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ACCOUNTING COSTS TO DECLARE QUALITY ASSURANCE COSTS TO THE MANAGEMENT

AYMAN HISHAM M. OZREIL
Master of Accounting, Aligarh Muslim University, Uttar Pradesh, India

ABSTRACT

The study's objective is to realize the significance of costs accounting in announcing quality assurance costs to the management. The analytical and descriptive method has been used to answer study's questions and it has inferred that providing and schematizing quality assurance costs report and its outputs via accounting information systems is a necessity due to its role on improving the management's surveillance and demonstrating the increase in the costs of internal and external failure if any, which alerts the management to reduce it to improve the quality of the products, satisfying the customer, increasing sales and the potential to compete.

The study realized the importance of quality improvement programs and giving it much concern for its role in achieving important savings, increased profits and providing quality assurance costs report via accounting information systems to encompass its outputs of financial reports and to be designed on the basis of quality assurance activities.

KEYWORDS: Cost Accounting, Management, Quality, Quality Assurance Costs

INTRODUCTION

Due to technical developments in the field of informatics, technological changes, productivity and intense rivalry among companies in globalization era, the companies' interest and focus on the concept of total quality management grew bigger and quality assurance costs is now representing a fundamental ratio of production costs, the thing that required information about these costs which emphasized the need to report these costs via accounting information systems.

Recently, Quality assurance occupied the first priority among the concerns of managerial leaderships and became one of the most important issues of any institution seeking to elevate its performance level to achieve success.

Costs of quality (COQ) currently soar high among production costs in many institutions, the thing that necessitates the availability of information relevant to these costs. Thus, this study aims at highlighting the importance of measuring and reporting quality assurance costs by setting and reporting them via accounting information systems and by making this report one of its vital outputs. This study has used analytical descriptive approach to answer its questions.

To achieve and realize this, the following basic points have been displayed: the quality concept and overall quality management, quality assurance costs, the significance of reporting quality assurance costs via accounting information systems, measuring their costs and reporting them, abstract and suggestions in addition to introducing and handling the proposed study methodology.

Study Problem

This study tries to explain relevant issues through a number of questions:

- What is the definition of quality and overall quality management?

- What is meant by quality assurance costs and their aggregate sums?
- Why are quality assurance costs being measured?
- What is the significance of reporting quality assurance costs to the management via accounting information systems?
- How are quality assurance costs calculated, considered and reported?

Importance of the Study and its Objectives

The study's significance is that it handles one of many issues that reflect modern approaches to the field of accounting, which resulted from technical advancements in the field of informative knowledge and subsequent technological and production shifts and changes. Accordingly, the managers' interest and focus on the concept of overall quality management during the last two decades of the twentieth century have increased upon which a set of international standards and curricula for quality management have been fashioned and proposed and there have been genuine and prestigious awards and prizes granted for high quality companies considering that quality assurance costs now represent a relatively large percentage of production costs, the thing that prioritizes getting more information about these costs by setting and preparing quality assurance costs' report and working on making it one of the vital outputs of accounting information systems.

This study highlights the significance of measuring quality assurance costs and reporting it by including it in the outputs of accounting information systems and considering it when designing these systems, in addition to realizing the significance of that report to the management.

Study Hypothesis

The study's thesis holds that the management is unable to define and diagnose quality problems and reduce its costs unless they are reported by accounting information systems, which negatively affects its ability to improve quality in order to prevent profits decrease or increase.

Study Method and Plan

The study depended on an analytical descriptive approach through revising relevant books and periodicals, and it included the following basic points:

- Former studies.
- The quality concept and overall quality management.
- Quality assurance costs.
- The significance of reporting quality assurance costs via accounting information systems.
- Measuring quality assurance costs and reporting it.
- Conclusions and suggestions.

Previous Studies

The studies that handled the issue of quality assurance costs (quality control costs) are numerous; we mention the following studies for exemplification but not exclusion:

- **A Study by (Shukla & Agrawal, 2012):** This study aimed at investigating the effects resulting from total quality management on companies seeking to attain privileges. The analytical method was used through gathering data from the study and analyzing it in automobile sectors. Furthermore, Should the companies carry out total quality management successfully, quality privileges positively affect companies' performance as it is the case to privileged companies. Moreover, results revealed the presence of solid evidence that validates performance improvement of units working along quality privileges of the company and the importance of quality surveillance in correcting flaws found in products before producing a large number of products that do not meet the proposed qualifications.

