

Print ISSN: 2234-3040 / Online ISSN: 2234-3059  
doi: 10.13106/eajbm.2014.vol5.no2.23.

[Field Research]

## Development of Quality Management in the Republic of Kazakhstan

Ainur Jambul\*, Almazhan Dzhulayeva\*\*

Received: February 22, 2015. Revised: April 7, 2015. Accepted: April 14, 2015.

### Abstract

**Purpose** – This theoretical study develops practical recommendations for implementing a quality management system (QMS) in Kazakh organizations to ensure the effectiveness and safety of products and services. We discuss the improvement of Kazakhstan's quality standards based on the requirements of ISO 9000.

**Research design, data, and methodology** – We provide methods for improving the quality standards system, ranging from research and development to the sale of products. We also propose to establish a special quality systems award to motivate enterprises toward product quality improvement. The study's methodological basis included Kazakhstan's legislative and regulatory Acts, and international and national standards defining QMS requirements for scientists worldwide to develop and implement a QMS for enterprises.

**Results** – Aligning the QMS reduces Kazakh companies' costs for the detection and correction of defects, and the external and internal loss caused by the defects. Effective QMS also reduces management costs.

**Conclusion** – This article can help increase the transparency of organizations for their leaders and (if necessary) the external environment, and improve the accuracy, quality, and timeliness of decision-making.

**Keywords:** International Standards, Standards of RK, Product Quality.

**JEL Classifications:** L15, L23, M20.

### 1. Introduction

In a market economy, a lot of attention is paid to quality problems. Competition, both at the national and international

markets has led to the need to improve quality. In research and in practice, it became necessary to develop objective indicators for assessing the ability of firms to produce products with the desired quality characteristics. These characteristics are confirmed by a certificate of conformity for products. However, over time, to maintain its competitive status of the organization has been insufficient evidence that organized their production process is able to provide a specified level of quality. This was facilitated by further tightening competition, the direction of which was largely predetermined by the new methodology of quality management products and services.

The current stage of development of the methodology of quality encompasses not only the problem of quality products and services, but also the quality of governance, which is directly responsible for the formation of an appropriate level of quality.

### 2. Background

#### 2.1. Quality Management

Quality management is actively developing a theoretical discipline and management extremely relevant practice areas.

The consequence of this is to get wide distribution of quality management system (QMS), which tend to become the controlling subsystem of any production, covering all phases of the business. Same international standards ISO 9000 have the status of a formalized methodology concentration of total quality management (TQM). Development of ISO 9000 takes place quite rapidly. Due to this methodological terminology TQM enriched categories, applications and research previously carried out practically under this methodology. One of these categories is the efficiency and effectiveness of the QMS. The latest version of ISO 9000, on which the majority of certified QMS in the world, a major tool to improve the organization's activities in the field of quality is to measure the efficiency and effectiveness of existing QMS (Evans and Dean, 1999).

Management system- is a system of methods, resources and activities that directed to establishment, providing and maintaining the required level of quality.

The need for a systematic approach to managing the quality of products derived from the diversity and interdependence of

\* First Author, Department of Management and Marketing, Kazakh National University, Kazakhstan. Tel: +7-705-905-1993, E-mail: ainur.jambul@gmail.com.

\*\* Corresponding Author, Assistant professor, Department of Management and Marketing, Kazakh National University, Kazakhstan. Tel: +7-705-712-3814, E-mail: danone0303@list.ru.

internal and external factors and conditions that affect the quality of the continuity of the formation and support throughout the entire life cycle, from participation in this process all the elements of the sphere of production and use or consumption. Total Quality Management is a modern form of management - enterprise management system in the market, focused on achieving commercial success through the production of the desired level of quality.

Conventionally, two groups of the main objectives of the system of quality control.

The first group includes tasks that are directly related to the main purpose of the system:

- Development and implementation of a target date of new products corresponding to the highest world achievements;
- An increase in production of high quality products;
- Timely removed from production, modernization or replacement of obsolete products; bringing the level of quality products to the economically optimal, providing cost reduction, economical and rational use of manpower, material and financial resources;
- Expanding the range of products that are in high demand by the consumer;
- Improving the competitiveness of products in the domestic and foreign markets.

