



15th International scientific conference “Underground Urbanisation as a Prerequisite for Sustainable Development”

The quality management system as a key factor for sustainable development of the construction companies

Sergey Lukichev ^{a,*}, Marina Romanovich ^a

^a*Peter the Great St. Petersburg Polytechnic University, Polytechnicheskaya, 29, Saint-Petersburg, 195251, Russia*

Abstract

The implementation of the quality management system (QMS) is an important milestone for any construction company. Sustainable development of the company and its competitiveness are directly dependent on the proper functioning of the QMS. Certification of Quality Management System according to ISO 9001 can help to maintain a long trusting relationship with consumers. The purpose of this study is consideration of the basic QMS implementation problems and choosing the certification body. The results of the study show that there is a lot of suggestions about how to obtain a certificate of quality, but there is no algorithm of actions for the implementation of the system design companies in the construction industry. It is therefore necessary to develop guidelines for the implementation of QMS, previously classified construction companies and determine the main parameters of the choice of certification bodies.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the scientific committee of the 15th International scientific conference “Underground Urbanisation as a Prerequisite for Sustainable Development”

Keywords: Construction, civil engineering, buildings, quality, management, system, certification, ISO.

* Corresponding author. Tel.: +7-929-100-7311.
E-mail address: serj_lu@mail.ru

1. Introduction

Market quality problem for Russian companies is very acute because the competition on the international is intense. Implementation of the quality management system (QMS) will help bring the company to a new level, because the QMS is designed to continually improve the activities of companies.

The largest developer of voluntary international standards is the international organization for standardization – ISO. It began its work in 1947, and since then has published more than 21 thousands of standards covering almost all aspects of technology and production. The first version of the series of ISO 9000 standards that describe the requirements for QMS of organizations and enterprises, was introduced in 1987. The experience of implementing ISO 9000 standards came to Russia from Western Europe. By that time, three versions of the standards of this series had been introduced.

2. Materials and methods

Over the past 14 years the annual number of publications on the topic of the QMS has grown by almost 70 times. The interest in the topic peaked in 2008, 2011 and 2015, which corresponds to the introduction of new versions of ISO 9000 standards [1].

The analysis of the evolution of interest in ISO shows the continued decline after the release of the next version of the standard. So, in 2009 the number of articles decreased to 1036, and in 2012-2013 – 2749, which makes up 11.4 % of the total number of publications in 2009 and 23.6 % in 2012 - 2013, respectively (figure 1).



Fig. 1. The relative change in the annual number of publications, %.

Despite the expected full review of ISO version 2000, changes made to the standards of the series 2008 were mostly superficial in nature – they corrected inaccuracies and misunderstandings. This may explain the slight renewal of interest in the topic of ISO (about 12 %) associated with the release of version 2011, the main objective of which was to disseminate the requirements of the standard at the international level.

Due to the preparation for the transition to the new standards ISO 9000:2015, the interest in this topic has increased dramatically in recent years.

The greatest interest in the implementation of the QMS is represented in the construction sector since the presence of a QMS is a warranty mark, which contributes to the prosperity of the company and the increase in construction contracts. 2010 became the most popular certification of ISO 9001 in Russia (figure 2). Splash of certified organizations came at the end of the economic crisis of 2008. It is logical to assume that with the end of this crisis we can expect another surge in certification.

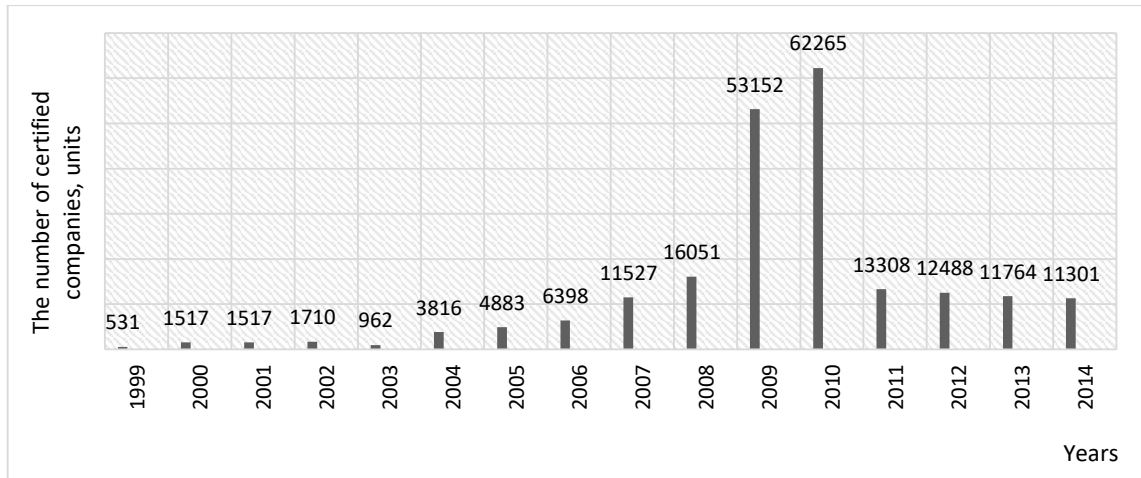


Fig. 2. Dynamics certified companies in Russia ISO 9001.

