The European Proceedings of
Social & Behavioural Sciences
EpSBS

ISSN: 2357-1330

https://doi.org/10.15405/epsbs.2019.12.04.487

SCTCMG 2019
International Scientific Conference «Social and Cultural Transformations in the Context of Modern Globalism»

TQM/ISO AT RUSSIAN ENTERPRISES

Valeriy Smirnov (a)*, Vladislav Semenov (b), Anna Zakharova (c), Anatoliy Blokhintsev (d), Vasiliy Ashmarin (e)
*Corresponding author

(a) Chuvash State University, Cheboksary, Russia, walera712006@mail.ru
(b) Chuvash State University, 15, Moskovsky Avenue, Cheboksary, Russia
(c) Chuvash State University, 15, Moskovsky Avenue, Cheboksary, Russia
(d) Chuvash State University, 15, Moskovsky Avenue, Cheboksary, Russia
(e) Chuvash State University, 15, Moskovsky Avenue, Cheboksary, Russia

Abstract

In the conditions of aggravating global competition for commodity markets in Russia, the problem of forming and implementing a development strategy for domestic enterprises becomes urgent. To maintain its position in global competition, the development strategy of Russian enterprises should focus on improving the quality of products and services. Russian enterprises are faced with the need to solve simultaneously a set of problems related to ensuring sustainable consumer demand for domestic products, technical and environmental safety of production, meeting requirements of national product standards. The article reveals the relevance of the problem of creating and implementing quality management systems in Russian enterprises, indicating reasons for the insufficient use of TQM/ISO. The evolution of basic principles of TQM in ISO 9001, QS 9000, in VDA 6.3 and target directions of the optimal interaction of all business processes in an enterprise are shown. As a result of the study, along with reasons for the certification process complexity of the quality management system at Russian enterprises, a strategic need to implement the TQM / ISO policy at Russian enterprises is identified. QSM implemented in a Russian enterprise, in accordance with TQM philosophy and ISO 9001 regulations should be aimed at meeting the requirements of the interested parties - the consumer and the manufacturer. QMS optimally distributes the duties, powers and responsibilities of personnel who manage, execute and carry out inspections of activities that affect the risks associated with the operation of the organization, its equipment and processes.

Keywords: Enterprise, requirements, standards, certification process.

https://doi.org/10.15405/epsbs.2019.12.04.487
Corresponding Author: Valeriy Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

World experience includes the creation and implementation of quality management systems (QMS), based on the principles of total quality management (TQM), as a corporate method of continuous improvement of the quality of all processes in an enterprise (Anil & Satish, 2016; Valmohammadi & Roshanzamir, 2015) and international standards of ISO 9001 (International Organization for Standardization) (Aldowaisan & Youssef, 2006; Priede, 2012).

The main objective of the implementation of TQM principles in the enterprise is the implementation of international standards of ISO 9001 series (Priede, 2012), which would reinforce the universal requirements for QMS.

The main reasons for the small number of Russian enterprises applying TQM/ISO in their practice are (Kiran, 2017): sustainable and controversial idea of the need to implement QSM, formed among managers; real difficulties arising in the process of developing and implementing QSM; lack of necessary resources for the implementation of the entire QSM cycle up to certification; business executives are not sufficiently aware of the benefits of QSM.

2. Problem Statement

The problem of ensuring the quality of products (goods and services) has not arisen today. At all times, starting with the ancient the need awareness for quality assurance was high in those cases when it was necessary to guarantee the reliability and safety of structures (temples, dams, bridges), vehicles, etc. Requirements for military industry and then requirements for space technology and nuclear power plants, and finally, requirements for the environment protection have become a powerful impetus for quality assurance in modern conditions.

It is customary to single out six main historical stages in the evolution of ensuring product quality at the enterprise level: individual quality control; workshop quality control; inspection quality control; static quality control; integrated quality management; quality assurance based on ISO 9001 standards.

With individual quality control, which was in effect until the end of the 19th century, one worker or a small group of workers were responsible for the manufacture of the entire product. Each employee could fully control the quality of the result of their individual labor, thereby ensuring the quality of the product.

The beginning of the 20th century is marked by the emergence of shop quality control, the birth of which was due to the development of production and the deepening of the labor division within manufacturing the production. This stage is characterized by the distribution of functions and responsibility for quality both between individual workers and the shop manager or foreman.

