QUALITY COSTS LINKS TO BUSINESS COST

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ABSTRACT
The purpose of this study is to investigate the extent to which Romanian manufacturing companies implement a cost of quality system, the motivation to implement it, and to identify the objectives behind Quality costs measuring and reporting.
Also it provides a fundamental introduction to Cost of Quality concepts in addition to understand how this measurement methodology links to business costs. It is a helpful overview of an approach to maximize value and bottom-line impact.
Companies can lose money because they fail to use significant opportunities to reduce their costs of quality.

KEYWORDS : *Quality Costs , Quality Management , Motivation , Implementation.*

JEL CLASSIFICATION : *M11*

1. INTRODUCTION

The term "quality costs" has different meanings to different people.(Juran, 1999)
Quality costs are the costs connected with both attaining and missing the desired level of quality in a service or product. They may be seen as the costs of preventing quality problems , measuring quality levels, controlling and inspecting quality levels, or failing to accomplish the desired quality levels.
What will it cost to improve quality ? What will it cost to not improve quality ?
These are basic questions that managers need to ask as they focus on the bottom line.
Probably the easiest way, rather than taking every member of the organization on a 5-day induction workshop, is to measure non-Quality, and specifically the costs of non-Quality, in the organization.
Because, typically, the 'Cost of Quality' (the technical term, which actually means 'the cost of falling short of Total Quality') is between 20% and 40% of the company or organization's annual turnover. That's a shocking statistic and most company directors won't believe it. Which is why it's useful to have the evidence of a Cost of Quality Audit to back up the claims. It's also a wonderful opportunity – cutting out the waste, rework and mistakes that cause those 20% costs requires minimal investment. The benefit goes straight to bottom line, increasing profits .
Understanding the cost of quality (the overall costs of producing a quality product) is one of the oldest quality business methods. The roots go back to 1951 , when Dr J.M. Juran 's first Quality Control Handbook made the analogy of "gold in the mine". Feigenbaum made it one of the core ideas underlying the Total Quality Management movement. It is a tremendously powerful tool for software quality, as it is for product quality in general. That is , these are often hidden costs we can't see but which can be recovered.
Many companies promote quality as the central customer value and consider it to be a critical success factor for achieving competitiveness. Any serious attempt to improve quality must take into account the costs associated with achieving quality since the objective of continuous improvement programs is not only to meet customer requirements, but also to do it at the lowest cost. This can only happen by reducing the costs needed to achieve quality, and the reduction of these costs is only

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possible if they are identified and measured. Therefore, measuring and reporting the cost of quality (CoQ) should be considered an important issue for managers.
This study would help to gain an appreciation of the background and practice of quality cost, particularly among manufacturing firms in Malaysia, where this study was undertaken.

2. LITERATURE REVIEW

Historically, business managers have assumed that increased quality is accompanied by increased cost , higher cost meant higher cost. Juran examined the economics of quality and concluded that benefits outweighed costs. Feigenbaum introduced "Total quality control" and developed the principle 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" .
The gurus and writers on the subject of quality costs improvement naturally each have their own emphasis on how to best approach implementation. It would be unwise to select anyone to be either wholly right or wholly wrong. In as much as it is possible they should be viewed as a totally.
Over the last several decades, quality costs have been divided into several categories. Since Juran discussed the cost of quality, many researchers have proposed various approaches to measuring cost of quality.
In my opinion, the most commonly accepted and comprehensive definitions have categorized quality costs as :

- Preventions costs are those costs of all activities that prevent poor quality in products or service. Included are such activities as quality planning, supplier capability surveys, the costs of new product review, process capability evaluations, quality improvement team meetings , quality improvement projects , quality education and training.
- Appraisal costs are those costs incurred to identify poor quality products after they occur but before shipment to customers. These include the costs of incoming source inspection / test of purchased material, in-process and final inspection /test, product, process, or service audits, calibration of measuring and test equipment , and the costs of associated supplies and materials.
- Failure costs are those costs incurred either during the production process(internal)or after the product is shipped (external).

Total Cost of Quality: The sum of all the costs (Prevention + Appraisal + Internal Failure + External Failure).
This typology is often referred to as the PAF (prevention, appraisal, and failure) and is one of "the most commonly used general cost of quality model in the United States (Campanella, 1990), Great Britain and based on the frequency of reference in the literature, world-wide (Plunkett & Dale, 1986). The PAF model traces back to the work of Feigenbaum (1956).
However, in many companies quality costs are not calculated explicitly but are simply absorbed into other overheads (Shepherd, 2001).

