

## THE ECONOMIC AND ACCOUNTING ADMINISTRATION OF THE QUALITY

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### **Abstract**

The non-quality consists of the sum of all the anomalies that exists in a company.It is recognized that the cost of this non-quality varies considerably from a company to another one and is , on average, 10 % -30 % of the turnover. To combat such a phenomenon means to consider this loss as an economic potential deposit.Quality management is applied at all levels , functions or activities of an enterprise and implies the principle of complementarity which indicates that the quality management of production can not be dissociated from the production process or deliverance of services.

It is also obviously the complementarity between the interest of consumers and that of the providers.The principle of complementarity leads to a redistribution of responsibilities for quality, to know "who does what" .This leads quality function to ensure four main missions : filter the deficiencies ; clarify the fundamental causes of anomalies ;coordinate internal and external actions of quality promoting ; cause systematic cost reduction of non- quality by a proper motivation of the responsibility centers ( economic mission).

Integrate the concept of quality in accounting allows to establishing financial statements showing the impact of non- quality cost on results. This is about an approach that led the manager beyond the cost analysis by nature,situation so prevalent currently .This integration is possible if we have a relevant theory of non- quality costs also relevant allowing an also relevant ventilation on responsibility centers.In that way, the principle of complementarity leads to classify the costs related to the quality into groups and it also helps to better understand the mechanisms of quality management ; by distinguishing the responsibilities and by the allocation of non-quality costs also allows various failing functions to motivate them in a rational manner.In fact, it allows to integrate the implications of the quality in the traditional accounting systems, and to measure the economic result .

It should be noted that traditional accounting does not take into account the quality and do not clearly identify the costs of non-quality importance whose importance is nevertheless crucial for the survival and development of the company. The economic and accounting management of the quality is the tool of choice for both the top management and for quality professionals .

The quality management does not present major difficulties from the economic and accounting point of view , with some few adjustments it `s part of the traditional cost accounting and is one of the essential tools of the company management having in view the development.

**Keywords:** quality, costs, management.

## Résumé

La non-qualité est constituée de la somme de toutes les anomalies que comporte une entreprise. Il est admis que le coût de cette disqualité varie considérablement d'une entreprise à l'autre et représente, en moyenne, 10% -30% du chiffre d'affaires. Combattre un tel phénomène revient à considérer cette perte comme un gisement économique potentiel.

La gestion de qualité s'applique à tous les niveaux, fonctions ou activités d'une entreprise et implique le principe de complémentarité qui induit que la gestion qualitative de la production ne peut être dissocié du processus de production ou de délivrance de services. C'est évidente aussi la complémentarité entre les intérêts des consommateurs et ceux des fournisseurs. Le principe de complémentarité conduit à une redistribution des responsabilités en matière de qualité, à savoir "qui fait quoi". Cela conduit la fonction qualité à assurer quatre missions essentielles: filtrer les défauts; faire apparaître clairement les causes fondamentales d'anomalies; coordonner les actions internes et externes de la promotion de la qualité; provoquer la réduction méthodique des coûts de dysqualité par une motivation correcte des centres de responsabilité (mission économique).

Intégrer la notion de qualité en comptabilité permet d'établir des états financiers faisant ressortir l'incidence des coûts de dysqualité sur les résultats. Il s'agit d'une approche qui conduit le gestionnaire au-delà des analyses de coût par nature, si répandues à l'heure actuelle.

Cette intégration est possible si l'on dispose d'une théorie pertinente des coûts de dysqualité permettant une ventilation également pertinente par centre de responsabilité.

Ainsi, le principe de complémentarité conduit à classer les coûts relatifs à la qualité en groupes; il permet aussi de mieux comprendre les mécanismes de la gestion de la qualité, en distinguant bien les responsabilités et par l'affectation des coûts de dysqualité permet aussi aux diverses fonctions défaillantes de motiver celles-ci de manière rationnelle. En fait, il permet d'intégrer dans les systèmes comptables traditionnels, les implications de la qualité et d'en mesurer le résultat économique.

