

# THE IMPLEMENTATION OF QUALITY MANAGEMENT PRINCIPLES IN LITHUANIAN ENTERPRISES

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## Abstract

Quality management models and quality management principles revealed in them, their implementation - it is a relevant problem for modern enterprises operating in the global market. The six main quality management principles the most widely analyzed in the scientific literature are: customer orientation, leadership commitment, employees involvement, continuous improvements, management by facts, process orientation. However, there is a lack of analysis in scientific literature revealing the influence of such principles to effectiveness of quality management system. The purpose of the article – is to examine the implementation extent of quality management principles and to determine quality management principles, which have the most influence on the effectiveness of quality management system.

*Keywords:* quality management, quality management principles, implementation.

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## Introduction

To improve the quality of product and service there are offered various models, methods and tools in scientific literature. Some of them are very broadly applied (philosophy of total quality management), others – specific, committed to the particular activity the enterprise (statistical analysis of processes). Most quality management models are understandable as the principles, requirements, or philosophies but they do not reveal the tools and methods which would help to implement those requirements and principles and that in turn negatively influence useful implementation of the requirements. The other reasons that determine not sufficient results of implementation of quality management models are as follows (Cao *et al.*, 2000; Nwabueze, 2001; Chinho *et al.*, 2005; Srdoc *et al.*, 2005; Barber *et al.*, 2006; Ruževičius, 2006; Lagrosen, Lagrosen, 2006; Martin-Castilla *et al.*, 2008; Ehlers, 2009; Pabedinskaitė et al. 2008, 2010):

- Not sufficient structuring of total quality management model;
- Not sufficient attention paid to human resources as one of the most important elements of quality management;
- The lack of authority commitment, training, motivation and data analysis;

The current circumstances allow to state that quality management models and tools and their practical application remain very relevant scientific problem. Its decision must be based on quality management experts, implementing and improving those quality management systems, experience and recommendations which would allow to determine what decisions and/or actions would let to improve the effectiveness of quality management system.

Purpose of the article – is to examine the implementation extent of quality management principles, to determine quality management principles, which would have the most influence on the effectiveness of quality management system.

## Quality management principles in the various quality management models

There exists a great variety of approaches applied for quality management - from the philosophical concepts to very specific practical methods and rates. The concept of different levels is widely used in the literature of quality management. Hellsten and Klefsjö (2000) distinguish three levels of quality management: principles, techniques and tools. Lagrosen and Lagrosen (2005) also analyse three levels of quality management elements, but name them a little differently: values, models and approaches, techniques and tools.

There are distinguished three main and most popular approaches (or models) to quality management in scientific literature: Total Quality Management (TQM), Quality Management System (QMS) and European Foundation for Quality Management (EFQM).

Total quality management (TQM) - management philosophy that prompts the continual improvement incorporating all employees into activity to raise the level of consumers' satisfaction. Total quality

management is very extensive conception (Grundey 2008; Vanagas, Vilkas 2008), often understood as management philosophy and methods that prompt the organization to evolve continually, including in such process all the employees and seeking better meet the needs of consumers, improving quality of the product and reducing costs (Bendell et al. 1995, Dale et al. 1997, Hellsten, Klefsjö 2000, Hansson, Klefsjö 2003; ergonomics, 2004). Kelemen (2006) claims that the main TQM elements are: commitment of the highest authority, continual improvement through the application of scientific knowledge and incorporation of the employees.

According to Barczyk (1999) TQM as whole consists of 18 major components. For ease of use these components according to the meaning are grouped into substantial provisions, grand principles (teamwork, continuous integration of the system, creation of quality standards, quality measurement, continuous quality improvement) management tools and management measures. Goetsch and Davis (2006) claim that there are eleven critical elements of total quality management: Strategically based, Customer Focus, Obsession with Quality, Scientific approach, Long-term commitment, Teamwork, Continual Process Improvement, Education and Training, Freedom Through Control, Unity of Purpose, Employee Involvement and Empowerment. Basu (2004) highlights the principles of quality improvement planning and cost reduction.

Lagrosens' (2005) accomplishing the analysis of scientific literature identifies six main TQM principles repetitive in many quality management models: Customer orientation, Leadership commitment, Participation of everybody, Continuous improvements, Management by facts, Process orientation.

