



Turība University

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SYNOPSIS OF THE DOCTORAL THESIS

Possibilities for Increasing Competitiveness of Small and Medium-Sized Enterprises of Latvia as a Result of Application of Quality Management System

**Developed for doctor's degree in Business Administration (Dr. oec)
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The main text of the Doctoral Thesis is presented in 161 pages and illustrated with 13 pictures and 47 tables. Thesis contains 7 appendices. The list of literature includes 144 literature sources.

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ANNOTATION

The main concepts of the theme – small and medium-sized enterprises (hereinafter referred to as "SME's"); competitiveness and quality are the topicalities of the theme of the Doctoral Thesis "Possibilities for Increasing Competitiveness of Small and Medium-Sized Enterprises of Latvia as a Result of Application of Quality Management System". Small and medium-sized enterprises are interested in producing products where potential buyers can see the qualitative features to meet their needs.

The aim of the Doctoral Thesis is as follows: to reveal the positive effects of the introduction of the quality management system in increasing the competitiveness of small and medium-sized enterprises, as well as to identify the major obstacles to reorganization of production in accordance with the requirements of the quality management system in small and medium-sized enterprises in the Latvian economy.

In order to achieve the set goal, two models are developed in the Thesis, the directions of improvement of the quality management system, as well as the research hypothesis is approbated and the results of the research are summarized, in order to define the preconditions for the importance of the quality management system of small and medium enterprises for increasing competitiveness.

The Doctoral Thesis consists of an introduction, 3 chapters, conclusions and suggestions, and the list of literature sources.

The critically creative approach method, combined with the logical approach method, is applied to the results of the research described in the first chapter. Comparison methods, analysis and synthesis methods, as well as various mathematical methods for determining competitiveness changes in the time periods included in the study are used to obtain the results of the study on competitiveness effects in different sectors of the national economy. The analysis and synthesis methods are important in the existing theoretical analytical evaluation, but deduction and induction methods as well as logical approach methods are applied in the development of new theoretical knowledge about the possibilities of SME competitiveness by using the advantages of quality management system.

Methods used in system research and management are useful in designing a systemic approach to reorganizing the activities of SME's in line with the requirements of the quality management system and developing the relevant models. The third chapter of the Thesis includes the methods of selection and survey of respondents corresponding to the purpose of the research. But the appropriate quantitative methods are applied to the processing of the obtained data.

The main text of the Doctoral Thesis consists of 161 pages and is illustrated with 13 pictures and 47 tables. Thesis contains 7 appendices. The list of literature includes 144 sources of literature.

Keywords: small and medium-sized enterprises; competitiveness; quality; correspondence; quality management system.

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INTRODUCTION

Research topicality. The topical concepts of the theme – small and medium-sized enterprises (hereinafter referred to as SMEs); competitiveness and quality are the topicalities of the theme of the Thesis “Possibilities for Increasing Competitiveness of Small and Medium-Sized Enterprises of Latvia as a Result of Application of Quality Management System”. The competitive edge of every company is a product that is produced with the quality requirements of its customers and offered to the market according to the consumer's perception of the value of the product offered in terms of value. The most successful merchants after the establishment of the company are trying to create the internal competitive advantage of the enterprise by developing business development projects, acquiring the appropriate resources and starting the production of products according to the system of conformity of production of the respective product developed in the company.

Constant efforts to maintain the company's competitiveness and/or increase it are transformed into a quality product produced by the consumer. It is determined by the regularities of the market and the behavior of its participants. An economically sound basis for competitive business consists of an informal agreement with a potential buyer on a mutually beneficial transaction, but the guarantee of this arrangement is a product produced by the customer's changing requirements, competitors and the integrity of the merchant. Therefore, small and medium-sized enterprises as well as large companies are interested in producing products where potential buyers can see the qualitative qualities that are needed for potential validity to be able to meet his needs. Thus, the merchant, his system of production conformity, internal and external competitiveness advantages form a system of mutually compatible and complementary elements, the purpose of which is closely related to the purpose of the buyer of the product – to satisfy their needs more completely by using the products offered by the merchant and taking into account the income at the buyer's disposal.

Despite the fact that the beginnings of small business development from the point of view of production and economic activity are in the period of the oldest craft, the attention of these politicians and scientists started to focus on these companies only during the Great Depression. The world-renowned economist Shumpeter (1934), in his research on adaptability, has shown that small and medium-sized enterprises, rather than large ones, are the most important factor in the country's economic development in Europe and the rest of the world. He noticed that during the economic recession, small and medium-sized enterprises were able to adapt to the competition rules, opportunities and threats of the external business environment in a shorter time. During this period, scientific research in different countries reveals the positive socio-economic and politically significant positive effects and side-effects of SME activity, which are emerging as the number of small and medium-sized enterprises increases and their competitiveness increases. More research on small and medium-sized enterprises, their different aspects of competitiveness in the scientific community only appears in the third quarter of the last century and in later years with Bolton (1971), Schumacher (1973) Birch (1979), Gofi (1982), the results of Bessley and Hamilton (Beesley, Hamilton, 1984), Oliver (1985), Anders (1985), and other scientists. The results of the scientific work of Storeja and Johnson (1987), Juelien (Julien, 1993), Zoltan, Audretch (1993), and other researchers have contributed a relatively large contribution to the research of SME development problems. attention was drawn to the elements that make SMEs more competitive, their cross-compliance and interaction in changing external environments and as a result of changes in customer quality requirements. Researches have revealed the ability of small businesses to better meet the needs of buyers in times of ever-increasing economic operators' income and a dramatic change in the perception of quality of life and the goods and services needed to raise it. Thus, in the second half of the last century, the middle class was developed in the more developed countries, and the needs of the merchants had to take into account the wide diversification of goods and services.

With the increase in income, the share of household spending on goods and services that matched the higher levels of Maslow's pyramid of needs – affirmation of affiliation, demonstration of their material condition and self-expression – increased (Maslow, 1954). Diversification of the needs of households and other market players necessitates new products. These and complementary circumstances created favorable conditions for the rapid development of small and medium-sized enterprises, first in countries with higher welfare levels followed by small and medium-sized enterprises working in other countries.

Today, more than 23 million small and medium-sized enterprises operate in the European Economic System, producing goods and services for an amount of over EUR 4 billion. These companies employ over 90 million economically active people from different European countries. In the European Union and in other developed countries of the world, SME development rates are significantly higher than those of large companies. Thus, since 2003, the number of small and medium-sized enterprises has increased by 20%, but the number of employees has increased by 1.24 times, reaching 67% of all employees (European Commission, 2016). Meanwhile, during the recession in Latvia and after the crisis of 2010, the number of micro enterprises increased rapidly and in the beginning of 2018 it exceeded 105 thousand, which makes more than 90% of all SMEs (LR CSP, 2018). Don't look at it, in the abbreviation “SME” it still does not match its content and ignores the large share of micro-enterprises in this group of companies.

Thanks to the rapid development of micro-enterprises in the last 5–7 years, Latvia has exceeded the EU average by the number of enterprises per 1000 inhabitants, but in the group of small and medium-sized enterprises there is still a relatively large lag behind the most developed countries in Europe (Eurostat, 2018). This clearly indicates the relatively low competitiveness of Latvian small and medium-sized enterprises in the EU economic space, proving the topicality of the theme of the doctoral thesis on a global scale. Unlike the major new Member States, SMEs operating in Latvia must focus on their export markets in their near and distant countries. For successful operation in other countries' markets, Latvian companies need to gain comparative competitive advantage and

use competitive advantages as effectively as possible to make domestic products competitive in foreign markets in terms of price and content.

One of the most effective and widely used means to gain comparative competitive advantage is the subordination of SME performance to the requirements of the production compliance system, which produces goods and/or services according to customers' changing quality requirements. Thus, products produced by small and medium-sized enterprises would include qualitative requirements of customers in the target market, which are crucial for maintaining and/or enhancing the competitiveness of any company. In this case, it is not essential whether the production compliance system is certified, taking into account the quality management requirements of the International Standard, which is not done for material, legal, cognitive or other reasons.

Thus, the topicality of the theme of the Doctoral Thesis combines several dimensions that are important for the socio-economic growth of the Latvian economy – micro, small and medium-sized enterprises as the most important socio-economic basis of economic activity; there is a strong need to increase the global competitiveness of SMEs due to the low capacity of the internal market, followed by a market-driven requirement to constantly monitor changes in customer quality requirements and to adapt them to products produced by SMEs in the shortest possible time, using the requirements of the company's production compliance system.

Research hypothesis. On the basis of the above arguments on the research topicality, the following hypothesis has been put forward for the study: **The competitiveness of Latvian SME's in the global market system is not sufficient and it can be increased by using the advantages of quality management and conformity of production system.**

The subject and the object of the research. Taking into account the defined title of the Doctoral Thesis theme, the elements forming the topicality of the theme, as well as the Labor hypothesis, the following research object is determined: **competitiveness of small and medium-sized enterprises and its changes in global market conditions in the sectors of the national economy most important for the development of the Latvian state.** Thus, the object of the research is aimed at the basic

conditions of the existence, growth stability and successful operation of SMEs working in Latvia – increasing competitiveness by integrating the Latvian economy into the global economic system.

Given the topicality of the topic and the subject of the study, the subject of the study is defined as: **possibilities for increasing the competitiveness of small and medium-sized enterprises by applying the compliance requirements defined in the quality management system and the production compliance system established in enterprises**, in accordance with the quality management basic principles improved within the framework of the Thesis.

Aim and tasks of the research. Taking into account the above arguments about the topicality of the topic, the Doctoral Thesis has the following objective: **to reveal the possibilities of increasing the competitiveness of SME activities by using the positive effects of the implementation of the quality management and production compliance system, as well as to identify the major barriers for SMEs to reorganize production according to the requirements of the quality management system and to develop a system of conformity of production with improved quality management basic principles.**

The most important tasks for achieving the goal are:

- 1) to explain the notions that are most relevant to the topic of work, to critically evaluate the content of the concepts that are present in science and necessary for research;
- 2) to critically evaluate the results of other authors' research on the competitiveness of SMEs, quality management systems and conformity of production, their relation to the competitiveness of SMEs;
- 3) analyze SME performance results and identify SMEs' competitiveness gaps in various sectors of the Latvian economy;
- 4) to evaluate the spread of quality management systems and certification organizations in the Latvian economy and other EU countries, as well as to reveal the positive effects of the quality management system on increasing the competitiveness of SMEs;

- 5) to develop a systematic model of conformity of production of products for the implementation of the quality management system for SMEs in order to increase their competitiveness and increase the stability of growth, to reveal the connection between the transformation of quality requirements and conformity of production rules with the improvement of SME competitiveness;
- 6) to identify the most important barriers for increasing the competitiveness of SMEs by introducing and applying quality management systems in the Latvian economy and to develop the basic principles of quality management, taking into account the basic principles of quality management system implementation and functioning as defined by Eduard Deming.

Limitations and assumptions of the study. The limitations and assumptions made in the thesis are mainly related to the object and subject of the Research, as well as to the period of time during which the most significant aspects of the Research object and subject are revealed.

The limitations and assumptions of the study are as follows:

- 1) the study includes the economic sectors most important to the national economy and the small, micro and medium-sized enterprises working there;
- 2) the most important statistical indicators are included in the analytical assessment of changes in SME competitiveness;
- 3) more attention is paid to the study of the nature and trend of key competitiveness indicators for SMEs in potentially more important and competitive sectors of the economy;
- 4) based on the methodology and accumulated practical experience in other scientific studies, the number of indicators included in the Thesis is considered sufficient to identify the most competitive SMEs in the economy;
- 5) the existing differences between SMEs in different sectors of the economy are considered irrelevant to the implementation of the quality management system, its impact on the conformity

- of the manufactured product and the increase in the competitiveness of companies;
- 6) the SME barriers identified in the study for the introduction of quality management systems to increase competitiveness are attributed to all sectors of the economy included in the Work, taking into account the specific characteristics of the product they produce;
 - 7) the design of production conformity models is applicable to any sector of the economy and to any country where SMEs seek to increase their competitiveness by exploiting the competitive advantages of a quality management and compliance system;
 - 8) improved quality management framework defined by E. Deming to be used in the establishment of the production conformity system and to increase the competitiveness of the enterprise in any sector of the economy where the advantages of this system are used, regardless of the number of employees in the company and its location.

