

## MODELS OF COST QUALITY MANAGEMENT

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### ABSTRACT

*The main aim of this paper is to explain the basic of quality cost management and its application in practice. In the first part of the paper we will attend to base models of monitoring quality costs. In the model of process costs we introduce categorization and efficiency of individual processes of quality management.*

*Quality provision and quality improvement in enterprises is not only technical and organization problem, but it is important economic questions. On the ground of acquaintance with fundamental approaches in quality cost management, we can expressly argue that economics of quality should be not-detachable and key part of quality management.*

**Keywords:** quality costs, models of monitoring quality costs, quality management, process

### 1. INTRODUCTION

We can see radical approach of the firms with area of economic effectiveness, productivity, planning and managing in the last years of the world economy. The basic tools to making this target are quality. Quality is sustained requirement of the customers, but it is a basic condition competitive company in the global economy. This trend is called as a revolution of quality and this century is „century of quality“.

### 2. QUALITY COSTS MANAGEMENT

Products quality meaningfully affects the companies' account or loss. From this aspects we must the activities oriented on care of quality appreciate not only from technical aspect but also from effectiveness. This second aspect is conjunct with quality costs that are base of companies programs of increasing effectiveness. Monitoring of quality costs compose the basic part of quality economics which is the one of bearing component of quality management system.

Why is important monitoring of quality costs? This cost constitute in British companies 30-30% of total costs. In west European countries quality costs constitute about 20 % of total production.

In practice are known 4 basic models of monitoring quality costs:

1. *Model PAF*
2. *Model COPQ*
3. *Life-cycle cost model*
4. *Model of process oriented costs*

Table 1. Fundamental variances of models for quality costs monitoring

<i>COST</i> - <i>MODELS</i>	Model PAF	Model COPQ	Life-cycle cost model	Model of process oriented costs
The costs of internal errors	✓	✓	✓	✓
The costs for external errors	✓	✓	✓	✓
The costs of assurance	✓	-	✓	✓
The costs of prevention	✓	-	✓	✓
Consume investment and occasions	-	✓	✓	✓
Damages on environments	-	✓	-	-
Quality costs by user	-	-	-	✓

### 3. MODEL PREVENTIONAL APRAISAL AND FAILURE COST (PAF)

Model PAF constitute the traditional view of quality costs, which is replace of new process, oriented aspects in model of process-oriented costs. The traditional view of monitoring quality costs differentiate between costs and issue.

- *Quality costs* are financial issue, which are necessary to realisation all activities of insure quality and they are component of value of the new product.
- *Loss from bad quality* arise from insufficient quality management system, unformed value of product and decreased economic results of organization.

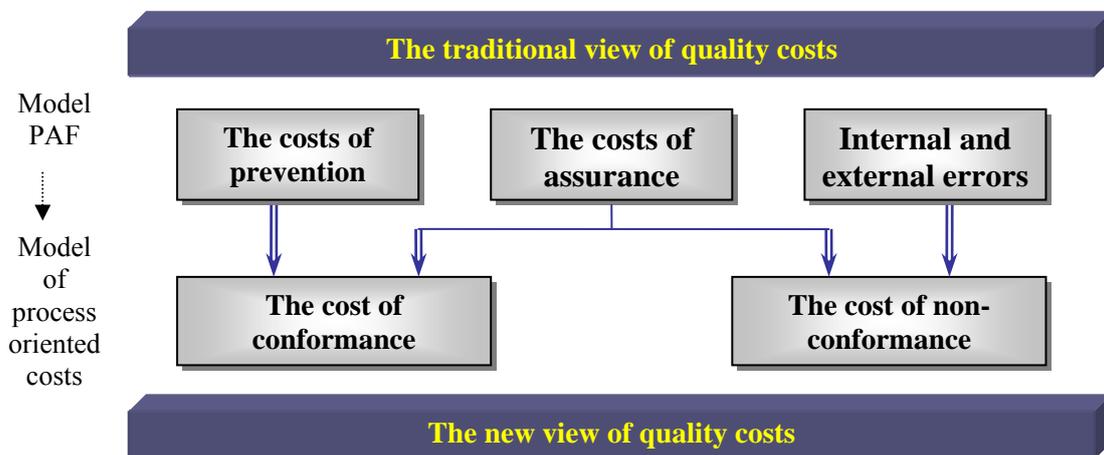


Figure 1. The traditional and the new view of monitoring quality costs

### 4. MODEL OF PROCESS ORIENTED COST

Model of process oriented cost distribute of quality cost into two basic section (*Sasse, 2001; Wildemann, 2000; In: Konetzny, 2003*):

