

**THE IMPACT OF QUALITY CULTURE ON CUSTOMER RELATIONSHIP.
EMPIRICAL STUDY IN THE INDUSTRIAL COMPANIES
FROM THE NORTH-WEST OF ROMANIA**

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ABSTRACT

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. 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. In this article we present only two dimensions analyzed, namely the "quality culture" and "customer relationship".

KEYWORDS: *Quality; total quality management; total quality management system; quality culture; customer relationship.*

JEL CLASSIFICATION: *M00; M10; M11.*

1. INTRODUCTION

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 it is an imperative.

From our research 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

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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.

In this regard, in this article we want to present the main findings about the relationship between the quality culture and customer relationship.

The 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 that we used quantitative and qualitative research methods in this regard, we used as quantitative method the survey based on the questionnaire and as qualitative methods we used semi-structured interview 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, 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.

2. FINDINGS

We show below some elements related to the identification of the investigated sample, so regarding the age distribution of the sample, it can be seen from Figure 1, the largest share in the sample included a record managers in the age group of 30-39 years with a share of 54.3%, followed by managers in the 40-49 age group with 27.7% accounted for.

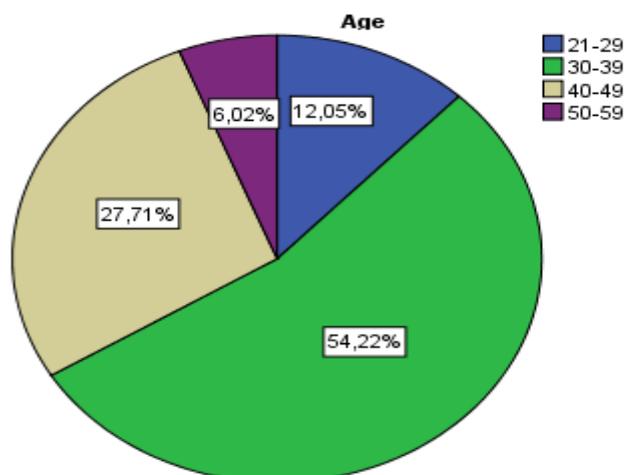


Figure 1. Sample structure according to the age

Source: own research

Regarding the distribution of the sample by gender, it can be observed in Figure 2, where we can see that the largest share in the sample registers managers, men are in a proportion of 69.9%, while women account for 30.1 %, this being determined by the specific activity (technical) organizations.

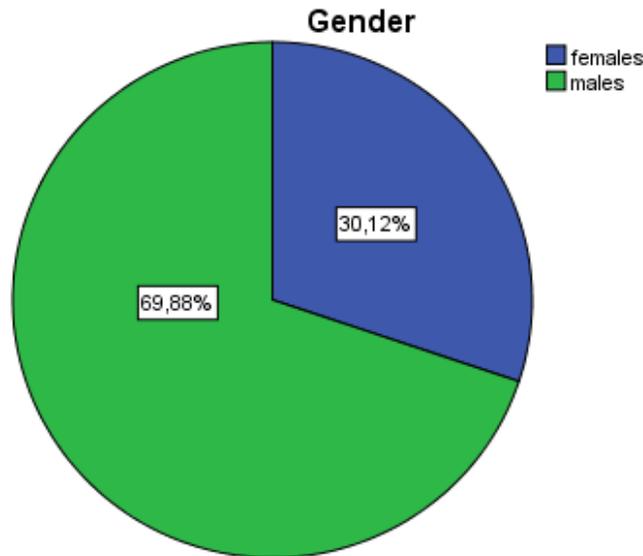


Figure 2. Sample structure according to the gender

Source: own research

Regarding the education level of the investigated managers, Figure 3 describes the following situation: surveyed managers said in a proportion of 94% that they are postgraduate and the remaining 6% said they have a university degree. This should not surprise us but we can correlate the situation with the distribution of the sample by age above, namely the industry specificity determine organizations to "purchase" managers with high skills, which implicitly assumes a level of high education.