International standards establish common rules and equal conditions for all producers, worldwide. For comparison, take the number of certified companies in Russia, Belarus, Germany and Japan (figure 3). In each country the burst of activity on certification follows the recession period.

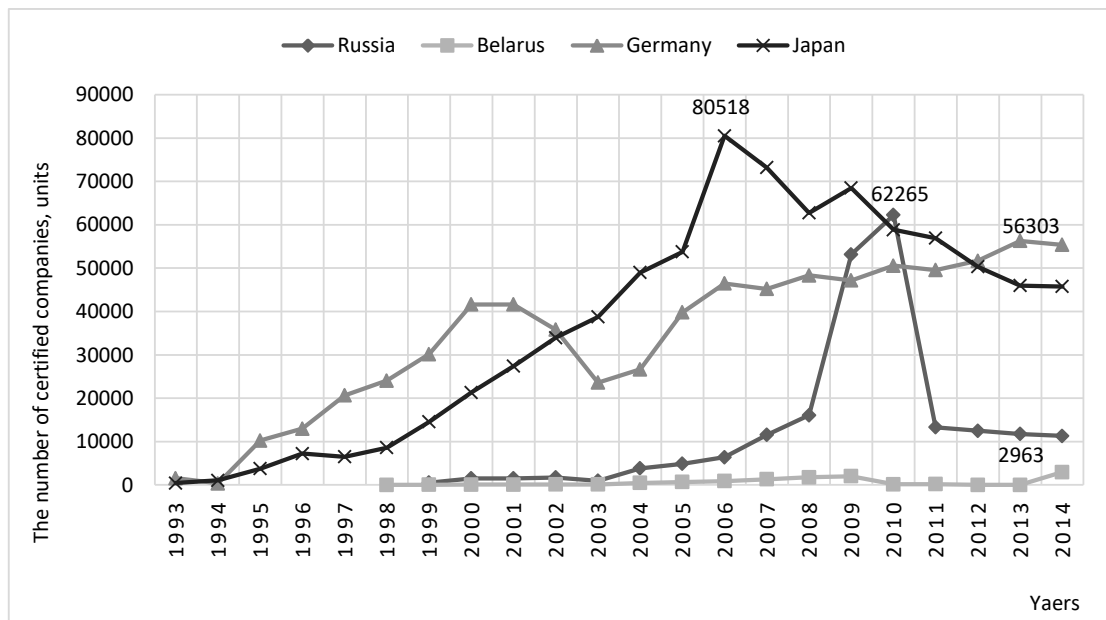


Fig. 3. Dynamics certified companies.

Implementation of the quality management system includes the following steps:

- Preparation of the system, which requires clear structuring and allocation processes implementation;
- Certification – select the certification authority;
- Maintenance of the system in working condition.

Well-chosen certification body contributes to the successful prosperity of the company through the additional incentives improvement process. Typically certification is the result of great work done by the whole team of the company.

The company's management decision on implementation of QMS should be made, in the first place, after considering the following issues:

- the purpose of the implementation of the QMS;
- deadlines for the introduction of the system;
- what resources can be allocated to creating systems and staff training;
- which certification system to choose which organization to contract for the certification of QMS.

The main objectives of certification are:

- to exceed customer expectations;
- to minimize the risk of denial of consumer products or its return;
- to improve the competitiveness of products;
- to enhance the prestige of the organization;
- to improve internal management.

According to the results of surveys of managers of Russian companies who are ready to implement QMS, the reasons for its implementation are the following:

- quality is the strategy of the company – 57 %;
- quality is part of the image of the company – 30 %;
- certificate is necessary for export activities – 24 %;
- certificate required of the company as a provider – 11 %;
- availability of the certificate is a requirement of partners and shareholders – 5 %.

Depending on the importance for leaders of those or other reasons will be different answers to questions related to timing, resources, certification body, which involve mutual contradiction (quickly, efficiently and inexpensively – choose two of the three). The certification body largely characterizes the quality of the QMS.

