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## **OPERATION OF QUALITY MANAGEMENT SYSTEM IN SELECTED ENTERPRISE: THEORETICAL INTRODUCTION**

**Abstract:** Rapid technological advances and variable conditions in the environment cause that properly functioning and improved quality management systems (QMS) in enterprises determine the competitive advantage under conditions of market economy. Currently most of the enterprises which created their own quality management systems follow the principles contained in the international standards. The most popular model of QMS is presented in the ISO 9000 family of standards. Based on the requirements contained in these standards, the system implemented was verified through getting the relevant certification, which is often the requirement of customers. The modern and comprehensive QMS represents an inseparable wholeness with the management system in an organization. It is built based on the requirements of standards and principles contained in the quality management concepts. Proper functioning of QMS, performance of tasks and reaching the goals is possible through continuous improvement that concerns all the areas of activity in the organization. This chapter provides a theoretical introduction to characterization of the quality management system in selected enterprise.

**Keywords:** quality management system, ISO standards, quality

### **1. Introduction**

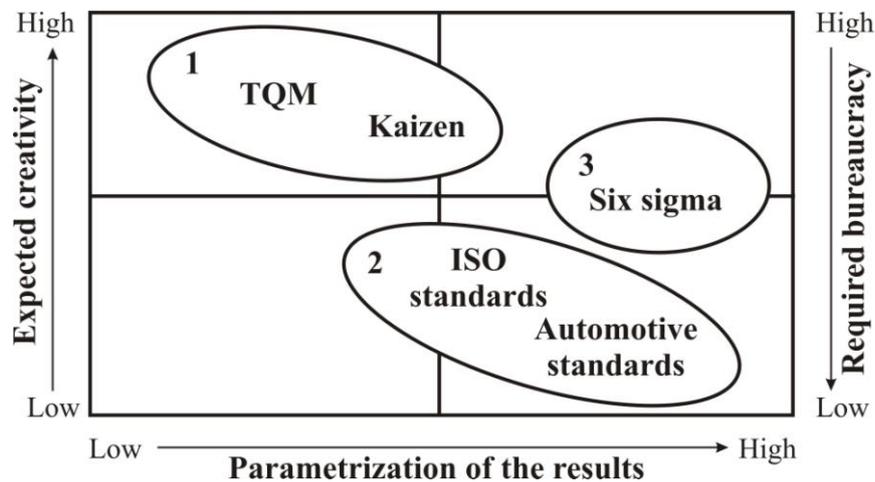
The choice of the most beneficial solutions which determines efficiency of the quality management system must be supported with understanding and knowledge of differences and relationships between available concepts, methods and tools. The differences between selected concepts were presented in Figure 1 (HAMROL A. 2008, DZIUBA S.T., PIEKARA A., MAŁAS W., KOZIOL P. 2013).

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*Fig. 1. Comparison of the concepts of quality management.*

Source: HAMROL A. 2008

With specific criteria, a matrix was used to obtain three groups of concepts with various dominant factors through which quality management can be perceived. The descriptive criteria included (OSTASIEWICZ W. 2004):

- Creativity that the concept requires from enterprise employees.
- Parametrization assumed by the concept.
- Bureaucracy needed for meeting the requirements of the concept.

Creativity is particularly connected with TQM and Kaizen. High parametrization is observed in Six Sigma and automotive standards whereas bureaucracy is the domain of the requirements contained in standards. This allowed for division of the concepts into three groups. Another factor is dominant in each group to affect the approach to quality management (HAMROL A. 2008):

- Quality management through general commitment, which is particularly emphasized in Kaizen and TQM. In this case, the efficiency of quality management is mainly associated with people, their motivation, culture, readiness to work in a team etc.

- Quality management through standardization: based on meeting the requirements of quality standards (e.g. ISO 9001, ISO/TS 16949 etc.).
- Management through measurement of efficiency of activities, which is particularly typical of the Six Sigma methodology and also represents an important area for automotive standards.

Quality Management System developed based on the requirements of the standards and the principles contained in the quality management concepts must be a key element of the whole quality management system in the enterprise (INGALDI M., DZIUBA S.T. 20013).

## **2. The concept of the quality management system according to ISO**

The definition of the quality management system (QMS) contained in ISO 9000-2005 says that QMS is a "management system for managing the organization and its supervision with respect to quality". Another definition emphasizes that QMS is a way the organization controls and manages business activities which are connected with the quality of the products or services offered (ŁAŃCUCKI J. 2006).