Research methods and methodology. The research methodology consists of a set of targeted, mutually compatible and complementary methods. The number of methods applied in the work and the positive effects of their application are considered sufficient to achieve the purpose of the Research, to fulfill the tasks and to prove the hypothesis.

The critically creative approach method, combined with the logical approach method, is applied to the results of the research described in the first chapter. Analytical evaluation of the existing theoretical heritage is important in the methods of analysis and synthesis, but in the development of new theoretical knowledge about the possibilities of increasing the competitiveness of SMEs, using deduction and induction methods as well as logical approach methods are applied. In the second chapter of the thesis, comparative methods, analysis and synthesis methods, as well as various mathematical methods for determining competitiveness changes in the time periods included in the Research are used to obtain the results

of the research on the competitiveness effects of SMEs in various sectors of the economy. The third chapter of the thesis uses the methods of selection and survey of respondents corresponding to the purpose of the research. But the appropriate quantitative methods are applied to the processing of the obtained data. Methods used in system research and management have been useful in developing a systematic approach to reorganizing the activities of SMEs in line with the requirements of the quality management system and developing the relevant models.

Based on the purpose, tasks and hypothesis of the Thesis, the following **scientific theses** are defined for defending the results of scientific research:

- 1) the establishment of a quality management system and a system of conformity of production in order to increase the competitiveness of SMEs can have a more positive effect in the sectors with the highest competitiveness;
- 2) in the academic environment and in the public domain of pluralism about the content of the terms “quality” and “relevance”, SMEs are largely prevented from establishing a system of conformity of production;
- 3) SMEs face difficult to overcome obstacles in the implementation of the requirements defined in the Quality Management System Standard and in obtaining the Certificate of Compliance;
- 4) increasing the competitiveness of SMEs' activities is largely due to the establishment of a production conformity system and its continuous improvement;
- 5) the name of the quality management standard does not correspond to its content, the results of the Study and the obtained quality and compliance findings;
- 6) the quality of the standard for quality management, the uncertainty and subjectivity of the requirements defined therein, the high costs, and the low level of expertise of SME owners and/or managers are often one of the biggest obstacles to increasing SME competitiveness.

Novelty of the Study. The following key innovations have been identified in the results of the scientific research on enhancing the competitiveness of SMEs through the potential competitiveness of the Quality Management System:

- 1) identify the sectors of the economy where the measures to enhance the competitiveness of SMEs can have the greatest economic impact through the requirements of a quality management system;
- 2) critically evaluated the most important terms “quality”, “relevance” and “competitiveness” of the Thesis, as well as other theoretical aspects relevant to the Research, using the results of the work of other scientists;
- 3) using the results of scientific research by various authors, the dimensions of the common and different content for the concepts of “quality” and “relevance”;
- 4) a model for quality and compliance transformation that can be used by researchers and entrepreneurs to complement their perception of the transition of quality requirements to SME production compliance rules;
- 5) a system of conformity of production and a model for the production of products that can be a useful tool for the production compliance of SMEs in order to increase competitiveness and increase profitability;
- 6) the theoretical need for transformation of quality requirements for customer variables and conformity of production rules and its relevance to the expansion of SME competitiveness enhancement theory;
- 7) theoretical possibilities of application of the most important elements of open production conformity system in the development of the theoretical substantiation of management decisions on the competitiveness of SMEs and other organizations;
- 8) the most significant barriers and their causes for the introduction of a quality management system in the operation of SMEs working in the Latvian economy for the purpose of

increasing competitiveness have been identified. They can be used in applied research in other countries to ascertain their existence and to identify others that have emerged, taking into account existing differences in the business environment and the different effects of using QMS.

Practical importance of the Doctoral Thesis. The results of the research are of great practical importance for increasing the competitiveness of SMEs in various sectors of national economy. The most important aspects of the practical application of the study are:

- 1) clear and well-defined concepts of 'quality and relevance' can be used in management decisions to establish a production compliance system for SMEs with a view to enhancing their competitiveness;
- 2) the model of quality and conformity transformation developed within the framework of the Research is of great practical importance. It can be useful for both SME managers in the production of competitive products and managers of other organizations whose activities are related to the conformity and quality of the product offered by consumers, including public administrations, education and health institutions, as well as other organizations;
- 3) the developed system of product conformity and its model is applicable in practice to enable SME managers to develop measures to increase the competitiveness of the company, taking into account the quantitative and qualitative aspects of the product produced. The model also has great potential for use by other organizations;
- 4) the elements of the quality management system that are most relevant to the stability and competitiveness of SME activities have been identified; the link between these elements and the key elements of the production compliance system has been identified, which creates practical opportunities for increasing the competitiveness of SMEs;

- 5) the practical necessity of transforming the quality requirements of customers' variables and the conformity of production rules and its relevance to increasing the competitiveness of SMEs;
- 6) the identified practical barriers to the implementation of a quality management system for SMEs operating in the Latvian economy are of great practical importance. They should be used by SME managers working on measures to increase the competitiveness of products produced by the company, as well as public institutions;
- 7) suggestions for improvement of the quality management system with the aim to use them to increase the competitiveness of SMEs with higher efficiency.
- 8) the updated framework for the implementation and functioning of Eduard Deming's quality management system is widely used in practice to establish a production compliance system for SMEs and to improve the product's compliance with customers' changing quality requirements;
- 9) the results of the study may be useful for the Standard Committee to develop and validate proposals for the development of a Quality Management Standard.

The results of the study are widely used in other EU Member States, as well as in foreign countries, in order to enhance the compliance of SMEs' products and increase their competitiveness.

Structure of doctoral thesis. The volume and structure of the doctoral thesis have been developed in accordance with the laws and regulations in force in Latvia and the University of Turība. The object and subject of the study, aims and tasks of the Thesis, as well as the hypothesis and the theses to be defended are taken into account in the work structure. The results of the study are presented on 161 pages and 7 annexes. 13 pictures and 47 tables are added to supplement, refine and detail the text.

The first chapter of the study focuses on the explanations of the basic concepts of competitiveness, quality and conformity. This chapter reveals a non-critical outline of the content of the relevant concepts, both in academic dictionaries issued in different languages and in scientific research.

To a greater extent, this refers to the quality of the content found in scientific publications. Explanations of concepts that are more relevant to the purpose of the Research and to the Content of the Work are developed using the knowledge gained from this chapter on the most important issues of the Thesis. Identified in the quality explanation is largely attributed to the position of SMEs in the implementation of the quality management system and the reorganization of production processes according to the requirements of this system.

The second chapter focuses on the analytical assessment of SME performance in various sectors of the economy. For this purpose, the most economically important sectors are selected, where the working SMEs produce the largest amount of value added and employ the largest number of economically active population working in the sectors of the national economy. First of all, changes in the number of economically active enterprises, start-ups and bankrupt companies are analyzed. This provides new knowledge on the most competitive sectors of the economy and the competitive SMEs working there. In the next study, the most important indicators and their changes for SMEs operating in the sectors covered by the Research are studied. Summarizing the competitiveness indicators obtained, we get an idea of the most competitive sectors of the national economy and the competitive small and medium-sized enterprises working there. Thus, the necessary knowledge about the sectors of the national economy is acquired, where the implementation of the SME quality management system can give the most positive effect to further increase competitiveness.

The third chapter of the thesis includes the results of research on the spread of quality management systems for SMEs in European countries and Latvia. This chapter focuses on the impact of quality management systems on increasing the competitiveness of companies. As a result of the research, new knowledge about the efforts of SMEs to produce products according to the requirements of the quality management system in various sectors of the economy, as well as the difficulties – different barriers faced by SMEs in increasing the competitiveness of the manufactured products to the changing quality requirements of the customers. The results of the research on the implementation of the quality management

system for SMEs operating in the Latvian economy are included and analyzed in this chapter. In the course of the further research, it is possible to transform customers' changing quality requirements into conformity requirements for the production of goods and services that are incorporated into ready-to-sell products and services. Once the products produced by SMEs reach the shelves of the stores, they can or may not notice the individually defined quality requirements in the range of goods and services offered on the market. Acquired knowledge of quality and compliance, their mutual transformation are used to develop systemic models. These models can be useful for SME managers and / or owners to understand more clearly the nature of the Quality Management System and its relationship with the production of marketable goods and services. Based on the results of the research on increasing the competitiveness of SMEs using the advantages of the Quality Management System, proposals are made for the necessary changes to the basic principles of quality management defined by Deming and the International Quality Management Standard.

Approbation of research results

The developed models are bugged by Kesko Group companies in Finland and the Baltics. ISO Standard Improvement Recommendations are submitted to the European Standards Commission.

The results of the research included in the doctoral thesis and the theoretical findings are presented in the following scientific publications:

- 1) Driņķe, Z., Zvirgzdiņa, R. (2018). Quality management system and models for small and medium enetrprieses development. *26th EBES Conference Proceedings*, Prague, Czech Republic Hosted by University of Finance and Administration, 8. pp. Publicēšanas procesā. Datu bāze: TomsonReutersWoS
- 2) Driņķe, Z., Bruksle, I. (2018). Pricing competences as a tool for competitiveness increase of Latvian companies un global market. *18th International Scientific conference globalization and its socio-economic consequences University of Zilina*, the faculty of operation and economics of transport and communications department of economics. Proceedings, Part V. Rajcke Teplice. Database: TomsonReutersWoS

- 3) Driņķe, Z., Bruksle, I. (2018). Quality management system as tool for corporate development and competitiveness increase in small and medium companies. *Proceedings of the 2018 International Conference "Economic science for rural development"*, Jelgava. Database: TomsonReutersWoS, EBSCO
- 4) Driņķe, Z., Bruksle, I. (2017). Quality management system as a global tool for international corporate development and increasing competitiveness. *17th International Scientific Conference Globalization and Its Socio-Economic Consequences University of Zilina*, The Faculty of Operation and Economics of Transport and Communications, Department of Economics. Globalization and its Socio-economic Consequences. Proceedings, Part V. Rejecke Teplice. ISBN 978-80-8154-212-1. Database: TomsonReutersWoS
- 5) Driņķe, Z., Liniņa, I., Zvirgzdiņa, R. (2013). Quality management system as a tool increasing export of complex goods. *Journal of Turība University Acta Prosperitatis*, No 4, pp. 9–23. ISSN 1691-6077. Database: EBSCO
- 6) Driņķe, Z. (2013). Kvalitātes vadības sistēma kā organizāciju attīstības un konkurētspēju paaugstināšanas instruments. Quality Management System as a Tool for Corporate Development and Increasing Competitiveness. *Uzņēmējdarbības vide un tās attīstības aspekti*. Monogrāfija. Autoru kolektīvs. Rīga: Biznesa augstskola Turība, 160.–181. lpp., ISBN 978-9984-828-72-5
- 7) Bulis, A., Orlovs, A., Driņķe, Z., Škapars, R. (2013). International transit transport infrastructure project and economic development of Latvia. *8th International Scientific Conference*. Proceedings, Vilnius, ISBN 609-457-469-6 online, doi: 10.3846/trans-baltica2013.006
- 8) Driņķe, Z., Liniņa, I. (2013). Quality Management System as a Tool for Corporate Development and Competitiveness Increase. *Scientific Journal of Ekonomikas un Kultūras augstskola "Economics and Culture"*, Volume 7, pp. 25–39. ISSN 2255-7563

