

Enhancing customer satisfaction, personnel satisfaction and company reputation with total quality management: combining traditional and new views

Traditional
and new views
of TQM

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Kari Lepistö, Minna Saunila and Juhani Ukko
LUT University, Lahti, Finland

Abstract

Purpose – This study investigates the effect of total quality management (TQM) on customer satisfaction, personnel satisfaction and company reputation.

Design/methodology/approach – The study results rely on a structured survey conducted among an extensive sample of Finnish SMEs. In addition to the examination of the relationship between TQM and company performance in terms of customer satisfaction, personnel satisfaction and company reputation, the study takes a view on the possible effects of the industry, the company size and the certified quality system.

Findings – The results reveal that two TQM dimensions, namely Customer Focus and Product Management, were related to companies' customer satisfaction, whereas four TQM dimensions, namely Management/leadership, Customer Focus, Personnel Management and Risk Management, were related to personnel satisfaction. None of the TQM dimensions were related to company reputation. The control variables – the industry, the company size and the certified quality system – were not found to affect customer satisfaction, personnel satisfaction or company reputation.

Originality/value – Most previous studies have been based on traditional TQM classification and have not shown the effects of the latest TQM-related dimensions. Compared to previous studies, this work integrates risk management, digitization, system deployment efficiency and stakeholder management into TQM, which has not been implemented in any previous study. The roles of hard and soft TQM factors have been carefully considered in this study; thus, the study does not place too much emphasis on either direction but provides a balanced picture of the performance of the management systems studied. Although there are studies on the effects of TQM on personnel satisfaction, customer satisfaction and reputation, they are based on a much narrower definition of TQM than that in this study. The business environment is constantly changing, but only a few studies have been conducted to extend the TQM approach. This has led to duplication of studies, and the effects of performance-relevant procedures have not been extensively studied in the past as part of TQM. Therefore, the concept of this study brings significant added value to TQM research and returns the TQM concept to the overall level while considering the requirements of the ISO 9001: 2015 and EFQM 2019 quality standards. The study also considers the effects of ISO 9001 certification and EFQM requirements.

Keywords Total quality management, Performance, Customer satisfaction, Personnel satisfaction, Company reputation

Paper type Research paper

1. Introduction

More than 880,000 certified quality systems can be found worldwide (ISO Survey). This indicates that the number of total quality management (TQM) systems is clearly higher than the number of certified companies since the construction of a certification, such as ISO 9000,



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usually starts with a quality system (Rahman, 2000). Numerous studies show that TQM and ISO 9001 certification have a positive effect on the performance of companies that have implemented them. In addition to these findings, there are indications that TQM affects personnel satisfaction (Boselie and van der Wiele, 2001; Ooi *et al.*, 2008; Kabak *et al.*, 2014; Arunachalam and Palanichamy, 2016; Babu and Thomas, 2021), customer satisfaction (Beheshti and Lollar, 2003; Ooi *et al.*, 2010; Hassan *et al.*, 2012; Topalovic, 2015) and company reputation (Beheshti and Lollar, 2003; Yusuf *et al.*, 2007; Mourougan and Sethuraman, 2017; Yousif *et al.*, 2017). These are essential issues because prior studies show that satisfied customers are loyal (e.g. Pattanayak *et al.*, 2017), and hence, companies do not have to invest unreasonably in finding new customers. Personnel satisfaction has a significant effect on business operations because, according to Pushpakumari (2008), there is a positive relationship between job satisfaction and employee performance. Vig *et al.* (2017) state that loss of reputation is one of the biggest risks for firms. In their research, they find that the reputation gained by products and services as well as leadership has an impact on the financial performance of companies.

Despite the above arguments, there is little reported information on the effects of TQM on customer satisfaction, personnel satisfaction and company reputation, taking into account in particular the importance of industry, company size and system certification. This study is the most extensive compared to the previous studies presented in the literature review. The study covers the requirements of the European Foundation for Quality Management (EFQM) and the standard SFS ISO 9001: 2015. The details of these procedures included in the study are stakeholder management and risk management, which are almost completely missing from previous studies. Moreover, linking digitalization and system deployment to TQM thinking is completely new as there is a lack of studies related to digitalization included in TQM dimensions. This study also examines the traditions of TQM, considering TQM's initial views on the content of functioning TQM. Unfortunately, in many TQM studies, these basics have been ignored. Prior studies use the traditional, rather narrow, definition of TQM. As the number of certified companies is considerable worldwide and imposes costs on companies, it is also expected to have a positive impact on the various activities of companies. For the first time, this study reveals the link between certification according to the new quality standard and extended TQM and customer satisfaction, personnel satisfaction and the company's reputation, which are important to a company's success.

This study aims to examine the effect of TQM on customer satisfaction, personnel satisfaction and company reputation by adopting a comprehensive view of TQM, including both traditional and more recently emergent views. The current study takes place through a framework in which, in addition to the expanded TQM view, the soft and hard elements of TQM are taken into account. More specifically, the study investigates which TQM dimensions affect customer satisfaction, personnel satisfaction and company reputation and the impact of certification, industry and company size in this relationship. The analysis is based on survey data of 271 respondents from SMEs working in the manufacturing and service sectors in Finland. The structure of the remaining of this article is as follows. First, the theoretical framework, covering theory underpinnings, main concepts and hypotheses, is revealed. Then, the research's methodology is described, after which a discussion of the results is presented. Finally, the conclusions of the research are presented.