Quality Management System (QMS) – is management system coordinating enterprise activity in pursuit of quality and implemented in accordance with ISO 9000, the requirements of international standard (Bass, 2004; Pociute *et al.* 2004). The purpose of enterprise implementing QMS - to arrange all proceeding processes in enterprise in order to reach better results, therefore its final product would bring the enterprise desirable profit and completely satisfy consumers needs (Bass, 2004; Pociute *et al.* 2004; Goetsch *et al.* 2006). Quality management system based on international standards is maintained with the same six principles mentioned by Lagrosen (2005), only additionally incorporated with principles of systematic approach and the principle of mutually beneficial relations with suppliers.

To evaluate the implementation level of quality management system and quality management principles are used: EFQM model (Eriksson 2003, Foster 2007; Pociute *et al.* 2004; Vanagas 2004), the national quality awards or world-class W. E. Deming or Malcolm Baldrige quality awards. The analysis of integrated elements of these award models shows that quality management principles are mostly taken into account in EFQM model and Malcolm Baldrige, leastwise – in W. E. Deming prize requirements. This points to that the implementation of quality management principles was pursued progressively.

It is noticed that almost all quality management principles mentioned in scientific literature are related to other management theories: management of human resources, marketing, management accounting, production and operations management. However, the special attention is paid to process orientation principle.

The application of process orientation in quality management models is emphasized as fundamental principle of quality management. In the international standard LST EN ISO 9001:2008, where quality management systems are created in accordance with its requirements the process orientation is revealed only in two sections (0.2 and 4.1). The standard states that “if organization pursues to operate effectively, it must identify and manage variety of relative activities. Activity or the entirety of activities using resources and managed in order to make the outcomes into results may be analysed as a process. Often, the results of one process directly are the outcomes of the other process. The systems application of organizations processes, together with the processes and the identification of their interaction and management of the processes, creating the desirable result can be defined as a „process orientation”. Applying process orientation to quality management system is emphasized the importance: to understand and meet the requirements; to analyse processes in the terms of value-added; to determine (get) the data of processes current and efficiency, to improve processes continually on the basis of their objective measurements. Chapter 4.1. „General requirements” presents that organization must: „to define processes needed for quality management system and to determine their application in the organization, to defined the sequence of these processes and their interaction, the criterion and methods ensuring the effective operation and management of processes, to ensure necessary resources and information needed for the process operation and monitoring, to monitor, to measure (where fits), and to analyze these processes, to implement the necessary actions needed to achieve planned results and continuously improve processes”. The main idea of the process orientation - the product for the consumer is created transforming the supplier's materials. In general terms the supplier and consumer

are apprehended as - both external and internal, when there are preceding a number of processes in the enterprise and each process uses the product created in the previously process and, of course, each product must be measured according to pre-established criterion. Discovering the inadequacies the corrective actions must be foreseen and implemented. Therefore, to evaluate any process there must be indicated specific, measurable criterions and determined methods of measurement, for example, measuring the quality of the product can be used methods of multi-criterion assessment (Ginevičius *et al.* 2005; Ginevičius 2007, Pabedinskaitė *et al.* 2009).

The criterion of processes management in the internal evaluation questionnaire and methodology of enterprise activity in National Quality Prize (Ministry of Economy of the Republic of Lithuania, 2010), which is prepared on the basis of EFQM model (Eriksson 2003, Foster 2007; Pociute *et al.* 2004; Vanagas 2004), is divided into five elements (evaluation of the processes most important to business success; the application of systematic approach in management; analysis of processes and establishment of their improvement objectives; improvement of the processes using innovations and creative work; implementation of new processes and efficiency evaluation), with provided examples how the enterprise could describe a particular element.

Thus, the quality management principles are analyzed in scientific literature quite broadly, mostly focusing on the six main quality management principles and imposing a lot attention to process orientation. However, the influence of quality management principles on the effectiveness of quality management system is not revealed enough.

### Research of quality management effectiveness in Lithuanian enterprises

The purpose of research – to determine the extent to which Lithuanian enterprises implemented quality management system in accordance with ISO 9001 international standard are using quality management principles, to evaluate the link between the effectiveness of quality management system and quality management principles, to determine the link of process orientation application and the nature of improvements and suggestions.