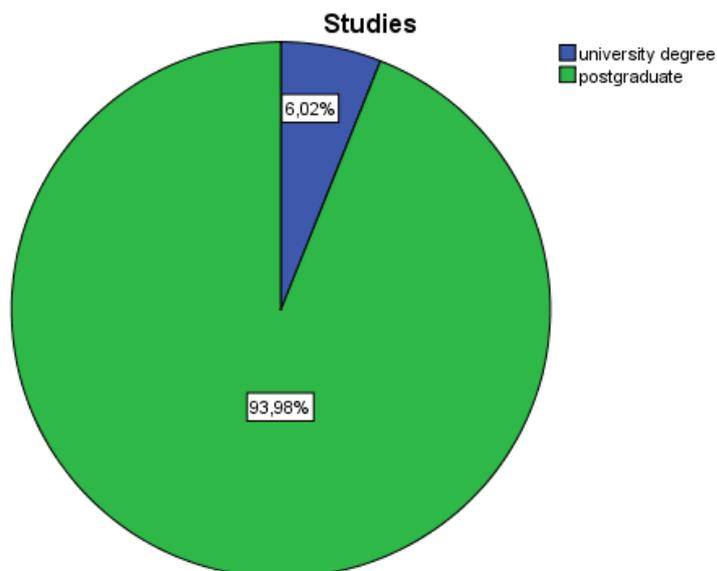


Figure 3. Sample structure according to the studies

Source: own research

In the following we present the analysis of specific factors considered in the framework of research, which determines the performance of the TQM system, these factors are expressed by the questions (items) from the questionnaire. In this article we present only two dimensions analyzed, namely the culture of quality and customer relationship.

In this regard, the variable “*quality culture*” is composed by 15 items and refers to the investigation of the existence premises of an internal climate favorable to the successful development, implementation and operational of the TQM system (quality culture as a component of TQM system), so this variable investigate the organizations management concerns of continuous quality improvement process, respectively investigates the existence premises of creation of customers dedicated organizations for obtaining long-term excellence.

We mention that we analyzed the internal consistency of the variable to identify whether the items that compose this variable are relevant (i.e. the items that compose the variable are in positive and raised correlation both with other items and with the overall score of the variable) to generate relevant information with respect to the measured attributes. In this regard, Cronbach Alpha internal consistency coefficient (Table 1) record value of 0.947, a very high value, indicating a very high level of internal consistency of the variable "quality culture".

Table 1. The level of internal consistency of the variable "quality culture"

| Reliability Statistics | | |
|------------------------|--|------------|
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| .935 | .947 | 15 |

Source: own research

We mention that almost all items remaining after the removal of irrelevant items are very high values (only two items make slightly discordant note), close to the maximum, the highest value recorded is 4.60, respectively lowest value recorded is 3.78 in this respect the items reveals an enhanced quality culture.

Adding the averages of the above items, we created the variable "quality culture". In Figure 4 we can see the variable "quality culture" histogram.

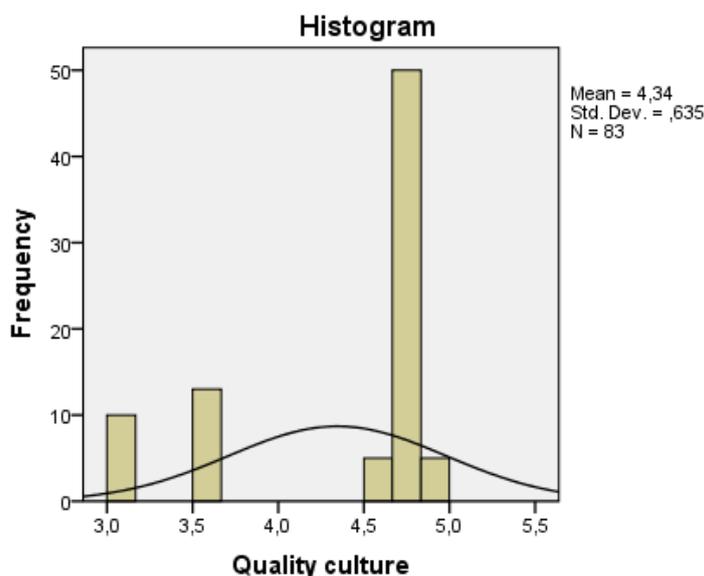


Figure 4. Quality culture histogram

Source: own research

Therefore, the variable "quality culture" registered among the organizations sampled an average high of 4.34, indicating the existence of characteristics of an internal environment favorable to the development of a quality culture such management organizations investigated is concerned about the continuous quality improvement, respectively there are in a very large extent the existence premises of creation of customers dedicated organizations for obtaining long-term excellence, but obviously there is the possibility of improving this aspect.

