Approaches to the Formation of Quality Management Systems in the Integrated Corporate Structures

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Abstract

The article presents the impulsive causes of developing and implementing the quality management systems (QMS) in corporations, defines and justifies basic approaches to the QMS formation in the integrated corporate structures and reviews the effectiveness of the application of these approaches. Based on the analysis of the approaches to the formation of QMS, we have drawn a conclusion that there is a direct correlation between the degree of coverage of corporate activities with management principles of quality and scale of the results from the project. According to the study it has been concluded that the choice of a particular approach to the development of the QMS in the activities of the integrated corporate structures depends on the level of maturity and type of corporation.

Keywords: quality management system, factors, pre-conditions, integrated corporate structure, development and implementation of quality management system.
1. Introduction

Due to the emergence of a large number of organizations with an integrated corporate structure there took place serious structural changes in the past decade in the domestic economy, which led to the exaggeration of competitive struggle between them. Among the most effective means of assuring high competitiveness for integrated corporate structures is, in our opinion, QMS, conforming to the requirements and recommendations of the international standards ISO 9000. Thus, there is a situation in which creating QMS becomes an extremely urgent task in many organizations with similar structure [10].

The most important impulsive causes of the development and implementation of QMS in the integrated corporate structure focused on the stable release of products and services activities, minimizing the negative impact on the environment, optimizing the manageability of financial flows of a corporation and ensuring staff’s concern about the resulting effect of their work can be [2, 3, 4, 15]:

- varying needs and requirements of customers and other interested parties;
- improving the quality and competitiveness of products of corporation;
- cutting of production costs;
- market expansion;
- reliability assurance for consumers;
- customers’ requirements at entering into a contract;
- participation in tenders, competitions and other events that may result in the contract and advertising the corporation;
- acquisition of license of activities (e.g., in the sphere of construction, design and production of measuring apparatus for military activities and equipment for nuclear power plants and others);
- securing state order, concessional lending and insurance;
- an aspiration to participate or to become an award winner of the National Quality Award or EFQM Award;
- conscious aim of the top management to be convinced in the conditions of production and QMS to international requirements;
- supply of products to the world markets, as many foreign bodies and certification schemes include inspection certification or assessment of the QMS organization in conformity with assessment procedures.

In the Russian Federation, one of the reasons to urge domestic corporations on creating QMS is the country’s entry into the World Trade Organization (WTO). The main advantages of accession to the WTO according to the economists are non-discriminatory conditions for penetration of Russian products to foreign markets, admittance to the international mechanism for mediating trade disputes, creating a more favorable climate for foreign investment as a result of bringing the legal system into line with the WTO rules, arranging the conditions for improving the quality and competitiveness of the Russian production, the ability to carry on a civilized equitable trade with almost all countries of the world and transnational corporations within the framework of this international organization.

However, on the other hand, it must be confessed that Russia's accession to the WTO has put many Russian companies into a tricky position because of their lack of preparation to work according to the laws of the international market. The transformation of the domestic
market of Russia in accordance with WTO agreements increased the pressure of foreign competitors in the economy on the whole.

2. Factors Influencing Establishing Qms in Corporation
Motivation to create a QMS in corporations is regularly analyzed by the International Standardization Organization (ISO). Table 1 represents statistics based on the results of the study conducted by the Technical Committee 176 ISO. More than 2 000 managers and directors on quality of major corporations of the world have taken part in the survey [20].

Table 1 - The main factors to have influenced the choice of ISO 9001: 2008 standard for certification

<table>
<thead>
<tr>
<th>Factors</th>
<th>ISO investigation, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase of customer satisfaction</td>
<td>36</td>
</tr>
<tr>
<td>Market needs</td>
<td>31</td>
</tr>
<tr>
<td>Regulatory customer requirement</td>
<td>28</td>
</tr>
<tr>
<td>Confirmation for internal purposes</td>
<td>19</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
</tr>
</tbody>
</table>

The leading motives for forming the QMS are: an increase of customer satisfaction (36%) and market needs (31%). Also interesting results can be observed in the analysis of the responses to the question about the benefits of the use of ISO 9001: 2008 for the organization (Table 2).