Quality management system is implemented in order to achieve both goals connected with meeting the requirements and expectations of customers but also to make processes that occur in the organization effective and to minimize business risk. It represents a system composed of specific principles, procedures, methods, tools, descriptions of workplaces, people and relations between each other, with their goal being achievement of the adopted quality goals.

The standards of ISO 9000 series are in general regarded as the basis for creation of quality management systems. They can be used by any organization, regardless of its size, type and products or services they offer. They are generally accepted since they meet the basic conditions that are conducive to their implementation into practice. The standards are (HAMROL A. 2004):

- Comprehensive: they contain all the components necessary for creation of the effective quality management system.
- Flexible: it is the responsibility of the organization to choose methods and tools for quality management.
- Universal: they can be used with respect to both products and services.
- Based on good organizational resources.
- Objective.

Another characteristic that determined popularization of quality management systems based on the requirements contained in standards of ISO 9000 series is opportunity for verification of the implemented system through certification by the relevant institution (KONSTANCIAK M., KONSTANCIAK E., BORKOWSKI S. 2002).

It was found in many sectors of the industry that the standards from ISO 9000 family, generally regarded as the basis for building the quality management systems, are insufficient. It is claimed that the standards should be supplemented with specific sectoral requirements which were insufficiently stipulated in ISO 9000 standards. A leader in creation of the supplementary standards is the automotive sector which uses such standards as QS 9000, VDA 6.1, or ISO/TS 16949. The requirements contained in the above standards are addressed mainly to direct and indirect suppliers of parts for manufacturing, spare parts and other materials.

Many standards have been developed by various associations of car manufacturers, which forced certain suppliers into implementation of several quality control systems. Creation of the ISO/TS 16949 standard was aimed to unify these requirements. It was based on the ISO 9001 standard and was supplemented with specific requirements for the automotive industry while maintaining its structure. The systems certified based on ISO/TS 16949 standards are currently accepted by the bigger part of car makers (BABICA M., PAJĄK E. 2006, ŁUCZAK J., MATUSZAK-FLEJSZMAN A. 2007).

Other sectoral ISO-based standards include ([www.jakosc.biz](http://www.jakosc.biz)):

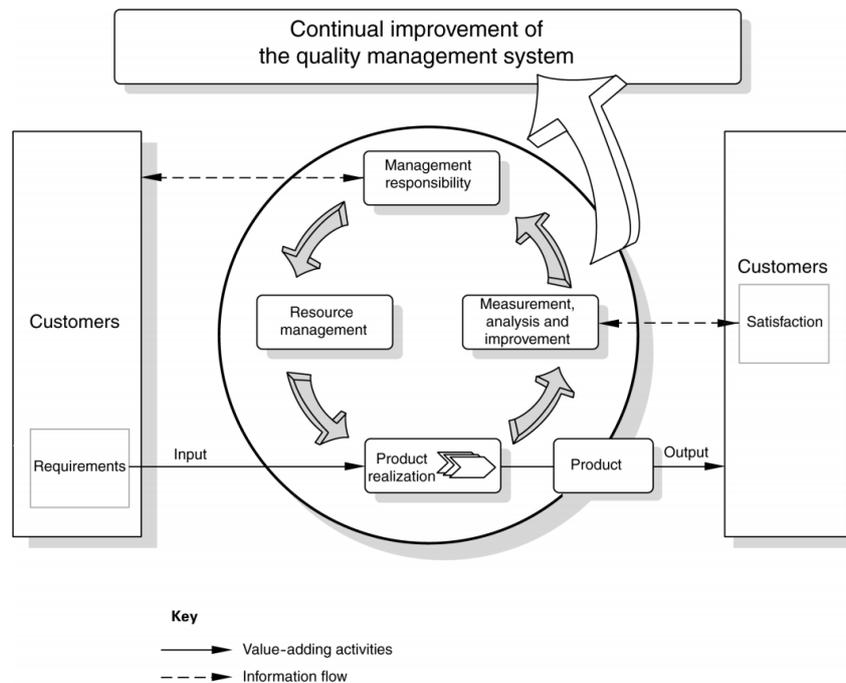
- TL 9000 – telecommunications,

- AS 9000 – aviation industry,
- AQAP - arms industry,
- EN 460001 – health care products,
- ISO 22000 – food industry.