Il est à remarquer que la comptabilité traditionnelle ne prend pas en compte la qualité et surtout ne fait pas clairement apparaître les coûts de dysqualité dont l'importance est pourtant déterminante pour la survie et le développement de l'entreprise. La gestion économique et comptable de la qualité constitue un outil de choix, tant pour les directions que pour les qualificateurs.

La gestion de la qualité ne présente pas de difficulté majeure du point de vue économique et comptable; avec quelques aménagements elle s'inscrit dans le cadre de la comptabilité analytique classique et c'est l'un des outils essentiels de la gestion de l'entreprise appelé à se développer.

**Mots clés:** qualité, coûts, gestion.

## Introduction

After a development that marked the different stages, the concept of quality tends to absolutize the impression that it is based on the modeling of economic environment in the coming years. This is the answer to the challenge of managing structural changes in market conditions at international level. Quality management is a direct result of the awareness that the main factor to maintain and increase customer is the quality of products and services provided.

In any establishment, economic or other, a quality compliant management system begins with the understanding and support of the management, the elaboration of standards of performance in each area and for each operation, followed by actual performance, the necessary corrective measures and continuous improvement of quality.

Management style focused on quality and customer satisfaction and applicable to all activities, production services, banks and government agencies, TQM (Total Quality Management ) represents the key to the competitiveness of many companies. Although many attempts, so far, the exact origin of the term "total quality" is not yet established. Deming and Juran, two of the most important precursors of quality management, don't use the term "total quality", even in their most recent works. Most authors agree that TQM is a new philosophy, a new business culture model to guide the customer in all activities and processes and optimize as needed to establish the long-term benefits.[1]

By quality management system, we understand an organization management / administration which causes a high degree of satisfaction to all parties interested in this field. An organization can demonstrate that its activities sign up within a system of quality administration if it can demonstrate that there is a set of rules of good practice (to some extent documented) and also if there are sufficient objective evidence of implementation of these rules and the rules of good practice. Integrate the concept of quality in accounting allows to establishing financial statements showing the impact of non-quality cost on results. This integration is possible if we have a relevant theory of non-quality costs also relevant allowing an also relevant ventilation on responsibility centers. The quality costs administration does not present major difficulties of economic and accounting point of view, with some adjustments it is part of the traditional cost accounting and is one of the essential tools of a company management.[2]

## 1. Background

The non-quality consists of the sum of all the anomalies that exists in a company. It is recognized that the cost of this non-quality varies considerably from a company to another one and is, on average, 10 % -30 % of the turnover. [3] In fact, their levels is even higher, if taken into account all the costs involving a poor quality of products - the invisible costs such as the loss of an organization's reputation and customer confidence in the products or services it offers. Economic consequences are considerable and can have decisive repercussions at both micro and macro level. It can be appreciated that a relatively small number of managers are considering this as a real problem. This behavior has many causes:

- quality cost does not appear in a direct manner in the traditional accounting;
- decision makers are not sufficiently and methodological trained in economic administration of quality;
- methods are less accurate and quite diverse;
- even qualitiens have different views on quality costs to be taken into account.

Experience has shown that reducing quality costs is possible and can be achieved by reducing the cost of recovery and by a slight increase in the profit margin, allowing the release of a non-negligible part of the necessary resources to improve productivity and salaries and can become an important tool in managing the company.

After the Second World War, the issue of quality management was laid for the first time in Japan, where, since 1949, began to be taught in schools. In the same year they founded and first quality circles, initiated by Prof. Kaoru Ishikawa. Also in this country since 1955 were initiated a series of radio campaigns in this area, because today due to their importance, quality costs undergo itinerant seminars.

Quality management concepts are related to a number of famous names guru in the field, including: JM Juran in the United States, P. Lemaître of France, M. Nixon in Britain.