- **A Study by (Nayak, 2012):** This study aimed at recognizing the effect of implementing the acts of total quality managements in companies sector of South Gujarat region. The study was made on a sample comprising 250 employees in companies sector of South Gujarat region to gather data relevant to the questionnaire. Moreover, the study was assembled from magazines, periodicals, researches, publications, books and various websites and results revealed that the total participation of the employee is considered to be vital for the success of implementing total quality management. Also, results have shown that companies set plans and strategies of growth processes based on permanent innovation to win the customer's satisfaction, introduce improvements and to create knowledge to please customers.

- **A Study by (Escanciano & Rodreguez, 2011):** The study aimed at examining the effect of quality management on mining in Spain and finding out whether the attestation of quality management systems can provide companies with a suitable framework to merge total quality management with other management systems, such as environmental, professional and safety managements. The study was carried out on 104 approved mining companies active in Spain and these were distributed among 15 samples of independent communities in Spain. Furthermore, results revealed that implementing the system of total quality management and making it as one of the most common strategies that the company adopts to show commitment towards quality and improvement. The ISO 9001 certificate was shown to be significant in reconsidering the company's quality given that quality provides companies with a basis upon which companies strive for integrated quality management that includes the most important concepts of environmental and professional safety for raising contentment level.

- **A Study by (Singh, 2010):** This study aimed at reviewing the different acts of total quality management including the application of ISO on Indian pharmaceutical industries to investigate the relationship between the acts of total quality management and company's performance. Also, the company aims at determining and analyzing the important factors that affect implementing total quality management in Indian pharmaceutical industries. The study used the analytical method in Indian pharmaceuticals in a lab specialized for discovering its nature. Furthermore, study's results revealed the significance of implementing the acts of total quality and its largely positive effect on total quality management that incorporates all methods for being instrumental to creating and fostering collaboration to make an efficient competitive market among companies. This study also recommended considering new methods for future research and studies.

What Distinguishes this Study from Previous Ones

This study is distinguished in highlighting and bringing into focus the significance of having quality assurance costs measured and reported by the four groupsand making it one of the vital outputs of costs accounting.

The study emphasized and ensured the management's need to report quality assurance costs and pointed out that

the best and the most ideal design and preparation of this report is the one that relies on the basis of quality-related activities.

The Concept of Quality and Overall Quality Management

Several definitions of quality notion have been proposed. Juran defines it as for how long the product can suit usage. Moreover, Crosby holds that quality is the product's tendency and ability to conform to the desired specifications, whereas Cohen and Brand describe it as meeting the beneficiary's requirements and demands and even exceeding it (Al_fadhl and Nour, 2002: 15). Furthermore, Malcom defines quality as the whole total of properties and traits which affect the commodity and service's capability to meet certain needs from the customer's perspective (Malcom, 1990: 44). Based on the above-mentioned, we can maintain that quality is the organization's attempt to satisfy the customer's desire and expectations with the lowest costs. Quality includes two essential aspects which are quality of design and conformance quality. The first is measured by the ability of the commodity's or service's specifications to satisfy and meet the customer's needs and desires, whereas the latter means to manufacture and fashion the product to match the design's specifications and those of industry and engineering. (Hornegren, Foster, Datar, 1996:1222).

As for overall quality management, there are several perspectives towards its definition but the one we dealt with was chosen for it contains the majority of perspectives. Accordingly, this definition conceptualizes overall quality management as creating and developing a set of values and beliefs that promote the slogan or ethos of customer-oriented quality as the purpose of the institution and that group work and team-oriented behavior is the most ideal to make the desired change in it. (Al-Qahtani, 1993:16). From the definition, it is obvious that overall quality management is of three key aspects which are the customer, group work and improvement. (Hornegren, Foster and Datar, 1996: 1213 and Heitger, Ogan and Matulich, 1992, p. p. 264–265).

Quality Costs

Quality costs are the ones upgraded to prevent low quality or they are the upgraded costs that result from lowering quality, such costs are divided into:

- Prevention costs: these costs are upgraded to prevent the production of goods nonconforming to the specifications, such as quality engineering cost, exported materials checkup and inspection, maintenance and repair of machines, industrial process engineering, design engineering and cost of training to reach the desired quality level.
- Appraisal costs: these are the costs upgraded to discover the individual units of the product nonconforming to the specifications, such as the handled materials inspection costs, testing the product via manufacturing process and the final inspection of the product.
- Internal failure costs: those are the ones upgraded when the product that does not match the specifications is discovered before shipping it to the client, such as cost of rejuvenating nonconforming products prior to shipment, re-inspection cost and lost margin of contribution due to low quality production.
- External failure costs: these are upgraded upon discovering products nonconforming to specifications after shipping it to the client, such as costs of profits, repair, maintenance and allowances granted for customers to encourage them to endorse their products and the margin of contribution lost due to sales reduction, market's share and price rate.