More and more interest is being attracted to integrated quality systems. They include several interrelated and supplementing subsystems in the enterprise. The compilations of various standards are possible. The most popular are ISO 9001 quality management systems integrated with one or two additional systems (TORUŃSKI A. 2009):

- ISO 14001 environmental management system,
- PNEN /OHSAS 18001 occupational health and safety management system,
- ISO/IEC 27001 information security management system.

Standards from ISO 9000 family and sectoral standards based on ISO 9000 provide a detailed description of individual stages of implementation and maintaining the efficient QMS ([www.jakosc.biz](http://www.jakosc.biz)). Figure 2 presents the model of QMS according to ISO.



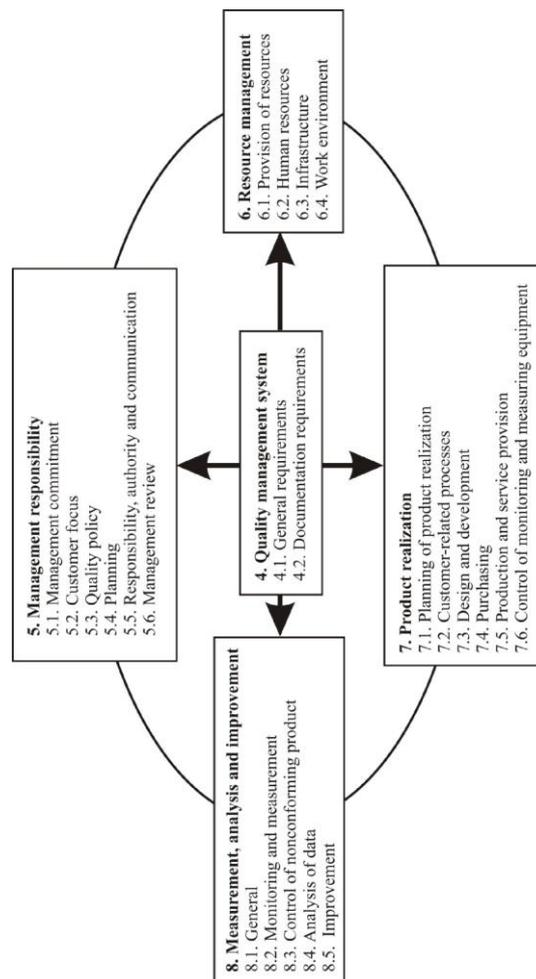
**Fig. 2. Model of quality management system.**

Source: PN-EN ISO 9001:2009

Similar to models of other management systems, the model of quality management system presented in Fig. 3.2 is based on the Deming circle, also defined as the PDCA cycle (Plan-Do-Check-Act) It indicates that continuous improvement is a precondition for meeting customer requirements while the efficiency of the quality management system largely depends on the effectiveness of the facilitation activities (SKRZYPEK A. 2014).

It is essential that the model based on a standard presents only processes and their functions which should be performed within the system. However, it does not contain the methods and resources for their implementation, which largely determine the efficiency and effectiveness of the QMS (Wawak T. 1995).

The document of the PN-EN ISO 9001:2009 standard contains the requirements arranged into five mutually interrelated processes. The basic processes (requirements) of the QMS defined by the ISO 9001 are presented in Figure 3.