2. Theoretical framework and hypotheses

2.1 TQM

This study focuses on the effects of TQM dimensions on customer satisfaction, personnel satisfaction and company reputation in Finnish small and medium-sized enterprises (SMEs). TQM builds its objective of organizational effectiveness on the following interconnected

factors: quality, people, organizations and management (Hackman and Wageman, 1995). The goals of TQM are to increase customer satisfaction, quality products and services and to reduce costs. These goals have raised the profile of TQM among business strategies (Tasleem *et al.*, 2016). According to Brown (2013), TQM aims to continuously improve operations by focusing on process-related functions and their development. Tang (2019) finds that TQM's goal is to help organizations achieve their goals, understand customer needs and expectations, implement process monitoring and standardize companies' operations. There is evidence that TQM has positive effects on organizational performance (Al-Dhaafri and Al-Swidi, 2016; Shafiq *et al.*, 2019). TQM improves company performance by influencing operational, economic, social and sustainability issues. TQM normally improves companies' finances by contributing to the reduction of any kind of loss, for example, the cost of redoing (Abu-Alain, 2018). It is important to note that the ISO 9001 standard includes several issues relevant to TQM, such as management, processes, personnel, customer satisfaction and continuous improvement. Hietschold *et al.* (2014) and Mitreva *et al.* (2016) state that certification is only the first step toward TQM.

Although several studies have highlighted the positive effects of TQM on performance, it has also been suggested that TQM does not always lead to the best possible outcomes because of the risk of stiffening innovation processes (Khalfallah *et al.* 2022). For this reason, Kaur *et al.* (2013) recommend the implementation of TQM in combination with other procedures, such as total productive maintenance. Qasrawi *et al.* (2017) note that in most companies, the implementation of TQM can be considered a complete failure. Failures have led to the identification of key success factors associated with TQM. According to Aboyassin *et al.* (2011), to succeed in TQM, a company must invest in planning, benchmarking, teamwork and efficient use of resources. Elhuni and Ahmad (2014) require companies to invest in issues relevant to their operations. Therefore, it is important to examine which dimensions of TQM contribute to company performance in order to highlight the right dimensions.

A comprehensive literature search was conducted to find appropriate TQM dimensions, which include both soft and hard TQM elements. Thus, this section first introduces the dimensions that prior research has traditionally suggested as forming TQM. These TQM dimensions are mapped in Table 1, and they are introduced in the text and defined on the basis of prior research. Traditional TQM dimensions are combined with new approaches to construct a comprehensive presentation of TQM dimensions. The comprehensive view of TQM dimensions utilized in this study was dismantled based on previous studies, EFQM and ISO 9001 data into items to be examined. These items were further classified as hard or soft elements of TQM.

2.2 Traditional approach to TQM dimensions

2.2.1 Management/leadership. A prerequisite for success is that top management is convinced of the benefits of an organizational culture that promotes the quality of processes and products (Dreyfus *et al.*, 2004). Support from top management enables the company to implement effective quality management programs, and management is responsible for setting goals to guide better performance (Mehmood *et al.*, 2014). Sadikoglu and Zehir (2010) state that an essential element of leadership is maintaining a clear view of customer requirements, and Garcia-Alcaraz *et al.* (2021) report that management plays a significant role in achieving customer satisfaction.

2.2.2 Data and reporting. Management should make decisions based on analysis to be able to anticipate and respond to changes in internal or external requirements. This requires that management have the ability to create reliable and high-quality information for all stakeholders to improve organizational performance. Business needs and strategy define the

Table 1.
Results of a literature
search on the content
of TQM

Research	1. Management/ leadership	2. Data reporting	3. Customer	5. Personnel	6. Processes	7. Product/ service	8. Materials and suppliers	9. Continuous improvement	Additional dimensions	Total
Saraph <i>et al.</i> (1988)	X	X		X	X	X	X			6
Flynn <i>et al.</i> (1994)	X	X	X	X	X	X	X			7
Badri <i>et al.</i> (1995)	X	X	X	X	X	X	X			7
Powell (1995)	X	X	X	X	X		X			6
Black and Porter (1995, 1996)	X	X	X	X	X		X	X		6
Ahire <i>et al.</i> (1996)	X	X	X	X	X	X	X			7
Grandzol and Gershon (1998)	X	X	X	X	X	X		X		6
Quazi <i>et al.</i> (1998)	X	X	X	X	X	X	X			7
Rao <i>et al.</i> (1999)	X	X	X	X	X	X	X			7
Rahman (2000)	X	X	X	X	X	X				6
Yusof and Aspinwall (2000)	X	X	X	X	X	X	X			5
Prajogo and Sohal (2003)	X	X	X	X	X					5
Dreyfus <i>et al.</i> (2004)	X	X	X	X	X	X	X		Cooperation; benchmarking; statistical problem- solving	7 + 3
Sila (2007)	X	X	X	X	X	X	X			7
Sadikoglu and Zehir (2010), Sadikoglu and Olcay (2014)	X	X	X	X	X	X	X	X	Communication; statistical control/ feedback	7 + 2
Valmohammadi (2011)	X		X	X	X	X	X		Communication and quality information; tools and techniques	5 + 2

(continued)

Research	1. Management/ leadership	2. Data and reporting	3. Customer	5. Personnel	6. Processes	7. Product/ service	8. Materials and suppliers	9. Continuous improvement	Additional dimensions	Total
Talib <i>et al.</i> (2013)	X	X	X	X	X	X	X	X	Quality system; benchmarking; quality culture; teamwork	8 + 4
Mehmoed <i>et al.</i> (2014)	X		X	X				X		4
Long <i>et al.</i> (2015)	X		X	X	X				Strategic planning	4 + 1
Qasrawi <i>et al.</i> (2017)	X	X	X	X	X				Teamwork	4 + 1
Omar <i>et al.</i> (2018)	X	X	X	X	X		X		Strategic planning and development	6
Singh <i>et al.</i> (2018)	X		X	X			X		Strategic planning, information and analysis	4 + 1
Chaudhry <i>et al.</i> (2018)	X		X	X	X				Strategic planning, information and analysis	4 + 2
Khalifaallah <i>et al.</i> (2022)				X	X				Innovation product; innovation process; strategic quality planning; information and analysis	2 + 4

Table 1.

actions by which the necessary information is produced (Sadikoglu and Zehir, 2010). Dreyfus *et al.* (2004) states about the importance of knowledge that quality cannot be improved if process-related quality information does not exist and is not measured or monitored.

