BULETINUL Universităţii Petrol – Gaze din Ploieşti	Vol. LVIII No. 4/2006	73 - 76	Seria Ştiinţe Economice

Measuring the Quality Level

Mihaela Ciopi Oprea

Universitatea Petrol-Gaze din Ploieşti, Bd. Bucureşti 39, Ploieşti
e-mail: mciopi@yahoo.com

Abstract

In this paper the author presents some aspects of how to measure the quality level. This is very important for the firm in order to establish the quality strategy. Therefore, the author suggests for measuring the quality level to taking into account the quality characteristics of products and also the faults of the products.

Key words: *quality level, quality technical level, faults of the products*

Introduction

The term quality has many meanings and connotations. For example, quality may mean: the degree to which a product or service brings satisfaction to the consumer; the degree of conformity to the appropriate aim or character; the degree to which a set of intrinsic characteristics fulfil the requirements.

Quality may also designate excellence, especially when we use the expression “this is a product of quality". An idea accepted by more and more authors nowadays can be expressed as “quality defines the customer”.

Such conditions being known, the issue of identifying the methods and tools for evaluating the quality from the quantitative point of view taking into account its relative, dynamic and complex character has to be discussed. Therefore, I suggest two integrated methods for measuring the quality level: taking into account the quality characteristics of products and also the faults of the products.

Measuring the Quality Level Taking into Account the Quality Characteristics of Products

The quality level is a relative unit, which can be determined in proportion to a sample reference unit, set by taking into account the existing offer and the market requirements at a certain moment.

According to the way of expressing it, for quantitative measurements from the qualitative point of view, the following indicators are used: quality class or type and technical level of the quality.

Quality class represents a category indicator or degree referring to the properties or characteristics which cover different requirements of products or services destined to same types of uses. The class shows a difference of explicit or implicit requirements, the stress being on the relation between the functional use and price. The class can be expressed numerically (for example 1,2,3 etc) and it is given according to a number of points. The highest qualitative class is 1 and it has a maximum number of points, while inferior classes are 2,3 etc, having minimum number of points. The points are given according to the nature, importance and size of the quality characteristics, on the basis of well-established norms.

The measurement of the quality technical level aims at a multi-standard type of analysis, where each quality characteristic has a certain influence on the whole image of the product. For example, in the case of machines and equipment the most important characteristics are the technical and availability ones, in the case of light industry products the esthetic characteristics are important, while in the case of pharmaceuticals and foodstuff products the content of active substances has a great importance.

The measurement of the quality technical level is done by:

- simple indicators, which take into account only one quality characteristic (relation 1);
- the synthetic quality indicator obtained by aggregation of several simple indicators (relations 2 or 3).

$$I_{ij} = \frac{k_{ij}}{k_{il}} \cdot p_{ij} \tag{1}$$

where: I_{ij} represents the qualitative indicator of the *characteristic i* of the product *j*;

k_{ij} - the prospect value of characteristic *i* of the product *j*;

k_{il} - the value of the characteristic *i* of the product *l*, chosen as reference;

p_{ij} - the influence balance of the characteristic *i* on the whole image of the product *j*.

The synthetic quality indicator is a competitiveness indicator which expresses the technical level of the product, analysed in accordance with the position it has in front of the competitive products.

$$N_{tj} = \sum_{i \in s_1} \frac{k_{ij}}{k_{il}} \cdot p_{ij} - \sum_{i \in s_2} \frac{k_{il}}{k_{ij}} \cdot p_{ij} \tag{2}$$

$$N_{tj} = \prod_{i \in s_1} \left(\frac{k_{ij}}{k_{il}}\right)^{p_{ij}} \cdot \prod_{i \in s_2} \left(\frac{k_{il}}{k_{ij}}\right)^{p_{ij}} \tag{3}$$

where: N_{tj} represents the technical level of the product j;

i - the chosen quality characteristics in order to characterise the analysed product;

s_1 - sub-multiplicity of characteristics that have to be as high as possible in order to favourably appreciate the product (effective power, payload);

s_2 - sub-multiplicity of characteristics that have to be as low as possible in order to favourably appreciate the product (specific power consumption).

According to the references chosen for the comparison, the following levels are established:

- *The conformance technical qualitative level*, when the product performance is compared with the parameters of the characteristics set in the valid manufacturing documentation;

- *The average technical qualitative level*, when the product performance is compared with average quality characteristics of the competitive products on the market;
- *The top technical qualitative level*, when the product performance is compared with best quality competitive product at a certain moment.

By determining the values of the technical level the position on market of the enterprise and its product can be pointed out, in order to establish its product strategy. The synthetic appreciation of performance and competitiveness of the organisation as a whole, is done by determining the technical level, taking into account the structure of the output (relation 5).

$$N_{ti} = \frac{\sum_{j=1}^{p} N_{tj} \cdot q_j}{\sum_{j=1}^{p} qj} \tag{5}$$

where: N_{ti} represents the technical level of the enterprise as a whole;

N_{tj} – the technical level of the product *j;*

q_j – the quantity of the product *j;*

$j = 1 \div p$ – the range of manufactured products.

The technical level of the enterprise can be measured by replacing the quantities of each type of product with the value of the end output, taking into account the unitary output costs or the sale prices.

Measuring the Quality Level Taking into Account the Faults of the Products

The faults of the products are those drawbacks which bring dissatisfaction connected with products and/or services. They can be: stoppage of electric power, delivery delays, goods that do not work, battered aspect, unconformity (deviations) from the specifications.

The faults of the products are classified according to the place where they can be seen, into: internal and external faults, both categories resulting from the quality of the processes and activities within the company.

The internal faults are deviations from the level of established quality (unconformities to the specifications) which have been identified within the supplying company. These deviations can change the product either into a recoverable scarp, when the deficiencies can be repaired, or into unrecoverable scrap, when no repairs can be done.

The external faults are registered by the customer, generating dissatisfaction, which can lead to specific reactions, such as: complaints, product returns, negative advertising, civil trials etc.

The faults can make the customers avoid buying the product in future, even if it has superior characteristics. Thus, the selling of the product can be influenced in two ways:

- the first buy is strongly influenced by the product characteristics, the customer not knowing the presumtive faults;
- the further buys are strongly influenced by the degree of faults noticed while using the post-selling product and services, supplies as an answer to the respective faults.

No matter the place, the main impact of the faults can be noticed in price rises, these representing losses of the company due to *non-quality*. The cost of the faults includes:

reconditioning of the recoverable scraps, integral conditioning of unrecoverable scraps or returned products, remedial services, answering the costumer's complaints. More, the external faults influence the credibility of the company, the market level, consequently, the profitability.

In order to measure the losses of a company, as a result of internal faults, the following indicators are calculated: the value of the scrap output and the percentage of the scrap output .

The evaluation of external faults is done by using several indicators, such as: the number of registered complaints and their evolution in time; expenses for solving the complaints and their evolution in time; the quantitative or value balance of the returned products in all sold products.

In conclusion, we can state that, both the product characteristics which meet customers' exigencies, and lack of faults, mean together a better quality, which gives companies the opportunity to increase users' satisfaction, to be competitive, to increase their market level, and to offer lower prices.

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Măsurarea nivelului calităţii

Rezumat

În acest articol, autoarea prezintă câteva aspecte referitoare la măsurarea nivelului calităţii. Această măsurare este foarte importantă pentru firmă, în stabilirea strategiei calităţii. În acest sens, autoarea recomandă pentru măsurarea nivelului calităţii, luarea în considerare atât a caracteristicilor de calitate ale produselor cât şi a deficienţelor acestora.