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DOCTORAL THESIS

- ABSTRACT -

**CONTRIBUTIONS TO THE IMPROVEMENT OF TOTAL QUALITY
MANAGEMENT SYSTEM**

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KEYWORDS

- Economic organizations.
- Management.
- Quality.
- Total quality management.
- Total quality management system.
- Improving the total quality management system.

INTRODUCTION

In the current economic context, quality has become a source of competitive advantage and organizations that wish to attain excellence must perceive quality as something natural, as an economic organization cannot function without human or financial resources, so quality should be seen.

Today, customers are increasingly advised and have increasingly complicated and sophisticated needs and desires, so it is one of the reasons that quality and total quality management system have become so important. Therefore, organizations should always ensure customers satisfaction, because satisfied customers are a today prerequisite for a great result tomorrow. Therefore, awareness of the importance of quality in running work of an organization, is the fundamental premise for the survival on the market and achieving the excellence.

So we divided the thesis into two main parts, namely, in the first part, which includes Chapters 1 and 2, we dealt with the literature review to determine the current state of knowledge in quality and total quality management field, respectively, in the second part of the paper, which includes chapters 3 and 4, we presented the form and the empirical research results obtained in the thesis.

Therefore, *Chapter 1* entitled “*Economic Organizations Management*” presents the fundamental aspects of the concept of *organization*, namely, we presented the definitions and organizational dimensions, respectively, we presents the fundamental aspects of *management* concept so we illustrates the definitions and the evolution of the concept as well as management functions.

Chapter 2 entitled “*Total Quality Management System: Conceptualization. Fundamental Problems*” addresses the fundamental problems of the concept of *quality*, thus definitions and evolutionary aspects are presented, respectively, the requirements and characteristics of *quality* concept. Also, the chapter approach the concept of *total quality management system* by

illustrating aspects defining the concept, respectively the chapter present the key principles of the concept, the components and aspects related to the implementation of total quality management system and illustration of a set of techniques and instruments. At the end of the chapter are discussed a number of fundamental features of the ISO 9000 and ISO 14000 standards, integrated systems of quality-environment management, respectively summarizing the key aspects of the following prizes for quality excellence, i.e. Deming Prize (Japan), Malcolm Baldrige Award (USA), European Quality Award (EFQM) and Romanian Quality Award J.M. Juran.

Chapter 3 entitled “*Empirical Study on Improving the Total Quality Management System in the Metal Construction Industry from North-West of Romania*” presents the form and empirical research results obtained in the thesis.

The general objective of the research was to develop a model of analysis and evaluation of total quality management system in order to identify key factors and best practices that determine total quality management system performance in order to its improvement in the metal construction industry organizations from the north-western Romania.

In this regard, we conducted two empirical studies, which we proposed the following: the first study, has proposed a model of analysis and evaluation of total quality management system in the metal construction industry organizations from the north-western Romania. So we formulated and analyzed the factors that contribute to successful development and implementation of total quality management system.

We identified and analyzed the specific factors and variables that determine the total quality management system performance.

We conducted correlation analysis of the studied variables, respectively we have increased the level of abstractization of the model by creating a global variable that synthesized the internal characteristics specific to the total quality management system from the organizations that were part of the sample.

We developed regression models through which we explained and we made predictions about variables variation which synthesize quality culture, respectively the customers’ relationship.

The model used, respectively its validation, enabled us to formulate recommendations and proposals on directing efforts to improve the total quality management system in the investigated organizations.

Regarding the second empirical study, we proposed a model of analysis and evaluation of employees' involvement and satisfaction within the total quality management system from the metal construction industry organizations from the north-western Romania.

So we identified and analyzed the variables that we assessed the employees' involvement and satisfaction within the total quality management system.

We performed the analysis of correlations between the studied variables, respectively we have increased the level of abstractization of the model by creating a variable that synthesized the specific characteristics regarding the employees satisfaction, respectively we created in the end of the study a global variable that synthesized the internal characteristics specific to the total quality management system regarding the employees involvement within the total quality management system.

