

*Maja Andrijašević**

DOI: 10.2298/EKA0876110A

TOTAL QUALITY ACCOUNTING

ABSTRACT: *The focus of competitive “battle” shifted from the price towards non-price instruments, above all, towards quality that became the key variable for profitability increase and achievement of better comparative position of a company. Under such conditions, management of a company, which, according to the established and certified system of total*

quality, strives towards achieving of a better market position, faces the problem of quality cost measurement and determination. Management, above all, cost accounting can help in solving of this problem, but the question is how much of its potential is being used for that purpose.

KEY WORDS: *quality, costs, accounting*

JEL CLASSIFICATION: M41, D24, D61

* Faculty of Management, Zaječar, Megatrend University, Belgrade

1. Introduction

Research conveyed by WEF (World Economic Forum) ranked Serbia, according to competitiveness of its economy, at 69th position of 75 countries included within the study (Jefferson Institute, 2003). One of the reasons for such a weak rating of Serbian companies is certainly quality, i.e. lack of quality. This does not refer to quality of a product itself; the focus is on quality of the process and systems of quality certified by competent institutions.

Nowadays, when not only Serbian companies face exceptionally turbulent environment, one must accept the fact that changes in the environment, on one hand, caused huge increase in supply of all goods, while, on the other, a significant shift of focus of competitive battle occurred from price to non-price instruments. In such an environment, the question of a company's survival increasingly depends on its desire and ability to orient itself towards quality and consumer satisfaction. This actually means the shift from product quality to quality management system, implying constant investments into quality and its promotion. And when the issue of investment is raised, the inevitable question is: why? And what is an investment into quality after all – an investment or an expense? Are the invested efforts worth the generated expenses, i.e. is there any return on investment when it comes to quality?

The answers to these questions are specific for each individual company and, theoretically, they are based on two fundamental conditions:

- Quality must be measurable by money
- There must be cause and effect relationship between quality and financial outcome

However, in practice, company managers face numerous difficulties in following performances referring to quality. On one hand, many quality indicators cannot be presented by general financial terms, while, on the other hand, the relationship between quality and profit is not direct enough to be easily perceived.

However, there is a solution. A company's management has at its disposal a whole set of management tools and, above all, cost accounting, which encompasses the business life of a company, as well as somewhat magical skills to connect all states, relationships and flows and to present them in transparent manner, but whose potentials are, unfortunately, still not used to appropriate extent.

2. Cost accounting – traditional approach

2.1. Background

Accounting is said to be as old as any organized human activity. Dating back to Babylon and Hamuraby's book of law, over Greece and Rome and further on through history, there has always been a need to record events referring to purchase and sale, payment and collection. Such recording originally generated bookkeeping, which at that level of development of production forces was primarily in function of trade and banking. Its further development was according to changes in organization of business activity.

The turning point in development was corporative method of organization, which raised new issues and set up new tasks particularly for the accounting function in a company. The concept of outcome has changed first – it became independent from the owner's connotation and instead of maximizing gain it shifts to maximizing profitability of business investments. This represents production-oriented business concept and maximizing the economic value generated by the company. Profit, as an absolute term, cannot be accepted as adequate criterion of business success any longer without establishing the relationship with limiting factor invested into its generation – the amount of the needed investment of capital into business assets.

This attitude raises the question of adequacy of traditional accounting scope and information it provides for internal use. If physical growth of a company, the complexity of its organizational structure, diversification of production program, as well as internal and growing turbulence of the environment as external factor is added to this, it is clear that management of a company is faced with new challenges.

“Traditional systems of accounting scope, primarily designed to provide information for external account rendering at the time when production technologies were, above all, work intensive, are not able any longer to respond to modern information needs” (Milicevic, 2000, p.137). Summary reports of financial accounting, dealing with a company as a whole, do not represent sufficient basis for making reasonable and rational decisions and managing a company. Efficiency of decision-making process, besides manager's intuition and experience, requires flexible management info system, designed to provide information focused on the future and coordinated with the needs of various levels of responsibility and decisions – from assistance in planning, decision-

making and control of both overall business activity and activities of specific organizational units. In short, management system of information incorporated in organizational design, strategy and climate of each individual company. Cost accounting has been developed and management accounting, adjusted to internal needs and focused on concrete problems of management, evolved from it later on.

2.2. Role and Importance

Cost accounting, as form of management accounting, has been traditionally oriented towards preparation and interpretation of information of financial accounting and analytical accounting of costs and results of individual organizational parts of a company, i.e. “quantity and value encompassing spending of production factors according to various aspects of profitability and economy” (Novicevic, 1995, p 19).

