

The Analysis of Total Quality Management Critical Success Factors

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ABSTRACT

Purpose: The primary purpose of this paper is to identify the most important factors related to the successful implementation of TQM in the literature and to compare the identified factors with the existing research.

Methodology/Approach: By conducting a systematic literature review in three main stages, this research analyzes 13 empirical papers published between 1995 and 2017. Three main stages included: formulation of the problem to be solved by the systematic literature review; definition of inclusion criteria and exclusion of articles; and article search and selection.

Findings: Analysing previous research and conducting a literature review, we identify six main critical success factors (CSF): top management leadership and commitment, customer focus, training (employees), procurement management (suppliers), information and analysis, and process management.

Research Limitation/Implication: In this paper, we focused solely on the influence of TQM practices on the financial performance of a company. As such, the non-financial performance indicators were not considered.

Originality/Value of paper: This paper adds value to the existing literature as it focuses on critical factors of TQM implementation examined in relation to the financial performance of the company and provides a good basis for understanding and developing more complex models.

Category: Literature review

Keywords: TQM; quality; critical success factors; implementation; literature review; performance

1 INTRODUCTION

The success of any quality management concept depends on its successful implementation within a company. In practice, however, the implementation of TQM is a complex and difficult process, and the benefits are typically not easy to achieve (Mohammad Mosadegh Rad, 2006). Therefore, exploring the key factors that determine the success of TQM implementation is an important issue.

Quality management (QM) is a concept with a long and complex history. The interpretation of the quality movement has varied across different periods, from quality control to total quality management and beyond. Thus, different definitions of QM have emerged (Bergquist et al., 2012). One of the most comprehensive definitions of TQM used in the literature considers TQM as “holistic management philosophy that strives for continuous improvement in all functions of an organisation, and it can be achieved only if the total quality concept is utilised from the acquisition of resources to customer service after the sale” (Kaynak, 2003, p.406).

Prior research suggests several possible key factors for the successful implementation of TQM. However, finding and selecting the right factors is a major challenge for businesses because there is no consensus on specific factors or a holistic framework (Ismail Salaheldin, 2009). The field of research into key factors and related measurement instruments is very broad and undefined. As such, various opinions and experiences related to factors exist in the literature (Nenadál, Vykydal and Waloszek, 2018). Therefore, research that provides an overview and structures previous research is a necessary step to establishing a common base in practice and academia.

In general, aspects of successful implementation of TQM can be drawn from four different theoretical areas: the work of quality authors (gurus), formal reward models, descriptive approaches, and empirical research (Claver, Tarí and Molina, 2003; Tarí, 2005). The research in the application of quality management comes from the contributions of quality gurus in the 1980s, when national governments have launched various models of quality awards. By the late 1990s, the vast majority of quality management literature consisted of case studies, descriptive and conceptual papers with rare exceptions of empirical studies (Hietschold, Reinhardt and Gurtner, 2014).

The main purpose of this research is to identify the most important factors related to the successful implementation of TQM in the literature and to compare the factors with the existing body of knowledge. In the first section (literature review), we explore key factors of successful implementation of TQM in the literature. However, different aspects of companies' performance have been included in these papers, which may or may not be related to financial performance. As financial performance is considered to be one of the most important measures of survival of a company, this paper provides a systematic literature review of the studies that confirmed the positive relationship between TQM practices and financial performance (subjective or objective). The reason to

focus on the papers with the positive relationship between these constructs is to identify the factors that contribute to the improvement of the financial performance, rather than to start another discussion whether TQM contributes to the performances.

2 LITERATURE REVIEW

Sila and Ebrahimpour (2003) and Karuppusami and Gandhinathan (2006) conducted some of the first literature review studies and identified key factors of a successful implementation of TQM. Starting with these papers, authors' focus on empirical research and identification of new key factors have constantly increased. Today, researchers most often focus on empirical studies that incorporate the principles of national quality models (Hietschold, Reinhardt and Gurtner, 2014).

Covering the period from 1989 to 2000, Sila and Ebrahimpour (2003) analysed and compared 76 empirical studies in 23 different countries. Through their research, the authors identify five key factors for successful implementation of TQM: top management commitment and leadership, customer focus, information and analysis, training, and supplier management.