2.1. Why are quality costs important?

First, because they are large, very large . In 1978 they were estimated by the UK government to be £10 000 million. There is no reason to suppose that they are any less now. The findings of a National Economic Development Council (NEDC) task force on quality and standards , published in 1985 , claims that some 10 to 20 per cent of an organization's total sales value is accounted for by quality-related costs. Using the figure of 10 per cent , it is estimated in the report that UK

manufacturing industry could save up to £6 billion each year by reducing such costs. Various studies carried out by UMIST and information volunteered by a variety of organizations have shown that quality-related costs commonly range from 5 to 25 per cent of company annual sales turnover. The costs depends on the type of industry , business situation or service.
Crosby claims that manufacturing companies incur costs amounting to 20-30 per cent of their sales by doing things over again , while in service companies he estimates that 40-45 per cent of operating costs are wasted . Schonberger quotes a figure between 15 and 30 per cent of sales for many companies . Blades, transposing the type of quality costs experienced in manufacturing and the private sector , claims this could result in a loss of between £6 billion and £11 billion per year. From the UMIST experience it is estimated that an organization which is not progressive in its approach to quality improvement should consider its quality costs to be around 15 per cent of annual sales turnover or operating costs in not-for-profit organizations .
Second, 95 per cent of the quality cost is usually expended on appraisal and failure. These expenditures add little to the value of the product or service, and the failure costs, at least , may be regarded as avoidable. Reducing failure cost by eliminating causes of non-conformance can also lead to substantial reductions in appraisal costs. The UMIST research evidence on quality costing suggests that quality –related costs may be reduced to one third of their present level , within a period of three years, by the commitment of the organization to a process of continuous improvement .
Third , unnecessary and avoidable costs make goods and services more expensive. This in turn affects competitiveness and, ultimately, wages, salaries , jobs and standards of living .
Fourth, despite the fact that costs are large , and that a substantial proportion of them are avoidable , it is apparent that the costs and economics of many quality-related activities, including investment in prevention and appraisal activities, are not known by many companies . Such a state of affairs is surely indefensible in any well-run business.

2.2. What are the core values of cost of quality?

Flexibility
Cost of quality can be applied at any organization. Service organizations can apply cost of quality; there are costs of poor processes in service industries as well as costs of measuring quality levels(appraisal) and investments to prevent poor outcomes. Most importantly, the elements of cost of quality are meant to be applied in the context of each organization. Because of this, these techniques can be applied to many types of organizations, and all improvement approaches.
Cost reduction via prevention
You can manage your improvement programs with a balance of prevention activity cost,
measurement activity cost, and connected costs. Increased and refocused prevention activities are used to first attack failure costs, then reduce appraisal costs.
Reducing the overall costs is the goal
Improvement programs will show bottom-line savings while avoiding the pitfalls that accompany simplistic cost cutting. These pitfalls may include decreases of product or service quality, increased customer dissatisfaction, added rework costs, or simple shifts of costs from one area to another.
The later a problem is found, the more it costs to fix
The central theme behind cost of quality is that the largest costs occur after product has shipped or a service has been performed; that is, in the category of external failure costs. By showing costs in the order of flow, managers will focus improvement efforts on issues at the earliest possible point in the flow.
Showing the quality payoff
A cost of quality system shows the payoff of improvement activities. Has the organization reached the point where added improvement activity consumes more resources than it returns in benefits? An ongoing cost of quality program will answer that by showing the pace of improvement.

A global look

Cost of quality allows a monetary measure of overall organizational progress. No longer will departments waste time arguing that their improvement trumps the contribution of another department's. All improvement will be measured in terms of their contribution to the bottom line.

2.3 What are critical success factors?

Poor quality costs the company money . Good quality saves the company money . It's as simple as that. James E. Olson, President of AT&T , said, "A lot of people say quality costs you too much. It does not. It will cost you less." But many companies today do not measure the cost of poor quality , and if you do not measure it , you cannot control it.