2.2.3 Customer. Talib *et al.* (2013) report that in order to succeed in meeting customer needs and expectations, a company must first identify them, after which processes can be directed to produce the desired products or services. There are two reasons for the importance of customer satisfaction. First, customer satisfaction shows whether a company is doing the right things for the customer, and second, whether they are doing these things in the right way.

2.2.4 Personnel. Mehmood *et al.* (2014) states that employees are the most important resource for any company as companies improve their productivity and performance. In order to become competitive, a company must train its personnel, and the training provided will further increase the company's competitiveness. Sadikoglu and Zehir (2010) emphasize that holistic quality training includes a number of technical skills and problem-solving methods, as well as new working methods and customer relationship management.

2.2.5 Processes. The purpose of process management is to systematically utilize all available resources to improve performance. Many previous studies show a clear positive correlation between process management and quality (Talib *et al.*, 2013). Because process management focuses on a company's operations by monitoring how operations are performed, it includes preventive and proactive practices to improve quality management and reduce variability to improve the quality level of production (Sadikoglu and Zehir, 2010).

2.2.6 Products/service. Dreyfus *et al.* (2004) states that TQM is a management system designed to continuously improve product quality to improve customer satisfaction and company performance. Sila (2007) also emphasizes the achievement of customer satisfaction through high-quality products and services. According to the author, affordable and high-quality products have a significant impact on the customer's experience.

2.2.7 Procurement and Materials. Buyers and suppliers using TQM work together to reduce costs and improve quality. By working with a single supplier for a long time, it is possible to establish a strong and mutually beneficial working relationship. Buyers should choose suppliers based on quality rather than price. Buyers should also work with suppliers to improve their quality (Sadikoglu and Zehir, 2010). Talib *et al.* (2013) also emphasize that previous studies show how a long-term collaboration develops a buyer-supplier relationship that directly affects competitiveness and performance. In addition, Jun and Cai (2010) emphasize the importance of a successful procurement process for customer satisfaction, especially in the service business.

2.2.8 Continuous improvement. Continuous improvement and innovation refer to an ongoing development process that improves the ability of processes to turn inputs into useful outputs (Talib *et al.*, 2013; Mehmood *et al.*, 2014). Development work helps to reduce process variability, thus improving performance. Continuous focus on the core dimensions that affect performance has been proven to be the best way to increase an organization's performance (Talib *et al.*, 2013). Mehmood *et al.* (2014) state that continuous improvement is the part of TQM that guides a company in its management, including the efforts of individuals to achieve set quality goals, meet customer expectations and improve company performance. Jun and Cai (2010) also show that continuous improvement plays an essential role in customer satisfaction.

Table 1 shows what issues have been included in previous studies when addressing the effects of TQM. The data are sorted in the table in chronological order.

2.3 Novel approach to TQM dimensions

2.3.1 Risk management. Moore *et al.* (2000) state that the main goal of risk management is to protect the organization from financial losses. Sukumar *et al.* (2011) note that SMEs rarely

provide risk management training to their employees, although human error and neglecting to follow instructions may present a high risk to the SME. Lack of information on IPR protection may also increase the level of risk associated with SMEs. The ISO 9001: 2015 standard also requires companies to provide evidence of the risk management system before their quality system can be certified.

2.3.2 Stakeholder management. The hallmark of good management is that management understands how closely the company is connected to its stakeholders and identifies the strategies used by stakeholders in pursuing their own goals (Frooman, 1999). The EFQM (2019), which can be seen as a European TQM model, also urges companies to engage their key stakeholders. The EFQM identifies customers, personnel, financial stakeholders, regulatory stakeholders, society, suppliers and subcontractors as stakeholders with whom engagement is important. Moreover, in a system built according to the ISO 9001: 2015 standard, stakeholders and their requirements must be identified before certification.

2.3.3 Digitalization. Kotarba (2017) has stated that increasing productivity is required in all business sectors. One of the engines of growth has been identified as digitalization (Sehlin et al., 2019; Ukko et al., 2020), which the European Commission has also included in its 2020 strategy. In his research, Kotarba (2017) discusses the development of digitization extensively and states that although the process-like approach is strongly reflected, it is important to develop digitalization and its measurement along with business development to achieve the desired benefits. Parviainen et al. (2017) state that digitalization is a process of implementation: thinking of existing functions from a new perspective, utilizing the tools provided by emergent technology.

2.3.4 System deployment. Although much has been written about the positive effects of TQM, Hansson and Eriksson (2002) state that not all firms achieve the desired results with TQM. They report that the generally accepted reasons for failure are the vague requirements of TQM and the failed implementation of the system due to a poorly managed TQM project. Also, Mosadeghrad (2014) cites an inefficient TQM package, poor TQM deployment procedures and an unsuitable environment for deployment as the main reasons for failure.

2.4 Comprehensive view of TQM dimensions

Table 2 presents a comprehensive view of TQM dimensions, including both traditional and novel approaches presented in earlier sections. As shown, not all dimensions used in previous studies are treated as separate dimensions in this study. Although studies have been conducted on the effects of TQM on personnel satisfaction, customer satisfaction and reputation, they are based on a narrower definition of TQM than that of this study, which, based on careful analysis, selected 11 dimensions divided into 61 topics. The cases were balanced so that 34 cases were under soft TQM and 27 cases were under hard TQM. The respondent did not have to think about what things should or could be compared to competitors, so to harmonize responses, benchmarking was linked to processes and products. Some studies have highlighted benchmarking, which in this study has been interpreted as a single technology, not as an actual TQM dimension, so it is linked to process improvement and TQM dimensions related to products or services. Data and reporting that occur in previous studies have also been treated as a single technique and have been addressed in the statements of the management/leadership and process management dimensions. In addition, in terms of performance, data and reporting are important in the listed dimensions. Achieving organizational collaboration is a matter of leadership skills, so this was combined with the management/leadership dimension. The purpose of balancing the order and location of the dimensions and items was to minimize the potential effects of the common method bias already identified in the design stage. In addition, compared to previous studies, this study integrated risk management, digitization, system deployment efficiency and stakeholder management into TQM, which has not been implemented in previous studies.

