

CALCULATION OF IMPLEMENTATION EFFICIENCY OF QUALITY MANAGEMENT SYSTEM

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Abstract: The article reveals a cost recovery for the implementation of Quality Management System and assessment funds allocated for staff motivation as an example gas company. The author calculates and demonstrates cost-effective implementation of the QMS.

Keywords: The annual economic effect, the estimated coefficient of investments effectiveness, the payback period of the system, implementation of quality management system.

Costly part of the project implementation, maintenance and development of the QMS forms standard: from wages (and taxes on it) employees working exclusively in this project, the salaries of employees who spend part of their time on a regular basis, payments to workers who spend their time periodically for examples during internal audits, organizational costs for equipment, paper, etc., the cost of external, such as a certification and audit, staff training costs. The company "Regiongazstroy" implemented detailed system of cost accounting, the cost of implementing a QMS project can be traced to the beginning of the preparation for the project. And the costs can be divided into two groups:

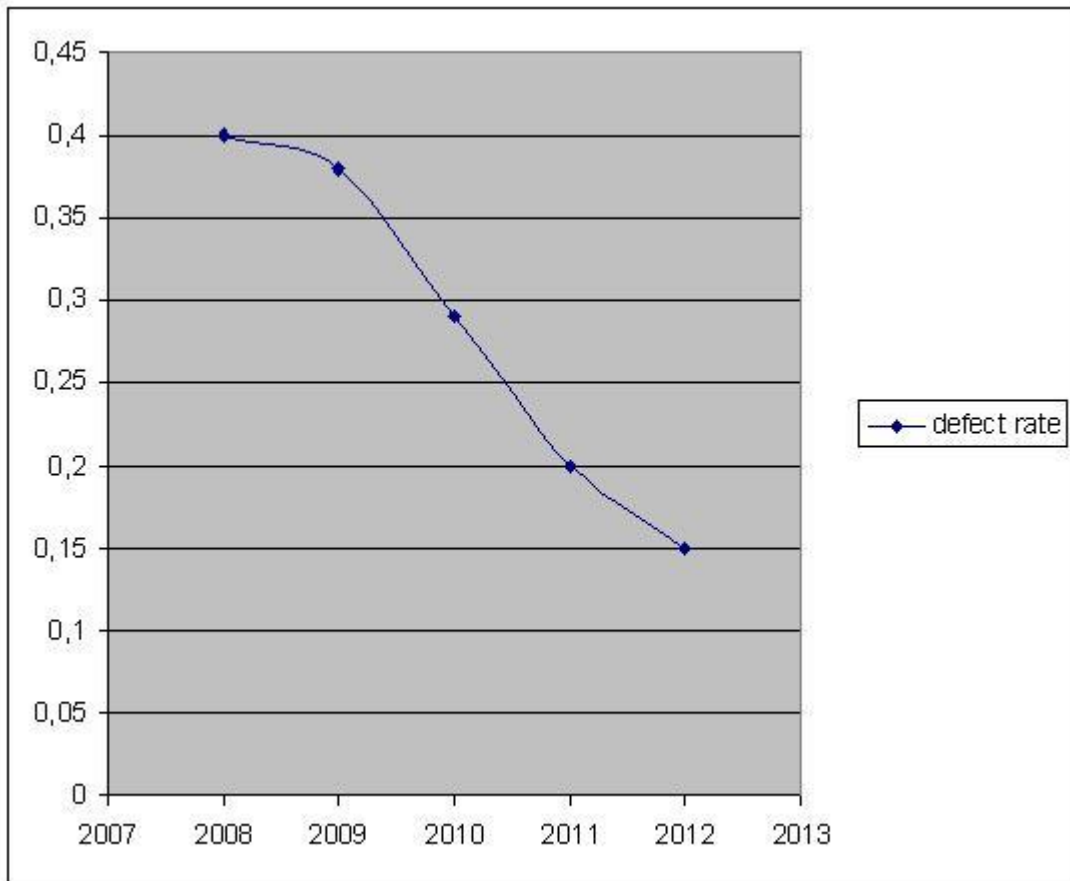
- costs that were necessary to prepare a set of papers, formal certification and maintain the minimum required documents - the so-called "paper QMS" to improve the corporate image and start working with customers (new markets), which is sufficient to have the certificate;

- costs, which are incurred in excess of those indicated for the factual implementation of the QMS.