It is often cheaper to provide high-quality products and services than to provide shabby ones. Quality is not the cost of providing an output. It is the value the customer receives from the output. Ronald Reagan wrote , "Consumers, by seeking quality and value, set the standards of acceptability for products and services by voting with their market place dollars , rewarding efficient producers of better quality products and performance" . Of course , it is not necessary to produce products or services that greatly exceed the customers expectations, but it is necessary to fully meet those expectations.

In the country of Utopia , poor quality costs are zero. The workers always assemble parts correctly so there is no need to test anything . There is never a flaw in the materials , and the products always work perfectly.

But here in Romania, and in most other places in the world , things are a bit different. People make errors , equipment malfunctions, parts break down.

Poor quality cost is defined as all the cost incurred to help the employee do the job right every time and the cost of determining if the output is acceptable, plus any cost incurred by the company and the customer because the output did not meet specifications and customer expectations.

Poor quality cost has become a valuable tool in directing the improvement activities of many corporations , large and small. The tool has been so widely accepted that it is now part of many of the government's major contracts. Companies as IBM, General Electric, and American Telephone and Telegraph use it as a primary measure of the effectiveness of their efforts to improve quality and to integrate the quality responsibility into all functions of the corporation . It has also vividly demonstrated to management that they had been reacting to problems as they occurred rather than preventing them from occurring. As Ralph Wurster, editor of "Quality magazine", wrote in June 1986: "I guess we are just too busy swatting flies to find out how they are getting in".

2.4. Implementing Quality Cost Programs

Today, more and more enterprises of all sizes are defining quality cost requirements, from the collection of scrap and rework costs to the most sophisticated quality cost programs. Almost all quality management consultants have quality cost programs as an integral part of their repertoire (Campanella, 2003). Money is the basic language of upper management.

3. RESEARCH METODOLOGY

The contents of this paper arise from studying the theory, analyzing the evolution and observing the practice of quality cost .

The methodology of the study was conducted through a questionnaire . It was reviewed for the validation purpose by a panel of ten experts in the field of management, quality and manufacturing. The basic criteria to select this experts was based on experience in their fields and their positions within the quality professional community. The panel included PhD Professor , quality consultants

and quality engineers. They were supposed to answer survey questions and write feedback or suggestions regarding their experience in quality costs.
The questionnaires contained four questions and help us to understand that implementation of quality costs plays an important role among manufacturing firms, particularly in Romania, as the implementation will help to reduce customer complaints, rework, warranty expenditure, failure costs, and total quality costs as well as improving the sales volume.
The four questions are:

- What is the goal of a quality cost system and what are the benefits of cost of quality ?
- How it should be a successful cost of quality program ?
- Which category quality (prevention, appraisal, internal failure, and external failure) is the highest priority for cost reduction?
- Why do Romanian firms refuse to implement cost of quality?

4.FINDINGS AND DISCUSSIONS

1.What is the goal of a quality cost system and what are the benefits of cost of quality ?
The respondents were asked about the goal of a quality cost system . From the 56 responses received , 89,7% of respondents have answered that improving the bottom line is the essential goal.

2. How it should be a successful cost of quality program ?
Most of the respondents have considered that a successful cost of quality program should be comprehensive and not just cover those portions of the business that are simple or obvious.
3. Which category quality (prevention, appraisal, internal failure, and external failure) is the highest priority for cost reduction?
A number of respondents expressed that Prevention costs and External failure costs were the highest priority for cost reduction. They agreed that prevention costs provided tools and training for reducing wastes in the process. Among fifty respondents who answered this question, fourteen voted for External failure costs, thirteen for Prevention costs, ten for Internal failure costs, and three for Appraisal costs.
4.Why do Romanian firms refuse to implement cost of quality?
The primary reason given by the respondents for not implementing a quality cost system is the lack of knowledge of how to track the cost of quality (92.1%). This could be due to a lack of training, motivation, and exposure of the respondents to quality costs. Other respondents mentioned a lack of management support, the instability of the firm's economic conditions, and other reasons that accounted for an equal proportion of 8.9%.

5. CONCLUSIONS

Cost of quality will demonstrate the value of improvement approaches. Cost of quality makes an ongoing "economic case" for the value of improvement, excellence, and quality, no matter what improvement approach is used.
The findings of this study should be helpful to industrial/quality professionals to continuously improve the quality management programs and to increase profitability.

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