To make the research was chosen the enterprises from eight different ranges of activity (food, furniture, textile, paper, chemicals materials, metal, building materials and pharmaceuticals). The sample of research – 74 enterprises, their quality management experts answered the questions from the questionnaire; six of them did not indicate the name of the enterprise. Almost all the enterprises are classified as small and medium-sized (18.9% of enterprises workforce contained from 11 to 50 employees, 56.8% - from 51 to 250 employees, 24.3% - from 251 and more). 68 enterprises from 74 indicated that their main activity is production.

The bigger part of enterprises involved in the research, operate in the sectors of food industry and metal processing. The research showed that all enterprises are implemented quality management system in accordance with ISO 9001 international standard and six of them participated in the competition of Lithuanian national quality prize.

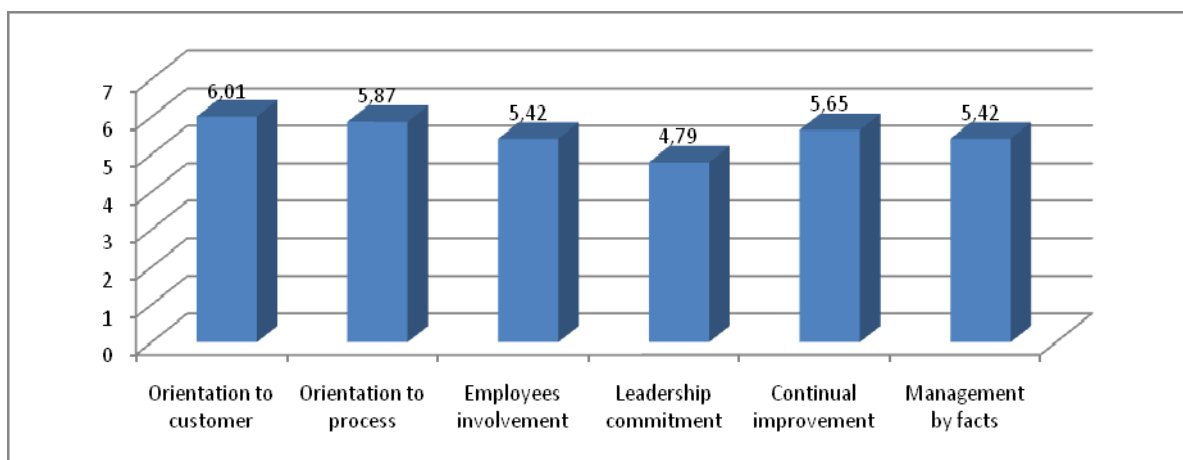


Figure 1. Implementation of quality management principles

The respondents were asked to evaluate the effectiveness of quality management systems and

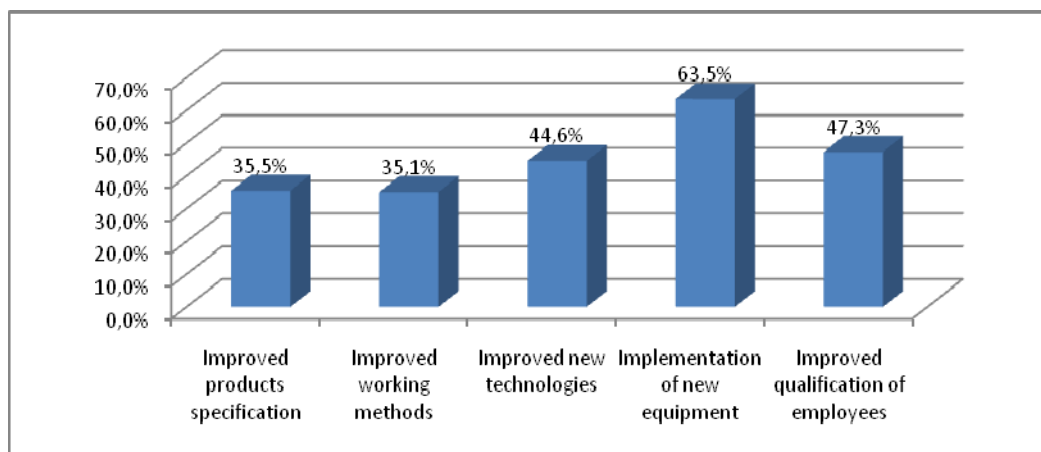
implementation of quality management principles in the scale of seven points (1 point - very bad, 7 points - very good). 43.2% of respondents indicated that the efficiency of quality management system or model would evaluate positively (5 points). Implementation of quality principles is considered quite well, because the total average of principles' implementation seeks 5.53 points. Implementation of customer orientation principle is considered to be the best - average seeks 6.01 (Fig. 1). Implementation of leadership commitment principle is considered to be the worst - 4.76 points. The average of process orientation principle's implementation is higher than the overall average of all the principles - 5.87.