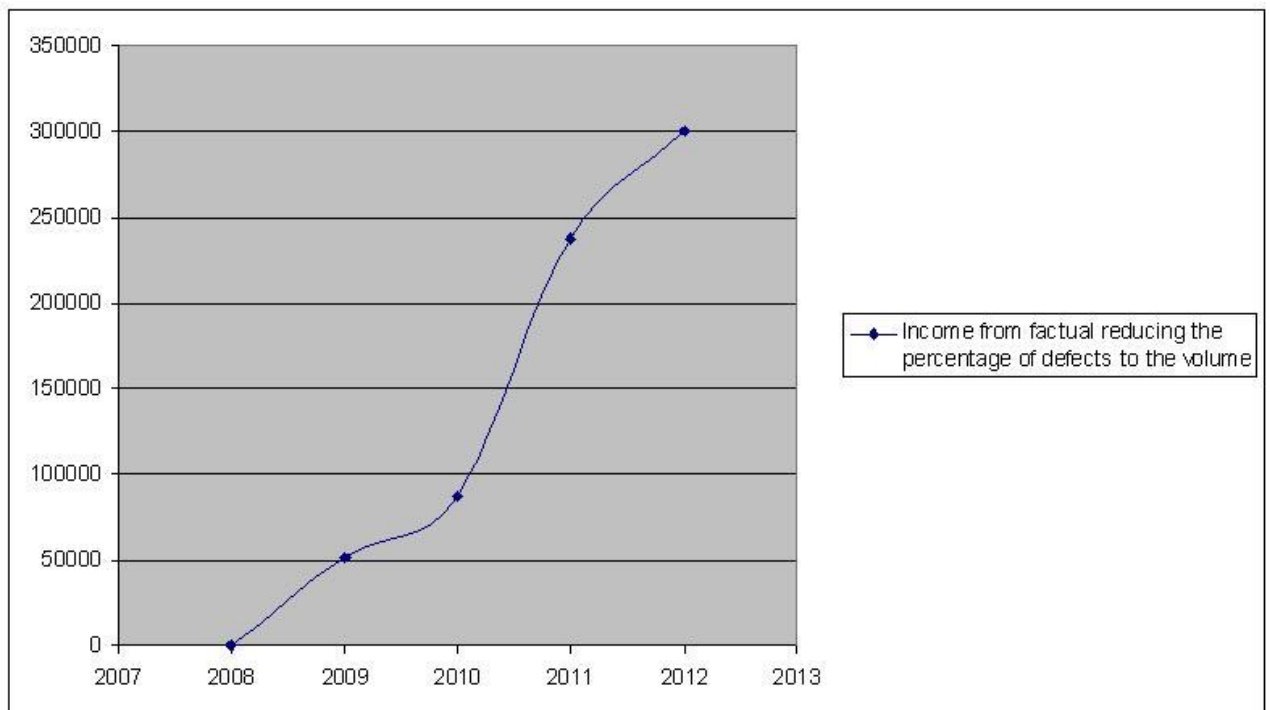
Income from the reduction of defects is only a part of the effect of the QMS. Basic profits arise from the access to new markets. Customers of new markets are diverse, and if part requires a formal certificate and signs of the existence of the QMS (presence department, documentation), others to conduct their own audits to ensure not just the presence of the QMS, and a sufficient level of development. The accounting system of the application "Regiongazstroy" allows to separate these groups, highlighting the revenue and profit from them.

In Limited Liability Company «Regiongazstroy" preparatory work for the implementation of the Quality Management System began in 2008. In September 2010 level of QMS was allowed to obtain ISO certification.

Change coefficient of defects and economic effects of its reduction compared to 2008 (the beginning of preparation for the implementation of the QMS) to the volume shown in the pictures 1 and 2.