Such definition of accounting generates its basic tasks which can be narrowed to: taking over the costs from financial accounting, their allocation aimed at defining the unit cost, encompassing the state and flow of supplies/performances and short-term accounting of results.

The basic objective of cost accounting has been and still is to define, as accurately as possible, the unit cost of a product unit, which financial accounting cannot define. It cannot separate values belonging to balance sheet from the ones belonging to income sheet, since it does not possess the tools for measuring the costs by nature and costs per product.

It is because of such a formulation and the close ties with financial accounting that the cost accounting is still focused to the great extent on requirements of external financial reporting and represents applied, routine and structured system not liable to frequent changes. Although in its basis it is part of management accounting, it is not completely used as essential part of the information set available to company's management.

A research conveyed in 44 large companies in the US, when 261 managers were asked to identify main problems of cost accounting in his/her company, shows that 53% of the surveyed agreed that the existing system provides adequate information for accounting production costs, but 52% found that there was lack of information for decision-making (Zimmerman, 2000, p.13). Not at all praiseworthy.

thy for accounting information system, whose efficiency is measured by the size of its impact on decision makers.

Company's management nowadays finds itself more frequently in situation to change, develop and control business strategies under the influence of variable external environment, i.e. to set special, non-routine information requirements from accounting information system. To face these requirements adequately and to be efficient in its basic purpose, accounting information system requires above all multi-purpose and flexibly set system of cost accounting, adjusted to unique nature of the business climate of a company. It must be, as much as possible, open for development of non-routine part, which will try to meet special information needs. Therefore, nowadays there are various attempts to change and supplement the existing systems of accounting of costs. The objective is to provide wider information support to the company's management in part where the responsibility for management of a company is emphasized. Key changes having occurred in the phase of accounting of costs were aimed at identifying opportunities for better management of costs and to make their accounting more precise.

3. TQA – Total Quality Accounting

3.1. Quality Cost

“Quality has become one of the key competitive variables generating the need for evaluation of spending resources needed for the given level of quality by which the company can expect and achieve competitive advantage on the market” (Gajic, 2005, p 16). Therefore, under the influence of TQM, the last decades of the 20th century were marked by a clearly defined need for measuring total quality cost to provide the company's management with information about, above all, investments into quality and the effects of such investments. And since managers speak the language of money, putting quality under the conditions of costs offers powerful means of communication and control.

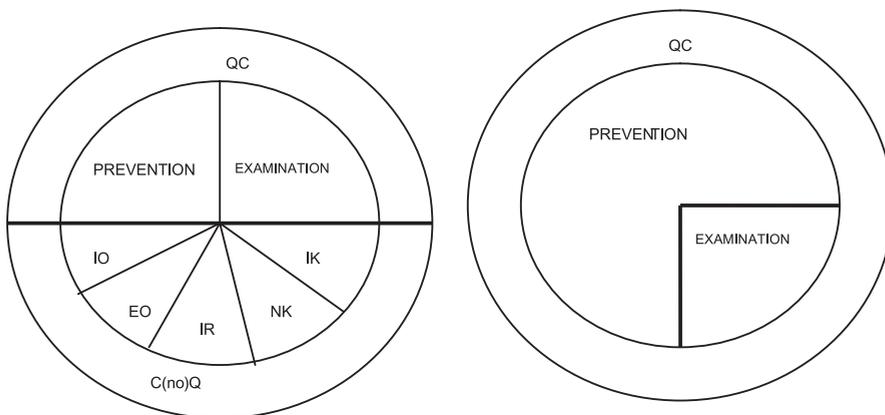
Quality cost is means extracted by quality out of the attribute “good” into a measurable parameter presented by money. Measuring quality by money enables simple comparison and defining priorities of various problems. It also enables measuring quality trends within certain period of time. Since each company's management is forced to economize with money, quality cost is the most reliable

tool for evaluation of efficiency and effectiveness of the realized measures for quality promotion and a basis for all decisions referring to quality.

These costs are generally divided into two groups: “Cost of conformance” and “Cost of non-conformance”(Glynn, et al. 2003, p. 569). The first group implies prevention cost, i.e. the cost of the activities that prevent decrease of quality below the required level (e.g. training of the staff, maintenance, technical support, etc.) and cost of examination that provide achievement of certain quality level (e.g. inspection, testing, revision of quality, etc.). The latter implies the so called cost of internal and external failures, i.e. cost caused by errors in quality. Within the cost of internal failures one measures cost of eliminating the errors on the product which has not been delivered yet, cost of finishing, re-works and waste. Within the cost of external failures, one measures additional cost of low quality product which has already been delivered: warranties, reduced price due to below standard sale, as well as opportunity cost of decreased business activity due to loss of consumers.

