

THE QUALITY COST ANALYSIS

Professor PhD Daniela POPESCU
Senior Lecturer PhD Sorina GÎRBOVEANU
University of Craiova

Abstract:

The analyses of the quality cost are very vast. The most frequent met techniques are the analyses of the tendency and the Pareto analyses. The objective of these techniques is to determine the opportunity to improve the quality.

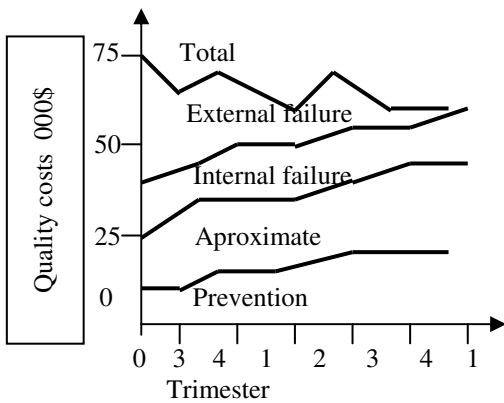
The technical analysis in order to find the cost of quality are varied. The most frequent techniques are the tendency analysis and the Pareto analysis. The objective of these techniques is to determine the opportunities for the improvement of quality.

The Tendency analysis

The tendency analysis implies the simple comparison between the level of the costs from the present and from the past. It suggests that at least a year should pass before a comparison is made and any conclusions are drawn from the information. The trend analysis gives us information for long term predictions. It also gives information regarding the enforcing and implementation of the improvement of quality programs. The information from this type of analysis comes from monthly reports and from

the detailed transactions that make the elements. The tendency analysis can be made from cost categories and subcategories, on products, on the measurement scale, on the corporation's plans, departments, etc. Those charts are showed in figure 1. The time steps on the charts of temporal series are the month, the trimester and the year, depending on the purpose at hand.

The Figure1(a) shows the chart for four cost categories, in trimesters. It's the cumulative type, the second line from the bottom includes the prevention costs and the estimate costs; the third line from the bottom includes the internal failure costs; and the last line includes all the included costs. Figure 1(a) shows that the prevention and the internal failure costs are rising, meanwhile the estimated costs are unchanged and the external failure costs are falling.

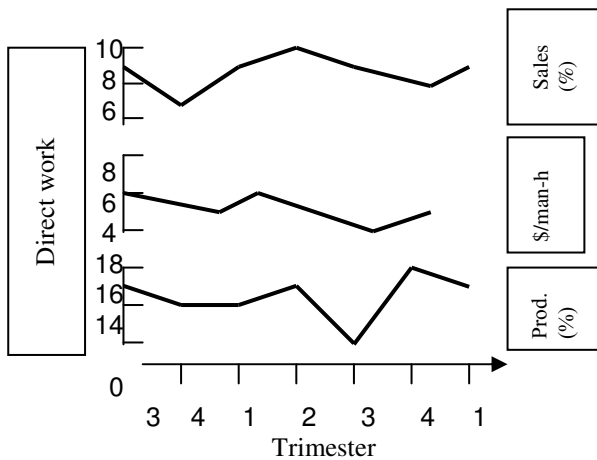


1 (a) Category of costs

Figure 1. Time series for longer periods

Figure 1(b) shows the tendency analysis for three different measurement basis. The tendency difference between those three points shows the need for a fourth measurement base. A drop in

percentage of neto sales during the fourth trimester is due to the seasonal variation, while the production costs variation for the third trimester is due to the excessive costs over time.



1 (b) Tendency variation

Figure 1. Time series for longer periods

Figure 1(c) shows the tendency analysis for two different products. The figure states the fact that costs for product B are more favourable than for

product A. In fact, product B shows an obvious improvement while product's A costs are rising. A growth in costs for estimative and prevention costs is

hoped will improve the external and internal mistake costs for product A. The comparison between companies

or products must be conducted with care.

