects in an entity. The work include: 1. Organization of the specific entity, 2. Conditions for applying the ABC method, 3. Quality Costing.

Following analysis and multiple international studies (Juran, J. M. (1951); Crosby, P. (1984); Deming, W.E. (1986); Campanella, J. (1990), Dale, B., Plunkett, J. (1999)) , the majority opinion turns to the classification of quality costs in prevention costs, assessment costs,

internal failure costs and external failure costs. Studying the international literature (Atkinson, J., Hohner, G., Mundt, B., Troxel, R. & Winchell, W. (1991); Juran, J.M. (1995); Evans, J.R., Lindsay, W.M. (1999)), I can say that the main reasons for not using quality cost is the lack of management support or lack of interest in quality management to track costs, mainly due to the specific principles of TQM, which involves a lot of paper work, lack of knowledge regarding how to track quality costs and the benefits derived from applying COQ. Other reasons for not using quality cost are the lack of an accounting and an appropriate computer system for tracking cost of quality, the explanations in this regard are divided between the lack of tools for collecting, organizing, filtering and reporting of quality costs, lack of accounting mechanism to provide the financial reporting system pursuing elements of quality costs, accounting system and inadequate resources to carry out normal COQ calculations in the industry. For partially solving these problems is part of the ABC method proposed by the sector as an alternative to traditional accounting systems. Using the ABC method does not influence the cost (such as the cost method of cost centers, for example), but rather the allocation of shares on the activities that determine cost effective. International researchers (Riahi - Belkaoui, A. (1993); Evans, J., Lindsay, W. (1996), Walton, M. (1996)) suggest using the ABC method in the TQM, because ABC allows managers to accurately track costs and identify excessive resources and thus a good support for the implementation of TQM and other quality improvement programs. Managers can use information gathered by the ABC analysis, and they lead by Pareto analysis, the main cost drivers, an important ingredient in most TQM initiatives.

### Steps in calculation quality costs:

#### 1. Organization of the specific entity:

Implementing TQM requires the fulfillment of general conditions of organization:

- Implementer entity has benefited from TQM gradually, continuously increasing product quality, customer satisfaction and market share (the implementation of TQM must be applied at least 5 years);
- Responsibilities for data collection quality costs recovered Quality Assurance Department with sales and supply department and production department;
  - Analyze "Quality cost report" at the end of each year;
  - Evaluating the effectiveness of resource allocation decisions, managers have decided to use the ABC method for allocating indirect costs of quality. (ABC method provides relevant information on costs, compared with traditional accounting approaches);

- Management accounting organization provided specific application of the ABC method.

#### 2. Conditions for applying the ABC method :

To ensure effective way of organizing the management accounting and cost calculation through ABC method should consider the following:

1. Adoption by the management at the method of activity-based costing (ABC).

When the ABC method is chosen should consider the organizational factors of management accounting and cost calculation as: size of the entity, use of technology, product number, the significance of indirect costs and competition.

2. Setting the time to conduct economic and financial operations and determining costs. In order not to distort costs in year store chosen reporting period in the previous calculation and post-calculation. Thus, the chosen reporting period relate to month or semester, but with some exceptions, perhaps annually.

3. Choice of staff responsible for the execution of specific works of management accounting and cost calculation. In the context of the ABC method, each service has its functional or department representative. Development works for a preliminary calculation and post-calculation is performed at the functional level of service and responsibility for establishing such and accountability it is only specialist department. All budgets are then collected by the entity's accounting department and subject to approval by the management institution.

4. In time planning of the specific work of management accounting and cost calculation. This issue is closely linked to the degree of fulfillment of the tasks undertaken by departments which is made using graphs or tabular statement, can take different forms depending on the requirements of the entity.

5. Choosing the processing of information from management accounting. Because the ABC method requires a huge amount of data entry and processing, their processing is necessary with the help of powerful software that runs on platforms equipped with modern computers. Here comes the advantage of data processing network, to be it intranet or Internet. Costs relating to quality are calculated using data from financial accounting, management accounting, the entity's operational systems (procedures, standards, specifications) and other information calculated or estimated.