Carrying out a Pareto analysis for papers published between 1989 and 2003, Karuppusami and Gandhinathan (2006) identified 37 empirical studies by conducting reliability and validation tests in order to group key factors. The five most important factors identified by the authors are the role of management leadership and quality policy, supplier quality management, process management, customer focus, and training.

The analysis of 145 articles using a structured overview of empirical studies Hietschold, Reinhardt and Gurtner (2014) identified 11 key factors, where the five most important factors are: HRM/recognition/teamwork, top management commitment and leadership, process management, customer focus and satisfaction, and supplier partnership.

Similar research on identifying key factors for successful implementation of TQM was carried on by Aquilani et al. (2017) for the period from 1993 to 2016. In this paper, the five factors mentioned above are confirmed in their work: leadership/top management commitment/top management role, customer focus/satisfaction, training and education, measurement or metric systems/data information and analysis/quality data and reporting, supplier collaboration/management/supplier quality (management).

3 METHODOLOGY

For the identification, selection, and analysis of the relevant articles, we followed the stages used by Suárez et al. (2017). According to authors, a systematic

literature review has three main stages: (1) formulation of the problem to be solved with the systematic literature review; (2) definition of inclusion criteria and exclusion of articles; and (3) article search and selection.

In the first stage, we defined the problem to be solved. The main research question was: “What are the main TQM critical success factors of the positive influence of TQM on the financial performance of a company?”

In the second stage, we defined inclusion and exclusion criteria. We covered the period from 1995 to 2017 and only scientific articles were selected which were published in journals that had a JCR (Journal Citation Reports of Thomson Reuters) or SJR (SCImago Journal and Country Rank by Scopus) impact factor. The following keywords were used: TQM, implementation, and financial performance. Papers relevant to the successful implementation were selected based on the following criteria: quantitative research; articles in English; and papers that examine the relationship between TQM and financial performance.

The third stage implied article search and selection. The first step included a total of 116 articles. After a detailed analysis of the abstracts, 94 articles were eliminated since the dependent variable had not been related to the financial performance of a company. The next phase included a complete analysis of the papers that meet the criteria. The total number of papers further analyzed is 13 (Powell, 1995; Samson and Terziovski, 1999; Douglas and Judge, 2001; Kaynak, 2003; Kaynak and Hartley, 2005; Demirbag et al., 2006a; 2006b; Sadikoglu and Olcay, 2014; Dubey and Gunasekaran, 2015; Jiménez-Jiménez et al., 2015; Valmohammadi and Roshanzamir, 2015; O'Neill, Sohal and Teng, 2016; Sweis et al., 2016). Table 1 presents the analysis of the articles identifying CSFs and used measures of financial performance. The analysis was conducted by identifying the key factors in the papers and then grouping them into broader categories.

Table 1 – Critical Success Factor Related to the Positive Influence of TQM Practices on Financial Performance

<i>Authors</i>	<i>Critical Success Factors</i>	<i>Performance</i>
Powell (1995)	committed leadership, adoption and communication of TQM, closer customer relationships, closer supplier relationships, benchmarking, increased training, open organization, employee empowerment, zero-defects mentality, flexible manufacturing, process improvement, measurement	financial performance/total performance, TQM programme performance
Samson and Terziovski (1999)	leadership, people management, customer focus, strategic planning, information and analysis, process management	quality performance, operational performance, business performance

<i>Authors</i>	<i>Critical Success Factors</i>	<i>Performance</i>
Douglas and Judge (2001)	top management team involvement, quality philosophy, emphasis on TQM-oriented training, customer driven, continuous improvement, management by fact, total quality methods	perceived financial performance
Kaynak (2003)	management leadership, training, employee relations, quality data and reporting, supplier quality management, product/service design, process management	inventory management performance, quality performance, financial and market performance
Kaynak and Hartley (2005)	management leadership, training, employee relations, quality data and reporting, supplier quality management, product/service design, process management, customer relations	inventory management performance, quality performance, financial and market performance
Demirbag et al. (2006a)	quality data and reporting, role of top management, employee relations, supplier quality management, training, quality policy, process management	financial performance
Demirbag et al. (2006b)	quality data and reporting, role of top management, employee relations, supplier quality management, training, quality policy, process management	financial performance
Sadikoglu and Olcay (2014)	overall TQM practices, leadership, knowledge and process management, training, supplier quality management, customer focus, strategic quality planning	operational performance, inventory management performance, employee performance
Dubey and Gunasekaran (2015)	human resource, quality culture, motivational leadership, relationship with internal and external partners	firm performance
Jiménez-Jiménez et al. (2015)	top management support, quality information, process management, product design, workforce management, supplier involvement, customer involvement	customer results, people results, society results, business results
Valmohammadi and Roshanzamir (2015)	leadership, strategic planning, customer focus measurement, analysis and knowledge management, workforce focus, operations focus	organizational performance
O'Neill, Sohal and Teng (2016)	QM implementations	capital labour ratio, value added labour
Sweis et al. (2016)	customer focus, continuous improvement, training and education, teamwork, top management commitment	quality outcomes, customer satisfaction, financial performance, innovation