The second group of problems includes tasks - means to improve the quality of the processes of creation and production of products, improvement of organizational and economic methods of quality management:

- Creation and implementation of programs to improve the quality and competitiveness of products;
- Improving the quality of manufacturing products, increasing production and technological discipline, compliance with the technical documentation;
- Improving the organizational and technical level of production, to ensure the widespread introduction of advanced technology;
- Mobilization of labor collectives in the implementation of plans and programs to improve the quality;
- Improvement of metrological provision of production, working test units, services standardization and technical control, methodological and information support of quality management;
- Improving the accounting, evaluation and analysis of the level of product quality, development of economic methods of quality management and the system as a whole;
- Compilation and dissemination of best practices in improving the quality of products (Knowles, 2009).

## 2.2. Quality Control

To control the quality of products and its increasing need to evaluate the level of quality. Assessing the level of product quality is the basis for generating the necessary control actions in the system of quality control.

The purpose of evaluation is due: what quality indicators should be selected for consideration, the methods and the accu-

racy with which to determine their value, which means it will require, as a process and in what form to submit results of the evaluation.

Product properties can be characterized quantitatively and qualitatively. There are also such things as *qualitology* - the science of quality and *qualimetry* - is a quantitative characteristic of one or more properties of the product, its quality components, considered in relation to certain conditions of its creation and use or consumption, called the index of the quality of products.

In a competitive environment businesses will thrive, introducing a system of quality control. Currently, the growing demands to improve the quality of products - one of the characteristics of the global market.

General (total) quality control (TQC), carried out by firms in Western Europe, the US and Japan suggests three required conditions.

1. Quality as the main strategic goal of the recognized top management firms. In this case, set targets and allocate resources to address them. Since the requirements for the quality determines the consumer cannot exist such thing as a constant level of quality. Quality should continue to grow, because the quality is a constantly changing target.
2. Measures to improve quality should address all units without exception. Experience has shown that 80-90% of the events are not controlled by the departments of quality and reliability. Particular attention is paid to improving the quality of such steps as R & D, which is due to a sharp reduction in the period of creation of new products.
3. Do not stop the learning process (focused on certain jobs) and increase motivation (Tague, 2005).

Modern development of a quality management system has received as a result of the transition from total quality control (TQC) to total quality management (TQM).

If TQC - this quality management to meet the requirements, the TQM - even by the management objectives and requirements. In TQM also includes quality assurance, which is treated as a system of measures, causing consumer confidence in the quality of products.

## 2.3. Total Quality Management

Model Total Quality (Total Quality Management) was proposed by Armand Feigenbaum in the early 50s.

Under total quality control Feigenbaum realized a system that allows us to solve the problem of product quality, and its price depending on the benefit of consumers, producers and distributors. Feigenbaum proposed to consider the quality is not the end result of the production of the product, and at each stage of its creation. Created a system of universal Feigenbaum quality control was introduced into the practice of Japanese enterprises W. Edwards Deming.

Thanks to a living legend Edward W. Deming, one of the creators of "Japanese economic miracle", the theory of quality management has been further developed. It is believed that the activities of the Deming has greatly contributed to the emer-

gence of high-quality and inexpensive Japanese goods (Juran, 1988).

What is the basic meaning of the concept of Total Quality Management? Total Quality Management - is a fundamentally new approach to the management of any organization, focus on quality, based on the participation of all its members (staff in all departments and at all levels of the organization) and aimed at achieving long-term success through customer requirements and benefits for employees organizations and society as a whole.

TQM system is a complex system, focused on continuous improvement of quality, minimize production costs and delivery on time. The main ideology is based on the principle of TQM - improvement there is no limit. Regarding the quality of the Trust installation - the desire to "0 defects" to "0 overhead" to supply just in time. At the same time realize that to achieve these limits is not possible, but you must constantly strive for this and not dwell on the results achieved. This ideology has a special term - "continuous quality improvement" (quality improvement).

The system uses TQM quality management, adequate objectives. One of the key features of the system are the use of collective forms and methods of searching, analyzing and solving problems, constant participation in improving the quality of the entire team.

The most important elements of TQM are:

The involvement of senior management: a strategy for quality in the company (organization) must provide a constant, continuous and personal involvement of senior management (director) of the company in matters related to quality. This is one of the basic and mandatory conditions for the successful implementation of TQM, which is key to the success of the company in quality assurance (Crosby,1981).

The emphasis on the consumer: all the activities of the company focus on the needs and wishes of both external and internal customers.

Universal participation in the work: to provide opportunities for real participation of everyone in the process of achieving the main goal - to meet customer needs.

Attention processes: focus on processes, treating them as an optimal system to achieve the main goal - maximizing the value of the product to the consumer and to minimize its cost for both the consumer and the producer.