Table 2 –What are the most important benefits by using ISO 9001: 2008 for your company? (Not more than 3 answers)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase of customer satisfaction</td>
<td>50</td>
</tr>
<tr>
<td>Standardization of business processes</td>
<td>50</td>
</tr>
<tr>
<td>Higher dedication (obligations, interest) of management</td>
<td>35</td>
</tr>
<tr>
<td>Efficient utilization of data as a tool for business management</td>
<td>35</td>
</tr>
<tr>
<td>More effective survey (analysis) of management</td>
<td>34</td>
</tr>
<tr>
<td>Improvement of communication with consumers</td>
<td>31</td>
</tr>
<tr>
<td>Improvement of overall performance of suppliers</td>
<td>20</td>
</tr>
<tr>
<td>Request of a consumer</td>
<td>19</td>
</tr>
<tr>
<td>Improvement of communication with suppliers</td>
<td>19</td>
</tr>
<tr>
<td>Improvement of finance results</td>
<td>11</td>
</tr>
</tbody>
</table>

The ISO survey shows the priorities for companies around the world that are to improve customer satisfaction and standardization of business processes.

At the beginning of 2014 more than 1.1 million certificates of conformity to ISO 9001: 2008 were issued in 187 countries of the world [7.19]. There is an annual increase in the number of issued certificates, in the period from 1994 to 2013 the rates of increase ranged from 2 to 81% per year (with the exception for 2003 and 2011., i. e, in recent years the transition to the new versions of the standard ). More than 84% of the certified companies fall on European countries, East Asia and the Pacific, while the share of the second region from year to year has been increasing. Leading countries in number of certificates issued are China, Italy, Germany, Japan and the United Kingdom. The top ten countries account for 72% of the
total number of issued certificates. Among the post-Soviet countries, Russia is a clear leader with a certificate number about 12 000, the other countries have by far less certificates.

3. Approaches to the Formation of Qms in Corporations and Their Effectiveness

In today's globalized world economy, the leaders of Russian corporations need to take a range of measures to bring their administrative structures into line with international standards applied in the countries belonging to the WTO. In practice, there is often a problem of choosing a strategic approach to the development of the QMS to the integrated corporate structures. In order to identify and classify the approaches to the formation of the QMS we have conducted a content analysis of Russian and foreign corporations in the field of quality management. The results indicate the presence of at least four approaches to the formation of the QMS in the integrated corporate structures (Fig. 1).

![Figure 1 – Approaches to formation of QMS in the integrated corporate structures](image)

As seen from the figure, the approaches considered differ in width of objects of QMS proliferation. So, if the first Option implies creation of the QMS at the level of linear enterprises, then the third and fourth Options suggest formation of the QMS across the integrated corporate structure. Accordingly, each of these approaches is oriented towards achieving an appropriate result (Table 3).

Table 3 – Effectiveness of application of approaches to formation of the QMS in the integrated corporate structures [9]

<table>
<thead>
<tr>
<th>№</th>
<th>Option of forming QMS</th>
<th>Obtained result</th>
</tr>
</thead>
</table>
| I | Development and implementation of the QMS at the level of linear enterprises (business units) | – ordering the processes of production and technology  
– stabilization of quality of output / services rendered |
| II | Development and implementation of the | – strengthening managerial vertical  
– ordering the securing processes, including the processes of |
The analysis of Table 1 enables to conclude that there is a direct correlation between the degree of corporate activities coverage with the principles of management quality and scale of the results obtained from the implementation of the project on formation of the QMS. At the same time, the transition from one Option to another formation of the QMS takes a lot of labor, financial and time costs. For this reason, the corporation should make the choice of an approach to the formation of the QMS independently, based on the type and level of corporate governance, availability of resources, dynamics of the external environment, especially in terms of technological development, technology and innovation processes, including management ones.

Formation of the QMS at the level of individual business units of the integrated corporate structure (Option 1) is characteristic primarily for the conglomerate (or diversified) structures. This has to do with the fact that the business of conglomerate corporation, as a rule, is diversified so that its management outline is extremely difficult to formalize within a single system or structure. That is why the corporate conglomerate center enables each business unit of the leadership to choose the governance structure that fits it to a greater extent. This corporate center is responsible for the strategic planning, development of the quality policy, as well as for the coordination and financing of the activities in the field of quality management on the integrated corporate structure scale.

In addition, the first Option of the formation of the QMS can be applied in large-scale
vertically integrated corporations at the early stages of their development, as a result of a merging or takeover, the business unit possessing the QMS of rather high level of maturity affiliates with the corporation. The independence of the QMS of such business unit can be retained until:

Firstly, the corporate center develops and launches the general corporate strategy in the field of quality management. At that, the QMS of an individual business unit can be a base / standard for its development, implementation and perfection;

Secondly, the actions to integrate the QMS of the business unit into the general corporate QMS are conducted.