The second variable presented in this paper is "customer relationship" it is composed of 31 items related of the questions 100-123 of the questionnaire and refers to an extremely important aspect within the TQM system, namely the organization's relationship with customers. If until now we investigated certain conditions related to internal aspects (parameters) within organizations, in this moment, we are investigating an aspect (parameter) related to the relationship with outside the organization, so through this variable we want to see how organizations interact with customers, the extent to which they strive to identify, understand and meet the needs or exceed customers' expectations, so basically, we will investigate through this variable, the extent to which the organizations are directed to their customers.

We mention that we analyzed the internal consistency of the variable to identify whether the items that compose this variable are relevant (i.e. the items that compose the variable are in positive and raised correlation both with other items and with the overall score of the variable) to generate relevant information with respect to the measured attributes. In this regard, Cronbach Alpha internal consistency coefficient (Table 2) record value of 0.989, a very high value, indicating a very high level of internal consistency of the variable "customer relationship".

Table 2. The level of internal consistency of the variable "customer relationship"

| Reliability Statistics | | |
|------------------------|--|------------|
| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
| .988 | .989 | 31 |

Source: own research

We mention that almost all items remaining after the removal of irrelevant items are very high values (only two items make slightly discordant note), close to the maximum, the highest value recorded is 4.60, respectively lowest value recorded is 3.90 in this respect the items reveals a very high level of awareness among management organizations sampled in the importance of knowing as much as possible the detailed customers profile, what they wants and expects in order to meet their needs to retain and keep (so not to lose) the customer as much as possible.

Adding the averages of the above items, we created the variable „customer relationship". In Figure 5 we can see the variable "customer relationship" histogram. So the variable "customer relationship" recorded a very high average, 4.46, approaching the maximum (5), which means that insofar the investigated organizations endeavor to identify, understand and meet the needs or exceed customer expectations it is realizing in a very high level, so basically the investigated organizations are customer-oriented in a very large extent.

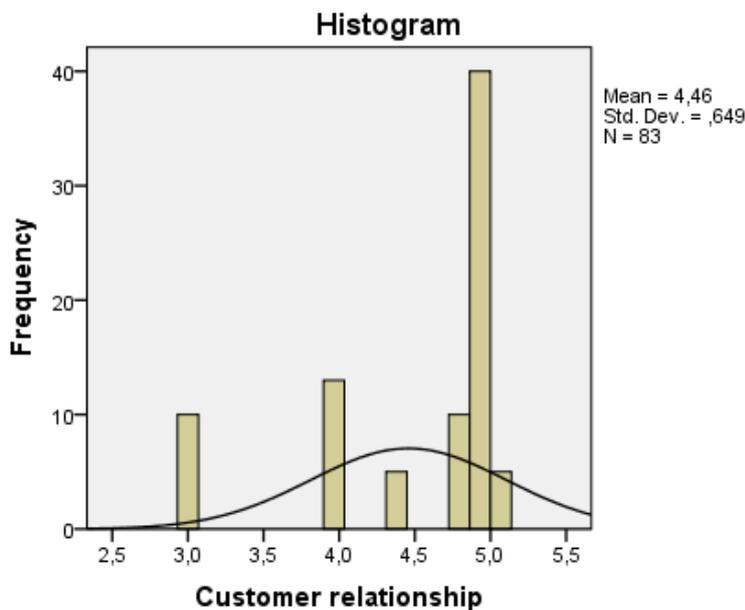


Figure 5. Customer relationship histogram
Source: own research

In this context we wonder if, between the studied variables exist associations, correlations, and if there is, we are interested to find out how powerful and in what sense is manifested correlations, so basically, we intend to identify the extent to which a variable is dependent by another variable. To this end, we analyzed the presence of correlations between the variables studied, using Pearson's correlation coefficient, which can be seen in Table 3.