Continuous improvement: constantly and continuously improve product quality.

Basing decisions on facts: to base all decisions of the company only on facts rather than on intuition or experience of its employees.

Quality management is implemented using a quality management system that is an integral part of quality management.

Quality Management System - a system created in the company for a permanent policy and quality objectives, as well as to achieve these goals in order to continuously improve the quality of products or services.

QMS is designed to ensure the quality of products or services of the enterprise and "tune" is the quality expectations of consumers (customers). While its main task - not to control each unit of production, and to make sure that there were no

errors in the work, which could lead to marriage (poor quality of products or services).

QMS is part of the organization's management system, designed to meet the needs, expectations and requirements of stakeholders to deliver results in accordance with the quality objectives. The quality objectives complement other objectives of the organization related to the development, funding, profitability, the environment, health and safety. Different parts of the organization's management system can be integrated with the quality management system into a single management system using common elements. This can facilitate planning, allocation of resources, definition of complementary objectives and evaluation of the overall effectiveness of the organization (Gunasekaran and McGaughey, 2003).

### 3. Research method

#### 3.1. Category of product quality control

For efficient organization of quality control requires that not only was clearly highlighted object management, but also to clearly identified by management categories, ie the phenomenon to better understand and organize the entire process.

With regard to quality control should provide at least the following categories:

Object management - quality products. Sometimes as the object occurs competitiveness, technical level or some other indicator characteristic. As an object of control can be either all the properties of the product or any part of their group or individual property.

The purpose of management –is the level and condition of the product quality, taking into account the economic interests of producers and consumers, as well as safety and product stewardship. It's about what kind of a set of properties and what level of quality should set, and then reach be out and to ensure that this population and this level appropriate to the nature needs. This raises questions about the effectiveness of production and consumption, affordable prices for the consumer, the level of cost and profitability of products for its designer and manufacturer. Nor can we overlook the timing of product development, production and deployment of its communication to the consumer, which is directly related to competitiveness.

The subject of management – is the governing bodies of all levels and individuals to ensure the achievement and maintenance of planned state and level of product quality.

Methods and means of control - the ways in which governments act on the elements of the production process, ensuring the achievement and maintenance of planned state and level of product quality. Quality Management uses the following four types of methods:

- 1) Economic methods to ensure the creation of economic conditions that encourage groups of companies, design, technological and other organizations to study the needs of consumers, create, manufacture and maintain products that

meet these needs and requests. Among the economic methods include pricing rules, credit conditions, economic sanctions for non-compliance standards and technical regulations, rules, compensation of economic damage to the consumer for the implementation of his defective products;

- 2) Methods of material incentives, providing, on the one hand, encouraging employees for the creation and production of high-quality products (among these methods include: the creation of systems quality award, the establishment of wage supplements), and on the other - the recovery of damages from it is not of good quality;
- 3) Organizational - administrative methods implemented through binding directives, orders, directives leaders. Among the administrative organizational methods of quality control are also regulatory requirements;
- 4) Educational methods that affect the mind and mood of the production process, encourage them to high-quality work and strict compliance with the special functions of quality control. These include: the moral encouragement for high quality products and raise pride in honor of the factory brand.

The choice of methods of quality control and the search for their most effective combination - one of the most creative moments in the establishment of management systems, as they have a direct impact on the people involved in the development and manufacture of products, that is to mobilize the human factor.

### 3.2. QM Tools

Management Tools - include office equipment (including computers), communications equipment, in short, everything that used the bodies and persons that control specific functions in quality management systems of the means of quality control are also included:

- Bank of normative documents regulating the indicators of the quality of products and organizing specific functions of quality management;
- Metrology tools, including (depending on the system) national standards of physical quantities, model and / or working measuring instruments;
- State system for ensuring the uniformity of measurements (ICG);
- Public service of standard reference data on the properties of substances and materials (GDSN).

### 3.3. QMS relations

Management relations, i.e. is the relations of subordination (subordination) and coordination (cooperation).

The relationship of subordination is usually characterized by vertical links from the head to subordinates. The content of these relations is determined by the degree of centralization and decentralization of functions and tasks of quality control. At the enterprise level relationship of subordination quality management

determined by the production structure of the company and the structure of the existing quality management system. Management relations are based on a combination of one-man management, collegiality, and the activity of members of the workforce, on the economic, moral and material incentives (Rebrin, 2004).

Relations are characterized by horizontal coordination bonds between individual workers and organizations interact for the sake of providing a certain level of product quality or improve it.