- 9) Driņķe, Z., Janovs, V. (2011). Quality Management System as a Tool for Corporate Development and Competitiveness Increase. *Scientific Journal of Riga Technical University Sustainable Spatial Development*, Volume No. 3, pp. 71–76. ISSN 1691-6174
- 10) Driņķe, Z. (2009). Visaptverošas kvalitātes vadības modelis publiskajā un privātajā sektorā. The Total Quality Management Model in the Private and Public Sector. *Scientific Papers University of Latvia, Economics and management*, Volume No. 744, pp. 214–228. ISBN 978-998-45-141-1, ISSN 1407-2157

The results of the scientific research are reported at the following international scientific conferences:

- 1) Driņķe, Z., Zvirgzdiņa R. (2018). Quality management systems and models as tool for small and medium enterprises. 24th EBES Conference Proceedings, Prague, Czech Republic Hosted by University of Finance and Administration
- 2) Driņķe, Z., Bruksle, I. (2018). Quality management system as tool for corporate development and competitiveness increase in small and medium companies. Proceedings of the 2018 International Conference “Economic science for rural development”, Jelgava
- 3) Driņķe, Z., Bruksle, I. (2017). Quality management system as a global tool for international corporate development and increasing competitiveness. 17th International Scientific Conference Globalization and Its Socio-Economic Consequences University of Zilina, The Faculty of Operation and Economics of Transport and Communications, Department of Economics. Globalization and its Socio-economic Consequences
- 4) Driņķe, Z. (2013). Kvalitātes vadības sistēma kā organizāciju attīstības un konkurētspēju paaugstināšanas instruments. Quality Management System as a Tool for Corporate Development and Increasing Competitiveness. Uzņēmējdarbības vide un tās attīstības aspekti. Monogrāfija. Autoru kolektīvs

- 5) Bulis, A., Orlovs, A., Driņķe, Z., Škapars, R. (2013). International transit transport infrastructure project and economic development of Latvia. 8th International Scientific Conference, Vilnius
- 6) Driņķe, Z., Janovs, V. (2011). Kvalitātes vadība sistēma kā efektivitātes nodrošināšanas instruments produktivitātes paaugstināšanai. Rīgas Stradiņu Universitāte

1. THEORETICAL ASPECTS OF THE COMPETITIVENESS AND QUALITY MANAGEMENT SYSTEM OF SMALL AND MEDIUM ENTERPRISES

In the following discussion of the theme on the increase of competitiveness of small and medium-sized enterprises in connection with the introduction of the Quality Management System, it is necessary to reveal the socio-economic, technical and management content of the most important concepts of the Research. For several years studying the activities of MSME's in Latvia, as well as analyzing and critically evaluating the research published in the scientific field on this issue, it has been established that in practice and science there is a lot of pluralism about concepts such as small and medium-sized enterprises; competitiveness in the general sense and the competitiveness of the company as a specific feature of the competitor; quality in the general sense and the relevance and quality of a particular product produced by a given company. Exploring the experience of small and medium-sized enterprises in different countries around the world, it is discovered that there is no single, acceptable answer to the question of what is a small and medium-sized enterprise. The need for an agreement on the single content of the SME concept is largely due to the expansion of foreign trade and the need to reduce misunderstandings by developing and implementing the most appropriate SME support measures for their countries on different continents. In practice, state support has often proved to be one of the most important aspects of building competitive advantage and using it in foreign markets. After joining the EU, Latvia has fully taken over the characteristics of SMEs as defined in EU legislation by joining the socio-economic and political system. The content of the concept of SMEs used in the EU and in many other countries of the world does not correspond to its content – if the SME acronym refers only to small and medium-sized enterprises, but the content reveals a three-tier division of enterprises – micro, small and medium-sized enterprises. Competition and competitiveness are the basic categories of the market economy, which, with the transformation of the market economy itself, have undergone dramatic

changes. Therefore, the concept of 'competitiveness' is given a great deal of attention in various scientific and other publications. The world-renowned scientists such as P. Krugmans, M. Porters, P. Samulesen, M. Spens, J. Stiglitz, J. Tyrol, and many others (Vane, Mulhearn, 2012). The notion of competitiveness in the glossaries and other scientific publications explains the concepts of competitiveness in an inadequate modern market economy. Critically evaluating the definitions of competitiveness included in different editions, more elaborate explanation of the concept of competition is elaborated for the Thesis: **Competitiveness – a set of features of performance characteristic of an entity or organization that is used to achieve a particular goal at a particular place and time.** But the competitiveness of SMEs is explained as follows: **Competitiveness of SMEs is for a merchant – a set of performance characteristics specific to an SME owner and an organization that is used to achieve the goals of engaging in business.** The definitions of competitiveness and SME competitiveness defined in the thesis preserve the essence of these concepts – the ability to be superior in the attraction of resources, in the production of products and/or in the sale of produced products.

This means that there is a certain competitiveness for every merchant who can identify customer requirements, buy resources on the market, can produce the intended product according to the fixed customer quality requirements and sell this product at a price that corresponds to the business purpose. Taking into account the acquired new knowledge of competitiveness, it is found that the introduction of the Quality Management System in the operation of SMEs can only be hypothetical rather than determined to increase their competitiveness capacity. This can only happen if the company increases the sales volume of the products produced and retains the reduction of the resources obtained as a result of the implementation of the quality management system to the unit of the manufactured product, avoiding the overrun of resources in another place. The results of the study show that quality is a much more appropriate concept compared to competitiveness. This concept is widely used on a daily basis in each of the groups of economic actors – households, businesses, state and municipal institutions, as well as in public organizations, but possibly with different content. It has been

proven in practice that entrepreneurs and consumers know what quality is, but only a few are able to explain it. The content of the concept of quality is also widely discussed in scientific articles from the beginning of the 20th century. Scientists such as J. Juran (1989), Deming (2000), Dorfman, and Steiner (Dorfman, Steiner, 1954), K. Lefler (Lefler, 1982), Kanji, Asher (1996), G.Knovless (Knowles, 2011) are well known to quality researchers who has focused on researching product quality issues related to customer quality requirements, their constant changes in the market of goods and services. Taking into account the wide range of research on quality and the lessons learned from its critical evaluation, Quality in Work is explained as follows: **Quality – a set of entity-defined features used to assess the suitability of a particular material or immaterial thing to meet his needs.** In the work, the term 'quality' is linked to the concept of 'relevance', which is intrinsically linked in any human domain. The concept of compliance The work is explained as follows: **relevance – a set of features defined by an individual, a company, or another organization, which is used to evaluate the usefulness of a product and/or service production process and / or the value of use of the product produced.**

Implementation of the Quality Management System (hereinafter QMS). The “MSMEs” is a strategic decision, whose adoption and successful implementation requires good knowledge and understanding of the basic elements of the QMS and their interrelationship included in the ISO 9001: 2015 standard, as well as other quality management system support systems. **The most important of these elements is the company itself,** which has established a production compliance system. More important for MSME managers to be aware that the production compliance system is market-oriented and the customer is dominant. This means that the production compliance system must always meet the customer's changing quality requirements. Many researchers have pointed out that the most important aspect of MSME competitiveness is the internal environment of the business, the prevailing threats and opportunities (Juran, 1995; Ajitabh, Momaya, 2004; Elbanna, Child, 2007; Broh, 1982; etc.).

The next element of the QMS is **management and its participation,** its quantitative and qualitative composition. It is the MSME management that determines the goals and objectives of the activity, the mission and

the vision, where the most important place is assigned to the client and his quality requirements.

These issues are constantly being discussed extensively in the scientific environment, where opponents express ideas on various issues of increasing the efficiency of the company's management (Achtenhagen, Brundin, 2016; Maxwell, 2013; Liraz, 2017; Mezzei, 2006, etc.).

In these and many other scientific studies, attention is also paid to the compliance issues, the level of their competence and the competence-forming dimensions of the MSMEs leaders. It is important for MSME managers to know the driver's compliance law, which determines the necessity of the control entity's characteristics for the characteristics of the control object, its operational objectives and tasks.

The next element of the QMS – **the personnel involved and their involvement** – is closely related to management. MSME employees are the most important of the resources at their disposal, they are the biggest opportunities and in some cases it is the biggest threat to the company's goal. Tricker is one of the many scientists who have focused on researching staff employed by the company. He has come to the realization that the greatest benefit of the necessity of employee involvement defined in the Standard is the sense of responsibility of people to be responsible for their own performance (Triker, 2014). Meanwhile, L. Dale and Ouens-Brogers have shown a scientific interest in staff compliance issues and their training as a powerful tool for maintaining the required level of compliance (Dale, Ouens-Brogers, 2017).

Processes are the fourth most important element of QMS. Despite the fact that each of us has witnessed many processes and is able to engage in several processes during the day, in practice it can be assured that many MSME managers find it difficult to process, interact and interact with each other. In essence, this is a sign of the first discrepancy, but not always with this conclusion is enough to solve the problem that has arisen. This is largely due to the inadequate interpretation of the term “process” in the QMS Standard as any activity requiring resources... (ISO 9001: 2015) and does not correspond to the practice in practice, where the process emerges as a set of targeted, mutually compatible and complementary activities that have

their own purpose. But there is no need for a resource requirement in the Standard. But it is important for the MSMEs to provide each of the production compliance processes with the necessary, mutually consistent and complementary resources, the quantitative and qualitative composition of which is determined by the product being manufactured. D. Besterfield and other scholars have devoted much attention to research into the conformity of production process processes (Bestefilt, 2016). In these scientific studies, MSME leaders and process investigators can gain useful insights into **the effectiveness of processes**. This means that it is impossible and unnecessary to create effective processes in the company – it is an integral part of every process. But it is necessary to develop sufficiently effective processes that form a single process system that organically fits into the production compliance system. These processes will work with the efficiency that a business manager will have with their management decisions and resources.

Evidence-based decision making is the fifth core element of the QMS. Its importance is linked to the production compliance system and the MSME as a system that includes the production conformity subsystem. Despite the fact that many scientists have devoted their work to researching various socio-economic systems and their constituent elements, systemic thinking for many MSME managers seems difficult.

It is important to note that this fact is one of the most important aspects of increasing the competitiveness of MSME – the manager should be able to think systemically and well orientated in the company as a special and unique socio-economic, technical and management system. Systemic thinking is closely linked to compliance and the production compliance system specifically.

The unwritten rule of each manager is to create a system of adequately functioning production compliance that can consistently offer products that meet customer quality requirements and keep track of changes to these requirements. Inefficiently functioning production compliance system at best increases the cost of production and reduces the profitability of the company, but in the worst case, the compliance of the manufactured product with the much more negative consequences for increasing the competitiveness of the MSME is reduced.

Evidence-based decision-making is closely related to the next element of the QMS – **the continuous improvement of the product and system produced**. Essentially, product placement is one of the processes that is closely related to customer quality requirements. This issue has received a lot of attention from the founders of the quality management system, Deming, Juran and others. It is important for MSME managers to know what should be improved and in what direction development should go. Although the answer to these questions is not complicated, it is more difficult to decide on the development and the resources needed to make it difficult for many MMUs to overcome. In practice, it has been observed that the product and also the production processes have a passive and active phase.

In the passive phase, minor improvements are implemented which are sufficient for the company not to lose the level of production efficiency achieved and/or to reduce the sale of the manufactured products at a reasonable price for the merchant. In this phase, management decisions on production and/or product development are based primarily on customer complaints and novelty elements in alternative products. In the active phase, however, radical and rapid improvement of the product and production system is being implemented with the aim of switching to the production of a new product, which would be able to meet the requirements of customer quality more fully. The last element of the QMS included in the thesis is **relationship management**. In an effort to build this QMS and production compliance element, it is important for MSME managers to be aware of what are the most important partners and mutually beneficial relationships. There are no ready and helpful answers to these questions, it is a matter of experience and intuition. But the manager needs to understand that his business is not isolated from other – potential co-operation partners and will not be able to produce products that meet customer quality requirements. Interesting results on these issues are derived from the work of several scientists (Rosu, Pavalolu, 2014; OE, 2017; Gage, Sullivan, 2009; Sounders, 2015, etc.). The above theoretical aspects of the competitiveness of micro, small and medium-sized enterprises, quality and QMS, production compliance system and customer quality requirements can be used to continue theoretical and empirical research in relation to the compliance of manufactured products with customer quality requirements and continuous improvement of the manufactured product.