We developed regression models through which we explained and we made predictions about variable variation which synthesize the customers' relationship.

The model used, respectively its validation, enabled us to formulate recommendations and proposals on directing efforts to improve the total quality management system in the investigated organizations.

Chapter 4 entitled "*Conclusions and Personal Contributions*" presents the conclusions and personal contributions respectively, limits and new research directions.

PART I: THE LITERATURE STUDY

We have started our research in the field of quality and total quality management system, based on the general framework in which conceives, creates, develops and improves quality, namely *the organization*. We mention that in this research, we generally refer to business organizations, respectively, in particular, the metal construction industry organizations from the north-western Romania.

In the literature we find numerous approaches in defining the concept of organization, so we tried to present some key elements in defining the concept.

Regarding the definition of *management*, we conclude that there is no standard definition of this concept, each author addresses this concept somewhat differently, but we can identify a number of essential elements, common in defining it's in the vast majority of authors, so we realized a synthesis of the most important definitions in the literature regarding the concept of *management*.

We mentioned in several works (Sălăgean, et al., 2015; Sălăgean, 2014; Sălăgean, et al., 2014; Sălăgean, et al., 2013) that in the current economic context, quality has become a source of competitive advantage and organizations that wish to attain excellence should perceive quality as something natural, as no economic organization cannot function without human or financial resources, so quality must be understood.

Today, customers are increasingly advised and have increasingly complicated and sophisticated needs and desires, so it is one of the reasons that quality and total quality management system have become so important. Therefore, organizations should always ensure customers satisfaction, because satisfied customers are a today prerequisite for a great result tomorrow.

Therefore, it is imperative that companies know their customers closely to determine what their real needs are to satisfy them and surpass their expectations, which will lead to satisfaction, customer delight and thus will strengthen the organization on the market and will contribute to obtain long-term excellence.

Understanding the importance which quality has in the conducting a business activity for surviving on the market and achieving excellence, there are some questions which appear: *What is quality? How to obtain, provide, and improve quality?* etc., so trying to answer this questions, we had to clarify in this regard the following concepts, for which we used a bibliography relevant to the fields, which allowed us to define from the general to specific:

- The concept of economic organization:
 - defining issues;
 - organizational dimensions.
- The concept of management:
 - defining issues;
 - developmental aspects;
 - management functions.
- The concept of quality:
 - defining issues;
 - developmental aspects;
 - quality imperatives;
 - quality characteristics.
- The concept of total quality management system:
 - defining issues;
 - principles of total quality management;
 - components of total quality management system;
 - implementation of total quality management system;
 - techniques and tools of total quality management.
- ISO 9000 and ISO 14000 standards.
- Integrated systems of quality-environment management.
- Awards for excellence in quality.

PART II: THE IMPROVEMENT OF TOTAL QUALITY MANAGEMENT SYSTEM

In the second part of the work we want to present the results of empirical research conducted in this thesis, in which we analyzed the total quality management system in order to improve it in the metal construction industry organizations from the north-west of Romania.

Our research is composed of two empirical studies through which we want to develop on the one hand, a model of analysis and evaluation of the total quality management system within the organizations from the metal construction industry from the north-west of Romania, and on the other hand, we want to develop a model of analysis and evaluation of employees' involvement and satisfaction within the total quality management system from the metal construction industry organizations from the north-western Romania.

Research objectives

The general objective of the research was to develop a model of analysis and evaluation of total quality management system in order to identify key factors and best practices that determine total quality management system performance in order to its improvement in the metal construction industry organizations from the north-western Romania, goal that was achieved through the following *specific objectives*:

- the development of a model of analysis and evaluation of total quality management system from the metal construction industry organizations from the north-west of Romania;
- the development of a model of analysis and evaluation of employees' involvement and satisfaction within the total quality management system from the metal construction industry organizations;
- identifying best practices and ways to improve the total quality management system.