It is noteworthy to show that the higher quality gets, the higher prevention and appraisal costs get while the costs of internal and external failure decrease as quality increases.

The Significance of Reporting Quality Assurance Costs via Accounting Information Systems

Intense rivalry between companies in the era of globalization requires the managements to look for new ways and methods to run their companies with high efficiency. To realize this, new required information that might be different from previous information must be available. The following is the factors which led to significant change in required information (Thaher, 2002: 11-15):

- Agents' taste shifted and moved toward the better.
- Openness of global markets mutually.
- Technological change that made the world smaller place given the internet's ability to reach any part of the world almost instantaneously leading to the facilitation of products' marketing and hence increasing the intensity of rivalry.
- Rapid changes occurring to global markets.
- Companies' holders increased pressure to manage their own companies to gain feasible returns.
- Focusing on quality and brand or type.
- Focusing on activities.

As a result of these factors, the need to attain previously-overlooked information via accounting information systems arose, in addition to ensuring the conformance of those systems' design with the needs of the company and its developed processes to assist the management in making the appropriate decisions to survive, succeed and increase the ability and potential to compete. These mentioned factors have led the company to concentrate on quality assurance costs in a response to the ever developing and changing tastes of customers, so reporting information relevant to quality assurance costs via accounting information systems became demanding given that quality assurance costs now represent a fundamental ratio of production costs according to the estimates of several experts. For instance, a study revealed that quality assurance costs among American companies range from 10% to 20% of sales (Polimeni & others, 1991: 443), hence, we find that several industrial corporations have established a department to survey and monitor quality assurance costs as an attempt to decrease defective products. Moreover, quality improvement programs can lead to earning significant savings and high gains considering that Motorola company for the production of telecommunication devices and electronics estimated it will raise 2.2 billion dollars annually as a result of quality assurance programs. The value of this saving represents 16.5% of the annual profits amounting to 13.3 billion dollars in 1992 considering that this company earned a net worth of 576 million dollars as labor-income in 1992 and without the savings of quality assurance programs. Furthermore, if the company had not earned the savings of quality assurance costs, it would have lost more than 1.5 billion dollars (Horngren, Foster and Datar 1996: 1222).

From here, we find that it is important to specifically report quality assurance costs to provide the company with relevant information. So, information specific to quality assurance costs can be useful and instrumental to the company given that the proper and positive use of this information can improve the progress of management in the efforts of surveillance and it can lead to broader knowledge of the strategic applications of the costs (Carr & Tyson, 1992: 52). Moreover, the report of quality assurance costs reveals the ascent of internal and external failure costs if any, which draws

the attention of the company to necessarily reduce these costs to reduce quality assurance costs by identifying and diagnosing quality assurance problems. The company can also use these reports for inspecting in-depth interactions among the four groups of quality assurance costs previously-mentioned, in addition to the fact that studying the report of quality assurance costs provides a deeper vision for the management, especially when comparing the approaches of these costs in time. Also, we find that quality assurance costs must drop in time in successful quality-related programs considering that the significance of providing quality assurance reports via accounting information systems arises from the great influence of these costs on profits. As for contribution, if we assume that competition improves the quality of products, companies not highly concerned with quality improvement can suffer from the decrease of market shares and profits. From here, we find that quality's benefits are represented in preventing profits' decrease or in earning high gains; in addition to that quality improvement has no financial effects. Concerning quality improvement, the company earns expertise on the product and the process of creating it. Such expertise might reduce costs in anticipation given that high-quality products improve the company's reputation which might lead to double its earnings in the future.

Accordingly, we infer that the inclusion of quality assurance costs report within financial reports provided by accounting information systems is greatly significant.

Measuring Quality Assurance Costs and Reporting it

Activity Based Costing (ABC) is considered one of the best and most recent methods to accurately measure activity costs by employing costs drivers to each activity and getting production to tolerate activity costs according to the causes. So, this method will be adopted to identify activity costs represented by quality-related value chain. The latter appears to be a sustainable resource of information on activity costs and it includes administrative jobs or major activities as the following:

- Research and developments.
- Product design.
- Production.
- Marketing.
- Distribution.
- Post-sale service.