When determining the bodies of quality management must proceed from the fact that the quality management - an organic part of the overall production management, one of its branches, one of its functions. For this reason, it cannot resist it. Therefore, as a rule, quality management is developed and implemented under the current management staff and is a clear and well-organized efforts to identify needs, create, manufacture and maintenance of products.

At the enterprise level, combining quality management organized in one of two ways. The first is a clear division of roles and tasks of quality control among existing units and employees, periodic review of both the functions and tasks and their distribution for performance enhancement. It does not create a specialized body - the Quality Management Department.

The second involves, in addition to the first embodiment of the allocation of the overall function of coordination and creation of a special body - the Quality Management Department. This department and assigned many special features of quality control.

Each of these two options has advantages and disadvantages. Thus, the advantages of the first embodiment are that all the participants of the production process are responsible for quality. There is no feeling that someone behind them carries this responsibility and must resolve all issues related to quality. The disadvantage is a fact that a number of coordinating functions nobody does, nobody conducts organizational and methodological questions of a general nature.

The second option is deprived of this drawback, but the employees of the enterprise is often a feeling that there is a specially selected people in the company who are responsible for the quality, therefore, they have to solve all the problems related to quality.

In any case the general management of the quality management system should be headed by the head of the company responsible for all activities of the company and the economic results that in a market economy cannot be high in poor quality.

Analysis of the development of forms and methods of organization of work on quality, identifying possible applications to work on the principles of total quality management theory, development schemes of the mechanism of quality management, the definition of requirements, the state of the market situation as a source control product quality, a critical examination of the definitions of basic terms suggests the following:

1. Modern organization of work on quality theoretically acceptable and practicable and effective to build than the general global control, and on the principles of the general theory of control schemes based on mechanisms of quality control;

2. Current product quality control should be directly guided by the nature of the needs of their structure and dynamics; capacity and market conditions; incentives due to economic and technological competition, characteristic of market relations;
3. Modern quality management in the enterprise, regardless of ownership and scale of industrial activity should optimally combine steps, methods and tools to ensure, on the one hand, the production of products that meet the current demands and needs of the market, and on the other - the development of new products, capable of meeting the future needs and future needs of the market;
4. Schematic diagram of the control mechanism as organic interacts with marketing research and includes in its membership the block development of the quality policy (Kruglov & Sergeev, 1997).

## 4. Findings

### 4.1. International Standardization

One of the most important conditions for entry into the global economic system is stable transition to international standards quality firms in all economic sectors. State management of standardization in the Republic of Kazakhstan, according to the Law "About Standardization", carries Gosstandard Kazakhstan, which forms the state policy in the field of standardization, and state control over compliance with the mandatory requirements of state standards, participates in the work of international standardization. International standardization - is the work of standardization, with the participation of several (two or more) of sovereign states. The results of international standardization are international standards or recommendations for the standardization used to become a member as national standards, or create (revised) national standards. International standardization can be carried out on the basis of bilateral agreements between the two countries, as well as on the basis of multilateral agreements related to a specific region or combined mutual economic relations. The widest in scope is international standardization carried out by international organizations, first and foremost is the International Organization for Standardization.

The world market today is organized so that access to it with products that do not meet the requirements of internationally recognized standards is almost impossible. Therefore, large foreign companies are actively involved in the work of ISO technical bodies, which allows them to have information on international standards of first-hand and tell about their achievements, fix them and achieve recognition, and thus gain a competitive advantage. Recently, the work of ISO technical bodies have begun to participate and Kazakhstani companies. In May 2001, Kazakhstan joined the International Organization for Standardization.

To conduct economic activities and compete successfully in the market sales of industrial products, works and services,

businesses and suppliers need to apply effective and efficient management of its activities. The use of such systems should to ensure continuous improvement of product quality, meet the needs of customers and other stakeholders of the enterprise (internal customers, subcontractors, etc.), as well as society as a whole. Customer requirements are usually included in the standards and specifications for products, but it is not a guarantee that they can be truly satisfied if in the organizational system of the company, including marketing, supply of products, its after-sales service, innovation in quality, there are serious flaws and inconsistencies. Therefore, the company should be involved mechanism of guaranteed quality of customer requirements, which could provide tangible results. The list and sequence of such action should have been clearly identified and their necessity and sufficiency should be clear as to employees of the enterprise and consumers alike.