2. ANALYTICAL ASSESSMENT OF THE COMPETITIVENESS OF SMALL AND MEDIUM-SIZED ENTERPRISES

In today's world, with the rapid expansion of the number of SMEs in the EU and in other parts of the world, economic importance and competitiveness are consistently increasing. At present, in the EU countries, the share of SMEs in the total number of enterprises has reached 99.8%, and in the various sectors of the national economy (hereinafter referred to as TS), they employ almost 68% of all economically active population, producing more than 42% of GDP (Eurostat, 2018). The bulk of China's exports – 60% are SMEs and 46% in Thailand (China, 2018, Ping, 2016). In many countries around the world, micro and small businesses have proven to be more flexible in responding to economic crises and other external threats (OECD, 2017).

The performance of small and medium-sized enterprises has shown that companies in this group compete successfully with large companies in several performance indicators. The following scientific research results on the positive effects of SME activity in different countries of the world are convincing to this:

- in some sectors of the economy, the global competitiveness of SMEs is 2–3 times higher than that of large companies in local and foreign markets (OECD, 2018);
- SMEs are more competitive than large companies in creating new products and offering additional jobs (Sargeant, 2011);
- thanks to the successful implementation of SME development policy in Japan for decades, the unemployment rate in this country is close to the level of natural unemployment and is several times lower than in the US and the EU (METI, 2017);
- results of SME Operational Research in Japan show that 10% of industrial small enterprises have higher productivity compared to large companies, but in service sectors this figure is 30% (NATP, 2017);
- employees in small and medium-sized enterprises are generally more satisfied with work and working conditions compared to large companies, mainly due to greater persistence and trust from employers (Kok, et al., 2011).

The above-mentioned research results on the prevalence of SMEs in the world, their impact on the country's economic development and the competitiveness of SMEs in local and foreign markets clearly demonstrate the need to pay more attention to the development problems and solutions of small and medium enterprises in Latvia, especially in the context of the region. In the Latvian economy Small and medium-sized enterprises entered the country with the major changes in the national economic system. The experience accumulated in Europe with the involvement of economically active people in business is still widely used to promote the development of SMEs in different sectors of the TS. At present, the share of SMEs in economically active enterprises is 98.87%, and in recent years their share has steadily increased (CSB, 2018) due to favorable development conditions. According to the CSB (the Central Statistical Bureau of Latvia), 78.3% of all employees in the country are employed by SMEs, the net turnover of goods and services produced by them is 70%, and the value added is 71% of the total economy. The study focuses on the operation of SMEs by industry, net turnover of products produced and sold by SMEs, added value added and number of employees.

This provides an opportunity to identify the most competitive and thus the most promising sectors in which the Quality Management System can have a more positive effect on increasing the competitiveness of SMEs. In order to gain a more detailed knowledge of the changes in the competitiveness of SMEs working in different national economy (TS) sectors, the reporting period is divided into two parts – from 2007 to 2017 and post-crisis period from 2010 to 2017. In order to assess the changes in the competitiveness of SMEs, the most important sectors of the national economy are selected for development, where the development of SMEs and the increase of competitiveness have a more positive effect. The coding of the sectors included in the study according to the NACE-2 (Nomenclature of Economic Activities) classifier is as follows: Industry (B+C+D+E); Construction – F; Trade – G; Transportation – H; Hotels – I; ICT Services (PK) – J; immovable property and real estate transactions (NP) – L; Professional services (PK) – M. Thus, attention is paid to product manufacturing industries – Industry and Construction, as well as commercially

important services industries. The summary includes a narrower outline of the research results, so the focus is on the added value produced by SMEs by sectors covered by the study. In the micro-enterprise group, the largest increase in value added was observed in the ICT sector – 2.7 times, in the Professional Services sector – 1.4 times and in the Industry sector – 1.6 times. The results of the study convincingly prove that, despite the low operating experience and low production capacity, micro companies show relatively good growth rates. At the end of the reporting period, small companies produce more than 2.4 billion Euro of value added, which is unevenly distributed across the economic sectors included in the Study. The largest volume of research is similar to that of the micro-enterprise group in Trade and Industry. But the greatest increase in the value added generated throughout the reporting period is found in the ICT services and Industry sectors, as well as in the Hotel and Restaurant sector. This is proof of the high performance of small businesses, despite the difficult conditions in the external business environment. Indicators of structural dynamics show that the largest increase in the share of the entire reporting period agrees with the small enterprises working in the ICT sector – less than 1.7 times. Relatively large relative growth has been achieved in the Hotel and Restaurant sector as well as in the Industry sector. In the group of medium-sized enterprises, considerably more advantage over other sectors of the economy included in the Study is shown by the enterprises working in the Industry sector with the amount of added value of 1.15 billion. In the relative growth of the value added produced throughout the reporting period, the leading role in the hotel and restaurant sector is maintained by the companies working in the hotel and restaurant sector. But in the post-crisis period, the greatest increase in value added is found in the ICT services industry, Construction and Industry. The results of the research reveal that the greatest resistance during the reporting period has been shown by merchants working in the Professional Services sector. Comparatively high value added production stability is observed in the sector where transactions with real estate are included. In all other sectors included in the Study, the lower ability of medium-sized companies to orient themselves in the

external business environment is evident, in order to detect the threats and opportunities prevailing in the business in time, trying to keep the company with a positive end result. In the course of the further study, the priority sectors for the implementation of the Quality Management System in MSME activities are searched using an axiom open to theory and tested in practice – there is more competitiveness for micro, small and medium-sized enterprises working in the sectors of the economy who have demonstrated their ability to produce higher value added (hereinafter VA) in their activities to increase the net turnover of the products produced and to achieve the higher available resources for efficiency indicators compared to competitors. Therefore, only the relative growth rates and individual performance indicators are used in the next Study:

- the relative change in value added over the reference period;
- the relative change in the number of employees during the reference period;
- relative changes in VA production efficiency relative to net turnover
- the efficiency of the use of labor by micro, small and medium-sized enterprises in relation to the relative changes in value added of these enterprises over the reference period.

Competitiveness indicators, calculated using the results of research of other scientists and theoretical conclusions about relative and composite indicators of competitiveness of enterprises (Rengkung, et al., 2017; Prozchaskova, Straka, 2017; Nemethne, 2010; Meyer, Meyer, 2017; Szreb, Ulbert, 2011) are applied in the evaluation of the competitiveness of MSME. The relative growth and performance indicators included in the Study are used in the development of the content of the competitiveness assessment indicators. The development of these indicators takes into account the fact that the composition of SME owners and/or managers has changed significantly over the reporting period, taking into account newly established and failing SMEs. The calculated and aggregated values of the indicators applied to the evaluation of SME competitiveness by the sectors of the TS included in the Study are included in Table 2.1.

Table 2.1

Changes in the overall competitiveness of MSMEs in selected sectors of the economy for research

Selected national economy (TS) industries	Changes in long period (SKS points)			Changes after the crisis period (SKS points)			Overall indicator of competitiveness changes (SKS points)		
	MIC	S	M	MIC	S	M	MIC	S	M
Industry	30,4	48,1	53,5	32,1	94,6	83,0	62,5	142,7	136,6
Construction	-66,8	-88,7	-68,0	81,8	162,8	89,7	15,0	74,1	21,7
Trade	-9,9	-18,3	-27,6	-6,2	59,3	61,1	-16,0	40,9	33,6
Transport	-3,4	22,2	99,1	-27,7	68,8	104,8	-31,1	91,0	203,9
Hotels	3,6	49,5	163,9	-14,8	159,1	233,8	-11,2	208,6	397,6
ICT services	199,7	99,3	14,9	106,2	166,7	163,5	305,9	265,9	178,4
Transactions with immovable property (NP)	-27,0	-20,6	40,1	64,0	46,2	47,8	37,0	25,6	87,9
Professional services (PK)	-10,6	-38,7	-13,8	21,2	69,0	40,8	10,6	30,4	27,0
Changes in US Groups of SKS	116,1	52,7	262,0	256,7	826,5	824,6	372,8	879,2	1 086

TS – national economy; NP – immovable property; PK– services; ND –employees; SKS – complex competitiveness (MIC – micro; S – small; M – medium-sized)

Source: Table compiled by the author using data from the CSB and Lursoft, as well as the results of billing

Analytically evaluating 1.1. In the table below, it is found that the highest competitiveness in the micro-enterprise group is shared by merchants working in the ICT services sector. It is followed by micro-enterprises in the industry, with a significantly lower competitiveness rate. The merchants dealing with real estate, micro enterprises in the construction and professional services sector have also improved their performance during the reporting period. Micro companies in other sectors have lost their competitiveness in 2007.

Complex competitiveness of small businesses throughout the reporting period is higher compared to micro enterprises. In this group, the leading position is maintained by merchants working in the field of ICT services, Hotels and restaurants, and small merchants working in Industry. Changes in the competitiveness of small businesses operating in the Transport and Construction sector are also positive. The weakest performance, on the other hand, agrees with the Small Businesses of Professional Services, as well as with small businesses that do business with real estate. Significant changes in competitiveness in the economic sectors included in the study can be seen in the group of medium enterprises. Medium-sized merchants in the hotels and restaurants sector show significantly higher competitiveness than other industries. The achieved composite competitiveness indicator is 1.6 times higher than the second place – Transport. Meanwhile, Industry's medium-sized enterprises remain in the third competitive position.

The results of the study clearly show that the acronym "SME" so far does not correspond to reality – this shortcut ignores the number of micro enterprises, which account for almost 95% of the total number of SMEs. These companies account for almost 30% of the total value added and employ 42% of SMEs. Therefore, the acronym "SME" within the Work is replaced by a more appropriate acronym "**MSME**", so micro-enterprises are taken into account in this title, their development is no less important than small and medium growth in the country.

3. BARRIERS AND EFFECTS OF QMS APPLICATION IN THE LATVIAN ECONOMY TO INCREASE THE COMPETITIVENESS OF THE MSMEs

The Quality Management System in Latvia is a relatively new tool for increasing the competitiveness of MSMEs. The first Quality System in Latvia was certified more than 20 years ago, and in November 1995 the company “Baltaruta” was certified. With the involvement of Latvia in the wider competition space, the popularity of QMS in the establishment of the conformity of production system and its accreditation in accordance with the requirements of the relevant ISO Standard will increase. With the increasing demand for accreditation of production compliance systems established by MSME, the number of accredited certification bodies has increased and currently 8 institutions offer their services in this field. The number of companies certified in our country at the beginning of 2018 exceeds 700 units, it is important that 89% of them are micro, small and medium enterprises and 59.9% of them are involved in the production of goods in the Construction or Industry sector. However, Latvian merchants are lagging behind in establishing production conformity systems accredited by other EU countries. In this indicator, Latvia is the last place in the Baltic States – the number of accredited companies is 29% lower in Lithuania and 11% lower in Estonia. The research and the work of other authors reveal several problems that hinder the implementation and maintenance of the Quality Management System. Major issues are divided into the following groups:

- 1) companies lack knowledge and understanding of the QMS and ISO Standard requirements to subordinate production to the requirements of the Quality Management System with their own resources without calling the consultant (Liang, et al., 2007);
- 2) Problems encountered by enterprises in accreditation and certification of the quality management system in cases where the consultant has proved insufficient competence (Brzozowski, et al., 2014);
- 3) The management and specialists of the company have insufficient knowledge and understanding of quality and compliance issues in order to develop the necessary documentation (Gotzmani, et al., 2002).