- **Costs of Conformance** - Cost of conformance is the total cost of ensuring that a product is of good Quality. It includes costs of Quality Assurance activities such as standards, training, and processes; and costs of Quality Control activities such as reviews, audits, inspections, and testing. Cost of Conformance represents an organisation's investment in the quality of its products.
- **Costs of Non-Conformance** - includes both in-process costs generated by quality failures, particularly the cost of Rework. And post-delivery costs including further Rework, re-performance of lost work (for products used internally), possible loss of business, possible legal redress, and other potential costs.

Some authors (*Mateides, Strašík, 2004*) called this group of process-oriented cost like as Costs of good quality (Cost of conformance) and Costs of Rework quality (Cost of Non – Conformance).

The main aim of quality cost management is to monitoring of quality cost into all factory processes. Very important part of this approach is to define specific group of factory processes:

1. **Value adding activities (VA)**: in this group are processes which increasing the value added of final product. These processes are necessary to **maximize**.
2. **Non-value adding activities (NV)**: in this group are processes which uncreated the value added of final product. These processes are necessary to **minimize**.
3. **Value reducing activities (VR)**: in this group are processes which decreasing the value added of final product. These processes are necessary to **eliminate**.

Individual types of operation is possible to date, like is terminology in electrical engineering, its follows:

- **actual output (AO)**: value adding activities create the actual output (actual power). Total of all actual outputs represent finished product, and summarisation of the all-technological operation (*cutting, sharpening, pasting, connecting...*). Actual output is necessary to maximize in the time.
- **supporting (fictitious) output (SO)**: these outputs supporting the actual output from the reason of availability final result of economy (*operation like as: transport of unfinished product, installation of machine, ...*). Cost on supporting output decreasing the profit of company. These processes are necessary to minimize in the time.
- **reactive(powerless) output (RO)**: these outputs don't have any positive effect for value added of final product. In this group is possible to integrate operation like as: *construction changes, break of production and machine break from the reason of human factors or technological absence, ...* These processes are necessary to minimize or eliminate in the time.
- **error (wrong) output (EO)**: these outputs are creating from the reason of unabled processes or processes that are outside of control. Error outputs cause decreasing value of the product and overall (total) output. In this group is possible to integrate operation like as: *batch-oriented errors, incorrect production practice and production of non quality product, ...* The main aim is to eliminate error outputs.

## 5. CONTROLLING OF THE QUALITY

Economic of the quality is very important part of the economic category in the last years. The new territory is **controlling of the quality**.

Controlling has the specific post and foundation as possible top methods of the economic management. In this time are known a lot of possibilities use of controlling which are possible to integrate into specific section of *financial, investment and cost controlling, personal controlling, controlling in the management quality, controlling of the marketing, realisation and sale*.

In the general, controlling is characterise as a system, which effect is to improve management company on the base of objective evidence and valuate all economic facts in company. In this case it is effective work with information, with their collection, separation, processing and distribution. Controlling has this information to prepare for solution of planning, decision-making, implementation and inspection controlling responsibilities. How is to see controlling has a great unit of managerial responsibilities. On the firs side is possible to known all company from worker of controlling. And on the other side is possible to known specific individual formation and tools off the management company.

Controlling is a component of managing system in company, provides services for regulating and supports management of company to achieve defined targets. Controlling as a subsystem fill up the control system in two ways. The first section is support of management with services for direction company and the second section is complement of management on further outputs for direction company (figure 2).