Dimensions Traditional (T)/New (N)	Content of the items used in this study; S = soft item; H = hard item		Cronbach $\alpha > 0.7$
Management/ Leadership (T)	(1) Organizational awareness of goals (S)	(6) Management support to achieve goals (S)	0.879
	(2) Monitoring the achievement of goals (S)	(7) Quality of internal cooperation (S)	
	(3) Goal metrics and awareness of goals/goal metrics (S)	(8) Problem solving (S)	
	(4) Management feedback on success (S)	(9) Equal partnership (S)	
	(5) Clarity of responsibilities and authority (S)	(10) Supporting initiatives (S)	
Customer Focus (T)	(11) Clarity of strategy (S)	(14) Customer satisfaction analysis (H)	0.691
	(12) Customer satisfaction assessment procedures (S)	(15) Action plans to improve customer satisfaction (H)	
Personnel (T)	(13) Customer satisfaction (S)	(18) Training programs to achieve goals (H)	0.781
	(16) Personnel knowledge of opportunities to influence customer satisfaction (S)	(19) Handling educational success (S)	
	(17) Mapping of training needs (H)	(20) Level of personnel competence (S)	
		(21) Level of personnel motivation (S)	
Processes (T)	(22) Process efficiency (H)	(26) Opportunities to improve processes (S)	0.829
	(23) Measuring success and performance (H)	(27) Self-assessment of process performance (H)	
	(24) Process performance information (S)	(28) Finding areas for improvement by comparing to competitors (H)	
	(25) Competitiveness of processes compared to competitors (S)		
Procurement and Materials (T)	(29) Procurement efficiency (H)	(32) Quality of suppliers (H)	0.730
	(30) Material deficiencies (H)	(33) Identity of materials (S)	
	(31) Value of inventories (H)		
Products (T)	(34) Competitiveness of products/ services (S)	(37) Product/service development activity (S)	0.729
	(35) Product price/quality ratio (S)	(38) Progress of products/ services compared to competitors (S)	
	(36) Customer complaints about products/services (H)		
Continuous Improvement (T)	(39) Overall level of continuous improvement in system (S)	(42) Informing personnel of changes (S)	0.804
	(40) The level of operational development (S)	(43) Rewarding personnel for successful projects (S)	
	(41) Control of corrective actions (H)		
Risk Management (N)	(44) Identification of risks to operations/products (H)	(46) Monitoring of corrective actions related to the risks (H)	0.819
	(45) Maintenance of risk assessments (H)	(47) Reduction of risks to operations/products (H)	

Table 2.
Content and reliability
of the used measures

(continued)

Dimensions Traditional (T)/New (N)	Content of the items used in this study; S = soft item; H = hard item		Cronbach $\alpha > 0.7$
Stakeholder Management (N)	(48) Stakeholder identification (S)	(51) Action plans to meet stakeholder requirements (H)	0.891
	(49) Identification of stakeholder expectations and requirements (S)	(52) Monitoring the implementation of stakeholder requirements (H)	
	(50) Objectives to meet stakeholder requirements (S)	(56) Identification of stakeholder requirements in the field of digitalization (S)	
Digitalization (N)	(53) Exploiting the opportunities offered by digitalization (H)	(55) Level of utilization of digitization (H)	0.834
	(54) Digitalization and shop floor management (SFM) in operation and development of internal processes through digitalization (H)	(56) Identification of stakeholder requirements in the field of digitalization (S)	
System Deployment (N)	(57) Adherence to ratified practices (H)	(60) Effectiveness of practices (H)	0.844
	(58) Effectiveness of the implementation of agreed practices (H)	(61) Personnel awareness of the importance of adherence to practices (S)	
	(59) Monitoring compliance with ratified practices (H)		

Table 2.

2.5 Hypothesis development

2.5.1 TQM and customer satisfaction. Previous research has shown that as competition intensifies, TQM's role in product design, performance development and customer focus management grows. Customer satisfaction is one of TQM's most important goals, and it requires jointly agreed upon procedures and the organization's commitment to those procedures. With the success of developing its operations, a company can achieve excellence over its competitors through customer satisfaction (Sheikholeslam and Emamian, 2016).

Previous studies have reported positive results on the effects of different TQM dimensions on customer satisfaction (e.g. Beheshti and Lollar, 2003; Ooi *et al.*, 2010; Hassan *et al.*, 2012; Topalovic, 2015). Topalovic (2015) studies the effects of TQM in the banking industry using commitment of top management, courtesy, responsibility and tangible elements as TQM dimensions. He shows that all other dimensions of TQM have a positive impact on customer satisfaction except tangible elements. He also reports that by increasing the range of services offered, banks are able to improve customer satisfaction and customer loyalty.

Hassan *et al.* (2012) study 171 Pakistani industrial companies. As TQM dimensions, they use employee involvement, commitment to quality, fact-based management, customer focus, process monitoring and control, continuous improvement orientation and incentive and recognition system. Their research concludes that the successful implementation of TQM improves organizational performance, which is most likely to be reflected in customer satisfaction and quality, among others. Similarly, Ooi *et al.* (2010) study the connection between TQM practices and customer satisfaction and also TQM and service quality in Malaysian SMEs. Their TQM dimensions are strategic planning, leadership, customer focus, information and analysis, human resource focus and process management. This research shows that all TQM dimensions with the exception of human resource focus have a significant positive impact on customer satisfaction and service quality. In addition, they emphasize that customer focus as well as information and its analysis are heavily connected to service quality and customer satisfaction.