The results of the research show that in Latvia MSME managers and/or owners face similar barriers in their efforts to increase the competitiveness of the company by using the ISO Standard requirements for the establishment of the conformity of production system. In addition, the Research identifies specific problems in this issue, the most important of which are:

- Insufficient knowledge and difficulties of MSME managers, owners and employees to properly understand the nature of the quality system and implement it in the production compliance system;
- Unspecified and blurred explanations and requirements of the international and Latvian QMS standard;
- the complexity of work in the implementation of QMS, as well as the comparatively large amount of time and Quality Manual books and documents;
- Costs of implementation of QMS and maintenance costs;
- lack of sufficiently competent consultants on QMS issues;
- lack of consistency of auditors on compliance issues with the QMS;
- relatively long time for Quality management system document checks and large number of involved staff and staff have difficulties in switching from **the concept of quality that is known and understandable to everyone** to the *concept of compliance* in the internal environment of a company and in the processes of production compliance management.

Research by other scientists has also shown that the use of ISO 9000 for QMS development and certification is too expensive, time consuming, consumes a lot of resources, the documentation is too formal and impersonal, and as a result the cost of system deployment is often higher than the benefits received, especially for MSME (Kaziliūnas, 2012; Liviu, 2015). Taking into account the barriers identified in the Study, the work focuses on finding out the causes of these barriers or problems by organizing focus groups of MSME managers and owners, as well as by interviewing certified company managers. In order to increase the competitiveness of MSMEs, it is important to identify the most important elements of the production compliance

system. Such an approach is consistent with theoretical knowledge and practice in the interaction between the elements of socio-economic systems and their impact on the whole system, its quantitative and qualitative aspects. In order to identify the key elements of the MSME production compliance system and to determine their relevance in terms of their impact on the quality of the manufactured product to the customer's quality requirements and the company's competitiveness, a focus group is created. Its composition consists of MSME leaders, owners and quality management system experts – a total of 12 participants. The focus of the focus group work is to identify the most important elements of the production compliance system that could facilitate the implementation of the production compliance system and its operation in the operation of the MSME.

The results of the focus group work are summarized in Table 3.1. The table below shows the following key results for the focus group:

- greater attention should be paid to the production processes, their inter-operability and the provision of adequate resources for the establishment and operation of a system of conformity of production and QMS elements such as internal environmental relevance and product design documentation have received equally high expert judgment;
- production compliance system and management processes for the whole company; training of personnel involved in the production conformity system; verification of measuring instruments and their application for conformity assessment; compliance enhancement processes;
- more attention should be paid to production processes, their inter-operability, and the provision of adequate resources for the establishment and operation of a system of conformity of production;

Table 3.1

Focus Group Results Summary on the Importance of QMS Elements in the Production Compliance System

The most important QMS elements	Supply of resources	Production	Final product
Quality Guide	2	2	3
Processes of supply of resources	3	2	2
Resource suppliers	3	2	1
Workforce compliance assessment	3	2	1
Capital adequacy assessment	3	3	1
Resource compliance assessment	3	2	1
Assessment of inter-compliance of production resources	3	2	2
Relevance of EP internal environment	3	3	3
Product design	1	3	3
Production planning	2	3	2
Production processes	2	3	2
Management processes	3	3	3
Staff training	3	3	3
Measuring instruments and other accessory devices for determining conformity	3	3	3
Verification and validation processes	3	3	3
Corrective and preventive activities	2	3	2
Processes of an inappropriate product	3	3	2
Compliance improvement processes	3	3	3
Reaction to customer complaints	2	3	3
Overall rating	50	51	43

Source: Table compiled by the author using the results of the Study

- the quality manual is an essential element of the QMS, but in practice it plays a minor role in the design and maintenance of the production system;
- the quantitative and qualitative composition of the production resources is defined in the product design documentation, but the procurement processes and suppliers are crucial for ensuring the consistency of the composition of resources;

- the adequacy and the level of efficiency of the production processes depend to a large extent on the adequacy of the volume of resources and composition;
- In the capital adequacy assessment, the focus is on the existence of the technological equipment required to produce the intended product and its compliance with the requirements of the product manufactured. Not less important is the efficiency of the production activity, which is related to the acquisition and compliance of resources;
- the assessment of the adequacy of resources should focus on a proven track record that the qualitative composition of the supplier's resources is not homogeneous;
- constant attention should be paid to the exposure of workers in contact with the external environment, thereby endangering the internal environment;
- the design of the product and the precise execution of that work are of strategic importance. In the development of the project and its continuous improvement, one has to take into account the resources at the disposal of the MSME and the existing restrictions on their use;
- The training process for staff should start with the training of company managers so that sufficient qualified personnel are included in the production compliance system. In essence, this is the most important condition not only for the production of a product that meets customer quality requirements, but also for the business owner to achieve the desired profit and profitability level;
- The level of efficiency of measuring instruments, verification and validation processes is closely related to the competence of MSME managers and employees, which is the function of the appropriate product. Therefore, these elements are equally important for the functioning of the entire production compliance system and for maintaining a high level of performance;
- the most important aspect of the system of conformity of production and each workplace is to engage in compliance measures in all cases where any of the non-conformity features of the product appear and to take corrective and/or preventive action;

- a sufficiently effective response to customer complaints is more closely related to the continuous improvement of finished products and manufacturing processes.

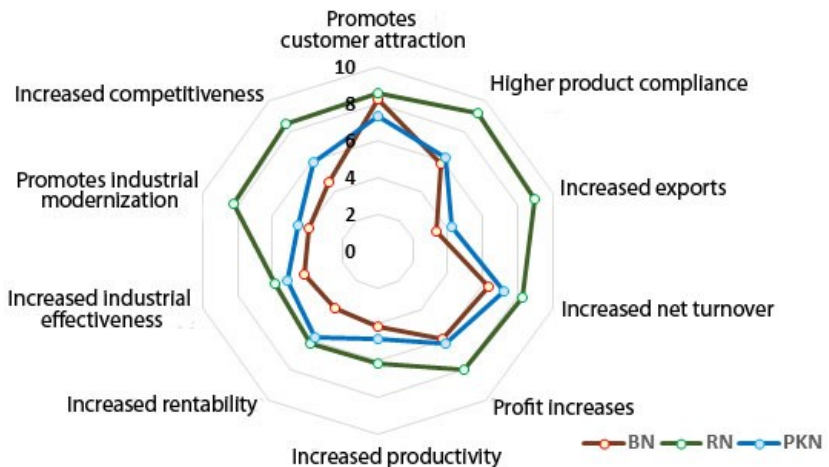
Above all, only the most important focus group experts' findings on the relationship between the elements of the Quality Management System and the MSME product manufacturing compliance system and its individual subsystems are outlined. These findings are considered essential for maintaining and enhancing the competitiveness of the MSME, regardless of whether the company works in accordance with the requirements of a certified Quality Management System, or the company manager and/or its owner has developed a unique, product-specific production product compliance management system. The results of the study show that the most important factor in the operation of the MSME production system is the supply of resources and the production process itself, but the product is less important.

In this case, the importance of the produced product in generating the cash flow of the MSME, obtaining the expected profit and reaching the planned profitability level is not denied. The results of the study provide MSME managers and/or owners, other interested parties with new knowledge about the establishment and functioning of the production compliance system, as well as its importance in increasing the competitiveness of the MSME.

In the further development of the work, attention is paid to the QMS Standard and its application problems in the establishment of the system of conformity of production and its maintenance in order to promote the increase of competitiveness (ISO 9001:2015). For this purpose, a survey of accredited MSME managers and/or owners is conducted. The questionnaire includes 20 statements that are divided into two interrelated groups: a) statements that make it possible to identify the most significant effects that merchants who have set up production compliance systems have on, and b) statements used to identify the most important causes in relation to the experience gained in establishing a system of conformity of production and maintaining it in accordance with the requirements of the QMS standard. A sample of 683 units is selected for the study, which corresponds to the general population with 95% confidentiality and 5% limit error. As a result of the survey, 327 correctly filled out questionnaires were received from 638 questionnaires. Respondents are divided into groups according to their affiliation to one of the TS sectors:

Construction, Industry and Services. This distribution is maintained for the processing of the obtained data, as well as for the interpretation and extrapolation of the obtained results. As a result of the data processing, the minimum and maximum values, as well as the median and the modality in each of the respondent groups are identified with the SPSS and Exel programs, as well as important indicators such as arithmetic mean and standard error are calculated. Analytical evaluation of the results gives new knowledge about the most important aspects and potential of increasing the competitiveness of MSMEs working in different sectors, which is in the Quality Management System and its Standard regulating its operation.

A full outline of the results of the Study on the relevance of QMS and Standard in enhancing the competitiveness of MSMEs is included in the Doctoral Thesis, but the Summary sets out the composite indicators of the experience of MSMEs working in the Industry, Construction and Services sectors on the issue included in the Study. The arithmetic mean of the fixed attitude in the survey of the owners and/or managers of MSMEs working in the sectors covered by the survey, broken down by the statements included in Group I of the questionnaire, is disclosed in Picture 3.1.



BN – construction industry, RN – manufacturing sector, PCN – service industry

Picture 3.1. The Importance of Accredited Quality Management System in Increasing the Competitiveness of MSMEs in the Fields of Research

As can be seen from the processed data in Picture 3.1, derived from respondents' attitudes towards the statements in the questionnaire, they have been able to maximize their views on only some of the statements about the impact of the Quality Management System and Standard on the competitiveness of the MSME, as follows:

- QMS increases the number of clients – difference 0.35 points;
- QMS promotes increased efficiency in the use of resources available to the company – a difference of 1.65 points;
- QMS contributes to an increase in corporate income – a difference of 1.89 points.

It is important to note that from the above statements only in the first and third cases the respondents' opinion exceeds 6 points, in the second case it is lower than 6 points. This means that QMS and Standard do not contribute to increasing the efficiency of the use of resources available to the company. The majority of respondents consider the range of fluctuations in response to the following statements in Part I of the questionnaire:

- QMS increases export volume – difference 5.55 points;
- QMS promotes modernization of production processes – difference 4.30 points;
- QMS enhances competitiveness – difference 3.94 points;
- QMS enhances profitability – a difference of 2.38 points.

The greatest divergence of opinions is revealed by their attitude to the statement that the Quality Management System contributes to the increase in the volume of exported products, which is by far the most important aspect of global competitiveness. To a large extent, these differences are linked to the sectors covered by the Study, of which only MSMEs working in Industry, especially the largest ones, are forced to constantly take care of the growth of exports, which is one of the most important opportunities to increase their competitiveness. But MSMEs working in Construction also feel relatively positive in the relatively small market of construction products in Latvia, which still has relatively low

competition. A similar situation exists in the services market, which is reinforced by the peculiarities of service exports. In turn, the most responsive of the statement about the positive impact of the Quality Management System on the modernization of production processes was the Industry Sector MSMEs with 8.25 points, while the most refusing companies in the Construction Sector were only 3.95 points. This is largely due to the technological differences in the manufacturing of industrial and construction products, which are largely determined by the competitive pressure exerted by those working in the industry on MSMEs in comparison with the Construction industry.

The results of the survey of the owners and/or managers of MSMEs, broken down by statements included in Group II of the questionnaire, are included in Picture 3.2.



BN – construction industry, RN – manufacturing sector, PKN – service industry

Picture 3.2. Reasons for Importance of Accredited Quality Management System Elements in Increasing the Competitiveness of MSMEs

In spite of the difference of opinion of the owners and/or managers of MSMEs in the answers to the questions of Group II, the answers given in Picture 3.2 show distinctly closer contact points. Minimum differences are found in responses to the following statements in the questionnaire:

- QMS Accreditation MSME is an expensive event – a difference of 0.63 points;
- KVS Standard is a good assistant in increasing resource efficiency and competitiveness – difference 1.78 points;
- The clients of the company and other stakeholders are interested in the existence and content of the QMS manual – difference 1.93 points;
- QMS Handbook is useful for the staff employed in the company to perform their duties – difference 2.02 points.