At its inception, workshop control began to rely on the principles of scientific management developed by famous American specialist F. Taylor (1856–1915) (as cited in Uddin & Hossain, 2015). In accordance with these principles, two limits of acceptable quality were used in the control. The lower and upper limits of tolerances were entered into the drawings, and two types of gauges appeared in the templates: throughput and non-throughput.

On the eve of the Second World War, the development of mass production, the growth of enterprises and an increase in the volume of output led to the separation of technical control from manufacturing

https://doi.org/10.15405/epsbs.2019.12.04.487
Corresponding Author: Valeriy Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

operations, to its organizational formation into an independent professional type of activity. Independent technical control services began to be created at enterprises with staff controllers headed by a chief, who was usually subordinate to the head of the enterprise. This marked the beginning of the stage of inspection quality control (quality control during product inspection).

New organization of control work predetermined the formulation of the problem to ensure the quality of production processes. The solution to this problem is connected with the fourth stage, which is called "statistical quality control". The impetus to the industrial application of statistical methods for quality control was the work of the specialists of the American company "Bell Telephone Laboratories". In the mid-1920s, they developed and put into practice a statistical control method based on the use of a control map (Bayart, 2005) with regulation boundaries.

3. Research Questions

There is no significant improvement in product quality of domestic producers despite some success at Russian enterprises (Semenov, Zakharova, Chaynikov, Patianova, & Dulina, 2017). The main reason is inefficient use of methods that have developed in solving quality problems in a market economy. The paper aims at discovering and studying this subject.

4. Purpose of the Study

The aggravation of competition and the effect of factors associated with the pace acceleration of scientific and technological progress, prompted the heads of industrial firms to "integrated quality management" at the end of the 40s.

In the methodical plan, the transition from traditional quality control to quality management was something fundamentally new: the task was to prevent product defects, instead of detecting them. The mechanism of integrated quality management focused the entire system of measures taken to achieve a given level of product quality.

Specific organizational approaches to quality management at the enterprise level were formulated on the basis of the general methodology of integrated quality management in the 60-70s in different countries, taking into account their national and economic conditions.

The end of the 80s was marked by the emergence of a new methodology for ensuring product quality based on international standards of ISO 9001. According to this methodology, the creation of high-performance and efficient QMS at the enterprise, meeting the principles of TQM and the provisions of ISO 9001 standards, is a guarantee that requirements of consumers will be fully satisfied

5. Research Methods

There is a developed methodological apparatus in the theory and practice of quality management, which is often associated with ISO 9001 standards, various theories of the founders of the quality and concept of TQM.

https://doi.org/10.15405/epsbs.2019.12.04.487
Corresponding Author: Valeriy Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

The concept of Deming (1966). He called for a systematic approach to problem solving and continuous improvement. The "Plan-Do-Check-Action" methodology is an example of a systematic approach for continuous improvements.

The concept of Juran (2004). He goes further than Deming's (1966) conceptual reasoning and proposes specific methods and techniques for collecting and deploying customer requirements. His significant work is related to the concept of systematically collecting customer requirements, identifying quality parameters at an early stage for subsequent monitoring of goal achievement, functional cost analysis as a tool for accounting customer requirements.

The concept of Feigenbaum (1961). The main position of his concept is the idea of inclusiveness of quality management. Starting point for quality improvement is customer expectations. Feigenbaum (1961) took into account the influence of the cost factor of quality improvement, formulated in the works of Deming (1966) and Juran (2004). Feigenbaum (1961) emphasized the importance of interfunctional work, motivation and staff qualification.

The concept of Crosby (1996) is another representative of TQM approach. He pays special attention to the principles of preventing defects, creating an atmosphere that encourages workers to improve quality, and assess quality costs.

The concept of Ishikawa (1976): Based on the concepts of Deming (1966) and Juran (2004), Isikava developed the concept of total quality control (CWQC), due to the profound consideration of internal organization features of the enterprise in the improvement method. The concept of Ishikawa (1976) represents significant progress compared to the Deming (1966) and Juran (2004) concepts. In addition to CWQC, the tools developed by him, such as "Seven Quality Tools", quality function deployment methodology (QFD) and methods in the field of personnel training and statistical methods, significantly contribute to this.

Basic principles of TQM / ISO were devepoled in QS (Quality System Requirements) and VDA (Verband der Automobielindustie) (Flott, 1998; Ingason, 2015).

QSM of an enterprise must meet minimum requirements described in ISO 9001. The requirements are universal, they can be applied to QSM enterprises of any industry.