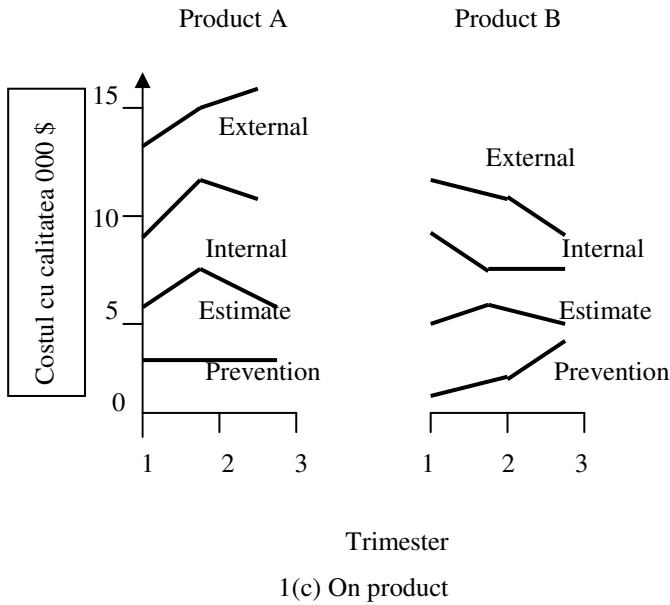


Figure 1. Time series for longer periods

A chart that underlines the tendencies for the external failure costs is presented in figure 1 (d). The costs for returning the products and for sales

have risen, while the costs for other categories are unchanged. In this figure the index is production and the time series is the trimester.

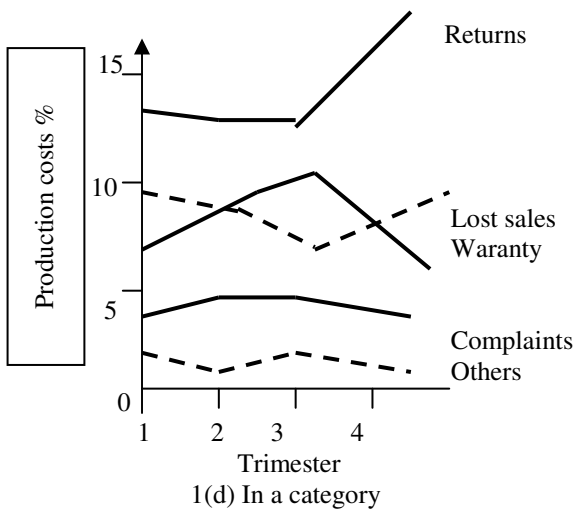


Figure 1. Time series for longer periods

Figure 2 shows a chart with the tendency analysis on a short period of time for the assembly line. The proportion between the product service cost and the sales cost is in percentage, stated in months. This proportion is compared to the quality measures, the percentage for the discrepancies. Both curves are descending, which supports the basic concept the improvements in quality imply the reduction of costs.

The tendency analysis is an efficient tool, bearing in mind that sometimes casual fluctuations occur. These variations are similar to those that appear in control charts. The important factor to notice here is the tendency. It is also important to notice that there is a gap between the actual cost making and their actual linking with reality.

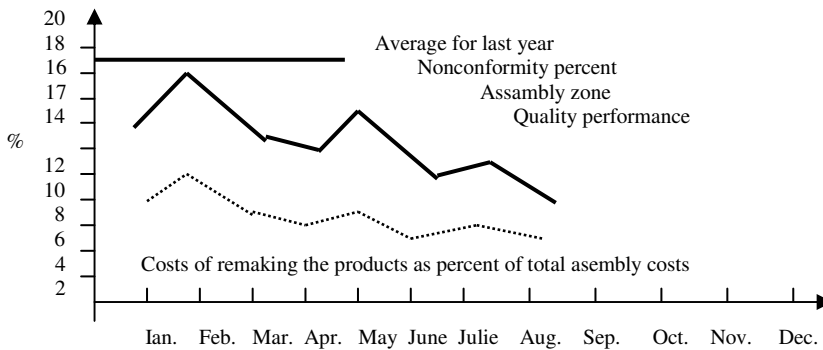
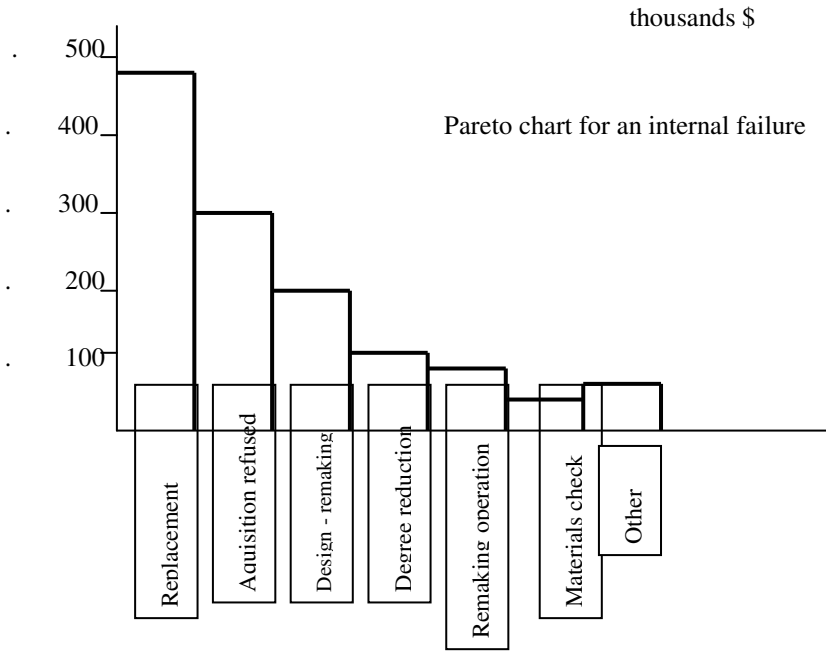