Picture 1. Defect rate



Picture 2. Income from factual reducing the percentage of defects to the volume

From the graph it is clear that a significant economic effect is achieved within six months after achieving a sufficient level for quality management system certification company. This indicates that the cost of the QMS are medium-and long-term investment. But it is clear that the effect of reducing the defects

don't cover even the past of cost of the QMS related to personnel, constantly serving the QMS. Consequently, the economic meaning of the QMS implementation should be sought to expand the market.

Also there were given revenue and profit from the introduction of the QMS, from two groups of customers, and the overall effect of two groups. From these results it is clear that the benefits of customers, requiring the introduction of an informal group of QMS is much higher "formal requirements"

In assessing the effectiveness of the implementation of QMS in the company we use generalizations and private figures.

The main general indicator of economic performance include:

- the annual economic effect;
- The estimated coefficient of investments effectiveness;
- The payback period of the system.

The annual economic impact of the development and implementation of the QMS is calculated as:

$$E = A - C * C_n$$

where E - the annual economic effect, rub;

A- annual savings (annual profit growth), rub.;

C - one-time costs, rub.;

C_n - normative coefficient of investments effectiveness. C_n value equals 0.15. C_n is a minimum rate of investment effectiveness, below which they are not advisable.

$$E = 2 - 0.15 * 1.33 = 1.8 \text{ million rubles}$$

The estimated coefficient of investments effectiveness is given by:

$$C_e = A / C$$

$$C_e = 2 / 1,33 = 1.504$$

The resulting value is compared to C_n . If $C_e \geq C_n$, the costs can be considered viable, otherwise they are economically unjustified.

Payback period T is the period of time (years) during which the development costs of the QMS is fully repaid, and is calculated using the formula:

$$T = C / A = 1.33 / 2 = 0.67 \text{ year}$$

Also we can estimate the amount of funds that can be spent on additional staff motivation. The annual average economic effect since the start of the introduction is 1.8 million rubles. Of course, it not only through the QMS, and a set of marketing and technical activities. Taking them into account for bonuses for the results of the QMS can be sent to 300 thousand rubles a year. Part of the salary or wages associated with time spent in the QMS (with tax) for all staff involved in the QMS is 1.7 - 1.8 million rubles in a year. In percentage terms, the motivation is 17-18 percent, and this apparently is normal. However, 102 people involved in the process of the QMS Company "Regiongazstroy". In this is an average 245 rubles for person in the month. Obviously, for this money the employee will not be ready for new efforts and discomfort. Indeed, with an average salary of 40,000 rubles per month employee psychologically prepared to bear an additional burden at a minimum bonus payment of 800 rubles and more.

Results:

1. Factual implementation, maintenance and development of the quality management system leads to a steady decline in the scrap rate of 25% per year, and a decline in the defects for the next year, even with increases in the production of commercial products. The formal implementation of the QMS does not lead to an actual reduction in the volume and percentage of defects. Volume losses of defects proportional to the volume of production within the statistical margin of error.

2. Return on investment over a five year period to the factual implementation, maintenance and development of the quality management system is more than 100%, ie the ruble invested in QMS brings ruble profit.

3. Profitability of the introduction and development of the QMS drops and becomes unprofitable during the crisis, with deflation, reducing the volume and overall profitability, but the amount of loss is not commensurate with the income for the entire period of the project.

4. The costs of implementing QMS are medium-term investments, and effectively compensated for the period of 0.67 years.

5. For cost-effectiveness in the implementation of QMS company must have a certain level of volume and profitability for the start of the implementation of the QMS, and the process of implementation and development must be accompanied by a complex of marketing and technical activities.

6. Limit of funds allocated for the motivation of staff is 17 % of the economic benefit. Thus the limit of the monthly premium for the implementation and development of the quality management system in relation to the "Regiongazstroy" makes 300,000 a year.

7. Economically reasonable limit of motivation for work on the QMS is psychologically inadequate for the employee, so system of motivation for the implementation of the QMS must include bonuses best employee and forfeiture worst workers and diversity of bonuses on time. Thus, economic methods can not solve the problem - it is necessary to apply administrative controls.

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