QS 9000 is based on the requirements of ISO 9001 and lays down additional requirements for the automotive industry. QS 9000 requirements are significantly expanded compared to the requirements of ISO 9001, for example, they describe the process of measuring customer satisfaction.

VDA 6.3 and VDA 6.5 are more profound documents than QS 9000 standard, since they are directed not only at the manufacturer and its suppliers, but also affect the entire added value chain. It should be noted that basic principles of TQM preserved in ISO 9001, QS 9000, in VDA 6.3 (VDA 6.5) (Amsden, Ferratt, & Amsden, 1996):

1) Quality is the strategic goal of an enterprise. Quality should be the number one goal primarily for management, whose task is to extend the quality function to management and employees;

2) Involvement of all employees. TQM can be successfully implemented only where all employees are actively involved in this process;

3) Understanding quality in a broad sense. In addition to the traditional understanding of quality in relation to the product, the quality of the service, process, work, environment should be considered;

https://doi.org/10.15405/epsbs.2019.12.04.487
Corresponding Author: Valeriy Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

4) Prevention of inconsistencies. Collecting customer requirements at an early stage of product development is the most effective way to reduce the cost of eliminating nonconformities;

5) Customer orientation. The consumer determines what quality means. Those properties of products that are useful from the point of customer's view must be taken into account;

6) Focusing on processes means that not only the result is the key, but also the process, since only an error-free process leads to faultless products;

7) Staff orientation. Particular attention should be paid to aspects related to motivation, communication, development, cross-functional interaction of employees;

8) Continuous improvement of products is possible only with continuous improvement of processes;

9) Cost of quality control.

6. Findings

The entire responsibility for the effective work of an enterprise lies with the management, which is responsible for providing the resources necessary for the implementation, monitoring and improvement of QSM in the enterprise.

The results of TQM principles and ISO 9001 requirements implementation should be the optimal interaction of all business processes in the enterprise in the following target areas:

- results orientation (achievement of results that satisfy all stakeholders of the organization);
- customer orientation (creating sustainable perceived customer value);
- process and fact management (organization management through a set of interdependent and interconnected systems, processes and facts);
- workforce development (maximizing employee contributions through their development and involvement);
- corporate social responsibility (exceeding the minimum regulatory concepts in which the organization operates, and the desire to understand and meet the expectations of stakeholders in society).

Due to the optimization of business processes, we should expect an increase in the quality of supply of serial products and processes in the enterprise, as well as the preservation of its market share.

The main problems of Russian manufacturers are low quality and unacceptably long terms between the development of new products and its launch into production. These problems are due to a combination of causes:

- lack of well-adjusted collection process, consumer assessment;
- lack of well-adjusted processes of setting all products into manufacturing series;
- inability to meet the pledged quality requirements in the course of new products development, both by their own manufacturers and suppliers;
- lack of well-adjusted process for continuous improvement of product quality based on data received from the consumer.

It should be noted that QSM certification process at Russian enterprises is rather difficult. The reasons are:

- detachment of top management. The failure of top management to understand their leading role and responsibilities in creating, operating and constantly improving the effectiveness of QSM;

https://doi.org/10.15405/epsbs.2019.12.04.487
Corresponding Author: Valeriy Smirnov
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

- partial implementation of ISO 9001 requirements;

- incompetence in interpreting ISO 9001 requirements;

- desire of the company management of obtaining a certificate in the shortest possible time and in any way leads to the use of a very diverse set of means. QSM development is fully entrusted to consultants. The organization staff has a very general idea of ISO 9001 requirements with this approach;

- deficiencies in the development and implementation of QSM in an enterprise may be aggravated by deficiencies in certification processes related to the violation of functioning rules of certification bodies; insufficient competence of auditors and competence of the certification commission; deliberate or biased actions of auditors; inadequate "on-site" audit technology; weak control of certification bodies by accrediting organizations.

- organization's failure to fully comply with the requirements of ISO 9001 to ensure customer satisfaction and the lack of orientation of certification bodies to verify this requirement. The fundamental requirement of ISO 9001 is to ensure customer satisfaction. Producers of goods or services should understand that the quality of the same product (service) does not always mean the same thing for the producer and the consumer.

