

Quality Management in European SME's

Empirical Study

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Abstract

This paper is about Quality management practises in SME's and how are impacting to enterprise developments and stability. The research sample was compounded from 341 European SME companies, based on surveys and personal interviews. Research was oriented on understanding consequences between enterprises management system, Quality management system, developing process maturity and enterprise stability. The aim of this research was defined key drivers of Quality management systems for SME, its implementation and developing. This empirical research findings should be used for SME management and are also opening questions for future research activities.

Key words

Quality management, controlling, SME, process

JEL classification

M10, M15, L11, L15

Introduction

The aim of this research was defined key drivers of Quality management systems for SME, its implementation and developing. Current hyper-competitive business environment and globalisation are offering many opportunities and treads also. This environment is challenging SME companies, but from the other hand the pressure from big and global companies is getting stronger. Necessary condition for SME's stability and competitiveness are decreasing cost and increasing customers trust. The way, how to achieve it is Quality management implementation. SME definition is for this research accordingly with the EU recommendation no. 2003/361. The paper will be focused on processes maturity level in SME, its performance and its linking with quality management style and development.

1 Literature review

Quality management system (QMS) should be seen differently in SME. It is depending on company size, its management style, its perceptions, customers expectations etc. According Sainis et. al. (2017, p. 1), when the operational functions of an SME are certified under ISO standards, improvement in their organizational performance and their competitiveness is achieved. This thesis are verifying (Ismyrilis & Moschidis, 2015) considering those achievements, customers' satisfaction and continuous improvement are further supported. Quality management should be seen as a part of SME philosophy and its strategy. Developing new opportunities that are supported from the restructuring of their strategic plan should also be incorporated in the development of a quality plan (Vargo & Seville, 2011). Quality management should be seen in different forms. From basic forms as implementation some of quality management standards, throw their certifications as ISO 9001 should be, to philosophy of Total Quality Management (TQM)

One of key SME needs is increase productivity. Productivity is a fundamental measure of the success of an organisation (Goldman & Sachs, 2018). The motivation of QMS implementation should be different, and also there are QMS implementation and operations cost. For SME is relative easy pass the certification process within an organization, when a Quality Management System is operational, but QMS operations, necessary organizational changes QMS implementation are having costs and its return is not necessarily taken into consideration. These results are taken and verifying also by Tamayo-Torres et al. (2014). SMEs are confronted by people and public approaches. Lack of familiarity and lack of knowledge about QM preclude QM engagement by SMEs (Kumar et al., 2014).

How measure impact of QMS to SME performance? Here are different approaches. The financial analysis methods and its ratios should be used for finding solutions. According (Delen, Kuzey, & Uyar, 2013) and as they pronounced, that quick and reliable method used for measuring the performance of a company is financial ratio analysis. Measuring and analysing the financial ratios gives the option to the potential stakeholder to consider and evaluate a company's operating and financial performance (Hirt, Block, & Danielsen, 2013). From the Herzallah et al. (2014) survey, the indirect relationship between the TQM practices and the SMEs' financial performance was validated. The factor proven to influence that relationship was the competitive/differentiation strategy developed from the SMEs, which was found to have a direct, significant and positive relationship with the hard elements of TQM. In consequences between impact of quality management and process maturity management we

can see SME's financial stability and higher performance. (Kampouridis, Giannopoulos, & Tsirkas, 2015)

QMS and its implementation in SMEs should be way, how to support competitiveness and SME stability. QMS need be developed on stable management environment based on processes maturity increasing. The level of processes maturity is one of significant factors, which is supporting QMS implementation, its developing and performance. How to manage processes, develop QMS in line with SME financial stability? The answer should be in controlling as a management tool. According Draheim's thesis (2010, p. 11): "Businesses are made of processes. Enterprises strive for excellence in business processes." This approach is developed by Weske (2012, p. 5): "A business process consists of a set of activities that are performed in coordination in an organisational and technical environment. Company operation activities are simply realise a business goal." The complete thesis of importance of processes continuous development are supported by Svozilová (2011, p. 14) who sees logical sequences in the processes, sequential processing and defined results. In the business we can use this approaches for QMS development.

