

# **OPPORTUNITIES FOR OPTIMIZING THE COST OF QUALITY**

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**Abstract:** Nowadays, in front of an increasingly fierce competition, the center of gravity of any business in order to make a profit is customer satisfaction. For achieving this desideratum, companies, in their role as suppliers of goods and services, mostly aim to obtain economic and financial performance by improving quality and thus optimizing emergent costs. From this perspective, quality improvement within the economic entity must be a continuous activity which aims mainly to target the performance of processes, products and services in order to be more efficient and meet consumer demands. Therefore, the main interest consists in taking action to ensure effectiveness and efficiency, in equal measure for both economic entity, but also for the customer, through the application and selection of optimal solutions targeting decreasing costs. This paper aims to highlight that quality improvement becomes a very important process whose primary concern should be: discovering defects and quality cost optimization.

**JEL classification: M40, M41**

**Key words: quality; quality cost; managerial accounting; optimization; continuous improvement**

## **1. INTRODUCTION**

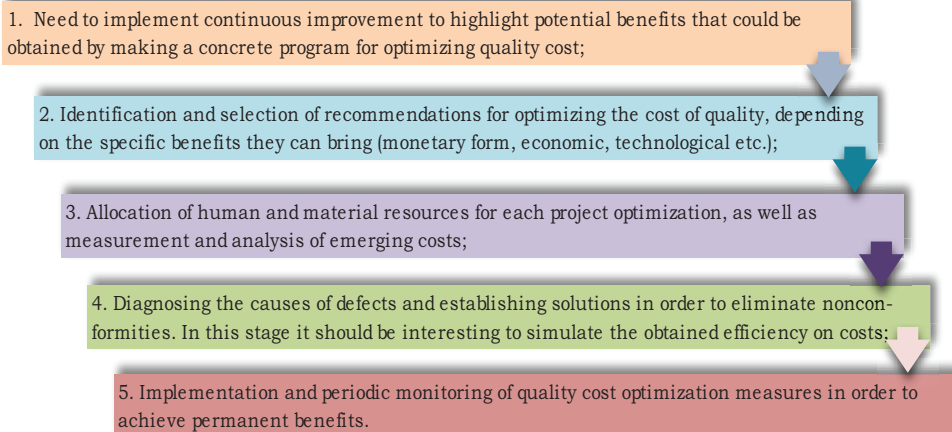
Optimizing the quality costs is a highly controversial issue often discussed in the scientific literature. In fact any economic entity that aims to improve quality of products and services must take into account both implicit costs made in order to achieve customer satisfaction and how to achieve the objectives at the lowest possible cost. Therefore, in the following article, we come with the proposal of using specific quality tools, which once implemented within the company's processes facilitates managerial accounting approach regarding quality cost optimization.

## 2. ANALYSES

Quality cost continuous improvement is an attribute which should not be missing from top management vision of the economic entity and must take into account all costs associated with quality. Thus, starting from the great vision of Crosby, Deming, Juran and Feigenbaum regarding quality, all of them put great emphasis on continuous improvement which should ensure gradual optimization of the quality costs. The steps to be followed consistently to achieve this goal are the following:

- **understanding the client.** This is the first step and most important of all, as the economic entity needs to know, understand and comply with customer requirements in order to ensure continuity in the retail market, regardless of the industry in which it activates;
- **evaluate effectiveness.** Collecting data on internal procedural measures and determining if the process meets the requirements of cost, time or variability rules;
- **process analysis.** This step involves, in fact, determination of the efficiency and effectiveness of the process . Normally, depending on the diagnosis discussed, you can select several assumptions about future actions;
- **improving the process.** Ensure the premises on functional performance, technical and economic process;
- **implementing changes.** Where appropriate, the necessary adjustments must be made;
- **standardization and monitoring.** In this last step it must be carried out the proving performance, standardization and continuous monitoring of the process to eliminate any gaps that may arise.