A tool for analyzing customer satisfaction during an audit is indicated in ISO 9001. The analysis is carried out before the organization undertakes to deliver products to the consumer and provide: defining product requirements; agreement of contract or order requirements that differ from previously formulated; the ability of an organization to fulfill certain requirements; ability of an organization to respond to the requirements of contracts (orders) different from previously formulated (when a consumer changes conditions)

The TQM / ISO 9001 quality policy at Russian enterprises should become a strategic benchmark, which achievement is to ensure world standards of living based on the formation of a competitive economy model with a long-term potential for dynamic growth. Quality contests are held annually in Russia, gathering prominent Russian and foreign specialists. Russian representatives participate in international conferences with presentations on the experience of implementing the principles of TQM and ISO 9001 in Russian enterprises.

The number of organizations implemented international standards, is growing. Today, large Russian enterprises with ISO 9001 certificates of conformity provide about 80% of industrial production.

QSM small businesses are actively created and certified, not only according to ISO 9001, but also according to ISO 14000 specialized environmental management standards.

7. Conclusion

The main advantage of QSM based on ISO 9001 standards is the universal TQM coverage of the entire enterprise structure. All participants in the production and business cycles of the enterprise are involved in QSM. This ensures the overall orientation of management and staff in TQM, by maintaining and ensuring the established ISO 9001 quality level.

ISO 9001 standards are widespread throughout the world, certificates are issued in all countries in both highly developed and developing. The presence of QMS based on the principles of TQM and ISO

9001 standards are a guarantee of the enterprise reliability and creates a certain positive image for it among partners and consumers.

The presence of QMS corresponding to ISO 9001 is indicated in the brochures, letterheads of a company, packaging and labels accompanying the products of a company – this is an advertisement and a guarantee of product quality. In the presence of such a logo, the consumer will always choose certified products from the mass of goods that do not have certification; this is especially true for technical goods.

Since the Russian economy is undergoing a process of integration into the world market, then an important condition for concluding transactions and successful foreign trade activities of our country enterprises to work with foreign partners and promote final goods outside Russia, is QMS compliance certificate with ISO 9001 requirements.

References

Aldowaisan, T. A., & Youssef, A. S. (2006). An ISO 9001:2000-based framework for realizing quality in small businesses. *Omega, 34*(3), 231–235.

Amsden, R. T., Ferratt, T. W., & Amsden, D. M. (1996). TQM: Core paradigm changes. *Business Horizons, 39*(6), 6–14.

Anil, A. P., & Satish, K. P. (2016). Investigating the Relationship between TQM Practices and Firm's Performance: A Conceptual Framework for Indian Organizations. *Procedia Technology, 24*, 554–561.

Bayart, D. (2005). *Walter Andrew Shewhart, Economic control of quality of manufactured product (1931).* Landmark Writings in Western Mathematics 1640–1940, 926–935.

Crosby, P. (1996). *Quality is still free: Making Quality Certain in Uncertain Times.* McGraw-Hill.

Deming, W. (1966). *Edwards. Some Theory of Sampling.* Dover Publications.

Feigenbaum, A. V. (1961). *Total Quality Control.* New York: McGraw-Hill.

Flott, L. W. (1998). Training in the ISO 9001/QS framework. *Metal Finishing, 96*(2), 84–85.

Ingason, H. T. (2015). Best Project Management Practices in the Implementation of an ISO 9001 9001 Quality Management System. *Procedia – Social and Behavioral Sciences, 194*, 192–200.

Ishikawa, K. (1976). *Guide to Quality Control. Tokyo.* Asian Productivity Organization

Juran, J. M. (2004). *Architect of Quality. The autobiography of Dr.Joseph M. Juran.* McGraw-Hill.

Kiran, D. R. (2017). Evolution of Total Quality Management. Total Quality Management. *Key Concepts and Case Studies*, 15–20.

Priede, J. (2012). Implementation of Quality Management System ISO 9001 in the World and Its Strategic Necessity. *Procedia – Social and Behavioral Sciences, 58*, 1466–1475.

Semenov, V. L., Zakharova, A. N., Chaynikov, V. N., Patianova, A. O., & Dulina G. S. (2017). The elaboration of the conceptual framework of providing competitiveness of production with the use of forecasting techniques. *Advances in Economics, Business and Management Research, 38*, 606–610.

Uddin, N., & Hossain, F. (2015). Evolution of Modern Management through Taylorism: An Adjustment of Scientific Management Comprising Behavioral Science. *Procedia Computer Science, 62*, 578–584.

Valmohammadi, C., & Roshanzamir, S. (2015). The guidelines of improvement: Relations among organizational culture, TQM and performance. *Int. J. of Production Economics, 164*, 167–178.