After analyzing the costs involved in creating products, JM Juran introduced for the first time, in the '50s, the concept of quality cost, highlighting that increase profitability for excess costs must be reduced and this is achieved by making good a thing from the first time.[3]

## 2. The quality administration method

Pierre Lemaître, professor and founder AFQ (Association française des qualitiens) is in fact the one who promoted the quality administration method through the costs generated. "Quality administration" is a method that includes a set of quality management activities through the costs generated in all stages of the product, from conception to delivery including

tracking them in operation. If there is the possibility of comparisons between different sets of data, quality costs can be regarded as a criterion for quality performance of an organization. Representing a potential source of profit maximization of the organizations, the quality costs can be used as a tool for optimizing quality processes and relevant activities.[2]

The main purpose of the method is to reduce the total costs of quality, while maintaining or improving the quality of products or services and involves the completion of several stages, as follows: [4]

- Identification of activities generating expenses related to quality;
- Determining the total cost of quality and its division into three categories:
  - costs for the prevention of defects;
  - costs of identification of defects;
  - costs of remedying defects: at the producer / at the beneficiary.
- Drawing of a model of a possible “quality balance sheet” which highlights failures costs and their consequences. At this stage the three categories of costs are recorded in an account quality as follows:

Model of a possible “quality balance sheet”

Quality balance sheet	
Assets	Liabilities
A. costs for the prevention of defects	C1.costs of remedying defects: at the producer
B. costs of identification of defects	C2.costs of remedying defects: at the beneficiary

Source:Stanciu,I., Olaru,M.- Commodity Fundamentals,ASE,Bucuresti,1992[4]

According to that balance the manager can change the weights of these categories of costs in order to achieve the objective of optimum quality with minimum expenses.

- Analysis of the causes of non-quality costs in each stage of implementation (is studying the causes of the types of defects: critical, major, minor side, their frequency and their average cost).
- Establish measures to improve quality and reduce costs within reasonable limits according to the maximum tolerated defect.
- Preparing forecast budgets for quality expenses on compartments and stages.

The basic principle of this method, verified in practice is that by applying a relatively small growth of the defects prevention costs (retrofitting, qualification of personnel,

implementation of quality assurance and control) cause a relatively large reduction of the costs of remedying defects.

In order to be integrated into a business performance evaluation, quality costs must be properly integrated into a system for assessing the effectiveness of the organization's management in general. Using a set of specific and measurable indicators, the management company may adopt a performance measurement approach and may take decisions in order to increase their performance in the medium and long term.

In order to be performed, such analyzes should take into consideration the different **quality cost categories**. Juran in his "Quality Control Handbook" grouped in 11 categories the costs incurred to obtain the appropriate product for use: the cost of market research to identify customer quality requirements; costs for research and development activities; costs planning to manufacture; costs to maintain the accuracy of work processes and equipment, process ;control technology costs (human and material); costs to promote sales and related services (training for proper use of product demonstrations on use.); costs "product evaluation" on inspection, testing, evaluating the degree of compliance with the specifications; defect prevention costs (training and motivation etc.) ;costs due to "failures" in making quality ;costs incurred to keep informed all staff on quality related activities.[3]

Criticizing the traditional approach to quality costs, mainly because it takes into account only direct , tangible costs, Kelada proposed the delimitation of the following cost categories:

- direct non-quality including the costs caused by inadequate (insufficient), evaluation costs (to detect non-quality) to prevent non-quality costs and over-quality, loss of orders, etc.;

- quality indirect costs involved in analyzing a competitor activities on the development of high quality products, cost recovery correction or image of a company, following the sale of products that have disappointed customers, purchase of equipment greater accuracy etc.[5]

Quality costs include both voluntary cost to achieve a desired level of quality and involuntary cost, of failures in reaching this level. These are called "cost of quality" (compliance costs) and "non-quality costs" (costs of non-compliance). To these can be added the cost of lost opportunities.[5]

ISO 9004-3/2008 standard recommends the following categories of quality costs:[6]

- Costs of achieving quality - involved in achieving and maintaining a specified level of quality: prevention and appraisal costs (investment costs) and the costs of internal and external failures (loss);

-External quality assurance costs - involved in demonstrations and samples as required by customer specific clauses objective evidence of quality assurance, procedures, data, testing demonstration and evaluation.