How to implement QMS philosophy, develop SME and support its stability? The answer could be given by controlling managerial system. Controlling is "The typical controlling process is designated to plan, observe and steer enterprise and business processes. In this way controlling has to generate compressed information to support the management in its decision processes." (Kamps, 2013, p. 60). Modern controlling can be explained by the following theory: "Controlling can support management by identifying, planning and steering decisions which contribute to the added-value of the company." (Laval, 2018, p. 13). Controlling orientation to goals and planning is also evident in (Bedenik, 2015, p. 153). "Controlling is one of the new approaches which helps management to adapt better to new circumstances, to build vital and vivid organisations, capable of facing new challenges." These approaches are verified also by (Písař & Havlíček, 2018, p. 1172).

2 Aim, Methodology and Data

The aim of this research was defined key drivers of Quality management systems for SME, its implementation and developing.

Secondary goal will be analysing QMS implementation failure factors. The research limitation contains two main limitations.

- First is given by (im)possibility directly evaluate impact of QMS to SMEs financial healthy and stability. Písař (2018, p. 526) in linking of this topic mentioned: “Controlling and its level of implementation as well as its performance is not possible to evaluate directly, because there are many other factors with influence to final results.” It means we need find relations between QMS and degree of its implementation and financial results.
- Second limitations is time factor. Chosen way how operate this research is able offering detailed data, but its collection is time consuming. It means, that results and their interpretation must be able to use in short time, or results will lose its timeliness and thus its usability in practice.

Based on previous problem understanding were defined key drivers for SMEs QMS implementation, its developing and continuous improving. For variables research will the linear correlation method be used. Based on its result, following hypotheses will be proved or rejected.

The following hypotheses were defined in order **to fulfil the objectives of the thesis**:

- H1 – If the correlation of variables QMS, Controlling and Processes CMM will have a very close relationship of the min. value of 0.7 of the Pearson correlation coefficient, then positive change of one variable will have positive impact to others variables.
- H2 – If the correlation of QMS and others financial variables will have a very close relationship of the min. value of 0.7 of the Pearson correlation coefficient, then QMS will be key factor for SME financial stability.

2.1 Data Sources

The study is based on a sample of 341 European SMEs (213 SMEs from CZ). The researched data was reached by survey in SMEs. Survey questionnaire¹ – first part was compounded on questions from on management system, financial analysis, quality management and other areas. Second part of survey was oriented to depth research, which was focused on quality management. The research was based on personal interviews with top and middle management and with staff also. The questionnaire was evaluated by scaling responses. The research data was collected from the period 2017–2019. For researched data reliability the Cronbach alpha calculation was used. Results of this evaluation are between the range 0 to 1. If the value is higher than 0.7 it means high consistency, and reliability of the analysed data and conclusions based on that.

2.2 Variables Examined

QMS² – level of existence, implementation and development of QMS in the examined business, based on scaling.

Processes maturity degree³ – the level processes maturity degree is evaluated based on the Capability Maturity Model⁴ (CMM) methodology.

Controlling⁵ – evaluation of the execution and implementation of controlling activities in SME.

Turnover of the enterprise – the amount of funds received by SME in a specific period (the fiscal period).

Return on Equity (ROE) – return on equity capital $ROE = EAT / \text{equity capital}$.

Return on Assets (ROA) – return on the company assets $ROA = EBIT / \text{Assets}$.

¹ Authors are open for research cooperate. In case of interest, contact authors. Data, questionnaire form, instructions for use should be shared.

² QMS – rating scale: 0 = none or insufficient, 1 = low level, initial state, random QMS without feedback, 2 = medium level, QMS is driven in fundamental way, lacking the control mechanisms of quality failures, 3 = high level – enterprise is working intensively on the QMS and has some results, 4 = optimised level – the enterprise is moving QMS to TQM with all employees engaging.