As you can see, the question of the high cost of QMS accreditation is that MSME merchants have the same viewpoint – it is an overly expensive event. The relatively small difference of opinion in the statement about the utility of the Standard for the establishment of the conformity of production system and its maintenance should be evaluated in the context of the average point of the opinion point, which reaches the maximum value of 5.24 in the Industry sector, while the minimum value of 3.34 points is found in the Services sectors. This means that participants in the questionnaire reject the QMS Standard as an aid to maintaining and/or increasing the conformity of manufactured products. In a similar situation, there is a Quality Manual against which many respondents have a negative attitude in all sectors covered by the Study. Focusing on issues that reveal the greatest difference of opinion:

- QMS system contributes to the reduction of the prevailing threats in the internal environment and the probability of their occurrence – difference 4.3 points;
- a company respects customer complaints – difference 3.69 points;
- a company respects customer quality requirements – the difference is 3.14 points;
- customer satisfaction significant for a company – 2.95 points.

Identified differences of opinion between MSME owners and/or managers are largely related to the weaknesses of the existing Quality Management Standard and its regulated Quality Management System, which are also evident in other studies (Dobb, 2017; Cochran, 2015; Gazal, et al. 2016; Hoyle, 2017). It would be important for the standard authors and the monitoring committee to consider the most important business differences in different sectors of the economy when creating the content of the Standard. No less important is the objective difference between products manufactured in different industries, their prices, conformity characteristics and customer-quality requirements that create a greater or lesser range of variation (Lira, 2017). Also, the speed of changes in customer quality requirements and the ability to meet new requirements are different for micro, small and/or medium-sized companies in different industries (Shapiro, 1983; Achtenhagen, Brundin, 2016; Saltane, Ardic, Mylenko, 2011; Chan, 1982). These and many other aspects explain the differences of opinion identified in the Study on the Quality Management System Element and the Impact of the Standard on MSME efforts to increase and/or maintain its competitiveness.

The results of the Research outlined above revealed the weaknesses of QMS and Standard, which are not only economic but also cognitive or understanding barriers. The following major weaknesses of the QMS Standard are identified in the course of the next study, involving experts:

- 1) Attention is drawn to Standard Content, the elements of which do not have a logical obligation, they do not correspond to the structure of each production system established in the company;
- 2) The standard does not take into account the need to transform customer quality requirements into production compliance requirements, which is the most complex process in establishing a production compliance system;
- 3) The standard does not clarify such qualitative concepts as QMS; does not explain how the quality objective can be defined and quality can be planned if Chapter I of the Work demonstrates that quality is the prerogative of market participants and it is formed as a set of traits defined by individual subjects; The standard does not answer the question of the effective implementation of a quality system;

- 4) The standard seeks to reveal the content of risk-based thinking, ignoring the need to explain how thinking can be based on risk. In addition, in this case, the Standard authors are unclear about the dangers and risks that prove in another phrase "... identify risks as a basis for planning", which is, in essence, an incomprehensible requirement for MSMEs;
- 5) The standard does not take into account the widely known axiom in the scientific environment that the method of analysis gives new knowledge, but the method of synthesis – the understanding of the case or the whole process;
- 6) The Standard Requirement "... the organization must monitor customer understanding..." is scientifically and practically incorrect.

Taking into account the shortcomings of the open Standard and the theoretical aspects of the Research described in Chapter I of the Thesis, as well as the scientific conclusions included in the Work, it is necessary to apply the concept of quality correctly, taking into account the content explained and proved in the Thesis. Therefore, the Standard should refrain from using the term "quality" in all cases where the internal environment of the company is in compliance with the production compliance system and the compliance requirements are fixed. If MSME managers and specialists follow the quality requirements included in the Standard, there is a cognitive contradiction – the compliance requirements included in the production processes are constantly in conflict with the quality content and understanding of quality in the Standard and in the consciousness of each employee. Resulting suggestion – change the quality Management standard name by renaming it as a standard of conformity of production or, in a general sense, **a Compliance Standard for the Organization**. In conclusion, the observations in practice and the results of the studies provide an opportunity to identify several MSMEs established barriers for the application of the Quality Management Standard, which are divided into the following significant groups:

- 1) Economic barriers. The established quality management system implementation procedure and the subsequent certification is an expensive event with an unclear end result. In addition,

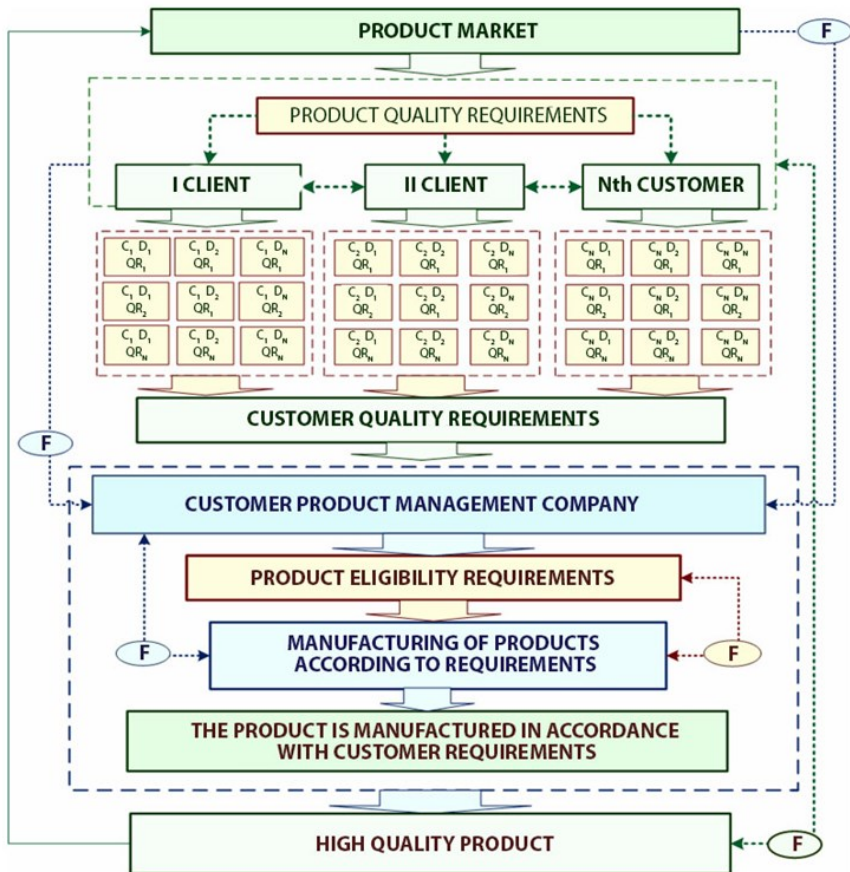
relatively high fees for MSMEs need to be made for external audit audits and re-certification. This study has shown that the Quality Management Standard and, accordingly, the accredited QMS have a weak impact on export growth, production process modernization, and increased production process efficiency.

- 2) Cognitive barriers. In essence, the QMS Standard is written in a language that is not standard. The standard fulfills its functions as long as it helps the manufacturer to determine with sufficient precision the conformity characteristics of the manufactured product and to define the dimensions required for it.
- 3) Organizational barriers. They are related to the large number of QMS Standards and the formulation of fuzzy actions in activities that require MSME owners to make management decisions. The results of the study show that many MSME executives and/or owners consider the Standard to be a weak assistant in improving the efficiency of corporate governance.
- 4) Language barrier. Language barriers are closely linked to cognitive barriers. Nowadays, no educated entrepreneur is creating insurmountable barriers, but it is important to understand the requirements included in the QMS Standards to be used in the establishment of a production compliance system within a company. In practice, many MSME owners have refused certified Quality Management Systems precisely because they are poorly associated with increasing the efficiency of their operations and production processes and increasing their competitiveness. In essence, it is a factor in the need for standard improvement and education in management.

Taking into account the results of the study outlined above regarding the deficiencies of the QMS and its regulatory Standard, MSMEs often have to use other sources of information that could give the MSME manager the necessary knowledge and understanding of establishing a system of conformity of production. Essentially, the development of this system is based on the results of research conducted by Eduard Deming in the

second half of the last century about the quality and creation of an appropriate product manufacturing system. In this Study, the terms “quality” and “quality product” are strictly separated from the concepts of “relevance” and “the right product”. This does not mean that they exclude each other, but complement each other, the application of these words in practice differs – if quality and quality product refers to the requirements of the customers, then the conformity and the corresponding product only apply to the internal environment of the MSME company, its production system.

The development of QMS was largely driven by the economic boom after World War II, when European, US, Japanese and other developed countries have to face increased competition in the consumer goods market. Managers of larger and smaller companies are starting to focus on the issues of maintaining and improving the quality of their products. For small and medium-sized enterprises that have decided to benefit from the potential competitive advantage of the Quality Management Standard in order to increase their competitiveness, it is important to understand how the quality requirements are transformed into compliance requirements. The model developed within the framework of the quality requirements transformation in compliance requirements is included in Picture 3.3.



Dimension (D); Quality requirement (QR); Feedback (F)

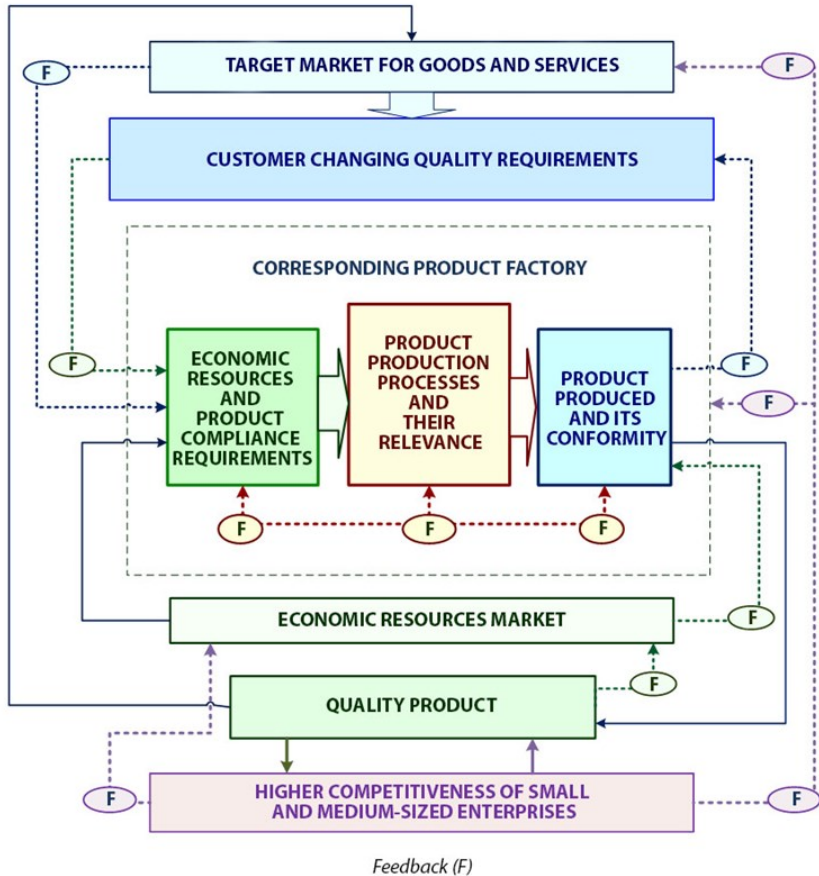
Picture 3.3. Transformation of customer quality requirements into compliance requirements and appropriate product manufacturing model

Source: Model developed by the author

The model shows that a single product combines several quality requirements, the content of which is determined by the buyers, creating a set of qualitative requirements $\sum K_n P_{n,}$, which consists of the social,

technical, economic and management dimensions. The figure shows that each client and each of these dimensions has several qualitative features of the product, for example – $K_1D_1KP_1$ – the first quality of the first dimension I of the first client, and so on. Thus, the MSME manager gets an idea of customer quality requirements. At this point, the decisive moment for competitiveness is starting – from the quality requirements identified in the market research, it is necessary to select the requirements to be included in the product being manufactured, which are referred to as **fixed quality features** in the Work and remain unchanged for some time. The model shows that the quality requirements identified in the market research come to the head of the company, which makes a decision on the quality requirements to be fixed in the product being produced, which in the production reaches **compliance requirements**.