EFQM emphasizes the following customer satisfaction management procedures in EFQM section 3.1: identifying customer groups, managing customer relationships, creating sustainable value for customers, understanding the needs of customer segments and interacting with customers. In addition to procedures, EFQM handles the results as customer insights, which can focus on, for example, customers' perceptions of the company, the commitment of the personnel, the company's products and services, the company's reputation, sustainable value creation, deliveries and communication. ISO 9001:2015 has also made customer focus part of the system to be certified by requiring organizations to conduct a customer-centric operation (ISO 9001: 2015 section 5.1.2) and monitor customers' views on how well the organization has met its customers' expectations. Based on the preceding evidence, H1 is proposed as follows:

H1. TQM has a statistically significant effect on customer satisfaction.

2.5.2 TQM and personnel satisfaction. Previous research on the positive effects of TQM on employee satisfaction (e.g. [Boselie and van der Wiele, 2001](#); [Ooi et al., 2008](#); [Kabak et al., 2014](#); [Arunachalam and Palanichamy, 2016](#); [Iqbal and Asrar-ul-Haq, 2018](#); [Sanjaya, 2018](#); [Ahmed and Idris, 2020](#); [Babu and Thomas, 2021](#)) has been conducted using a variety of TQM dimensions. [Boselie and van der Wiele \(2001\)](#) study the effects of the combined factors of human resource management (HRM) and TQM on individuals' satisfaction and intentions to change jobs. Based on an extensive literature review, they identify key research subjects, including the format of information delivery, insight into goals and objectives, work conditions, co-operation within business units, information sharing, leadership, customer focus and salary. The analysis reveals that the positive perception of individual employees of the company's HRM/TQM factors leads to good satisfaction and reduces the idea of changing jobs. In that study, employee satisfaction is most strongly supported by co-operation within business units, leadership and salary.

[Ooi et al. \(2008\)](#) study the influence of TQM dimensions on employee job satisfaction in Malaysian electronics companies. They divide TQM into the following dimensions: education and training, leadership and management commitment, customer focus, organizational culture and teamwork. Their research shows that the selected TQM dimensions have a positive and significant impact on employee satisfaction. [Arunachalam and Palanichamy \(2016\)](#) study the impact of TQM dimensions on Indian industrial personnel. They use as TQM dimensions training, employee empowerment, teamwork, customer focus, appraisal system, top management commitment, continuous improvement, employee involvement and organizational trust. The results of their study show that employee training, employee empowerment, appraisal system, top management commitment and continuous improvement explain both job satisfaction and commitment in a statistically significant way. [Kabak et al. \(2014\)](#) study the effects of TQM in Turkish service industries. As dimensions of TQM, they use employee relations and teamwork, employee training and education, employee reward and recognition, employee empowerment and quality culture. Their study shows that all selected TQM dimensions have an influence on job satisfaction. A result of the author's review is that there is an influence of TQM on employee satisfaction.

[Chaichi and Chaichi \(2015\)](#) and [Ahmed and Idris \(2020\)](#) report a positive effect of TQM on personnel satisfaction. [Sanjaya \(2018\)](#) analyzes the role of TQM in personnel satisfaction and organizational performance in Indonesia and uses top management commitment, implementation of TQM philosophy, customer management, supplier management, benchmarking, training, open organization, employee empowerment, zero-defects mentality, flexible manufacturing, process improvement and measurement as dimensions of TQM. His results show that TQM has a positive and significant effect on company performance and personnel satisfaction and that personnel satisfaction has a significant effect on company performance. Recognition, leadership and guidance, work environment,

working conditions and occupational safety are considered significant influencing factors for positive results (Sanjaya, 2018).

The EFQM highlights personnel-related practices in EFQM section 3.2 by considering employee needs, developing personnel to achieve goals, the importance of communication, caring for personnel, having a positive work atmosphere and ensuring competence. The EFQM also promotes the monitoring of the results obtained by established procedures in the “Results describing the views of the personnel” section, which shows the satisfaction of personnel with the chosen policies. ISO 9004: 2018 indicates the importance of personnel satisfaction by recommending continuous reviews of employee satisfaction levels in ISO 9004: 2018 section 9.2.2. Based on the preceding evidence, H2 is proposed as follows:

H2. TQM has a statistically significant effect on personnel satisfaction.

2.5.3 TQM and company reputation. There are some indications that TQM may also enhance a company’s reputation (Beheshti and Lollar, 2003; Yusuf *et al.*, 2007; Mourougan and Sethuraman, 2017; Yousif *et al.*, 2017). Yousif *et al.* (2017) investigate the effects of TQM in the field of health care. They use quality systems, medical and sanitary personnel, quality leadership, continuous improvement, relationships with suppliers and relationship with the patient as TQM dimensions, and one of the six hypotheses investigated is the positive impact of TQM on the reputation of the hospital. The researchers report that, with the exception of medical and sanitary personnel, all other dimensions have a positive impact on the reputation of hospitals.

Yusuf *et al.* (2007) study TQM practices in Chinese companies and find that in addition to influencing several performance elements such as customer satisfaction, market share, personnel, operations and products as well as services, TQM also has a significant positive impact on a company’s reputation. Researchers state that more than 68% of respondents report positive effects on the company’s reputation.

Some studies conclude that TQM has indirect implications for company reputation. Beheshti and Lollar (2003) state that quality significantly affects the value of industrial firms’ products. By improving the quality of its products, a company can influence its quality reputation while also increasing its market share. Mourougan and Sethuraman (2017) study the effects of TQM in service industries. They state that reputation depends on the qualitative performance of the company. Effective design leads to both improved product reliability and increased reputation. A reputation based on the reliability of products is sustainable because the reputation growth based on it is difficult to copy. The reliability of products or services leads to an increase in their reputation, which is part of a company’s reputation and market advantage. The good performance of products compared to those of competitors can create a strong positive reputation, which is likely to affect a company’s performance. As previously stated, the loss of reputation is one of the greatest risks for firms (Vig *et al.*, 2017). The EFQM considers the reputation of an organization as a measure of excellence in criterion 6. Based on the preceding evidence, H3 is proposed as follows:

H3. TQM has a statistically significant effect on reputation.