The approach to the development and implementation of the QMS with an emphasis on the management structures (Option II) can be used in any type of the integrated corporate structures. The key objective of such projects consists, as a rule, in reserving the functions of a “qualified owner” for the corporate center due to optimization of the corporate management system, the phased adoption of key management technologies and controlling tools in the operational management of the business unit activities within the corporation. As practice shows, the development of the QMS in the management structures coincides with the period of developing the corporation and forming up power in vertical direction. Subsequently, this approach evolves expanding the scope of the QMS application to the level of all management structures of the corporation and its business units (Option III forming QMS). However, such practices are rare. Usually, during the formation of the corporation and building the vertical of power, the QMS grows to the scale of the company on the whole, covering the level of management structures and the level of its individual business units.

The third Option of forming the QMS can be considered a classical one as its range of applications is very broad and does not depend on the size and nature of corporation activities, and the results of its certification are significant and revealing. On the basis of the experience of the Russian and foreign corporations (PJSC “Rostelecom”, the United Company RUSAL, JSC “PO Eltekhnika”, Sage Group [13], and others.) let us formulate key features and characteristics of the approach to the development and implementation of the QMS through the corporation (Table 4).

Table 4 – Distinctive features of the approach to the development and implementation of the QMS in the scale of the whole corporation

<table>
<thead>
<tr>
<th>Feature</th>
<th>Brief characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Type of corporate management</td>
<td>This approach can be applied in the corporations of any type. It is the most efficient for vertical and integrated and concentric corporations.</td>
</tr>
<tr>
<td>2. Level of maturity of the system of corporate management</td>
<td>Average and above the average. The company is to go through the stages of “Spring”, “First age”, “High activity”, “Youth” [1]. The most preferable is the stage of “Prosperity” and above.</td>
</tr>
<tr>
<td>3. Financial performance</td>
<td>Sustainable. There is a possibility to involve the administrative advisers, as well as a possibility to initiate and realize the project at all levels of corporate management.</td>
</tr>
<tr>
<td>4. Relations with consumers</td>
<td>End market and sales mix are formed. The need for the QMS development is predetermined, as a rule, by the requirements of revenue-intensive customers of corporation and / or government. The QMS is considered as a tool to establish an image of a reliable supplier.</td>
</tr>
</tbody>
</table>
5. Process approach
Production processes are identified, set up and resultant. The development of QMS aims at adopting a unified approach, optimizing the processes and growth of business activity as a corporation on the whole, and its individual business units.

6. System approach
Existence of unified standards of planning, budgeting, documents circulation, distribution of authority and responsibility enables to plan and manage costs of quality at all levels of corporate management. The unified approaches to monitoring and measuring a corporation in terms of QMS allow to build flexible and efficient systems of gathering and analysis of statistical data for managerial decision making.

7. Human factor
Involvement of personnel into realization of the project is, as a rule, through training. Owing to large scale and territorial remoteness, the systems of distance learning are offered in most of the integrated corporate structures, which enables to optimize training budget.

One of the advantages of the QMS development is the improvement of relations and exchange of knowledge between the corporate center and its business units.

8. Permanent improvement
Formation of the QMS in terms of corporation is the first step to realize the conception of sustainable development.

The use of a standardized model that is laid down in international standards ISO 9000 allows the corporation to conduct a comparative analysis of the results of their internal business units, as well as to carry out benchmarking studies on the industry in general. However, as the quality management experience is developed and accumulated, the corporation often “grows” from a standardized model and feels the need to make changes and go beyond its requirements. “The moment when the organization will manage to adapt the model to its own specifics is a turning point in its development - the control system has become mature and can develop measuring instruments for itself” [11]. In this case we are talking about the formation of the corporate Quality Management System based on the principle “from quality management to quality of management” (Option IV). With this approach to the formation of the QMS of the corporation, there are two key design solutions (Figure 2).

![Design decision in formation of the corporate QMS based on the principle “from quality management to quality of management”](image)

1. Creation of the integrated management systems (IMS), on the basis of the standards on certain aspects of corporation activities
2. Creation of individual (personified) management systems

Figure 2 – The Options of project decisions in forming a general corporate QMS
As practice shows, the general corporate QMS are widespread in the internal and external corporate structures. Such systems combine the subsystems according to the selected management, the corporations and / or subsystems that are based on the requirements and recommendations of international and national standards which take account sectoral specific feature of the business of corporation. It is accepted to refer the system of environmental management (in accordance with the rules of the international standard ISO 14001), the system of management of industrial security and labor protection (based on the requirements of OHSAS 18000), the system of social responsibility (in accordance with ISO 26000), the system of information security (in accordance with ISO 27000), the energy management system (based on ISO 51000), the risk management system (based on the recommendations of ISO 31000), etc. to such subsystems today.