It is possible to formulate an equation to measure quality assurance costs as follows: (Hajjaj and Basili, 2001: 83).

Total Quality Assurance Costs = Prevention Cost + Appraisal Cost + Failure cost

It is also possible to calculate failure costs by the following formula:

Total Failure Costs = Internal Failure Costs + External Failure Costs + Lost Contribution Margin

It is favorable to design and prepare quality assurance costs report on the basis of relevant activities by which the prepared report will be a powerful tool to the management. This report will facilitate the management of quality assurance costs activities and it will also enable people in charge to focus on the most important areas and issues, in addition to providing information necessary to appraise each type of failure in relation to other types.

Moreover, referring to the ease of applying this method in preparing quality assurance costs report and in being compatible with most companies should be made (Youde, 1992: 38).

Accordingly, the following practical case will be presented to explain how quality assurance costs are accounted and reported. Company (X) manufactures the products (A) & (B) and what follows is the relevant information.

	Product (A)	**Product (B)**
Produced and sold units	20000 units	10000 units
Sails price	4000 dinars	3000 dinars
Variable unit's costs	2400 dinars	1600 dinars
Engineering design hours	12000 hours	2000 hours
Testing & inspecting unit's hours	2 hours	half an hour
Re-instated units rate	5%	10%
Re-instatement costs for each unit	1000 dinars	800 dinars
Renovated units rate	4%	8%
Renovation costs of unit	1200 dinars	900 dinars
Lost sales due to bad quality	____	600 units

The rate of the worker's wage of design is (150) dinars per hour, whereas that of testing and inspection is (80) dinars per hour.

To identify quality assurance costs for each product according to the four groups of costs, we perform the following:

- Defining quality-related activities and groups of activity costs and such activities are represented by engineering design, testing, re-instatement, customer support, retrieved and replaced portions, maintenance and renovation.
- Defining the value of costs allocation basis or factors of quality-related activities cost , given that the design hour have been adopted as the basis of loading engineering design activity costs, testing hours as a basis of loading testing activity costs, the number of re-instated units as a basis of loading re-instatement costs, number of repaired units as the basis of loading customer support activity costs, retrieved and replaced portions and maintenance and repair activity.
- Defining the rate of privatization costs for each activity.
- Costs of each activity are calculated by multiplying the rate of privatization by units' ratios of privatization.
- Defining total quality assurance costs by adding the costs of all activities relevant to the quality of products(A) & (B) in every aspect of value chain activities.

A quality assurance costs report is set into two parts:

The First Part: includes all of quality-related costs except those present in the lost contribution margin of sales loss and from decreased prices of sold products. The latter was displayed in the second part of this report because the costs in this part are for an alternate opportunity expenses that are roughly estimated. Hence, they are not generally registered in accounting information systems despite being an important factor for motivation towards implementing quality improvement programs.

The Second Part

Quality Costs: The Amount of Lost Sales Contribution Margin Per Unit Gross Margin Contribution Ratio to Sales

Product A Product B Product A Product B Product A Product B Product A Product B

External Failure Costs: --1 200 Unit --1400 dinars --1680000 dinars --5.6%

Lost contribution Margin Estimated Via Sales Loss

In the first part of this report , it is obvious that total quality assurance costs of product (A) are (7056000) dinars minus (5000000) dinars for appraisal and prevention costs that amount to 6.25% of this product's sales value. In turn, we notice a decrease in external and internal failure costs given they were merely (2056000) dinars and a ratio of 2.57% of this product's sales value. We notice its influence on the absence of sales loss due to bad quality and that is evident in the second part of this report. As for product (B), we notice an increase in the costs of internal and external costs reaching (1592000) dinars among total costs that reach (2292000) dinars with 5.34% of this product sales as evident in the first part of this report while we find that prevention and appraisal costs represented 2.3% of sales. As such, in the second part of this report, the lost contribution margin of the sales roughly estimated (1680000) dinars of this product, due to the lowering of production quality.

Accordingly, we conclude that the total quality cost for product (A) is (7056000) dinars, and product (B)’s quality costs are (2292000) and (1680000) dinars.

CONCLUSIONS AND SUGGESTIONS

The study tackled the subject of quality assurance costs and reporting it to work on making it one of the vital outputs of accounting information systems. Quality assurance costs are grouped into four: prevention costs, appraisal costs, internal and external failure costs.