In practice, the quality costs are grouped into 4 categories: prevention costs, appraisal costs, costs of internal failures and external failures costs( the Feigenbaum typology)  
This ranking could be a quantitative expression of policy-oriented to customer satisfaction. In actual practice of companies in developed countries and in the literature ,the average percentage of the total cost of quality assurance are: 3-12% -prevention; 15-32% assessment;22-50% -internal failures; 20 -48%- external failures.[7]

### 3. Complementarity principle applied in quality administration

The principle of complementarity induces that the production of quality administration can not be dissociated from the production process, all normally means necessary in developing the product are the means of production. At the same time must be considered also that non-quality as any process can generate non-quality anomalies.In that case the administration consists of:

- to answer the following questions: what anomalies? what economic consequences? the root causes? whom must react? what outcomes will be?
- to establish action plans capable of satisfactory answers to the above questions;
- to monitor the implementation of these plans and to measure the outcome.

Applying the principle of complementarity generates consequences on:

- ✓ **how to define quality** : if we consider quality as "the ability to meet a defined or potential need ", than the non-quality is the "inability to meet a defined or potential need."
- ✓ **partners** : no society, no human group can exist without sharing functions and tasks necessary to its survival and its development.
- ✓ **organization** : once the principle of complementarity implemented in the operational functions, it becomes possible to extend it to the whole company and then possibly to modify profoundly the criteria of management and style of the company: participatory management, motivational techniques, etc..
- ✓ **the quality-management organization** : The principle of complementarity leads to a redistribution of responsibilities for quality, to know "who does what" .This leads quality function to ensure four main missions : filter the deficiencies ; clarify the fundamental causes of anomalies ; coordinate internal and

external actions of quality promoting ; cause systematic cost reduction of non- quality by a proper motivation of the responsibility centers ( economic mission).[8]

The principle of complementarity leads to consider the costs of non-quality as consisting on the one hand of the cost of defects of any kind and on the other hand, of the quality function cost. It is completed by the balance between the two types of costs and leads to the idea that the cost of quality function should not be higher of the anomalies cost.

#### **4. Implications and applications in accounting systems**

Integrate the concept of quality in accounting allows to establish financial statement showing the impact of the non-quality cost on results. It s is a new approach that leads beyond the manager, beyond the cost analyzes and gap of cost by nature, so widespread today `s. This integration is possible if we have a pertinent non-quality costs theory allowing an equal and permanent deduction on responsibility centers. In this sense, one can notice the French experience in the use of so-called "Methods in Y" based on a dual analysis of anomalies: an analysis of the underlying causes, prior to the imputation of responsibility centers one. These two analyzes are priority because they condition the preventive actions and can track products, technologies, etc.

The principle of complementarity leads to classification quality relative costs into two groups: quality production costs and the costs of non-quality.[8]

#### **5. Economic and budgetary administration of quality**

The non-quality is generated either by the client's inability to fully express his needs either by the contractor inability to produce a product according to the needs expressed or implied. It originated in human imperfection or a faulty communication which is manifested by withholding information. They cost consists of the cost of deviations of any kind and their consequences and cost of quality function (considered as a replacement anomaly). To limit at the beginning and then reduce qualitative deviations is required to carry a wider control which will generate expenses that can be expressed in monetary value. Thus it is possible to assess the cost of the lack of quality.It is interesting to compare this cost: either the turnover or the production units or added value.

That requires a clear distinction between quality management and quality function management .Quality improvement is actually lowering costs of non-quality.In this purpose, it is necessary to reduce the cost of quality deviations consequences-role of the quality



function- and in parallel, improving the efficiency of this function in order to ensure a balance between the costs and reduce their amount. The expenses of the quality function correspond in reality to a masked saving because costs of deviations were not the effect of preventive actions of this function.

Quality administration means:

- an inventory of quality deviations (technical analysis);
- evaluation of expenses of quality function;
- definition of objectives (setting a forecast budget);
- balancing the quality function cost with the cost of deviations (improving quality function yield);
- reducing the cost of non-quality (the most profitable choice corrective actions).

This requires the use of administrative, accounting and extra-accounting resources: various inspection reports, the balance quality, array of objectives, ratios,etc [8,9]

The so-called method Y, above mentioned, becomes a solution to consider, as is the use of consequences of an approach on the one hand between the items seized with great precision as appearance flaws (considered direct costs) and on the other of the items seized in the global enterprise, due to indirect consequences of deviations, (which can be considered as indirect costs).