Orientation towards quality implies elimination of other group of costs through creation of awareness that the quality is not monitored but built into the product and the entire system. Promotion actions are focused on prevention in order to eliminate the causes of error occurrence and prevent the cost of low quality.

Diagram 1. *Quality cost* (Beecroft, 2000, p.5)



Initial position

CAPTION
 IR – internal resignations
 ER – external resignations
 LR – lost reputation
 CD – customer dissatisfaction
 LK – lost consumers

Ideal position

3.2. Quality Cost Measurement

Majority of companies has no idea how much they spend on quality planning and control, i.e. how much the established quality system costs them. Successful and best-led companies found out that initial cost of this type ranges from 20% to 40% of sales. These companies managed to reduce their quality cost from 30% to only 3% of sale in several years. This was done through orientation towards continuous quality improvement, i.e. through approach that it is acceptable and economically justified to introduce measures to increase the quality cost since they will result in reduction of total costs of the company.

On the other hand, experience of large number of managers who wait and hesitate to introduce measurement, show that they never manage to introduce functional system of quality cost measurement. They are most frequently too occupied with attempts to obtain as precise amount of costs as possible, and at the same time they neither realize nor understand completely why this is done at all. They do not realize that only by defining the quality cost (either precise or approximate) clear objectives for its reduction can be set. Even worse, they lower the prevention cost below minimum, which hides the threat of unnoticed but multiple increases of some other costs, at some other places in the production process and product promotion.

To make correct decisions one needs information on all costs “burdening” the product, as well as on causes of their generation. Unfortunately, most companies nowadays recognize only the costs of waste, finishing, warranty as well as the costs of examination and costs caused by errors, which are only the tip of the iceberg. One predicts all other losses that are not directly visible, although they are a much bigger burden to a company than directly visible costs. Therefore, it is needed to make all these costs visible first and then to define the areas where some savings can be made. The point of Deming’s definition that “quality equals dollar” ($Q = \$$) is in setting of such a quality system that will lead to saving, i.e. to reduce total business costs, and to achieve that, one has to establish efficient system of measuring quality costs.

Methods that are, for the time being, most frequently used for this purpose are the following (Brdarevic, 2001, p 36):

- Traditional accounting according to financial accounting,
- Accounting according to predefined categories,
- Accounting according to cost centre, and
- ABC accounting (activity based cost)

The first two methods are based on traditional accounting of costs where the highest value cost categories are generally separated. Majority of organizations and their managers, who do not understand the meaning of a more complete viewing of quality cost, find this method very reliable and effective. Big mistakes are made in this way and they are shown by the following:

- After they obtain data based on their requirements, they believe that they have good information. Most frequently they are not aware of the fact that the information is neither sufficient nor “all-inclusive”.
- They frequently forget that, when classifying quality costs, the main constraint is how to gather data. They do not see the costs they do not know how to systemize and recognize. Or, even worse, they do not know why and how certain costs occurred.
- The third and the biggest mistake is that they believe that according to these semi or insufficient information they can define where they should save and how to organize the process.

Viewing the costs according to the cost centre is widely used in the existing information systems. It implies that the predefined categories are further developed and that each of them becomes a “cost centre”. The advantage of such data gathering lies in the fact that it is more detailed than the previous ones and it is most frequently done automatically. However, this is not a satisfactory solution either, since it does not eliminate the basic remark made for “accounting” approach – the costs are visible, but why they occurred is not.

New accounting concept generating the concrete way of understanding and accounting of the price, i.e. quality cost is: ABC (Activity Based Costs / costs based on activities). This methodology gained in significance along with popularization of management process and it is based on differentiating the cost bases (real financial indicators – budgeted, planned, engineered), monitoring costs for particular resources (labour, material, equipment) and monitoring costs according to the process that generate them. This means that one follows what cost has been generated (cost centre), who made it (an individual, equipment) and during which process (sale, procurement, training, etc.). This is, therefore, a multidimensional and process oriented cost measurement, which, unlike traditional quality approach, enables viewing and measuring of quality cost generated, apart from production, in other parts of the company.

3.3. Problems in Measurement

The companies having passed through the quality system certification process know best the significance and problems in defining quality cost. Soon after the certification, management of these companies is faced with the problem of defining the real unit cost of the established quality system and the measures realized on its promotion.