2.6 Summary and research framework

Based on the previous sections, a framework was designed for this study, as shown in Figure 1, covering a comprehensive range of TQM dimensions, separating this research from previous TQM studies. As previously noted, TQM affects customer satisfaction and service quality (e.g. Ooi *et al.*, 2010), as well as performance reflected through customer satisfaction (e.g. Hassan *et al.*, 2012) and product quality that improves customer satisfaction (e.g. Wantara and Tambrin, 2019). Although slightly different dimensions of TQM have been used in previous studies, it can be proposed that TQM also has a positive effect on

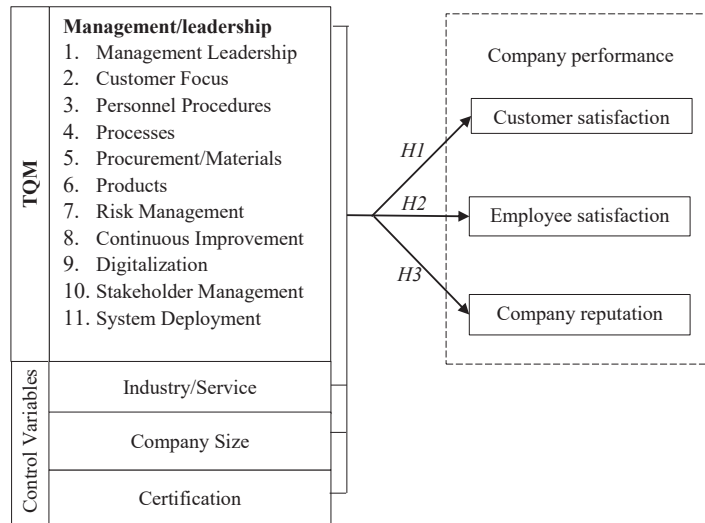


Figure 1. Research framework and hypotheses: the effects of TQM and control variables on the issues under investigation

personnel satisfaction, as described by [Boselie and van der Wiele \(2001\)](#), [Ooi et al. \(2008\)](#) and [Arunachalam and Palanichamy \(2016\)](#). Personnel satisfaction plays an essential role in companies. According to [Bin \(2015\)](#), there is a direct link between personnel satisfaction and commitment. Personnel satisfaction has a positive effect on business and increases profitability, while satisfaction increases personnel commitment. This is important because low commitment can lead to poor profitability, poor customer service and high employee turnover. [Jalagat \(2016\)](#) finds that job satisfaction, job performance and motivation interact. In terms of job satisfaction and performance in teamwork, higher job satisfaction leads to better performance. Finally, [Beheshti and Lollar \(2003\)](#), [Yusuf et al. \(2007\)](#), [Mourougan and Sethuraman \(2017\)](#) and [Yousif et al. \(2017\)](#) concluded in their TQM studies that TQM has a positive influence on a firm's reputation. A good reputation is important for companies. [Lee and Roh \(2012\)](#) show that company reputation has a significant effect on performance. [Hall and Lee \(2014\)](#) also report a positive effect between firm reputation and performance. They emphasize the importance of reputation in a company's success and regard it as a strategic competitive factor that must be considered by company management. [Li et al. \(2016\)](#) report that reputation has a significant effect on a company's performance, which is reflected in the company's growth opportunities.

Based on the above, this study considers customer satisfaction, personnel satisfaction and company reputation as important dimensions of company performance. Therefore, this study investigates the effect of TQM on company performance in terms of customer satisfaction, personnel satisfaction and company reputation. In addition, the framework includes the company's industry, company size and system certification as control variables.

3. Methodology

3.1 Sample and data gathering

The survey was executed among SMEs in Finland that had a maximum of 250 employees and a turnover of less than EUR 50 million according to the definition of SMEs. Only companies over five employees were accepted in this study. It was a requirement that the firm had more than five employees to ensure that the formal routines and processes of TQM take place.

A short summary of the research and its goals was forwarded to the top management of 6,889 randomly selected SMEs. In accordance with the focus of this study, the use of top management as a respondent is justified because it has the best knowledge of company operations and an understanding of how company operations are positioned relative to competitors. The study utilized two reminders and gained 271 useable responses, corresponding to 3.9% of the total mailing. All respondents were CEOs.

Of the responses, 163 (60.1%) came from industrial companies, of which 80 were uncertified and 83 were certified. A total of 108 responses came from service-oriented companies, which represented 39.9% of the responses. Of the service-oriented companies, 85 were uncertified and 23 were certified. Altogether, 165 of the companies were uncertified and 106 were certified.

3.2 Measures

The study's unit of analysis is the single respondent's comprehension of TQM dimensions and organizational performance (in terms of customer satisfaction, employee satisfaction and reputation). In this study, TQM is divided into 11 dimensions according. These 11 dimensions are the independent variables of the study. The dimensions are: management/leadership, personnel, customer focus, processes, product/service, procurement/materials, risk management, digitalization, continuous improvement, system deployment and stakeholder management. TQM was assessed with subjective measures. For each of the 11 TQM dimensions, several items needed to verify the TQM dimensions were designed. At the same time, the selected items were classified as belonging to either the soft or hard elements of TQM. A total of 61 items were designed, including 34 items classified as soft elements and 27 items classified as hard elements. The slight shift in focus to soft items is explained by the fact that all items in the management/leadership dimension were classified as soft in this study, although, for example, strategy and product/service development could have been classified as hard elements. The purpose of classifying the items used in the study into hard and soft elements was to ensure that the study forms a balanced analysis of the TQM system in which both elements are properly represented. This classification is shown in [Table 2](#). Reliability was tested using Cronbach's alpha values, which ensured the reliability of the constructs.