4 RESULTS

Our analysis extracted 10 factors from the literature. More specifically, our results identified six factors of the successful TQM implementation, including employees, leadership, information and analysis, processes, customers, and suppliers. Although our goal was to focus on five main CSFs, we included the suppliers as the sixth one, due to the same usage frequency as the factor customers. The most common used factor was employees and leadership (in 12 out of 13 papers, 92%), information and analysis and processes (69%), and customers and suppliers (62%) (Table 2).

Table 2 – Main Extracted Factors

<i>Main Extracted Factor</i>	<i>Critical Success Factors</i>
Top management leadership and commitment (92% coverage)	committed leadership (Powell, 1995), leadership (Samson and Terziovski, 1999; Sadikoglu and Olcay, 2014; Valmohammadi and Roshanzamir, 2015), top management team involvement (Douglas and Judge, 2001), management leadership (Kaynak, 2003; Kaynak and Hartley, 2005), role of top management (Demirbag et al., 2006a; 2006b), motivational leadership (Dubey and Gunasekaran, 2015), top management support (Jiménez-Jiménez et al., 2015), top management commitment (Sweis et al., 2016)
Employees (92%)	increased training, employee empowerment (Powell, 1995), people management (Samson and Terziovski, 1999), emphasis on TQM-oriented training (Douglas and Judge, 2001), training, employee relations (Kaynak, 2003; Kaynak and Hartley, 2005; Demirbag et al., 2006a; 2006b), training (Sadikoglu and Olcay, 2014), human resource (Dubey and Gunasekaran, 2015), workforce management (Jiménez-Jiménez et al., 2015), workforce focus (Valmohammadi and Roshanzamir, 2015), training and education, teamwork (Sweis et al., 2016)
Information and analysis (69%)	information and analysis (Samson and Terziovski, 1999), management by fact (Douglas and Judge, 2001), quality data and reporting (Kaynak, 2003; Kaynak and Hartley, 2005; Demirbag et al., 2006a; 2006b), quality information (Jiménez-Jiménez et al., 2015), analysis and knowledge management (Valmohammadi and Roshanzamir, 2015), measurement (Powell, 1995)
Processes (69%)	process improvement (Powell, 1995), process management (Samson and Terziovski, 1999; Kaynak, 2003; Kaynak and Hartley, 2005; Demirbag et al., 2006a; 2006b; Jiménez-Jiménez et al., 2015), operations focus (Valmohammadi and Roshanzamir, 2015), knowledge and process management (Sadikoglu and Olcay, 2014)
Customers (62%)	closer customer relationships (Powell, 1995), customer focus (Samson and Terziovski, 1999; Sadikoglu and Olcay, 2014; Sweis et al., 2016), customer driven (Douglas and Judge, 2001), customer involvement (Jiménez-Jiménez et al., 2015), customer focus measurement (Valmohammadi and Roshanzamir, 2015), customer relations (Kaynak and Hartley, 2005)
Suppliers (62%)	closer supplier relationships (Powell, 1995), supplier quality management (Kaynak, 2003; Kaynak and Hartley, 2005; Demirbag et al., 2006a; 2006b; Sadikoglu and Olcay, 2014), supplier involvement (Jiménez-Jiménez et al., 2015), relationship with internal and external partners (Dubey and Gunasekaran, 2015)