Research hypotheses

As regards research hypotheses, we developed the following hypotheses that we have classified as can be seen below in two categories namely: hypotheses noted with *H1.1...H1.7* refers to the first study, respectively hypotheses noted with *H2.1...H2.6* refers to the second study:

- *H1.1*: Within investigated organizations, there is a strong association between the variable "customers' relationship" and the variables that synthesize organizational infrastructure, human resource practices and organizational control.
- *H1.2*: Investigated organizations face significant negative effects of quality barriers.
- *H1.3*: There is a strong association between the variable "quality barriers" and other variables analyzed.
- *H1.4*: There is a strong association between the components of total quality management system.
- *H1.5*: The variation of the variable "quality culture" is explained in large measure by variables "leadership" and "communication".
- *H1.6*: The variation of the variable "customers' relationship" is explained in large measure by the components of total quality management, synthesized by variables "leadership", "quality culture" and "communication".
- *H1.7*: General assembly of the internal characteristics specific to the total quality management system from the investigated organizations, synthesized by variable

"internal quality", explains in a very large extent the variation of variable "customer relationship".

- *H2.1:* Within investigated organizations, there is a strong association between the variable that synthesizes customers' relationship and variables that synthesize, attachment, reward and employee motivation.
- *H2.2:* There is a strong and positive association between authoritarian leadership style and the variables that synthesize employees' attachment, reward and motivation, respectively, quality culture and customers relationship.
- *H2.3:* There is a strong and positive association between democratic leadership style and the variables that synthesize employees' attachment, reward and motivation, respectively, quality culture and customers relationship.
- *H2.4:* There is a very strong correlation between employees' satisfaction and quality culture.
- *H2.5:* The variation of variable that synthesize customers' relationship is explained in a very large extent by the variation of variables that synthesize employees' satisfaction and quality culture.
- *H2.6:* General assembly of the internal characteristics specific to the total quality management system from the investigated organizations regarding employees, synthesized by the variable "employees' involvement" explains in a very large extent the variation of the variable that synthesize customers relationship.

Research sample consisted of organizations that have as object of activity manufacture of metal structures and structures parts, activity classified according to CAEN division in 2511, from the north-western Romania. Regarding the formation process of the sample, the research was conducted based on a sample consisting of 14 companies from metallic construction industry from Cluj, Bistrița-Năsăud, Bihor and Maramureș that have implemented or are in the process of implementing total quality management system certification and ISO standards.

As regards **research instruments** we mention the following tools used for the two studies that make up our research:

- *Analysis and evaluation of total quality management system. Empirical study in the metal construction industry organizations:*

In this study we used quantitative and qualitative research methods in this regard, we used as quantitative method the survey based on the questionnaire (Appendix 1) and as

qualitative methods we used semi-structured interview (Appendix 3) in conjunction with direct observation.

The questionnaire was composed of a number of 27 items that describe the general factors that determine the development and successful implementation of TQM system, i.e., a total of 129 items that describe specific factors that determine TQM system performance. The questionnaire contains important factors considered in the analysis and evaluation of the TQM system, being composed on the criteria and procedure of the Malcolm Baldrige quality award (chapter 2.6.2), which gives a high degree of credibility to the questionnaire and to the research results. In order to evaluate the factors we used sets of simple questions on a Likert-type scale from 1-5 where: 1 = strongly disagree; 2 = disagree; 3 = undecided; 4 = agree; 5 = strongly agree. We have distributed 150 questionnaires, which were collected and validated 83, which means a response rate of 55.3%.

Regarding semi-structured interview applied within the qualitative research was used as a tool an interview guide consists of 19 questions aiming issues related to implementation and possibilities for improving the total quality management system, involving eight managers from the investigated organizations.

- *Analysis and evaluation of employees' involvement and satisfaction within the total quality management system. Empirical study in the metal construction industry organizations:*

In this study we used quantitative and qualitative research methods in this regard, we used as quantitative method the survey based on the questionnaire (Appendix 2) and as qualitative methods we used direct observation.