Three control variables were included. The company's industry was used as a control variable, as the focus of TQM is slightly different between industrial and service sectors. The industry control variable was measured by asking respondents whether the company was mainly an industrial company or mainly provides services. Company size was used in the study as the development of TQM grows as company size increases. Larger companies are assumed to have more resources available for development than small companies. The company size in this study was described by the number of employees, which varied between 5 and 250, making them SMEs. Certification is common in Finland, and companies invest considerably in it. Certification is used as a control variable, as it affects customer satisfaction, personnel satisfaction, or company reputation. The respondents were asked whether the company had a quality certificate.

Responses to the statements were given based on a Likert scale of 1–5 (5 = “strongly agree”, 1 = “strongly disagree”). In addition, the survey included specific questions about the organization, such as the existence of possible certification (measured as dummy variable yes or no), the industry of the business (measured as a dummy variable divided between service and industry) and the size of the company (measured as the number of employees). Respondents' perceptions of customer satisfaction, personnel satisfaction and the company's reputation were also added to the survey as dependent variables. These concepts refer here to organizational-level performance as comprehended by the single respondent. These responses reflect the degree to which the company representative assesses how the entire

company performs. It has been found that objective measures are more valid than subjective measures. However, the literature has shown that there is a high correlation and simultaneous validity between objective and subjective measures (e.g. Venkatraman and Ramanujan, 1987).

The exact items used in this study can be requested from the authors. The design of the items has taken into account the main principles highlighted by the study. The reliability of the collected data was checked using the Cronbach alpha coefficient. All but one of the Cronbach alpha coefficients were above 0.7. The Cronbach alpha value for customer focus is 0.691, which is 0.009 below the limit value of 0.70. The difference is so small that it is not necessary to consider the heterogeneity of the data or mutual correlations.

The selected items are grouped into either hard or soft items, as previously described. The division is by no means unambiguous, and even in this study, some items can be interpreted as belonging to both groups, depending on how the evaluator thinks about the matter.

3.3 Common method bias and non-response bias

Podsakoff *et al.* (2003) note that several researchers accept the idea that variance arising from research methods is a potential problem in behavioral research. Problems with common method bias may be due to the data being obtained from a single respondent, the use of a harmonized measurement procedure, or poor study design. The potential problem can be prevented by, for example, taking into account the study's temporal implementation and by differentiating the different measurement methods, emphasizing the anonymity of the answers and counterbalancing question order properly so that the logical progress of the research is not jeopardized (Podsakoff *et al.*, 2003).

Because in this study the same respondents were used as the sources for all gathered information, there was a risk that the common method bias would distort the results of the study. This potential problem was already addressed at the design stage of the study by conducting a very extensive literature review, which broadened the view of previous studies on the subject and developed detailed items for different dimensions. The survey ensured that the answers were given anonymously, so there was no need for respondents to respond to the items contrary to their own opinions. Respondents had the opportunity to choose the most suitable time for themselves, and it was not necessary to fill in all the answers at the same time. There was also no time limit for completing the questionnaire, so respondents were able to think about their answers before answering. The survey was targeted at individuals who were perceived as being in the best position to respond to the items. When designing the actual survey, the counterbalancing question order was taken into account to determine the correct order of presentation for the dimensions and items. This led, among other things, to the integration of issues related to the reporting and data analysis of traditional TQM into management and benchmarking into processes and products. The correct placement of the items provided a logical order of progression for the survey. Taking into account all the remedies taken, it can be proposed that the common method bias is not a factor in this study.

Non-response bias means uncertainty caused by non-response to the study. This uncertainty was tested by one-way ANOVA analysis, comparing responses in every dimension by carefully selected control groups. The control groups were selected based on the suggestion of Whitehead *et al.* (1993). They state that non-response bias can be examined by comparing the answers of the fully responded and the ones that did not fully respond to all items of the survey. For this reason, control groups were formed so that the first group consisted of responses that fully answered all the items and the second group consisted of responses in which some items had not been answered. The results of the one-way ANOVA ranged from $0.02 < p < 0.95$, when statistical significance is achieved if $p \leq 0.01$. The result of the analysis shows that non-response bias is not a factor in this study.

4. Results

This section presents the results of the correlation and regression analyses according to the research framework. The results show the effects of the TQM dimensions and control variables on customer satisfaction, personnel satisfaction and company reputation. Table 3 shows the correlations of the explanatory factors with the three control variables.

Table 3 shows that the number of employees has a small negative correlation between customer satisfaction, personnel satisfaction and reputation. In addition, there is a negative correlation between certification and customer satisfaction. The highest correlations with customer satisfaction are with system deployment and customer focus. With personnel satisfaction, the highest correlations are with management and system deployment. Reputation has the highest correlations with product and process.

Table 4 shows the results of the regression analysis. The results show that the explanatory power of TQM dimensions for customer satisfaction is almost 20%, for personnel satisfaction 20.5% and for reputation 12.3%. The result of the *F* test is 4.5480 ($p \leq 0.001$) for customer satisfaction, 4.7394 ($p \leq 0.001$) for employee satisfaction and 2.5868 ($p \leq 0.01$) for reputation, so all analyses are useful, and their significance clearly exceeds the limit of statistical significance.

Considering H1, it is revealed that the dimensions of Customer Focus and Products have a significant statistical explanatory power to customer satisfaction, and the *t*-value of both TQM dimensions is positive. The *p*-values for Continuous Improvement and System Deployment are approaching the limit of statistical significance but have not reached it. Of these dimensions, the *t*-value of Continuous Improvement is negative. The ability of other TQM dimensions to explain customer satisfaction is weak. It should be noted that the control variables certification, company size and company industry do not explain customer satisfaction at all. Thus, the results support H1 by indicating that customer satisfaction is positively affected by Customer Focus and Products development.

In H2, that is, in examining personnel satisfaction, it is found that the dimensions of Management/leadership ($p \leq 0.01$), Customer Focus ($p \leq 0.05$), Personnel ($p \leq 0.05$) and Risk Management ($p \leq 0.05$) are below the statistical significance limit value of 0.05. The results also show that Customer Focus, Risk Management *t*-values are negative. The *p*-value of the System Deployment approaches statistical significance but has not reached it. Thus, the results support H2 by indicating that personnel satisfaction is positively affected by Management/leadership, Personnel development. However, personnel satisfaction is negatively affected by excessive Customer Focus, Risk Management.