To go out today to the world market and to be quite competitive is possible only by implementing a quality management system to meet global requirements. The leaders of many of the largest industrial enterprises in Kazakhstan, including JSC National Holding Company "Almatykurylys" have realized this need, and some even went to the implementation of a quality management system and its certification to ISO 9000. It should be noted that in recent years Kazakhstan stepping up work on the transition to international quality standards ISO 9000, which are recognized in many countries around the world and provide a high level of reliability and firm performance. At present, of the 500 largest industrial enterprises produce only 30 meets this standard. In 2010, more than 100 domestic manufacturers have applied for international quality certificate. The Government of Kazakhstan supports this policy, as improving the competitiveness of domestic products by improving their quality to international standards - one of the main conditions for entry to the WTO. This work successfully carried out in the framework of the republican program "Quality". This program is approved by the Government of Kazakhstan on May 2, 2001 №590. The program "Quality" determines the main directions of activity of state and local government agencies and other organizations and enterprises to improve the quality and competitiveness of domestic goods and services. The main aims and objectives are: a) improving the enforcement of state administration in the field of quality products and services; b) improve the forms and methods of management; c) the introduction of scientific and technological progress to improve the competitiveness of domestic products; d) normative and informational support in the field of competitiveness and quality of products, works and services; e) the transition from the certification of goods, works and services for the certification of quality systems; f) training in the field of standardization, metrology and certification; g) the organization of events and promotion in the field of quality improvement (Hawkins, 2001).

### 4.2. QMS issues

Addressing issues of transition to international quality standards, it is necessary to take into account that the Kazakh enter-

prises have general and specific development problems that hinder the process. In particular, they are macroeconomic, regional, sectorial, economic and financial character, and decreased consumption of products in the domestic and foreign markets. Continue to deteriorate technical level and structure of the productive apparatus, increasing depreciation of fixed assets, increased production costs. The country has accumulated a lot of problems that hinder the transition of enterprises to international quality standards. This and the low purchasing power, brain drain, a high degree of risk of the manufacturing sector, the imbalance in the structure of industrial production to the predominance of extractive industries in comparison with the processing, low product quality and extremely rare update its nomenclature. To solve these problems it is necessary to state management in the field of quality was based on a rational combination of regulatory and legal, economic, organizational and administrative methods, which is particularly important for social and economic development of the country. Legal forms of government in the field of quality in the country are carried out through the establishment of the legislation of the Republic in this area and monitor their implementation. Thus, it was decided to develop a program "Quality", the Law "On Protection of Consumers' Rights Law" On Standardization ". However, most of the Legislative Work is under discussion or development. In our opinion, should streamline the system of state regulation of licensing consulting firms that provide services in the field of quality improvement (ASGR, 2001).

In addition, the company should specialize by industry, as the consulting company owned by insufficient specificity of the industry, and therefore not able to pull on a desired level of quality management. Such activities on the part of Government of the Republic of Kazakhstan will allow domestic organizations to implement international quality standards, be confident in the professionalism of consulting firms, providing them with qualified personnel in improving management quality system in a particular industry. And also lead to a decrease in the level of mistakes in the preparation of the quality certification system, and thus reduce the additional cost of their operation. To provide and regulate the activities of Kazakh producers and suppliers of goods and services in the field of quality is not developed legal framework. Therefore, this issue should be given a lot of attention on the part of the Government. Economic forms of governance in the field of quality should be carried out by encouraging business entities to improve the quality of products and services, improve the economic responsibility of manufacturers and sellers of the production and sale of substandard products.

In the Government proposal was made on the amendments and additions to the Rules for the development and implementation of the Public Investment Program (PIP) on the priority included in the PIP investment projects proposed by business entities that have implemented a quality management system conforming to international standards ISO 9000. However, a significant role in addressing quality play and consumers, since the external openness of the domestic market levels of their queries, in essence, the same level as the requirements for goods and services in the markets of the developed countries

of the world.

Organizational and administrative forms should ensure the participation of public administration in accordance with their authority in carrying out works to improve the quality and competitiveness of products, increase public awareness of the quality and the quality of goods, services and works. In our opinion this requires:

- develop and publish accessible and clarifying tutorials in the field of standardization and quality control;
- create a system of training in the field of quality, including basic knowledge about the quality;
- carry out scientific research in the field of quality;
- provide training for independent expert auditors quality system certification, and management development in the field of quality.

At present, this work is carried out in the country, but insufficient rates and volumes.

We believe that good governance in the field of quality will provide:

- widespread adoption of modern management techniques and quality assurance based on international standards;
- improvement of technical and economic performance of the industrial complex of the republic;
- increasing the competitiveness of domestic goods, works and services; g) release of a wider range of quality goods;
- the development of exports;
- the creation of new jobs;
- Protection of the population and the state of the market of substandard and unsafe goods works and services.