Table 3. Correlations between the studied variables based on Pearson's coefficient

| | | Correlations | |
|-----------------------|---------------------|-----------------|-----------------------|
| | | Quality culture | Customer relationship |
| Quality culture | Pearson Correlation | 1 | ,980** |
| | Sig. (2-tailed) | | ,000 |
| | N | 83 | 83 |
| Customer relationship | Pearson Correlation | ,980** | 1 |
| | Sig. (2-tailed) | ,000 | |
| | N | 83 | 83 |

** . Correlation is significant at the 0.01 level (2-tailed).

Source: own research

Are recorded high correlation (0.980) between the variable "quality culture" and the variable "customer relationship" which also means that the two variables are in a relationship of dependency very high (correlations within the range [0.8; 1] are very strong correlations) very close to the value of perfect positive correlation, which means that between the variable "quality culture" and the variable "customer relationship" there is a positive correlation and very strong, i.e. if the variable "quality culture" increase, also the variable "customer relationship" will increase.

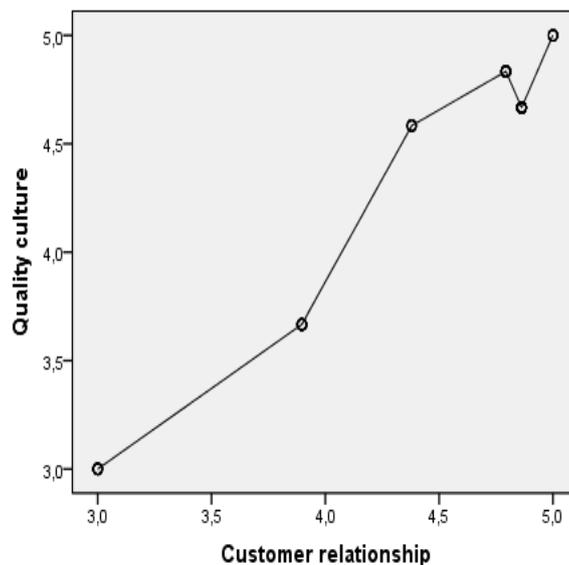


Figure 6. Correlations between the variable "quality culture" and the variable "customer relationship"

Source: own research

Knowing the relationship between two variables we can make predictions on the values of a variable called the dependent variable which is explained based on the values of another variables called independent variable. In this regard we will conduct a regression model through which we want to analyze the relationship between the dependent variable "customer relationship" and the independent variable "quality culture".

In Figure 6 can be verified the dependence of the variable "customer relationship" and the variable "quality culture" illustrated by very strong group of points around the trend line. Therefore, we proceed to conduct regression model, therefore, is summarized in Table 4, we can see the model regression coefficient of 0.980 R which indicate a strong association between the two variables. The value of R square that indicates that the variation of "customer relationship" explained 96% of the variation of "quality culture", which is a value extremely high (the remaining of 4% is explained by other factors that we were taken into account) indicating an extremely high dependence between these two variables.

Table 4. Summary regression model of "customer relationship" and "quality culture"

Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | ,980 ^a | ,960 | ,960 | ,130 |

a. Predictors: (Constant), quality culture

Source: own research

Table 5 is shown ANOVA table presenting test results of significance for the regression coefficient therefore see that Sig. <0.05 and statistics F recorded a positive and very high value (1947.513), which indicates that the null hypothesis is rejected, therefore, between the variables "customer relationship" and "quality culture" there is a significant relationship, so the model is statistically relevant.

Table 5. Relevance regression model of "customer relationship" and "quality culture"
ANOVA^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|----------|-------------------|
| 1 | Regression | 33,131 | 1 | 33,131 | 1947,513 | ,000 ^b |
| | Residual | 1,378 | 81 | ,017 | | |
| | Total | 34,509 | 82 | | | |

a. Dependent Variable: customer relationship

b. Predictors: (Constant), quality culture

Source: own research

In Table 6 is shown table model coefficients, the coefficient estimate for the B unstandardized, as well as standardized beta coefficient on the independent variable "quality culture" is statistically significant because in both cases Sig. is less than 0.05, thus standardized beta coefficient of 0.980 recorded value, which means that an amendment with a standard deviation of the variable "quality culture" variable "customer relationship" changes by 0.980 standard deviations.