If the decisions taken when planning time and resources may be adjusted by management in the process of QMS implementation, the choice of the certifying authority assumes the long-standing partnership (certificate validity is three years) and his shift will require a re-review of the significance of the reasons for the implementation process of the QMS.

Currently in Russia, there are 16 systems of mandatory certification, the main of which – GOST R. To date, the Federal Agency has about 600 voluntary certification systems.

There are private companies involved in the design and sale of quality certificates, as ISO 9001 is currently a major topic. The validity of these certificates is questionable.

There are various rating certification bodies in open access on the Internet. For example, the Association of independent experts for quality conducted a survey among more than 1000 Russian organizations on the activities of certification bodies and chose the 10 best Russian and international certification bodies. National Advisory Council on quality posted the rating on the official website taking into account the division of certification bodies on the 5 levels of reliability. The overall leader in both rating lists is the system of GOST R. The preference is given to the GOST R system since it has the maximum reliability of the certificate as it is issued by certification bodies accredited by the state. In addition, this certificate is recognized abroad.

The comparison of certification body ratings allows to conclude that different evaluation criteria were used by the author. For example, "Russian Register" in the first list ranks second, and only eight in another list. Most of the positions of the first rating list were not found among the first twenty positions of the second rating list.

3. Conclusion

Certification is not a mandatory step in the implementation of the QMS. There are special organizations to conduct audits of the QMS, they issue a certificate of compliance QMS standard. But not all organizations have the same authority in a variety of industries and territories. At the moment foreign certification bodies have more importance in Russia. To foreign partners trust, it is necessary to Russian organizations to obtain a certificate of the foreign certification body. Offices of foreign certification bodies are located in Moscow, Saint-Petersburg.

The quality management system needs to be developed in our country. ISO 9001:2015 aims to create a management system, therefore, the QMS may improve competitiveness in the global market. And therefore further demand for certification will increase.

There are many articles on the topic of the quality management system, there are many suggestions in obtaining quality certificates, but there is no single methodological guide for its implementation, that take into account typical characteristics of construction organizations. To develop methodological recommendations it is necessary to conduct classification of certifiers, certification systems and the companies themselves that are implementing the QMS, which, of course, are specific to the economic environment of the Russian Federation.

References

- [1] S. Lukichev, M. Romanenko, Problems of introduction of system of quality management in Russia, Actual problems of humanitarian and natural Sciences. 6 (2016) 113-116.
- [2] S. Lukichev, M. Romanenko, The choice of certification body for QMS project company, Actual problems of humanitarian and natural Sciences. 9 (2016).
- [3] A. Sinelnikov, K. Strelets, Analysis of the adaptation of the international standard GOST R ISO 9001-2001 of the quality management system to the building complex of the Russian Federation, XXXVI week of science SPbPU. 1 (2008) 160-162.
- [4] E. Nezhnikova, Problems of creation and functioning of quality management systems, Modern problems of science and education. 6 (2013) 958-962.
- [5] I. Lukmanova, E. Nezhnikova, Comprehensive assessment of quality management systems in construction, Modern problems of science and education. 10 (2013) 1791-1795.
- [6] I. Lukmanova, E. Nezhnikova, Project management in the field of investment and construction: monograph, FBGOU VPO MGSU, 2012.
- [7] P. Sadgin, I. Kozlova, The quality management system: benefits of adoption and problems of functioning, Problems of modern economy. 1(29) (2009).
- [8] E. Seko, T. Urunov, Challenges of construction mining plant, Construction of Unique Buildings and Structures. 7(46) (2016) 17-34.
- [9] Y. Dyatlov, I. Surkov, Self-regulation in construction as a stimulus certification of quality management systems, Bulletin of the Kuzbass state technical University. 5 (2011).
- [10] A. Kibkalo, M. Lebedeva, M. Volkov, Methods of Parametric Optimization of Thin-Walled Structures and Parameters which Influence on it, MATEC Web of Conferences. 53 (2016) 01051.
- [11] L. Sinyakov, G. Garmanov, A. Melentev, Strengthening and stabilization of the weak water saturated soils using stone columns, MATEC Web of Conferences. 73 (2016) 01003.
- [12] GOST R ISO 9000:2015. Quality management systems. Fundamentals and vocabulary, 2015.
- [13] GOST R ISO 9001:2015. Quality management systems. Requirements, 2015.
- [14] ISO 9001:2015. Quality management systems. Requirements, 2015.
- [15] ISO 9000:2015. Quality management systems. Fundamentals and vocabulary, 2015.