<i>Main Extracted Factor</i>	<i>Critical Success Factors</i>
Cross-cutting themes of quality (53%)	adoption and communication of TQM (Powell, 1995), quality philosophy, total quality methods (Douglas and Judge, 2001), quality policy (Demirbag et al., 2006a; 2006b), overall TQM practices (Sadikoglu and Olcay, 2014), quality culture (Dubey and Gunasekaran, 2015), QM implementations (O'Neill, Sohal and Teng, 2016)
Strategic planning (23%)	strategic planning (Samson and Terziovski, 1999; Valmohammadi and Roshanzamir, 2015), strategic quality planning (Sadikoglu and Olcay, 2014)
Product/service design (23%)	product/service design (Kaynak, 2003; Kaynak and Hartley, 2005), product design (Jiménez-Jiménez et al., 2015)
Continuous improvement (15%)	continuous improvement (Douglas and Judge, 2001; Sweis et al., 2016)

As shown in Table 3, the factors of successful implementation of TQM that we identified closely correspond to the existing factors highlighted in the existing literature. Top management leadership and commitment, customer focus, training (employees), and suppliers are found in all five studies, procurement management (suppliers), and process management in four studies, while information and analysis in three studies.

Table 3 – Key Factors for Successful Implementation According to Different Authors

<i>Comparison to the Previous Literature Review</i>				
Our research	Sila and Ebrahimpour (2003)	Karuppusami and Gandhinathan (2006)	Hietschold, Reinhardt and Gurtner (2014)	Aquilani et al. (2017)
top management leadership and commitment	top management commitment and leadership	the role of management leadership and quality policy	top management commitment and leadership	leadership/top management commitment/top management role
customers	customer focus	customer focus	customer focus and satisfaction	customer focus/satisfaction
employees	training	training	HRM/recognition/teamwork	training and education
suppliers	supplier management	supplier quality management	supplier partnership	supplier collaboration/management/supplier quality (management)
information and analysis	information and analysis	-	-	measurement or metric systems/data information and analysis/quality data and reporting
processes	-	process management	process management	Process quality management

4.1 Top Management Leadership and Commitment

According to the existing literature, the leadership and commitment of top management are undoubtedly one of the most important factors underlying the success of TQM. TQM is a management philosophy, and therefore the initiation of quality activities comes from the level of top management. Top management leadership and commitment relate to factors that measure the involvement and support of the quality of individuals at higher levels of an organization's hierarchy (Hietschold, Reinhardt and Gurtner, 2014). Thus, Oakland (2011, p.517) stated: "TQM must start at the top, where serious obsession and commitment to quality and leadership need to be demonstrated. Middle management also has a key role to play in communicating the message". The factor of top management's leadership and commitment imply that managers should be focused on aligning quality goals with their vision, on implementing quality as a part of corporate culture, and creating a culture in which continuous improvement is supported, and reluctance to change is minimized. Establishing a culture of quality that is supported by overall business strategy is crucial to the success of an organization. Therefore, it is important that leaders have competencies related to planning, communication, management, vision development and implementation as well as ensuring employee participation (Paulová and Ml̃kva, 2011).

4.2 Focus on the Customer and Customer Satisfaction

Some authors consider focusing on customer satisfaction to be a key factor in success, while others acknowledge customer satisfaction as a result of the successful implementation of TQM (Porter and Parker, 1993; Yusof and Aspinwall, 2000). Furthermore, Issac, Rajendran, and Anantharaman (2004) confirmed that customer satisfaction is part of the philosophy of TQM. This factor focuses on identification and meeting current and emerging customer needs (Nair, 2006). Considered in a long-term perspective, organizations can not "survive" without their customers. Consequently, issues related to customer retention or customer loyalty are considered crucial today (Vykydal, Halfarová and Nenadál, 2013). Organizations need to establish an open relationship with customers to receive information about their preferences and to receive feedback on how to fulfil these requirements in the best possible way (Das, Paul and Swierczek, 2008; Flynn, Schroeder and Sakakibara, 1994). Consumer opinions can improve the quality of products and services and should, therefore, be included at every stage of the product development process (Singh and Smith, 2004). Since customer satisfaction affects the success or failure of a company, an organization should be able to respond quickly to changing consumer needs (Mehra, Hoffman and Sirias, 2001). It is, therefore, important that every employee of a company is involved and committed to establishing and maintaining a high level of customer satisfaction.