³ Process maturity degree – 5 levels based on CMM

⁴ The capability maturity model (CMM), was developed to evaluate and recommendation practices for processes measuring and developing. Is using scaling 0–5 level, based on processes maturity degree.

⁵ Controlling – rating scale: 0 = absent or insufficient, 1 = low level, 2 = medium level, 3 = excellent level including automated ideas for innovative approach. The modern controlling meaning is not only evaluate as some old authors are using. Modern controlling meaning is check history data, compare it with current results and follow future goals. If there some deviation between current results and goals, then controlling process is searching for solution with goal chancel deviation.

2.3 Correlation Analysis

To determine the linear dependency of variables, according to Tran (2011) the method of Pearson⁶ correlation coefficient calculation was used. By this analysis were evaluated linear dependency between variables. A positive number implies a positive association, whereas a negative number implies the inverse association. Pearson's correlation is a measure of the relationship between two variables x and y , and it could be defined in terms of the population correlation, $\rho_{x,y}$, where:

$$\rho_{x,y} = \text{COV}(x,y) / \sigma_x \sigma_y$$

with the corresponding sample correlation $r_{x,y}$, given by

$$r_{x,y} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{(n-1)S_x S_y}$$

Here, $\text{COV}(x,y)$ is the population correlation between x and y , σ_x is the population standard deviation of x , and σ_y is the population standard deviation of y . In the above formula, are the sample standard deviations of x and y , respectively. The results of the correlation analysis allow confirmation or refutation of the H1 and H2 hypotheses.

3 Empirical Results

The data was analysed using an IBM statistical programme SPSS⁷ ver. 25.

3.1 Verifying the Consistency and Reliability Data Analysed

The analysed sample $n = 341$ was tested in the first step if it is consistent and reliable. The analysed data sample satisfied the data completeness to **100%**. The second step was testing the reliability by Cronbach Alpha calculation. The Cronbach Alpha⁸ values were **0.901** for variables $n = 3$ in table no. 1 and **0.782** for variables $n = 4$ in table no. 2. Results of **Cronbach Alpha value are**

⁶ The Pearson coefficient is (to 0.20 the correlation is negligible, 0.20–0.40 is not a very close correlation, 0.40–0.70 is moderately tight correlation; 0.70–0.90 is a very close correlation and more than 0.90 is an extremely close correlation).

⁷ If request for process of data analysing, follow SPSS 25 manual.

⁸ Cronbach's alpha is measuring of internal data consistency. If data are and how closely are related as a group. It is considered to be use for measure scale of reliability. Cronbach's alpha is not a statistical method – it is a coefficient of reliability or consistency.

proving high reliability of sample tested and finding based on these results and they have a high informative value.

3.2 Correlation Analysis

The purpose of computing Pearson correlation of Controlling, QMS, Processes CMM is find its linear dependency value. The summary of the correlation analysis are given in Table no. 1.

These results are used for H1 proving. If the correlation of variables QMS, Controlling and processes CMM will have a very close relationship of the min. value of 0.7 of the Pearson correlation coefficient, then positive change of one variable will have positive impact to others variables.

Table no. 1 Pearson correlation of Controlling, QMS, Processes CMM variables

		Controlling	QMS	Processes CMM
Controlling	Pearson Correlation	1	,808**	,799**
	Sig. (2-tailed)		,000	,000
	N	341	341	341
QMS	Pearson Correlation	,808**	1	,724**
	Sig. (2-tailed)	,000		,000
	N	341	341	341
Processes CMM	Pearson Correlation	,799**	,724**	1
	Sig. (2-tailed)	,000	,000	
	N	341	341	341

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

Source: author, based on research data collected

Based on result in table no.1 **H1 is confirmed**. Interpretation of these results is, that in case of value change in one variable, others variables will be changed similarly. High variables Pearson correlation value is showing, that QMS based on controlling is also tinny connected with level of processes maturity degree. For practical use it means, that SMEs which are working on improving of processes degree level are supporting QMS increasing.