Figura 2. Time series for shorter periods

The Pareto Analysis

The Pareto analysis is one of the most efficient analyses. A typically Pareto diagram for internal failure costs is shown in Figure 3(a). The elements are showed in descending order, beginning with the biggest from the left. A Pareto diagram has few elements that represent a substantial quantity from the total, these elements are localized in the

left side of the diagram and are called few and vital. The Pareto diagrams also have many elements that represent a small part of the total and localized to the right side of the diagram and are called the many and the useful. The Pareto diagrames can be set for quality costs guaranteed by the operator, the cars, the department, the production line, the categories, etc.



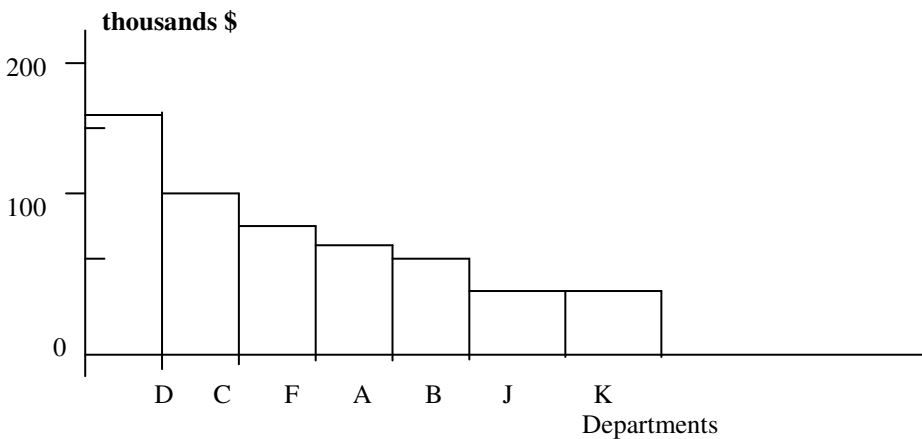
3(a) On categories

Figure 3. Pareto Analysis

Once the vital elements are known, projects can be developed for the reduction of the quality cost. In other words, many is spent for reducing the vital quality costs; little or no money is used for the many but useful elements.

is in fact an analysis of a few vital elements, from the Pareto diagram for the internal failure cost category, just like it was showed in figure 3(a). Based on this diagram, department D would be an excellent candidate for a program of quality improvement.

The figure 3(b) shows a Pareto diagram by departments. This diagram



3(b) On elements

Figure 3. Pareto Analysis

REFERENCES

- [1] Juran J. M., Editor, *Quality Control Handbook*, 4th ed. New York: McGraw Hill Book Company, 1980.
- [2] Knouse St. B., Editor, *Human Resources Management Perspectives on TQM Concepts and Practices*, Milwaukee WI: ASQ Quality Press, 1996.
- [3] Olaru M., *Managementul calității*, Ediția a II-a, Editura Economică, București, 1999.
- [4] Peace R. W., Editor, *The ISO 9000 Handbook*, Fairfax, VA: CEEM Information Service, 1992.
- [5] Popescu D., *Managementul calității*, Editura SITECH, Craiova, 2004.