Research project “Costs to be eliminated if products of the company and their processes in business are perfect”, conveyed at Royal Technology Institute in Stockholm (Sweden) analyzed the methods of measurement and work with quality cost in about 30 companies in Sweden industry (Volvo, Saab, Ericsson, Sandvilc, IBM, Telia, etc.). The project provided interesting data about problems these two companies are faced with.

Table 1. *Problems in measuring quality cost* (www.qualitydigest.com)

Problem type	DESCRIPTION
AREA OF MEASUREMENT	Many organizations measure quality cost referring to production including, for instance, waste, re-work, remarks, control and examination. Costs generated in other parts of business system were measured at a very limited extent or were not measured at all. These costs are considered to be difficult to measure.
CAUSES FOR MEASUREMENT	In some organizations adequate methods of measurement have not been developed and accepted. They believe their basic objective is to provide neat reports and not to use the information from the reports to promote the status. There is no real connection with promotion activities. In these cases quality cost measurement can become the objective in its own right without any practical application.
RESPONSIBILITY	The question who should be “blamed” for various costs or how to define who really caused the cost generation are yet another difficulty in measurement. Since many organizations build systems in which the staff reports on problems and errors, it frequently happens that the staff finds very unpleasant to report on quality cost generated at their position, and very frequently they fear to do that which results in hiding of certain costs, unpleasant for the staff.

MANAGEMENT	Purpose of reporting on quality cost is for management to be able to define the priority of prevention activities. One of the reasons this does not function properly is lack of interest and responsibility on the part of leadership for the obtained information, which reduces motivation of the staff for future reporting on problems and errors.
STAFF	In many companies the staff considers reporting on quality cost as additional work and they do not understand either the meaning of good and reliable measurements or their purpose.
ACCURACY	The management frequently thinks that the results of measurement of quality cost contain unreliable information, therefore they find the results weak bases for decision making and they do not use them. Successful companies most frequently initiate their measurements by small scope, i.e. they include only the costs with the highest amount, and then they gradually develop and build reliable system of measurement and perceiving of all costs.
APPLICATION	It is interesting that various experiences show that it is the best practice to apply quality cost measurement system from the very beginning. The companies that tried to initiate measurement several times face serious problems when refreshing these activities and being offered new methods due to the negative response of the staff.
COMPARABILITY	Production oriented companies find their quality costs higher than in service oriented companies. This is caused by the fact that measurement of production costs is far easier and more widely accepted. Of course, the highest quality costs are registered in companies that developed the best methods of measurement. Therefore, quality costs in different companies cannot be compared, unless it is certain that the same methods were used in data gathering.

3.4. Effects

Regardless of the problems the companies introducing total quality management systems and moving a step forward in improvement of their competitive position by their certification are faced with, it proved that investment into quality pays off.

Results of the research conveyed by International Certification Body for Quality Systems “Lloyds Register Quality Assurance” (LRQA) organized by Surrey University in England, prove that the companies certified according to ISO 9000 are twice as profitable as the others. The research included 222 British companies from machinery sector whose quality systems were certified by LRQA according to ISO 9000 requirements. Within the research, the researchers compared performance of certified companies with average performance in machinery sector according to the most important business indicators (realized profit, return on investments, scope of sale per employee, etc.) (www.qualitydigest.com). The diagrams below show the results:

Diagram 2. Realized profit (%) in large, medium and small companies

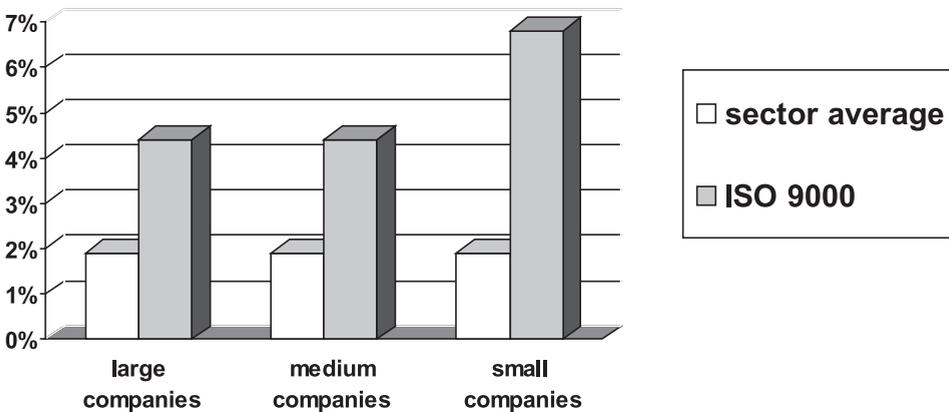
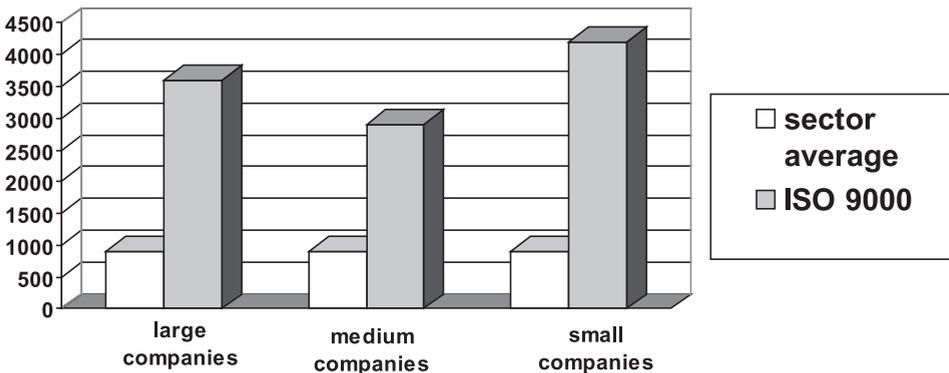