Steps required to be completed in order obtain an improvement on the quality of processes, products and services are exposed within the Figure no.1, below:



**Figure no. 1** Steps to optimize the cost of quality

One of the most effective tools to evaluate the success of a quality management program is to **determine, improve and optimize the cost of quality**. From this point of view, the issue under discussion presents a systematic approach to quality assessment of the costs, which must be based on an assessment methodology of total cost quality (prevention, appraisal, internal and external failure). In addition to provide satisfactory

results, it is necessary to identify the causes and costs of rework to improve existing processes in the economic entity. For this reason it is necessary a detailed approach of the improvements conferred by a comprehensive managerial accounting system so that effective strategies to prevent potential cost of poor quality can be identified in order to reduce or eliminate it.

When addressing the concept of improving quality we should include all processes within the economic entity. Therefore, to achieve the goal of optimizing quality cost, it requires the use of specific tools such as:

- Added and non-added value of the activities;
- 5S method;
- Kanban or Just-in-time method;
- Total Productive Maintenance;
- Quality circles;
- Suggestions system etc.

In the specialized literature there are two forms of continuous improvement process, namely: Kaizen and Kairyo. Kaizen<sup>56</sup> is actually Japanese for "improvement" or "change for the better" and refers to the philosophy or practices that focus upon continuous improvement of processes in multiple domains. The wide approach of quality management systems allowed Kaizen quality concept to emerge because it is based on a set of principles and techniques applied consistently. Addressing a strategy of small steps and small efforts, but made continuous, Kaizen proposes to focus on people and process, and also to achieve economic growth in a slow manner but constantly, preserving the balance of the organization. Unlike Kaizen, Kairyo strategy is based on the principles for obtaining improvements on technological innovation. Thus, using innovative technologies, new machinery and equipment, etc. "large steps strategy" can be defined. The differences between the two types of improvements are shown in Table no. 1, below.

**Table no. 1** Differences between Kaizen and Kairyo strategy

<b>KAIZEN</b> <i>Small steps strategy</i>	<b>KAIRYO</b> <i>Large steps strategy</i>
• gradual improvement	• improvement based on innovation
• process-oriented	• results-oriented
• investment limited but continuous	• substantial investments
• registration of constant costs to ensure smooth running of things	• record of bigger costs to implement know-how
• multiple involvement of staff at all hierarchical levels	• limited involvement of top management
conventional know-how	• innovative know-how
• rapid economic growth	• low economic growth

By implementing the concept of kaizen costing or cost improvement is necessary to achieve a continuous process of identifying and eliminating **non-value added activities** in a short time, at the lowest cost. If we take into consideration some examples, improvements or discharges may refer to shorten working time of the assembly process, turning off the lights, or labeling files. Basically, in a lean

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<sup>56</sup> Masaaki Imai is the promoter of the Kaizen strategy also known as continuous improvement strategy. First time, the concept of Kaizen has been implemented in several Japanese companies after the Second World War.

environment teams meet frequently and discuss projects for reducing quality costs as the tendency is that anything can be improved. In fact, the purpose of the concept of kaizen costing involves improving costs by eliminating losses on the production process. Over time, kaizen action on improving the cost of lost production within a company was sectioned into seven categories, namely:

- **overproduction** leads to other waste (waiting, transportation, motion, inventory, defects) and slow processes whose capacity exceeds demand from customers;
- **rework**, although at first reshuffle refers to preventing defects, practical experience has shown that it takes time and resources to eliminate the root cause;
- **movement**, it goes on the idea of bringing the work to the operator and not vice versa. Basically, it is about wanting to eliminate downtime to increase productivity. As measures may be proposed: elimination of unnecessary movements, ergonomic and efficient settlement of working materials and so on;
- **over-processing**, the issue it is about gaining process efficiency and not to agglomerate it;
- **waiting**, is one waste very easy to spot and correct. The central idea is to eliminate downtime (no need to wait for machines operators);
- **inventories**, it is desirable to minimize product inventory by converting the product in cash.

"5S"<sup>57</sup> programs for quality cost optimization include a range of activities in order to eliminate those losses resulting from errors, defects or injuries in the production process:

- **seiri** (sort), arranging items in order to preserve the necessary parts and disposing of the other;
- **seiton** (systematization), a place for everything and everything in its place;
- **seiso** (shine), actions to clear the process, viewed as a form of inspection that is designed to display abnormal conditions and pre-failure which could affect the quality costs;
- **seiketsu** (standardization), creating rules through the development of procedures to contain and monitor the first 3S (Seiri, Seiton and Seiso);
- **shitsuke** (support), self-discipline of human resources and their ability to maintain steady work, determined in continuous process improvement.