The examples of such systems may be the integrated systems of management of PJSC “MSC “Norilsk Nickel” [17] and the companies Bahia Sul Cellulose (Brazil) [6]. Both of these companies are concentric corporations specializing in mining and producing non-ferrous and precious metals, as well as the producing and processing timber and pulp and paper industry, respectively. The integrated management system based on the standards of international ISO 9001, ISO 14001 and OHSAS 18001 operate in these corporations. The effectiveness of systems is verified by leading certification bodies. The integrated management systems in these companies are oriented to:

a) the desire to improve social and environmental aspects of the companies;
b) the awareness of responsibility and desire to engage in dialogue on issues of quality, social and environmental policies;
в) consideration for the needs of stakeholders on the quality of products;
g) continuous improvement of business performances through the implementation of corporate sustainable development.

Within the creation of an entirely individual (personalized) system of management we regard the ISO 9001 international standard requirements only as a “working hypothesis”, which is daily checked for compatibility with the results of the business corporation [8]. As an example of such system one can give a system of functional integrity (Operations Integrity Management System - OIMS) which operates in the corporation ExxonMobil (Figure 3) [18].
The system shown in figure 3 covers the ventures of joint companies-ExxonMobil in 200 countries on extraction, production and sale of oil and fuel. Operation of the system produces good results in oil refining, oil delivery through pipelines or by sea and river transport, sale of fuel and lubricants for aviation and shipping, as well as in retailing. The OIMS is used in chemical industry, factories for the production of polyethylene and polypropylene, as well as in construction, such as the repair work in the areas affected by the destruction caused by military operations. The main results of the operation of the OIMS are:

a) cutting of days lost because of accidents by 60%;
b) reducing leakage of oil by 80%, and the extent of contamination by 95%;
c) minimizing significant misadventures (where the damage in money terms exceeds $25,000) by 55%.

Such results are the consequence of realization of the key principles of the OIMS in the ExxonMobil corporation:

1) The leadership of top corporate management and leaders at all levels on promotion of the OIMS as a basic tool for ensuring the effectiveness of the company's business;
2) a unified approach to management systems is applied at all levels of corporate governance;

Figure 3 – The OIMS system of the corporation ExxonMobil
3) the elements of the OIMS are comprehensive in nature and easy to understand. Each business unit can develop a management system that is adapted to the peculiarities of its activity and that meets at the same time the requirements of the OIMS corporation. As concerns the certification of the system on conformity with international standard ISO 9001, each business unit has a right to make a decision depending on the needs of the business;

4) use of the unified system enables to borrow the most progressive methods of work and apply them on a global scale;

5) the results of the audit and evaluation of the operation of the OIMS allow to plan the improvement of local and global character with sustainable development strategy oriented.

4. Summary
It can be concluded on the basis of the stated above that the use of one of these approaches in the integrated corporate structure depends on the level of maturity and integration type of the company (Table 5).

Table 5 – Application of the approaches to the formation of the QMS in terms of maturity and type of the integrated corporate structure

<table>
<thead>
<tr>
<th>Type of corporate management</th>
<th>Vertical integrated corporation</th>
<th>Conglomerate corporation</th>
<th>Concentric corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The stage of corporation development / Approach to formation of the QMS</td>
<td>Childhood</td>
<td>Youth</td>
<td>Maturity</td>
</tr>
<tr>
<td><strong>Option I</strong></td>
<td>Development and implementation of the QMS at the level of corporate business units</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Option II</strong></td>
<td>Development and implementation of the QMS in the managerial structures of corporation</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Option III</strong></td>
<td>Development and implementation of the QMS in the managerial structures and business units of corporation</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Option IV</strong></td>
<td>Development and implementation of the corporate QMS on the basis “from quality management to quality of management”</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

where 0 – practicability of application of the approach is absent;
– practicability of application of the approach is present, but probability of its application is extremely low;
+ practicability and probability of application of the approach are high.

5. Conclusion

Thus, the arguments and examples indicate that the choice of a particular approach to the development of the QMS in the activities of the integrated corporate structures depends largely on the level of maturity and type of corporation. Table 5 summarizes our recommendations concerning the appropriateness of the approaches to the formation of the QMS depending on the type of integrated corporate structure and its stage of the life cycle. Thus, at the stage of “Childhood”, Option I of the formation of the QMS is recommend to all types of corporations. As the corporation grows and achieves the stage of “Maturity”, it is advisable to use more sophisticated Options for creating the QMS (Option III and IV). It must be considered that the processes of development and implementation of the QMS in the corporate governance practices can be affected by external environment of the company, the risks associated with that environment, the changing needs of stakeholders, their purposes, the structure of the products, the processes used and the scope of business.

The Conflict of Interests

The author confirms that the presented data do not contain any conflict of interests.

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