Diagram 3. Realized profit per employee (in pounds) for large, medium and small companies



The presented data show that the effects of introduction of quality systems are measurable and visible, especially in small companies, which is understandable, since the initial investments in such companies are the lowest ones. Beside this, cost measurement systems do not require too much effort and are not too huge, i.e. it is easier to establish them.

4. Conclusion

Companies doing business nowadays find themselves in a constantly changing and complex environment, which requires frequent changes of the accepted business methods. Economic and legal environment change as well, frequently in an unpredictable direction, therefore a company's management is faced with growing requirements of competition. Development of global society emphasizes greater dependence on information systems, which, therefore, become more and more complex in order to meet the growing need for information, and the complexity further leads towards growing risk. These are all reasons that nowadays accounting is required much more than simple reports on the results of previous activities. Accounting, under modern business conditions, must take over a proactive role not only in preparation but in interpretation of both financial and non-financial information on companies and planned business activities, as well.

When it comes to quality and measurement and reporting on costs of meeting ISO standard, traditionally established system of cost accounting cannot provide adequate information for the company's management. Systems established in this way can, for the time being, provide information on initial investments (before certification) and they can measure non-quality costs later on, but they cannot measure the investments into prevention activities which are far worthier for the company than the corrective ones. Unfortunately, this simple fact has not become a practice yet in majority of organizations, which, even when they deal with quality, direct promotion activities towards elimination of errors not towards prevention, towards individual products not towards processes and systems. It is easier to account costs in this way, but it is far from useful.

Cost accounting set to follow and measure investments into quality can change this by simple treating of these investments as an investment. Although in the financial world there is a clear difference between investments and costs and built tools for evaluation of investments profitability, this concept can be applied to quality cost in case cost accounting accepts the task of planning them ahead.

If prevention costs are calculated – analogue to the calculation of unit cost of ready-made products (which is already done by cost accounting) with the expected results of the planned activities, it is possible to determine and measure prevention activities. In that case the company's management would also have adequate information base for decision making from the domain of quality management, which finally leads to management of total business costs.

Regardless of the fact that not a single element of quality system development standard according to which certification is made deals with quality costs, and that neither national legislation nor international accounting standards prescribe mandatory reporting on quality costs to organizations, each company striving for achieving better market position according to the established quality system and obtained certificate must take care of quality costs and establish efficient system of accounting and reporting on them. Outcomes of quality cost management systems are the measures for prevention of non-quality cost occurrence, which is the best way to increase profitability and to achieve better comparative position of the company.

REFERENCES

.....

Beecroft, D. (2000), "Cost of Quality, Quality Planning and the Bottom Line", *IIQP Newsletter*

Brdarevic, S. (2001), "Quality Cost Management – Way to Increase Quality and Profit", *Mechanical Engineering*, No (5), ps 29-46

Gajic, P. (2005), "Management Accounting in Function of Realization of Competitive Advantage of a Company", *Finance, Accounting, Revision*, No 20/5, ps 10-18

Glynn, J. J. et al, (2003), *Accounting for Managers*, Thomson Learning, London

Jefferson Institute, (2003), *Competitiveness of Serbian Economy*, Belgrade

Milicevic, V. (2000), *Accounting of Costs and Business Decision-making*, Faculty of Economy, Belgrade

Novicevic, B. (1995), *Management Accounting, Accounting of Cost*, Faculty of Economy, Nis

Zimmerman, J.L. (2000), *Accounting for Decision Making and Control*, Irwin, Boston

www.qualitydigest.com