Therefore, taking into consideration the above definitions, the benefits of using the "5S" could be stated as: registering lower costs, higher capacity, better safety, better maintenance, better quality, diversification of products, delivery on time, privacy and trust. In another view, the benefits of implementing "5S" are shown in the following figure:



Figure no. 2 Benefits of implementing "5S"

<sup>57</sup> Nowadays, in the quality field are found a variety of Asian terms, because of the fact that initially the Japanese were the first who have granted such an important place to quality.

Kanban<sup>58</sup> or Just in Time Method is a method that has been used in the automotive industry, for Toyota Production System. The main concept states that an economic entity can save costs by storing parts and components as they are delivered directly from the production line assembly to be installed on the finished product, or if applicable to semi-finished goods. If we discuss the issue of costs, specifically the cost of defects, in addition to Kaizen strategy (mentioned above), Just in Time Method uses a different key concept called Jidoka, as shown in Figure no. 3.

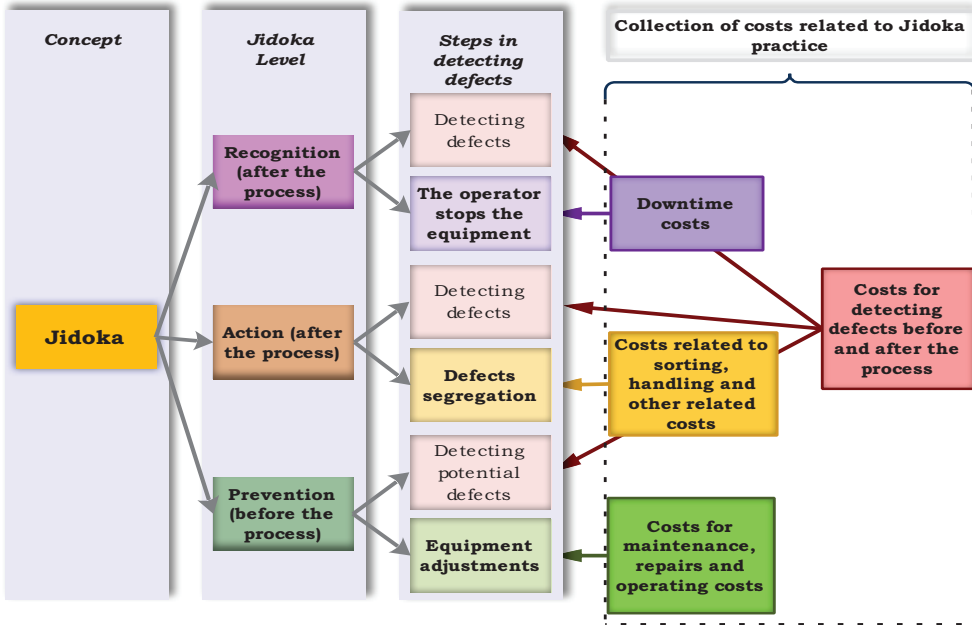


Figure no. 3 Jidoka practice and costs collection

Jidoka practice takes into account the existence of three levels: prevention level, is performed before the production process, and levels of action and recognition, which are done after the process.

Just in Time method is also known as the "supermarket method" because the original idea on cost savings was borrowed from supermarkets and is based on the use of cards for the supply line manufacturing parts or components. The process requires, in fact, the two streams of operation: one for the output, in which the parts and components required product flow assembly and the second assembly for the flow, in which previously produced pieces are transported and used directly for the assembly of the finished or semi-finished goods.

Among the advantages of the method, can be retained the following aspects:

- cost savings related to the delivery time of components or parts needed for assembly flow (eliminating downtime that occurs between operations);
- cost savings resulted from the failure to store components or related parts of the production process;
- streamlining and reducing the number of operations for the supply flow line;
- carry out a quick and objective inspection on consignments of products;

<sup>58</sup> Kanban is a term that comes from Japanese and means "card".