The questionnaire was composed of 112 items describing the factors considered important in the research area in analysis and evaluation of employee engagement and satisfaction within the TQM system. In order to evaluate the factors we used sets of simple questions on a Likert-type scale from 1-5 where: 1 = strongly disagree; 2 = disagree; 3 = undecided; 4 = agree; 5 = strongly agree.

We have distributed 500 questionnaires, which were collected and validated 388, which means a response rate of 77.6%.

We mention that as a method of data analysis, we used the computer aided analysis using IBM SPSS Statistics software version 22.

CONCLUSIONS

As a result of empirical studies we conclude that investigated organizations do not face significant problems that seriously affect the performance of total quality management system, however, these must make a real effort to improve the dimensions analyzed in this research in order to obtain the benefits which are expected from the implementation of total quality management system.

We should mention that following the results, from a total of 13 hypotheses (7 referring to the first study, 6 referring to the second study), three hypotheses are rejected, are refuted by the results, respectively, the other 10 hypotheses are confirmed by the results.

Regarding *personal contributions* in the present research we mention the following: regarding the *theoretical contributions* we mention that they derive from depth study of the literature conducted in the first part, in order to identify relevant information on which we defined the concepts necessary for creating theoretical context in order to conduct empirical research, respectively, to develop models for analysis and evaluation of total quality management system in order to its improvement.

The scientific approach was based on analysis the factors which determining the performance of total quality management system in order to identify opportunities for improvement in terms of effectively and efficiently implementation, support and operationalization of total quality management system.

In this regard we have considered the following theoretical aspects:

- the selection of relevant bibliography to the chosen theme and study of literature on the concept of economic organization, the concept of management, the concept of quality, the concept of total quality management system;
- integrated systems of quality management according to international standards ISO 9000 and ISO 14000
- the awards for quality excellence;
- development on the basis of literature study of a model of analysis and evaluation of the total quality management system within investigated organizations.

In terms of *practical contributions* we mention the following:

- the development of a model of analysis and evaluation of total quality management system from the metal construction industry organizations from the north-west of Romania:

- we formulated and analyzed the factors that contribute to successful development and implementation of total quality management system;
 - we identified and analyzed the specific factors and variables that determine the total quality management system performance;
 - applying the model using a global variable that synthesized the internal characteristics specific to the total quality management system from the organizations that were part of the sample;
 - applying appropriate regression models through which we explained and we made predictions on the variation of variables "quality culture" and "customers relationship";
 - the model used, respectively its validation, enabled us to formulate recommendations and proposals on directing efforts to improve the total quality management system in the investigated organizations.
- applying a suitable model for analysis and evaluation of employees' involvement and satisfaction within the total quality management system as:
 - we identified and analyzed the variables through which we assessed the employees' involvement and satisfaction within the total quality management system;
 - applying the model by creating a variable that synthesized the specific characteristics regarding the employees satisfaction, respectively we created a global variable that synthesized the internal characteristics specific to the total quality management system regarding the employees involvement within the total quality management system;
 - applying appropriate regression models through which we explained and we made predictions regarding the variation of variable "customers relationship";
 - the model used, respectively its validation, enabled us to formulate recommendations and proposals on directing efforts to improve the total quality management system in the investigated organizations.

As regards *the limits of the research*, we mention that the main barrier that we faced and that affected the research results, was the lack of availability respectively a high degree of refractory from managers to respond to the questionnaire, due on the one hand, to the complexity of the questionnaire that requires a greater response time, and on the other hand, the managers refraction was caused by invoking confidentiality clauses.

Another disadvantage of the research, is that surveys based on questionnaires and interview are characterized by a certain degree of subjectivity on the part of respondents, therefore, we tried to formulate questions so as to minimize the effects of this disadvantage.

Regarding *the new research directions*, we believe that this model of analysis and evaluation of total quality management system in order to identify key factors and best practices that determine total quality management system performance in order to its improvement, can be applied in the context of other industries and fields than the one for which it was used in this research.

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