In order for MSME to remain competitive in the target market, or to raise it, it is important to include as many customer-relevant quality requirements as possible in its product, but increasing these quality features makes the product manufactured more complex and more expensive for the buyer.



Picture 3.4. Model of production compliance system for better fulfillment of customer requirements and increase of competitiveness

Source: Model developed by the author

For a more complete picture of the production of appropriate products to increase the competitiveness of MSMEs, a model of the production compliance system, which is included in Picture 3.4., is being developed and complements the manufacturing compliance elements of the model shown in Picture 3.3., with the product market and the quality

requirements of its customers. The model shows that the features of the conformity of the identified product are passed to the company – the green color field.

The economic resources provided by the MSME and meeting the defined requirements come into production and the process of their connection or the second important stage in the production of the corresponding product begins. Using the elements included in the production compliance system, the validation of the result of the completed work is carried out throughout the production process to verify the presence of compliance at each stage of production and at each workplace. The appropriate product produced comes into the company's warehouse and the last stage in the creation of the appropriate product begins to bring it to the market. Produced feedback within the production compliance system is one of the most important elements in generating a positive product production effect, which creates the necessary preconditions for all production process units to function according to the defined product conformity features. At the moment when the production reaches the market, it is transformed into **a qualitative product from the corresponding product** produced by the company.

In the scientific environment, there has been a demand for relatively inexpensive and efficient solutions for controlling products and maintaining quality requirements. Thanks to an innovative approach and critical creative thinking, the development of a theoretical basis for quality management systems and the introduction of scientific knowledge into practice, more success and recognition have been gained by Eduard Deming, Joseph Joseph, Armands Feigenboom and Philip Crosby (Foster, 2007; Cloft, Kennedy, 2018; Lefler, 1982). Thanks to his scientific work on improving corporate governance with a view to satisfying customers' changing needs more fully, E. Deming is considered to be the developer of quality inventors and the theoretical basis of the quality system (Gabor, 1982), who actively participated in the implementation of theoretical knowledge in practice.

In the world's most advanced countries, the known basic principles of the 14 quality management systems were developed while Dinging stayed in Japan in the 1950s. They were developed over the next decades by conducting scientific work in the United States and engaging

in the development of product manufacturing compliance systems in various US companies, and compiled and published in 1982 in the *Out of Crises* (Deming, 1988) book. The crisis is in the consciousness of many business executives – their knowledge, thinking and understanding of the demands of customer changing qualities and the production compliance system. That's why the Deming 14 basic principles have been addressed to managers and, above all, to the company's top management. But the MSME manager and owner often coincide with one person, thus creating a very favorable situation for implementing the required reforms to produce market demanded products that meet the identified quality requirements of identified customers. Most of Eduard Deming's basic principles of company production management are also topical today.

Despite the fact that Deming has argued (Deming, 2000) that these principles can be useful for both small and large companies, nowadays the question remains to what extent they are applicable to the activities of MSMEs and their efforts to increase their competitiveness by subordinating the production system to the customer. changing quality requirements. This is largely the case for micro and small businesses, where the boundaries between managers and employees are rather fuzzy and unclear, but the business owner often has to take on a managerial position in combination with other responsibilities. The situation is much better in medium-sized companies, which can even notice the signs of a strict hierarchy of structuring and managing the internal environment.

There is relatively little research in the scientific environment about the application of the basic principles of management developed by E. Deming in the development and improvement of the MSME production compliance system (Jaccard, 2013; Kenji, Asher 1996; Krugman, 1996, etc.). Nevertheless, a number of researchers and quality experts have focused on modernizing Deming's basic principles, adapting them to today's challenges (Daghlgaard, Kristensen, Kanji, 2002; Omachon, 2005; Gaither & Frazier, 1999; Knowles, 2011; etc.). More than two dozen works by different authors have been identified in the course of the study, attempting to modernize Eduard Deming's quality management principles, interpreting them according to the knowledge of the subject, understanding and/or practical experience in managing production conformity and quality systems.

By critically analyzing the knowledge gained during the research, the following major findings are synthesized about the transformation of Eduard Deming's quality management principles:

- 1) the transformation of the basic principles of quality management defined by Deming follows time – the biggest changes are observed in the research published in the XXI century;
- 2) several authors of scientific works who have made changes to the basic principles of quality management defined by Deming have not critically evaluated the scientific knowledge of Deming and their compliance with the challenges of the new time, but have corrected them without any justification and references to E. Deming;
- 3) several of the basic principles of quality management defined by Deming are too vague and vague, such as *Adopt the new philosophy* (Deming, 2000);
- 4) the comments and explanations contained in the individual item adjustments are contradictory;
- 5) criticizing E. Deming's attempt to align corporate governance with quality management, incorporating in its guiding principles the need to institute (*Institute leadership*) (Deming, 2000), which is not in line with practice;
- 6) Deming and other authors included in the study are too categorical regarding the elimination of fear for the personnel employed in the company in terms of quality management of the products produced (Pylee, 2007; Dessler, 1982; Dessler, Varkkey, 2015);
- 7) individual authors have tried to correct and/or clarify the categorical necessity defined by E. Deming to eliminate work tasks, goals, plans and not apply the amount of work to be done in a time unit.

Discrepancies can also be noticed in a number of other principles of quality management defined by Deming, which are more or less idealized and/or spelled out in fuzzy and unclear language. Therefore, within the framework of the Research, several significant changes are made to E. Deming's quality management basic principles in order to make them more accessible to

MSME managers and/or owners, and could be used in a disproportionately expensive and unclear QMS Standard for the implementation and maintenance of the production compliance system in order to promote the company's competitiveness. Before MSME managers and/or owners decide on the design and implementation of a production compliance system, it is important to know the most important axioms of management theory and practice that are closely related to E. Deming's basic principles. The most important of these are:

- 1) the most important development barrier for a new company is the choice of the product being manufactured, the identification of potential customers and the quality requirements of the customers to be included in it;
- 2) every company is unique, the management of each company and the management methods applied are different, so an individual approach is needed to develop and implement a production compliance system;
- 3) the unit of each product produced is unique in the establishment. Uniqueness also persists in cases where the buyer is unable to identify existing differences;
- 4) the quality or quality of the products produced by the company must be sufficient from the point of view of the customer and the manufacturer. Quality sufficiency is determined by several aspects, but the most important of these are the income available to the target market customers, the ability of the product offered to meet customer needs and the alternative products offered by competitors, their qualitative characteristics.

The above-mentioned axiomatic findings MSME managers and/or owners should take into account that no recommendations available in the external environment for the establishment of a system of conformity of production and production of quality products will not and cannot give a positive result, while the manager and/or the owner will not be aware of the uniqueness of its company, its unique competitive advantages and weaknesses in the prevailing internal and external environment. It is a primary issue for every business and only then is the identification of the product being produced and the market research, the design and production of the chosen product.

Taking into account the basic principles of quality management defined by Deming and the results of the critical evaluation of the changes made by the authors included in the Study, the improved basic principles of quality management applicable to the development of the MSME conformity of production system and increase of their competitiveness are developed. Considering that the basic principles developed apply mainly to the company's internal environment, they change the name – **the basic principles of E. Deming's production compliance have been improved for managers**, which are defined as maintaining the form of presentation used by Deming:

- 1) Identify the product to be produced, identify potential customers, and record their quality requirements that must be taken into account in the design of the product to be manufactured. Explains the compliance requirements of the product being produced for the employees of the company; develops long-term and shorter-term goals of the company, engaging everyone in achieving this goal.
- 2) Establish a system of conformity of production in the company and define clearly defined requirements of compliance for employees in each workplace; make sure that the employees have understood them, know how and can embody them in the finished product.
- 3) Develop rules for internal and external compliance of production resources, focusing on employee compliance. Only at one workplace can every worker make the most of his knowledge, abilities, interests, and understanding of things and processes, all of his other subjective correspondence will be lower.
- 4) Constantly concentrate the resources at the disposal of the company for the improvement of the manufactured product in accordance with the changing quality requirements of the customers and increasing the competitiveness. Present the action plans in a clear and unambiguous way, communicate it to the employees, customers and other stakeholders in the company. The profit invested in improving competitiveness today can bring many times more profits tomorrow to customers who will be satisfied with the quality of the product they produce.

- 5) Changes in customer quality requirements are constantly monitored and the resulting data is used for continuous improvement of the product manufacturing compliance system. Improvement of the manufactured product according to customer quality requirements is a continuous process.
- 6) Compliance requirements defined by the company can only incorporate trained staff into the finished product, so never underestimate the need to increase the qualifications and cross-compliance of employees.
- 7) Take control of all processes in the company. The basic responsibility of managers in a company is to help employees learn the skills to incorporate all defined eligibility requirements into each product at the workplace. The purpose of the completed work monitoring is to help employees to use the economic resources and time of production more efficiently.
- 8) Minimize the need to control compliance with each unit of production produced. Instead, it creates conditions for the production of an appropriate product in each workplace, from the supply of resources to packaging and/or delivering the products produced to the customer. The most effective statistical methods are used as much as possible at the mass test site;
- 9) With the increase in the conformity of the product produced in the company, it is sought to sell the produced product as costly as possible. Concludes long-term and mutually beneficial agreements with resource suppliers, preventing inappropriate resources from entering production.
- 10) Reduce communication and communication barriers between business units, managers and employees. Remember – all drivers are subjected to the production process for proper product manufacturing. Reducing communication barriers contributes to the creation of a creative microclimate in the company and to the improvement of the conformity of the manufactured product, as well as the development of innovative products and innovative working methods.

- 11) Create an atmosphere of security and responsibility in the company, promote mutual respect and self-esteem among the employees of the company. Employee motivation requires an individual approach, striking a balance between material and spiritual values, so that every employee is aware of their importance in the production process and in increasing the competitiveness of the company.
- 12) Learn the skills of enterprise planning. The most important thing in all circumstances is to maintain a high level of conformity of the manufactured product. Prefer quality rather than quantity.
- 13) Develop and purposefully implement continuous training and qualification improvement of the employed personnel in the company. Remember, it is the workforce that is the most valuable resource in a company that can produce a product that meets the customer's quality requirements and constantly improves it, thereby enhancing the company's competitiveness.
- 14) Preventive activities in the company are carried out in a timely and sufficiently effective manner in accordance with changes in the business environment and customer quality requirements. Every employee in the company is involved in preventive activities. Remember that preventive action is very closely linked to the company's competitiveness, but profit is a function of competitiveness.

By familiarizing yourself with the basic principles of product compliance described above, it can be noticed that the basic principles of quality management defined by E. Deming have been substantially changed. These transformations have been made on the basis of the latest scientific knowledge in management theory, as well as on the basis of practical observations and accumulated experience in several larger and smaller companies. In addition, the basic principles of product compliance set out here are set out in a procedurally chronological order. This is essential for companies that are taking the first steps towards increasing competitiveness. Overall, the hypothesis put forward has been confirmed, as research on the competitiveness of small and medium-sized enterprises and their relation to the implementation of quality management systems proves that the benefits of quality management and conformity of production systems can increase competitiveness.

CONCLUSIONS

The results of the study, the new knowledge and the theoretical insights make it possible to draw significant conclusions for improving the competitiveness of SMEs. A full summary of the findings can be found in the Doctoral Thesis, but the summary includes a short list of conclusions.