- streamline the production process;
- optimizing operational and informational system etc.

Currently, given the positive impact on reducing cost and defects, Just in Time method is particularly used in practice, especially in the automotive industry and other industries focused on the same production system.

**Total Productive Maintenance.** It is a method used primarily to improve the usability and lifetime of an equipment or machinery related to the production system. Improvement lies in a better allocation of production resources and achieving better quality products. The plan to implement this method presupposes going through 12 chronological steps, namely:

1. Announcing the desire of implementation total productive maintenance. First of all, top management must ensure that the implementation of such methods would be well received by the staff of the economic entity. Without the interference of the management, the initiative could fail due to implementation of skepticism and mentalities refractory;

2. Launching training programs and staff training with purpose of knowing the methodology, obtaining benefits and advantages but also disadvantages;

3. Creating an organizational support by setting up a group to promote and support the constantly improving of the quality cost through this method. The group also must be made of representatives of each manufacturing department to discuss and identify possible shortcomings of the production system;

4. Establishing policies and measurable objectives. Usually at this stage, setting targets is performed using SMART principle: Specific, Measurable, Attainable Realistic), Time;

5. Outlining a detailed plan for implementation. Through this plan should be properly identified and established the necessary resources, what kind of equipment or machines need to be improved, established the systems maintenance and the development of new technologies where appropriate;

6. This step marks the beginning of actually implementing the total productive maintenance program;

7. Improving the efficiency of equipment and machinery "piece by piece". At this stage, the working groups should analyze each component of equipment and machinery and to make necessary improvements;

8. Developing an autonomous repair program carried out by company's operators. Periodic cleaning and control helps to stabilize conditions and slow down the damage;

9. Developing a planned or preventive maintenance plan on each part or component;

10. Continuous training and staff awareness regarding the importance of maintenance of equipment and machinery;

11. Developing a cost management program for tooling and equipment in order to consider the changing perspective of the design due to manufacturing process;

12. The last stage envisages the realization of a plan that takes into account continuous improvement and cost optimization.

**Total productive maintenance advantages are:**

- staff awareness on the efficient use of equipment and machinery from the manufacturing process;
- periodic review on the proper functioning of the equipment;

- increasing the quality of products and services;
- optimization of maintenance and repair costs.

**Quality circles** were originally developed in Japan as employee participation programs, to improve quality. In the U.S., quality circles have developed participatory productivity improvement programs that focus on quantity and quality of output. Like in Japan, participation is voluntary and the employees are paid while participating during normal working hours or during overtime. The methodology is about selecting a group and a leader who will receive special training for cost problem solving, analysis and reporting. The group begins to meet to identify cost problems, collect and analyze data, recommend solutions in order to optimize the costs and implement the changes approved by management.

**Suggestions system**, very much like quality circles, is one of the easiest techniques to use which takes into account the collection of quality cost optimization proposals conducted by the employees of the economic entity. Steps of the implementation of such an extremely efficient system, are the following:

- The first stage consists in creating and implementation of a qualified staff training for knowledge and awareness of the importance of the production system, quality, concepts, strategy, costs etc.
- The second stage envisages encouraging staff at all levels of the economic entity to achieve certain proposals on improving processes, products or services;
- The third stage and also the last, must take into consideration the analysis proposals made by the staff of the entity, including all the possibilities regarding financial and economic impacts of each suggestion made.

Subsequently, if some proposals receive the approval of the senior management and the efficiency is demonstrated in the future will become applicable. The three steps seem to be particularly simple, but if they are not applied in this order the system itself can be compromised. There are also some disadvantages in terms of involving a large number of staff, in the sense that suggestion system becomes a solution quite difficult to implement taking into consideration a continuous flow of a manufacturing entity.

### 3. CONCLUSIONS

Considering the largeness of the studied issue, opportunities for effective optimization of the quality cost can be much more varied and diversified depending on the field of activity of any company. The practice regarding quality cost optimization determines that any economic entity should recognize and prioritize this issue as one of prime importance in ensuring quality of processes, products and services. In this way, every company aims to improve the cost of quality because the benefits are stated in reduction of the entity's costs as a whole and in increasing the company's profit.

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