4.3 Employees: Training and Education

Employee related factors are most often manifested through employee training and education; that is, the focus is on employee participation. By actively participating, employees acquire new knowledge, learn how to identify problems more efficiently, and to solve problems more effectively. The resulting understanding of the importance of quality leads to an increased commitment to TQM. This change in attitude makes employees to feel as a part of the organization and enables the creation of a quality culture for the entire company. Training and education are considered to be the most important aspects of human resource management, i.e., it is considered to be “a key to a successful implementation of TQM along the dimensions of cost reduction and profit increase” (Kassicieh and Yourstone, 1998, p.36). Training needs, employee motivation, and improvement of future effective evaluation are essential for building a quality performance evaluation based on quality (Aquilani et al., 2017).

4.4 Suppliers: Supplier Management and Cooperation with Suppliers

Creating and maintaining a superior supplier relationship is another critical factor. One of the prerequisites for the success of production process management is a choice of reliable suppliers. As such, this issue deserves special attention (Pech and Vaněček, 2020). Supply quality is an important aspect of TQM, as parts provided by suppliers are often the main source of quality problems (Zhang, Waszink and Wijngaard, 2000). Poor quality leads to additional costs and can damage the image of the product or the entire company. As a result of this interconnectedness, record keeping and providing quality feedback are often considered extremely important in identifying problems and improving the supplier process (Saraph, Benson and Schroeder, 1989). Long-term relationships between the organization and selected suppliers reduce the cost of quality control and costs of poor product quality and ensure a continuous supply of the required quality components (Das, Paul and Swierczek, 2008; Zhang, Waszink and Wijngaard, 2000). Improvements in the quality of products or services require that all major suppliers comply with the organization's quality specifications (González-Benito, Martínez-Lorente and Dale, 2003).

4.5 Information and Analysis

The information system is a key part of the quality management infrastructure. To maintain and continually improve quality, organizations need a flow of reliable information (Rao, Solis and Raghunathan, 1999). Collecting relevant data is essential to monitor the current quality status. Organizations can not properly evaluate the quality of products and services unless they can measure status before and after improvement activities (Jayaram, Ahire and Dreyfus, 2010). Quality data and reporting include a high level of documentation, monitoring, and feedback. Documenting the processes, identifying the level of

waste and damage in the production process, as well as keeping information easily accessible to employees, are considered important factors underlying an organization's success (Kaynak, 2003). Measurement assists in evaluating the quality of processes and products or services, which is one of the most important methods for checking continuous improvement, monitoring processes, analyzing, and correcting deficiencies from required standards. For a process to be managed, primary data must be collected (Malik, Sinha and Blumenfeld, 2012).

4.6 Process Management

The process is a series of interdependent activities that consume resources and convert inputs into outputs. Organizations need to manage processes to function without operational errors (Zhang, Waszink and Wijngaard, 2000). The importance of process management is based on the assumption that organizations are systems of interconnected processes and that process improvement determines performance improvement (Deming, 1986; Samson and Terziovski, 1999). The importance of this in implementing TQM stems from its ability to add value to processes, increase quality levels, and raise enterprise productivity (Bigwood, 1997; Motwani, 2001). To achieve better product and service quality, organizations need to identify key processes and improve them on a continuous basis (Zhang, Waszink and Wijngaard, 2000). The application of appropriate statistical methods to ensure a high level of process control and the use of assessment results to acquire process knowledge have also been emphasized as important factors in several empirical studies (Saraph, Benson and Schroeder, 1989; Flynn, Schroeder and Sakakibara, 1994; Claver, Tari and Molina, 2003). Furthermore, process redesign and reengineering can lead to dramatic performance improvements (Samson and Terziovski, 1999).

5 CONCLUSION

The main purpose of this paper has been to identify the most commonly used critical success factors in the TQM implementation. Analysing previous research and conducting a literature review, we have identified six main critical success factors: top management leadership and commitment, customer focus, training (employees), procurement management (suppliers), information and analysis, and process management. This paper adds value to the existing literature as it focuses on critical factors of TQM implementation examined in relation to the financial performance of a company and as it provides a good basis for creating more complex models to explore the impact of TQM practices on company performance. The future research might focus on other dependent variables, such as employee satisfaction and customer satisfaction. By comparing the results with previous research, similarities, and shortcomings in identifying factors for successful implementation of TQM can be identified. The interplay between these factors and the financial performance might depend on the external factors, and future studies should elaborate the mechanism by which these factors

contribute to the financial performance of a company in specific industries. Case studies would be especially useful for managers in order to demonstrate the importance of TQM factors and to explain the mechanism of how previously identified critical success factors of TQM influence financial performance.

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CONFLICTS OF INTEREST

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