The made correlation analysis showed that there is a link between the effectiveness of quality management system and the scale of quality management principles' implementation (Table 1). According to the presented values of correlation coefficient we can see that the strongest link exists between the effectiveness of quality management system and process orientation principle, the weakest - the principle of management by facts, and the link between the effectiveness of quality management system and the implementation level of the leadership commitment principle is not statistically significant ( $t = 1,77 < t^{kr}=1,99$ ). The correlation coefficients between the effectiveness of quality management system and five quality management principles are important at the significance level of 0,05.

**Table 1.** The values of correlation coefficient between the effectiveness of quality management and quality management principles

The effectiveness of quality management system	The principle of process orientation ( $x_1$ )	The principle of customer orientation ( $x_2$ )	The principle of employees involvement ( $x_3$ )	The principle of continuous improvement ( $x_4$ )	The principle of management by facts, ( $x_5$ )
	0,514054	0,390404	0,378721	0,344242	0,296852
	$t=5,08 > t^{kr}=1,99$	$t=3,59 > t^{kr}=1,99$	$t=3,47 > t^{kr}=1,99$	$t=3,11 > t^{kr}=1,99$	$t=2,63 > t^{kr}=1,99$

The research showed, that the most popular improvement areas of processes in Lithuanian enterprises are: 63.5% of respondents indicated that the most popular area for improvement - implementation of new equipment (Fig. 2). 44.6% of respondents indicated that they improve their activity applying new technologies, and 47.3% - raising the qualification of employees. Respondents indicated that the issues concerning activity improvement are usually resolved through regular meetings (77% of respondents). 37.8% of respondents indicated that there are formed working groups to analyze the alternatives of improvement.



**Figure 2.** Improvement areas of processes

The research also showed that enterprises which have evaluated the systems effectiveness by 6 points are mostly inclined to improve qualification of employees (48.6%) and implement new equipment (44.7%). Enterprises which have evaluated the systems effectiveness by 5 points mostly improve technologies (42.4%) and work methods (42.3%).

However, the correlation analysis showed that correlation link of process orientation principle exists only with two activities of improvement (Table. 2).

**Table 2.** The values of correlation coefficient between the process orientation principle and nature of improvement

Process orientation principle ( $x_1$ )	Improved qualification of employees ( $y_1$ )	Improved working methods ( $y_2$ )
	0,25178	0,23272
	$t=2,20 > t^{kr}=1,99$	$t=2,03 > t^{kr}=1,99$

Considering the results of the research we can claim that enterprises seeking to increase the effectiveness of quality management system must pay particular attention to the process orientation approach which implementation is secured raising the qualification of employees and improving work methods.

### Conclusions

There are six main quality management principles the most widely analyzed in scientific literature: customer orientation, leadership commitment, employees involvement, continuous improvement, management by facts, process orientation, but there is a lack of analysis revealing the influence of such principles to effectiveness of quality management system.

The made research states that the extant of quality management principles in Lithuania enterprises is quite large - the average of principles' implementation seeks 5,53 points (out of seven possible) and the most widely is implemented the principle of customer orientation. Correlation analysis revealed that the strongest link is between the effectiveness of quality management system and its processes orientation principle. Analysing the link between the process orientation principles and nature of processes improvement, it was found that a link exists between the implementation level of the processes orientation principle and qualification of employees and improvement of work methods.

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