It should be noted that the Government of the Republic of Kazakhstan in a focused way policies to attract foreign investment, to implement the program "Quality", but much depends on the willingness of Kazakh partners to a successful business. You can analyze some construction companies that have already received quality certifications in accordance with the requirements of ISO. JSC National Holding Company "Almatykylyys." In general, construction and installation work increased from half a billion tenge in 1995 to 16.4 billion tenge in 2013. Average annual growth rates over the past five years more than 32 times. Build and production volumes are with 210 million tenge up to 20 billion tenge. The volume of services increased from "221 million KZT 6 billion tenge. The company's revenue from work performed and services rendered increased from 3.7 billion to 15 billion tenge in 2013 year. The company strives to develop the company and now. This was made possible by the fact that almost all of the objects are made of "turnkey". An important argument was the fact that the majority of works, services and manufactured products the company complies with ISO 9000, ISO 9001. "Munaigazkurylyys" is also one of the first construction organizations in Kazakhstan, to prove their compliance with international quality standards. The company operates Mangyshlak since 1964. Main line of action of "Munaigazkurylyys" –is the construction of oil and gas sector. Apart From addition, the company provides services in transportation, engineering, performs technical development and design work. The main customers of the company are

"Mangistau-Munaygas", JSC "Karazhanbasmunay", "KazTransOil", "Teksako Nors Buzachi Inc.", "Partex Corporation", "Karachaganak Petroleum Operating", "Tasbulat Oil Corporation", "Agip KCO" and others. In recent years, JSC "Munaigazkurylys" implements a number of projects for the rehabilitation and replacement of storage tanks for oil storage in Mangistau and Atyrau regions, as well as develop new fields of Mangistau region - Dunga, North Buzachi. All this is possible thanks to international quality standards. At the moment of "Munaigazkurylys" is the flagship among construction companies in Western Kazakhstan, proven ability to quickly develop international standards and operate in accordance with them. JSC "Imstakom" - builder. Over the years, participated in the construction of the largest sites of the Republic of Kazakhstan for ferrous and non-ferrous metallurgy, chemical and engineering industries were built unique civilian objects, including bridges, towers, masts in the cities of Astana, Almaty, Karaganda, Pavlodar, Ust-Kamenogorsk and et al. in recent years has increased the volume of construction works in the oil industry. The organization considers its main objectives: to improve the quality of services, increasing the competitiveness of manufactured metal structures, improving the technology of construction and installation work, raising total culture production deadlines of the work.

## 5. Conclusion

In conclusion, it should be noted that the current market demands, the possibility of free choice of goods and services, fierce competition, which involves not only domestic but also foreign companies affect the producers, forcing them to send priority efforts on quality. Kazakh enterprises, including AO National

Holding Company "Almatykurylys", realize that quality - this is the only way to survive in a market economy, are implementing the international quality system standards ISO 9000, and at the moment many have already received a return on invested in the quality of effort and money.

## References

- ASGR (2001). Republican program "Quality", Approved Suppress Government Resolution of 02.05. № 590.
- Evans, James R. and Dean, James W. (1999). *Total Quality: Management, Organization and Strategy*. Cincinnati, OH: South-Western Pub.
- Gunasekaran, A., and McGaughey, R. E. (2003). TQM in supply chain management. *The TQM Magazine*, 15 (6), 361–363.
- Hawkins, J. A. (2001). *Materials for use in the development of quality systems in accordance with the requirements of ISO 9000 in building complex organizations*. Moscow: Lukoil Neftegazstroy.
- Juran, J. M. (1988). *Juran's Quality Control Handbook* (4th edition). New York : Mcgraw-Hill.
- Knowles, Graem (2009). *Managing Quality in The 21st Century-Principles and Practice*. Retrieved March 30, 2010, from <http://www.bookboon.com>.
- Kruglov, M. G., & Sergeev, S. K. (1997). *Quality System Management*. Moscow: IPK Izd. Standartov.
- Rebrin, U. I. (2004). *Quality Management*. Taganrog: Publishing house TRTU.
- Tague, Nancy R. (2005). *The Quality Toolbox* (3rd ed). Milwaukee, WI: ASQ Quality Press.
- Crosby, Philip B. (1981). *Quality Without Tears: The Art of Hassle-Free Management*. New York : Mcgraw-Hill.