That quality cost management methodology requires teamwork and several phases and stages, as follows:[9,10]

Phase I : Analysis, concerning like stages:

*-information gathering-* the information include ongoing exercise flaws and finally exercise flaws; so we can determine the weighted average cost of flaws.

*-breakdown of costs flaws found-* which serve to define the forecast budgets ;

*-technical analysis:* which involves the breakdown on product, technique, type of flaw, workshops or centers ,to detect sensitivities and the degree of adaptation of means to specifications. These analyzes would allow a classification considering the cost distribution according to the proportion of costs corresponding to the noticed flaws.

*-deduction of non-quality cost:* these costs can be properly deducted only at the enterprise level and to some extent at the departmental level or in the case of a homogeneous production, using the "quality balance sheet."

The costs grid include: cost deviations (conception, sourcing, production, costs regarding the customer, warranty) and quality cost function (prevention, detection, deviations administration).

### Phase II- Budget forecasts,including :

-*budgetary forecasts*: overall objective of non-quality, objective and budget estimates on responsibility centers,technical objectives ( using the Pareto diagram).

### Phase III-Motivation and action, which refers to :

-the objectives grid : aimed to avoid exceeding on short-term the budgetary projections on

centers of responsibility. The annual budget of each such center is divided into 11 or 12 installments. In this way strengthens considerably the effectiveness of the quality function limiting the intervention, during the year, the important cases.

- reducing the costs of non-quality: existing grid only allows targets to avoid budget overruns but it has the effect of reducing costs, this can be done only with a program aimed at breeding methods to systematically eliminating the main root causes of anomalies highlighted the technical and economic analysis, called quality plan.[8]

This program must be defined by the operational management, at the quality responsible proposal and in accordance with each center of responsibility involved.

The whole process starts again from Phase I and is a continuing one.

Running the process supposes four periods:

-the deployment of information gathering;

-consideration of cost-noticed flaws and non-quality costs directly derived from cost accounting;

-consideration of non-quality costs obtained by extra accounting methods;

-consideration of non-quality costs determined by estimation.

The flaws cost is allocated in standard costs and the costs of non-quality in real ones. Having in view to motivate the leadership is preferable to work in real costs.

## **6. Advantages and limitations**

This type of analysis requires a simple but precis costs registration.All rubbish, alterations repairs, returns within the warranty period must be registered.Costs must be considered as they occur.

We must recognize that each workstation generates a certain amount of non-quality need to be quantified. Methodology is closed to the approach of management by objectives and could be associated with the budgetary administration. It emphasizes the importance of non-quality costs and has the great advantage to seamlessly integrate in the traditional firms administration systems, based on monetary value. In this way it provide the direct motivation

of each responsibility center without the quality function to intervene in particular. The transfer of responsibility is therefore avoided and could be developed about three months per year.

The method has been defined and used in a survey conducted by Pierre Lemaitre in France, about two decades ago, in order to assess the costs of non-quality in the SME`s and is also useful in the present.

## 7. Conclusions

It should be noted that traditional accounting does not take into account the quality and do not clearly identify the costs of non-quality importance whose importance s nevertheless crucial for the survival and development of the company. The economic and accounting management of the quality is the tool of choice for both the top management and for quality professionals .

The quality management does not present major difficulties from the economic and accounting point of view , with some few adjustments it `s part of the traditional cost accounting and is one of the essential tools of the company management having in view the development.

Nowadays it is obviously that quality has a leverage effect on the financial performance of the organization, lack of quality being expensive. Efforts of organizations to increase financial efficiency can lead sometimes to a partial abandonment of quality products and services issues.

Identification and quantification of quality costs has a double benefit:identified cost reductions and quality is improved. By improving quality performance, the company also improves quality costs. Often there may be important differences between the emergence and identification of deficiencies and until the preventive action can be highlighted the effects of these actions on quality costs could change. It is therefore preferable for the analysis and interpretation of the quality costs to achieve long-term.

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