1. The European Economic System employs over 23 million small and medium-sized enterprises, or 99.8% of the total number of enterprises, with a value of more than € 4 billion. There are more than 90 million economically active people in employment, making SMEs the most important socio-economic development.
2. As a result of the rapid growth of the number of micro-enterprises in the last 5–7 years, Latvia has exceeded the EU average by the number of enterprises per 1000 inhabitants, but in the group of small and medium-sized enterprises there is still a relatively large lag behind the most developed countries in Europe. This clearly indicates the relatively low competitiveness of Latvian small and medium-sized enterprises in the EU economic space.
3. According to the CSB, 78.3% of all employees in the country are employed by SMEs, the net turnover of goods and services produced by them is 70%, but the value added is 71% of the total economy. Despite this superiority, the competitiveness of SMEs in external markets is often lower compared to large companies.
4. The most important sectors of the national economy are selected for the assessment of the changes in the competitiveness of SMEs, where the development of SMEs and the increase of competitiveness have a more positive effect. Encryption of the sectors covered by the study according to the NACE-2 classifier is as follows: (B+C+D+E); F; G; H; I; J; L; M and S. Thus, attention is paid to product manufacturing industries – Industry and Construction, as well as to the commercially most important service industries with higher added value (VA).
5. Obtaining new knowledge on the competitiveness of SMEs In the sectors covered by the study, important indicators are used, such as the relative changes of the produced PV in the reference period;

Relative changes in the number of employees in SMEs during the reporting period; productivity and efficiency of production due to the increase in value added generated by SMEs.

6. Evaluating the calculated indicators of changes in competitiveness of SMEs, it is found that the highest competitiveness of enterprises in the micro-enterprise group is shared by the ICT service and the enterprises working in the Industry sector. Micro companies in the Construction and Professional Services sector have also improved their performance during the reporting period.
7. In the Small Business Group, higher competitiveness is observed in the ICT services, Hotels, and Industry sectors. Changes in the competitiveness of small businesses operating in the Transport and Construction sector are also positive.
8. Significant changes in competitiveness In the economic sectors included in the research, the group of medium-sized enterprises is observed. Medium-sized merchants in the hotel industry show significantly higher competitiveness than other industries, followed by medium-sized companies in the Transport and Industry sectors.
9. The results of the study clearly show that the acronym “SME” so far does not correspond to reality – this shortcut ignores micro-enterprises whose influence on the development of the state national economy (TS) is significant. Therefore, the acronym “SME” in the Work is replaced by a more appropriate acronym “MSME”, so micro enterprises are not ignored in this title.
10. Researching MSME activities in Latvia for several years, as well as analyzing and critically evaluating the research published in the scientific field, shows that there is a wide variety of concepts in small and medium-sized enterprises in practice and in the scientific environment; competitiveness; product quality and product conformity.
11. Competition and competitiveness are key categories of market economy that have undergone dramatic changes, so the concept of “competitiveness” is given a great deal of attention in various scientific and other publications.

12. Critically evaluating the definitions of competitiveness included in the various editions, a more elaborate explanation of the concept of competition in the following statement is elaborated: **Competitiveness – a set of characteristics of an entity or organization that is used to achieve a particular goal at a particular place and time. But the competitiveness of SMEs is explained as follows: Competitiveness of SMEs is for a merchant – a set of performance characteristics specific to an SME owner and an organization that is used to achieve the goals of engaging in business.**
13. Research shows that quality is a much more appropriate concept compared to competitiveness. In practice, it has been proven that everyone knows what quality is, but only a few are able to explain it.
14. Taking into account the wide range of research on quality and the lessons learned from its critical evaluation, Quality in Work is explained as follows: **quality – a set of entity-defined features used to assess the suitability of a particular case to meet his needs.**
15. The concept of "quality" in the work is linked to the concept of "relevance", which is inherently closely related and usable in the MMVU's competitiveness study. The concept of compliance The work is explained as follows: **relevance – a set of features defined by an individual, a company, or another organization, which is used to evaluate the usefulness of a product and/or service production process and/or the value of use of the product produced.**
16. Within the framework of the research, a model is being developed that reveals the transformation of quality requirements into compliance requirements, showing that a single product combines several quality requirements, the content of which is determined by the buyers, forming a set of qualitative requirements.
17. The customer quality requirements identified in the market research are used to select the requirements to be included in the product being produced or the fixed quality features that remain unchanged for a certain period of time. The Model of the Conformity of Production System is being developed for more complete fulfillment of customer requirements and increase of competitiveness. The

model shows that the MSME manager makes a decision on the quality requirements to be fixed in the product being produced, which in the production process meet **the requirements of conformity**.

18. In order for MSME to maintain its competitiveness in the target market, or to raise it, it is important for him to include as many customer-relevant quality requirements as possible in his product, but increasing these quality features makes the product manufactured more difficult and more expensive for the buyer.
19. It is important to take into account the fact that a number of elements of the quality management system should be used as the basis for the operation of the production compliance system and its operation for the MSME managers, the most important of which are the management and the personnel of the company, their correspondence; the company's internal environment and the prevailing threats and opportunities; business processes, their compatibility and complementarity; systemic thinking in management decisions; feedback and its effective operation; mutually beneficial relationships between partners.
20. The quality management system in Latvia is a relatively new tool for increasing the competitiveness of MSME, the first Quality System in Latvia was certified at the end of 1995. With the involvement of Latvia in the EU competition space, the popularity of QMS in the establishment of the conformity of production system and its accreditation in accordance with the requirements of ISO Standard will increase.
21. With the increase in demand for accreditation of production compliance systems set up by MSME, the number of accredited certification bodies has increased and currently 8 institutions are offering their services in this field.
22. The number of certified companies at the beginning of 2018 exceeded 700 units, of which 8% are micro, small and medium-sized enterprises and 59.9% are involved in the production of goods in the Construction or Industry sector.
23. Latvian merchants are lagging behind in establishing production conformity systems accredited by other EU countries. In this indicator, we are also the last in the Baltic States – we are lagging behind from Lithuania by 29% and from Estonia by 11%.

24. The study identifies specific problems encountered in the establishment of MSME – accredited production compliance systems, the most important of which are: weak knowledge and understanding of the quality of the quality management system and its implementation in the production compliance system; Non-specific and blurred explanations and requirements of the International and Latvian QMS standard; high costs of QMS implementation and maintenance costs; comparatively long time Quality management system documents and large number of employees involved in this event.
25. Taking into account the barriers identified in the Study, the Diploma Thesis focuses on the identification of the causes of these barriers or problems by organizing focus groups of MSME managers and owners, as well as by interviewing the managers of certified companies.
26. The results of the focus group work show the following major results of the work: in the establishment of the production conformity system, the experts identify the most important elements – compliance of the internal environment and documentation of the developed product design; production compliance system and enterprise management processes; personnel training; verification of measuring instruments and their application for conformity assessment; improvement processes as well as preventive and corrective actions.
27. The survey of accredited SME managers and/or owners demonstrates that QMS Standard and accredited QMS accreditation has become one of the most significant barriers to the establishment of an MSME compliance system for competitiveness.
28. The results of the survey data processing revealed that the QMS has the following advantages in the operation of the MSME and in strengthening its competitiveness: it contributes to the increase of the number of clients and the efficiency of the utilization of the resources available to the company, as well as promotes the increase of the company's income.
29. The greatest difference of opinion among respondents is found in the following issues: facilitating the increase of exported volumes, modernization of production processes, as well as increasing profitability and competitiveness.

30. The differences of opinion found in the research are largely explained by the division of respondents among different sectors of national economy – if MSMEs working in the industry are forced to constantly take care of the growth of exports, then MSMEs working in Construction feel relatively positive also in the relatively small market of construction products of Latvia, similar situation is in the service market.
31. MSME managers and/or owners working in the industrial sectors are confident that Quality Management Systems have a positive impact on the modernization of production processes, but construction industry companies are skeptical about it.
32. With the in-depth consideration of the QMS Standard, a number of significant weaknesses were identified with the help of experts: Standard content elements do not have a logical commitment; The standard does not define the need for transformation of customer quality requirements into production compliance requirements; The standard does not clarify such qualitative concepts as QMS; does not explain **how the quality objective** can be set **and quality can be planned**, as well as other shortcomings. Chapter I of the paper demonstrates that quality is the prerogative of market participants and is formed as a set of defined features of individual subjects, but is ignored in the Standard.
33. Taking into account the shortcomings of the open Standard and the theoretical aspects of the Research described in Chapter I of the Study, it is necessary to apply the concept of quality correctly, taking into account the content explained and proved in the Work. Therefore, the Standard should refrain from using the term “quality” in all cases where the internal environment of a production system is in place and compliance requirements are fixed.
34. Following the quality requirements included in the Standard, a cognitive contradiction arises – the compliance requirements included in production processes are constantly conflicting with the requirements defined in the Standard. The result is a proposal to change the Quality Management Standard name by renaming it as a Compliance with Standards, or Generally, the Organization's Compliance Standard.

35. The results of the study reveal the need for MSME managers to seek alternative solutions for developing a production compliance system to increase competitiveness in order to avoid QMS Standard deficiencies and high accreditation costs. One of the best alternatives is the basic principles of quality management defined by E. Deminga, which have preserved its topicality to the present day, but they need to be improved.
36. In the course of the research, more than two dozen works of different authors have been identified, attempting to modernize the basic principles of E. Deming's quality management, interpreting them in accordance with the knowledge of the subject, understanding and/or practical experience in the management of conformity of production and quality systems. Critically analyzing the knowledge gained during the research, several major findings are synthesized about the transformation of Eduard Deming's quality management principles to be used by MSME in decision-making in relation to compliance of manufactured products;
37. Taking into account the basic principles of quality management defined by Deming and the results of the critical evaluation of the changes made by the authors included in the Study, the basic principles of E. Deming's quality management applicable to the increase of the MSME competitiveness in cases where the QMS and Standard are not applicable in a particular situation are developed.

SUGGESTIONS

The results of the study, new knowledge, theoretical findings and conclusions make it possible to advise the following major suggestions:

For the Quality Standard Advisory Council

1. To supplement the Standard with a more precise explanation of the terms used therein, the content of which would not contradict the knowledge of quality, relevance and the like contained in the Standard in the scientific environment.
2. The standard requires a strict distinction between the terms “quality” and “compliance”, given that quality is a set of defined features of an entity, and compliance is a set of features defined by the entity that are used to meet the quality requirements of the customer.
3. Critically evaluate the name of the current QMS that does not match the efforts of companies to produce products that meet customer quality requirements. Therefore, the existing Quality Management Standard Name should be changed by renaming it as a Standard of Conformity of Production or, in a general sense, a Compliance of the Organization with the Standard and reduce Standard Access Barriers for Quality and Compliance stakeholders, which can significantly increase MSME’s involvement in manufacturing compliance systems and more productive customer needs.

For the Higher Education Institutions Offering Study Programs on Quality Management Systems and ISO Standards

1. Evaluate the contents of the existing Study Programs, taking into account the results of the Study.
2. To make the necessary changes in the respective study programs, the content of the study subjects, taking into account the results of the critical creative assessment and the results of the research included in the Work regarding the transformation of the quality requirements into conformity requirements and the functioning of the production conformity system.

3. Critically evaluate the feasibility and necessity of supplementing the content of the relevant study subjects with the basic principles of E. Deming's quality management system, which may be useful in making management decisions regarding the establishment of the production conformity system and its maintenance.

For EU institutions, Latvian state institutions, higher education institutions and scientific organizations:

1. Take into account the results of the study on the content of the terms “quality” and “relevance” in the drafting of laws and regulations.
2. Critically evaluate the compliance of the application of the acronym “SME” with practice and to consider the usefulness of its replacement with the acronym “MSME” more appropriate to the reality of business development.

The authors of the LAS Terminology Commission (Terminology Commission of the Latvian Academy of Sciences), Latvian Language Dictionary and Foreign Dictionaries evaluate the contents of the terms “quality” and “compliance” included in the publications and examine the necessity to improve the explanations of the mentioned concepts by using the results of the Research and the theoretical conclusions on the scientific and practical content of the above mentioned concepts.

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