The other purpose of Pearson correlation computing for QMS, ROE, ROA and Turnover variables is finding linear dependency. The summary of the correlation analysis are given in Table no. 2.

Based on finding table no. 2 the H2 hypothesis is not proved. Linear dependency between QMS, ROA and ROE is showing results in range 0.20–0.40 – is not a very close correlation.

Interpretation of this result should be, that QMS is one of important factors for SME financial stability and healthy, but is not decisive factor. Interesting finding is linear dependency between QMS and Turnover, which is showing high value of Person coefficient at 0.722 level. This dependency is highlighting, that in sample researched companies, **level of QMS impacted enterprise turnover factor and reversely.**

Table no. 2 Pearson correlation QMS, ROE, ROA, Turnover variables

		QMS	ROE	ROA	Turnover
QMS	Pearson Correlation	1	,383**	,379**	,722**
	Sig. (2-tailed)		,000	,000	,000
	N	341	341	341	341
ROE	Pearson Correlation	,383**	1	,845**	,305**
	Sig. (2-tailed)	,000		,000	,000
	N	341	341	341	341
ROA	Pearson Correlation	,379**	,845**	1	,312**
	Sig. (2-tailed)	,000	,000		,000
	N	341	341	341	341
Turnover	Pearson Correlation	,722**	,305**	,312**	1
	Sig. (2-tailed)	,000	,000	,000	
	N	341	341	341	341

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

Source: author, based on research data collected

3.3 Key Drivers for QMS in SME

Based on research findings, the Pearson correlation variable analysis and personal research in SMEs, the following key drivers were found and are important for QMS.

- **Managerial system based on controlling principles** – systems based on controlling are primary oriented on planning and achieving of set goals – future.
- **Processes maturity level** – evaluated by CMM method is offering simple process of evaluation and improvement based on findings. Highest processes maturity level contains ability of continuous self-improvement. It means, that developing of processes is also developing QMS in company and it is supporting QMS improvement.
- Based on personal research in researched enterprises, one decisive factor is **people and their engaging**. Moving from stage of QMS, where company is operating this

system, because for example they need ISO 9001 for proving quality to customers, but they are using this QMS only because they must. Second stage is moving from QMS to position of TQM – where all people and participant are engaged to quality management processes. This approach is bringing visible differences. Companies, which are able move QMS to TQM were in research sample at positions with biggest turnover and also good and stable financial results and stability.

- Based on previous bullet point are people engaging's also one of most risky actor. If people are working on QMS only because they must and there are missing QMS needs explaining factors, these companies are usually leaving QMS and their turnover is from 81% till EUR 400,000. These companies are usually stagnated and not growing. This factor and its power should be major factors for managers to focusing their activities in QMS here.
- We are living in hyper-competitive environment. It means, that any company need is be flexible and also cutting expenses. It means, that company needs evaluation of QMS system performance in short regularly periods, what is necessary for any improvements. It means – data collection and evaluation = creating of costs. SME which want to be successive must decrease these cost and be able deliver information for decision making as soon as is possible. Solution for this problem is usage advanced information system, which can decrease cost for this process rapidly.

The aims of this paper based on previous findings were achieved.

Conclusion

SMEs are important part of national economy, are important entrepreneurs and also resource of innovation potential. SMEs are operating in hypercompetitive environment of global economy. This situation is bringing many opportunities and challenges also. SMEs need be flexible and competitive in comparison with big and global companies. The way how operate SME on successfully way should be implementation to QMS and its future moving to TQM system. Based on research findings, companies with high level of QMS – especially TQM proved stable financial results, higher turnover and based on that are stable and competitive. SME processes maturity level, people in organization engaging and management system based on modern controlling principles should be a way, how increase QMS in SME and based on that support their competitiveness and stability. This research result should be used in practise and also are opening new areas for deeper research.

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