The importance of monitoring and evaluating quality assurance costs and focusing on it has been revealed given it is currently representing an essential ratio of production costs(mostly ranging from 10% to 20% of sales). Moreover, quality improvement programs leads to significant savings and high incomes, in addition to non-financial influences to improve the company's reputation. Studies confirmed the management's urging need to report quality assurance costs and the importance of providing assistance to improve the management's ability to prolong monitoring and surveillance and to reveal the increase of internal and external failure costs if any. As such, this drives the management to work on decreasing by defining and diagnosing quality assurance issues and reducing its costs to improve product's quality and to satisfy the customer considering the ability to use the mentioned report in inspecting interactions of the four groups of quality assurance costs, not to mention providing a deeper vision for the management, especially in comparing the tendencies of these costs over time. It was obvious that the best design and preparation of quality assurance costs is based on quality-related activities and a practical case to measure and report quality assurance costs was reviewed with demonstrating the effect of these costs on incomes and contribution margin. Prevention and appraisal costs of product (A) have been shown to represent 6.25% of sales, whereas internal and external failure costs represented a mere 2.57% of sales.

It is noted that the lack of sales loss of this product is due to bad-quality, which indicates the contrast in the relationship between prevention and appraisal costs from one aspect and internal and external failure costs from another. Concerning product(B), the costs of internal and external failure amounted to 5.34% and prevention and appraisal costs were of up to 2.3% of sales. Lost contribution margin resulting from lost sales of product(B) was estimated to be (1680000) dinars or a 5.6% of sales.

Accordingly, at the End of the Study We Propose the Following

- Giving quality improvement programs greater attention due to its role in earning significant savings and high incomes.
- Reporting quality assurance costs via accounting information systems and including it with its total outputs of financial reports.
- To design the report of quality assurance costs on the basis of quality-related activities.
- Companies should evaluate and estimate the lost contribution margin even approximately and considering it in the report of quality assurance costs given that it represents an important factor of motivation towards conducting programs to improve quality.
- Conducting research that handles other aspects relevant to quality assurance and its costs.

REFERENCES

1. Al-Fadhl, Muayyad Muhammad, Nour, Abdel-Nasser Ibrahim, (2002), Management Accounting, 1st floor, Amman: Al-Maysara for publishing, distribution and printing.
2. Al-Qahtani, Salem Saeed, (1993), Total Quality Management, Journal of Public Administration, issue (78), April.
3. Carr, Lawrencep, and Tyson, Thomas, (1992), Planning Quality Cost Expenditures: How much should a company spend on improving quality? management Accounting, Vol. LXXIV, No. 4, October.
4. Escanciano, C., & Rodreguez, F., (2011), Quality Management and Integrated Total Quality in Spanish Mining: Result of an Empirical Study. Dyna, 79 (171): 167-174.
5. Hajjaj, Ahmed Hamid, Basili, Makram Abdel-Masih, (2001), Management Accounting: A contemporary entry on planning, scheduling, surveillance and decision-making, 3rd floor, Al-Mansoura modern library.
6. Heitager, Les, Ogan, Pekin, and Matulich, Serge, (1992), Cost Accounting, 2nd ed., Cincinnati, Ohio: South-western publishing co..
7. Horngren, Charles, Foster, George, Datar, Sericant, (1996), Cost Accounting: Administrative Entrance, P2, 2nd floor, Arabicization of Ahmed Hamid Hajjaj, Al-Riyadh: Al-Marrikh for publishing Inc.
8. Malcom, Smith, (1990), Management Accounting for total quality management, Management Accounting, Vol. 68, No. 6, June.
9. Nayak, M., (2012), Measuring the Impact Total Quality Management Ensuring Management Practices in the Corporate Sector of South Gujarat region. Spectrum: A Journal of Multidisciplinary Research, Vol.1 Issue 1, pp 32-47.
10. Polimeni, Ralph S., and others, (1991), Cost Accounting: Concepts & Applications for managerial Decision making, 3rd ed., Singapore: Mc Graw-Hill, Inc..
11. Shukla, M., & Agrawal, P., (2012), The Structural Factors and Organizational Performance Relationships between TQM in Indian Automobile Sectors. International Journal of Engineering and Innovative Technology (IJEIT), 1(3): 119-121.

12. Singh, S & Dallah, R., (2010), Effect of Total Quality Management on

13. Thaher, Ahmed Hassan, (2002), Management Accounting, 1st floor, Amman: Wael for publishing Inc.

14. Youde, Richard K., (1992), Cost-of-Quality Reporting: How we see it? Management Accounting, Vol. LXX11, No. 7, January.