Regarding the unstandardized coefficients B, the sign it shows a direct correlation between the two variables, thus showing that an increase of one point of the variable "quality culture" variable "customer relationship" is amended with 1,002 points, which also indicates an extremely high dependence between these two variables, so the investigated organizations must pay a very special attention to quality culture because it is a dependence extremely tightly with customer relationship, so any deterioration or improvement to variable "quality culture" will have a corresponding effect on the variable "customer relationship".

Table 6. The coefficients of the regression model of "customer relationship" and "quality culture"
Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | ,106 | ,100 | | 1,064 | ,290 |
| | Cultura.calității | 1,002 | ,023 | ,980 | 44,131 | ,000 |

a. Dependent Variable: customer relationship

Source: own research

3. CONCLUSIONS

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.

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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.

In this regard, in this article we want to present the main findings about the relationship between the quality culture and customer relationship.

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.

As a conclusion, we affirm that the results obtained allow us to say that quality culture it is in a very close dependence with customers relationship, thus confirming the assumptions from the literature in this regard, we recommend investigated organizations management to pay particular attention to the creation and development of a quality culture in their organizations, because quality culture explains the high changes in customers relationship thus the absence of a quality culture, generate adverse effects particularly serious on customers relationship.

REFERENCES

- Aba, E. K. & Badar, M. A., 2013. A Review of the Impact of ISO 9000 and ISO 14000 Certifications. *Journal of Technology Studies*, 39(1), pp. 42-50.
- Abrunhosa, A. & Moura, P., 2008. Are TQM principles supporting innovation in the Portuguese footwear industry?. *Technovation*, Volumul 28, p. 208–221.
- Abusa, F. M. & Gibson, P., 2013. TQM implementation in developing countries. *Benchmarking: An International Journal*, 20(5), pp. 693 - 711.
- Calvo-Mora, A., Picón-Berjoyo, A., Ruiz-Moreno, C. & Cauzo-Bottala, L., 2015. Contextual and mediation analysis between TQM critical factors and organisational results in the EFQM Excellence Model framework. *International Journal of Production Research*, 53(7), pp. 2186 - 2201.
- Chiarini, A., 2012. *From Total Quality Control to Lean Six Sigma. Evolution of the Most Important Management Systems for the Excellence*. Bologna: Springer.
- Collins, J. W. J. & Steiger, D. S., 2009. *Implementing a Process Approach Compliant to ISO 9001:2008. Quality Management Systems Standard*. 2nd ed. Manor Parkway, Salem, Printed in the United States of America: GOAL/QPC.
- Dale, B. G., 2003. *Managing quality*. 4th ed. Oxford, UK: Blackwell Publishers Ltd.
- Dinh, H., Igel, B. & Tritos, L., 2010. Total quality management (TQM) strategy and organisational characteristics: Evidence from a recent WTO member. *Total Quality Management*, 21(9), p. 931–951.
- Hoyle, D., 2009. *ISO 9000 Quality Systems Handbook. Using the standards as a framework for business improvement*. 6th ed. Jordan Hill, Oxford: Elsevier Ltd.
- Ilieş, L., 2003. *Management calităţii totale*. Cluj-Napoca: Editura Dacia.
- Mosadeghrad, A., 2014. Why TQM programmes fail? A pathology approach. *The TQM Journal*, 26 (2), pp. 160-187.
- Nanda, V., 2005. *Quality management system handbook for product development companies*. United States of America: CRC Press.
- Oakland, J. S., 2003. *Total Quality Management text with cases*. 3rd ed. Oxford: Butterworth-Heinemann.
- Oakland, J. S., 2004. *Oakland on Quality Management*. Oxford: Elsevier Butterworth-Heinemann.
- Prattana, P., Tritos, L., Dotun, A. & McLean, M., 2010. A study of quality management practices in TQM and non-TQM. *International Journal of Quality & Reliability Management*, 27(9), pp. 1021-1035.