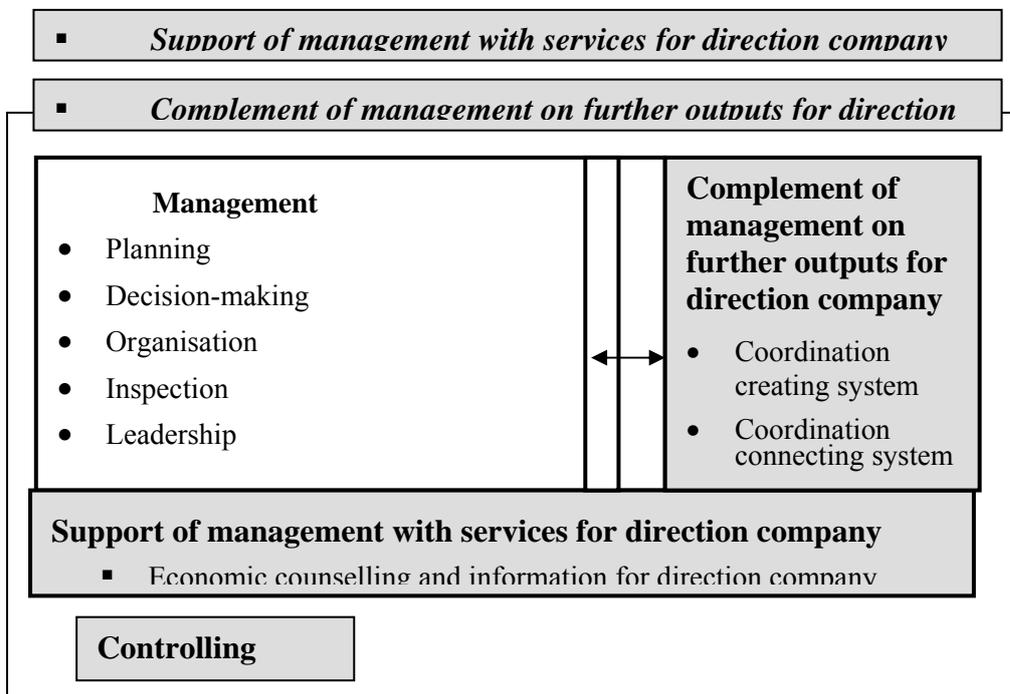


Figure 2. Complement of managing system with controlling (resource: Eschenbach 2000)

For the main target of the **controlling quality** is possible to deem these sentences:

- management of workers toward to improving of quality,
- compare the cost of quality according to place and time,
- continue presentation of the situation in market place,

- preparing of the analysis strong and weak marks of the company from the view of cost on error output and presentation their elimination.

The basic problem of cost quality management is to define the **process efficiency**. The process efficiency is possible to define like as share of actual outputs and summary of actual outputs, supporting outputs, reactive outputs and error outputs. This total off all outputs includes loss from some outputs and their value is always smaller than one (or 100 %). This value is defined like as **process efficiency (E)**.

$$E = \frac{AO}{(AO + SO + RO + EO)} \quad (1)$$

Index of process efficiency is on ideal stage have a value one (100%). Very important part of detection process efficiency is comparison between the process efficiency before and after the corrective arrangements. This is a methodics that indicate value of realized arrangements (*Linczényi, Nováková, 2001*).

## 6. CONCLUSION

This article is oriented on the implementation quality and quality costs as a tool of economic effectiveness in the company. This article describes advantage of the company that have quality control system. The company by the help of quality costs and their effectiveness utilization receive productivity and competitive advantage on the market. Such a understood opinion on quality as on necessary attribute of successful business is meant in theoretical level at foreign countries and in Slovakia but in business practise mainly absents.

## 7. REFERENCES

- [1] Eschenbach, R.: Controlling, Aspi Publishing. Praha, 2000, 812 s.
- [2] Horváth&partner. Qualitätscontrolling. Stuttgart: Schäffer-Poeschel Verlag für Wirtschaft Steuern Recht GmbH., 1997. 348 s. ISBN 3-7910-1148-0.
- [3] Konetzny, M.: Controlling. 2003. <http://www.mkonetzny.de>
- [4] Linczényi, A., Nováková, R.: Manažérstvo kvality. STU Bratislava.2001.s299. ISBN 80-227-1586-7
- [5] Mateides, A. a kol.: Manažérstvo kvality, história, koncepty, metódy. Vydal Miroslav Mračko, Bratislava, 2006, s751, ISBN 80-8057-656-4.
- [6] Nemčeková, M. - Hekelová, E.: Manažment životného cyklu výrobkov v systéme PLM. Manažment priemyselných podnikov, roč. 3, č. 1, 2006.
- [7] Nenadál, J.: Měření v systémech managementu jakosti. Praha:Management press 2001, 310s, ISBN 80-7261-054-6.