To implement the ABC method entity following steps:

1. Identification specific activities related to quality and quality costs;
2. Determining cost drivers (stimulating the cost) for specific activities of quality and the calculation of indirect quality cost allocation;

3. Rate calculation unit for each distribution basis;  
 Unit cost drivers = activity cost / total volume cost drivers

4. Quality costing distributed product analysis;  
 Activity cost consumed = unit cost driver x cost driver volume used in product manufacture

5. Total cost of quality as the amount of indirect costs charged to product quality.

*3. Quality costing :*

Analysis of quality costs can be achieved using the following format (Table 1):

Items and categories of quality cost accounting	Accounting
1. Prevention and appraisal costs	X
1.1. Prevention costs	X
1.1.1. Documentation relating to quality management	X
1.1.2 Supplier evaluation	X
1.1.3. Staff training program on quality	X
1.1.4. Quality control	X
1.1.5. Value analysis	X
1.1.6. Other costs of preventive	X
TOTAL 1.1	X
1.2. Appraisal costs	X
1.2.1. The salaries of staff performing the tests and inspections	X
1.2.2. Materials and products destroyed during the tests	X
1.2.3. Depreciation and inspection test materials used	X
1.2.4. Maintenance inspection and test equipment	X
1.2.5. Other appraisal costs	X
TOTAL 1.2	X
2. Failure costs	X
2.1 Internal failure costs	X
2.1.1 Waste	X
2.1.2 Reconditioning, repair	X
2.1.3 Degraded products	X
2.1.4 Other internal failure costs	X
TOTAL 2.1	X
2.2 External failure costs	X
2.2.1 Customer complaints	X
2.2.2 Warranty costs	X
2.2.3 Returned goods	X
2.2.4 Other external failure costs	X
TOTAL 2.2	X
TOTAL 2	X
TOTAL costs of quality	X

Table 1: Determination of quality costs

In the above model, various types of costs can be analyzed in terms of how to achieve production cost.

Primary cost (CPr) = Direct material + Direct labor + Other direct costs

Cost production (CP) = CPr + Indirect costs of manufacturing (production)

For quality costing can use the following table (Table 2):

Quality costs and quality activities	Cost driver unit	Volume cost driver used	Activity cost	Percentage turnover
(1)	(2)	(3)	(4)=(2)*(3)	(5)
1. Total prevention cost				
2. Total appraisal cost				
3. Total internal failure costs				
4. Total external failure cost				
TOTAL costs of quality				

Table 2: Total quality cost report

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Result:

For entity were considered the following data: turnover - 18.500.000 and number of products manufactured and sold - 7.200.

Cost drivers have values shown in Table 3:

Cost driver	Product analysis	Total
Number of orders	36	95
Equipment operating hours	6570	15725
Labor hours	153738	364847
Number of items	7200	16700

Table 3: Cost drivers

Calculating the cost of quality and cost drivers (Table 4):

Quality activities	Cost driver	Cost driver unit	Volume cost driver used	Activity cost
1.A Documentation relating to quality management	Labor hours	0.6579	153738	101150
1.B. Supplier evaluation	Number of orders	4055555	36	14600
1.C. Quality control	Number of items	1	7200	7200
1. Total prevention costs	Number of items			122950
2.A. New materials inspection	Number of items	0.8888	7200	6400
2.B. Inspection material in the unit	Number of items	0.2166	7200	1560
2.C. Current inspection activities	Number of items	1875	7200	13500
2.D. Final product inspection	Number of items	15625	7200	11250
2.E. Chemical inspection	Number of items	12.5	7200	90000
2.F. Testing equipment working	Equipment operating hours	0.1689	6570	1110
2.G. Correction of work tools	Equipment operating hours	0.8371	6570	5500
2.H. Periodic checks of the tools	Equipment operating hours	0.1704	6570	1120
2.I. Maintenance work tools	Equipment operating hours	2.7397	6570	18000
2. Total appraisal costs				148440
3.A. Determination defective products	Number of items	3.3333	7200	24000
3.B. Repair defective products	Number of items	0.5	7200	3600
3.C. Loss due to work interrupted	Labor hours	0.0279	153738	4300
3. Total internal failure costs				31900
4.A. Customer complaints	Number of items	0.6666	7200	4800
4.B. Returned goods	Number of items	2.5	7200	18000
4.C. Warranty costs	Number of items	0.3611	7200	2600
4. Total external failure costs				25400
Total costs of quality				328690

Table 4: Cost drivers

## Conclusion:

In position where an entity has decided to implement TQM aims to achieve visible results in the shortest time. A method of calculating the cost of quality becomes very important. Once the entity has developed a methodology for calculating the cost of quality, may hope for a more effective decision regarding their own quality cost system. If the beginning is hard, the results can be very good.

I consider the classification of quality costs in prevention costs, assessment costs, internal failure costs and external failure costs quite right.

The calculation of quality costs is only possible if the entity has established a system for collecting and measuring data taken from management accounts.

To be most reliable, quality costs must be calculated by specialists in the department of Statistical quality cost and financial and accounting department.

The calculation of quality costs using ABC, requires a kind of "quality cost report", report which allows to consider and analysis of data the types of quality costs. Quality cost and control cost are report provides information on cost trends quality information that can form the basis for management decisions.

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