**Fig. 3. Basic processes of the quality management system.**

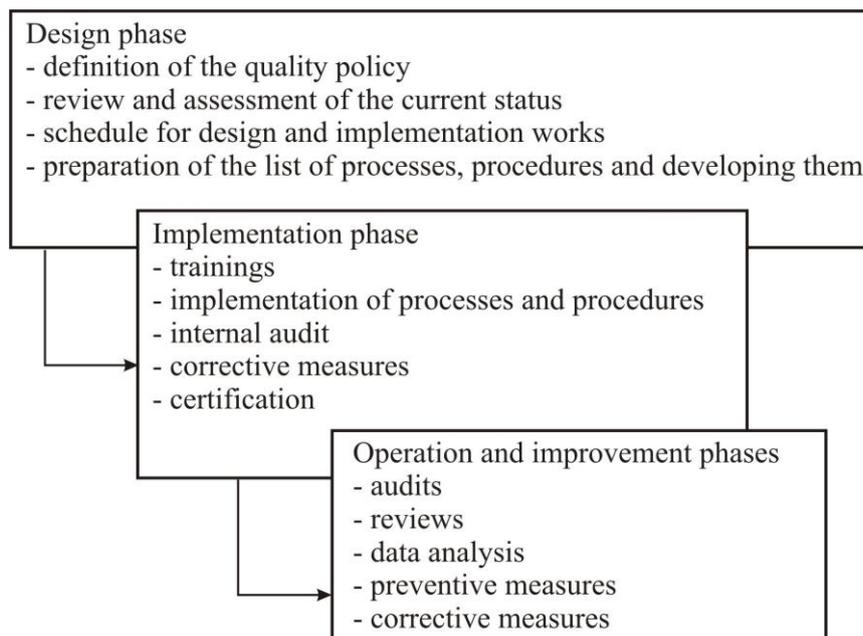
Source: PN-EN ISO 9001:2009

### 3.3. Implementation and use of QMS

The method to prepare and implement the quality management system substantially affects its effectiveness and the activity of the whole organization. The mistakes made at earlier stages of design are mainly noticed at the end of implementation. Therefore, it is necessary for project managers to have relevant knowledge and experience.

Depending on the size, level of knowledge among the managers and complexity of the processes, organizations decide to implement systems independently or with the help of a consultant.

The design and implementation of the quality management system is the responsibility of managers. This is illustrated in Figure 3.4.



**Fig. 4. Implementation and use of QMS**

Source: HAMROL A. 2004

The process of implementation and use of QMS can be divided schematically into three phases. Each phase requires a variety of activities that have an effect on proper final effect. Development of the internal model should take into account the components that fit the organization and the conditions of its operation the best. The managers are obliged to perform activities using the resources that take into account the variety of organizational forms and scopes of QMS effect (HAMROL A. 2004).

#### **4. Reasons and benefits of management systems**

There is a number of reasons for implementation of quality management systems. Each enterprise chooses their own road to be followed during development and implementation of a quality control system. However, the reasons for implementation of quality control systems and certification are similar in all enterprises. These include (Wawak T. 1995; KONSTANCIAK M., STASIAK-BETLEJEWSKA R. 2010):

- demands of the foreign market and, more and more often, the domestic market,
- growing competition and greater difficulties in finding the steady position in the market,
- new position of consumers in the market and the need for taking into account their requirements in this area in order to ensure that the consumers are maximally satisfied with products and services.
- necessity of using active marketing,
- necessity of achievement of long-term excellence, including the excellence of processes,
- forcing the work on the system by recipients,
- necessity to improve corporate image with respect to the contractor,

- harmonization, standardization and unification of regulations and adjusting them to the requirements of the European Economic Area,
- awareness of the impossibility of the entry and survival in the competitive market,
- increasing awareness of the impossibility of controlling the quality if it is not achieved before in the production process,
- requirements of competitive markets force companies to get system certification, which often guarantees getting a certificate for a product,
- changes in global scale in terms of quality and its understanding caused the necessity of considering the quality problem in a comprehensive manner,

Benefits that result from management systems include (EJDYS J., KOBYLŃSKA U., LULEWICZ A., TARASIUK J. 2005; PORADOMSKA P. 2008; KARDAS E., KONSTANCIAK M., PORADOMSKA P. 2008; KONSTANCIAK M., KONSTANCIAK E., BORKOWSKI S. 2002):

- comprehensive approach to the enterprise and processes in the enterprise,
- comprehensive approach to quality,
- saving time and expenditures compared to implementation of separate systems,
- synergistic effects,
- maintaining all the benefits of implementation of other systems,
- introduction of the process approach that results from the ISO 9001 standard,
- introduction of uniform principles for development and popularization of system documents that result from one shared documentation containing the components of ISO 9 001.
- comprehensive auditing of individual areas in the enterprise that takes into account the problems concerning quality and protection.

## 5. Conclusions

In order to find and maintain customers, enterprises, regardless of the sector, decide to implement various management systems, including quality management systems according to the ISO PN-EN ISO 9001:2009 standard. Apart from maintaining quality at the highest level, the system allows for production cost optimization and improvement of the quality of work. Furthermore, it helps organize corporate documentation and improve the quality of communication among the employees.

Having a certificate of the quality management system is not equivocal with high quality of goods or services. It is attitudes of managers and commitment of organization's employees that determine how the quality management system can ensure quality at any stage of product life. However, it is certain that the quality of this product is reproducible and the customers can expect that the product meets their expectations.

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