Explanatory factors	Customer satisfaction	Correlation	
		Personnel satisfaction	Reputation
Number of employees	-0.027	-0.035	-0.006
Industry/service	0.047	0.003	0.013
Certification	-0.008	0.033	0.035
Management/leadership	0.263	0.372	0.250
Customer focus	0.308	0.103	0.250
Personnel	0.204	0.303	0.204
Processes	0.278	0.252	0.260
Procurement/materials	0.216	0.100	0.210
Products	0.372	0.221	0.297
Risk management	0.198	0.143	0.238
Continuous improvement	0.210	0.271	0.248
Digitalization	0.201	0.237	0.179
Stakeholder management	0.275	0.227	0.244
System deployment	0.321	0.312	0.250

Table 3.
Correlations of
explanatory factors
with customer
satisfaction, employee
satisfaction and
reputation

Table 4.
Regression analysis
results

TQM dimensions	Customer satisfaction		Personnel satisfaction		Reputation	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Intercept	7.261	4.606E-12	6.773	8.583E-11	6.441	5.810E-10
<i>Control variables</i>						
Number of employees	-0.166	0.868	0.667	0.505	0.451	0.651
Industry/service	0.025	0.980	-0.076	0.939	-0.471	0.637
Certification	-0.381	0.703	0.731	0.465	1.074	0.283
<i>Independent variables</i>						
Management/leadership	-0.417	0.676	3.297	0.001 (**)	-0.115	0.908
Customer focus	2.680	0.007 (**)	-2.358	0.019 (*)	1.282	0.200
Personnel	-0.878	0.380	2.005	0.045 (*)	-0.444	0.657
Processes	0.543	0.587	0.577	0.563	0.584	0.559
Procurement/materials	0.080	0.935	-1.398	0.163	0.578	0.563
Products	3.149	0.002 (**)	-0.386	0.699	1.868	0.062
Risk management	-1.023	0.307	-2.236	0.026 (*)	0.536	0.592
Continuous improvement	-1.698	0.090	0.143	0.886	0.105	0.915
Digitalization	0.913	0.361	1.172	0.242	0.473	0.636
Stakeholder management	1.585	0.114	0.609	0.542	0.924	0.355
System deployment	1.732	0.084	1.667	0.096	-0.126	0.899
<i>F</i>	4.548 (***)		4.739 (***)		2.586 (**)	
<i>R</i> ²	0.199		0.205		0.123	
Adjusted <i>R</i> ²	0.155		0.162		0.076	
Note(s): Significance *0.01 < <i>p</i> ≤ 0.05; **0.001 < <i>p</i> ≤ 0.01; *** <i>p</i> ≤ 0.001						

Considering H3, the results in Table 4 show that none of the selected TQM dimensions or control variables have a statistically significant explanatory power in terms of reputation. It should also be noted that the *t*-values for Management/leadership, Personnel, System Deployment are negative.

5. Discussion

This study investigates the influence of TQM on customer satisfaction, personnel satisfaction and company reputation. Thus, this study contributes to the TQM management literature by showing the effect of TQM by using soft and hard items of each dimension. These results are discussed next.

First, the study shows that customer satisfaction is explained by Customer Focus and Products development. The findings make sense as focusing on customers' needs and developing the best possible products and services for them are proven to be necessities to ensuring customer satisfaction. Thus, it can be stated that the study is in line with prior research as it supports the findings of Beheshti and Lollar (2003), Ooi *et al.* (2010), Hassan *et al.* (2012) and Topalovic (2015). The results of the effect of product/service development on customer satisfaction are also supported by Lin *et al.* (2011) and Wantara and Tambrin (2019). On the other hand, it is somewhat surprising that some other TQM dimensions, such as Management/leadership, Processes, Continuous Improvement, are not significantly related to customer satisfaction. For example, Garcia-Alcaraz *et al.* (2021) stress the importance of management and operators in achieving customer satisfaction. Jun and Cai (2010) identify continuous improvement and management of the procurement process as the most important criteria affecting customer satisfaction in service providers, but they are not relevant in this study.

The reason why expectations were not met very well may be that the issues examined are internal to companies that aim to improve performance and are also included in

the ISO 9001 requirements. In Finland, this standard has been used for almost 40 years in the internal development of companies, so its impact on external results is not noticeable even within the company. On the other hand, because there are thousands of certified companies in Finland and the focus of certification is on management, processes, problem handling and continuous improvement, it has also been possible to link these issues to certification and internal development rather than to improving customer satisfaction, although customer satisfaction also plays a significant role in the requirements of the standard.

Second, the study shows that personnel satisfaction is explained by Management/leadership, Customer Focus, Personnel, Risk Management. The results are in line with the studies of [Boselie and van der Wiele \(2001\)](#), [Ooi et al. \(2008\)](#) and [Kabak et al. \(2014\)](#). Comparing the results of this study to [Arunachalam and Palanichamy \(2016\)](#), both studies report a positive effect on personnel satisfaction in terms of management/leadership and personnel procedures. This result is reasonable as putting emphasis on personnel by developing their skills as well as supporting their daily work has long been proven to be a significant predictor of their satisfaction.

Moreover, [Sanjaya \(2018\)](#) notes that the implementation of TQM has a positive effect on personnel satisfaction. The current study shows that only the management/leadership and personnel activities of the selected dimensions have a statistically significant positive effect on personnel satisfaction, partially supporting the view of [Sanjaya \(2018\)](#). [Chaichi and Chaichi \(2015\)](#) report that in addition to empowerment and employee training, appraisal systems and compensation have positive effects on personnel satisfaction. This is consistent with the results of the current study, although the topic studied differed slightly.

According to [Ahmed and Idris \(2020\)](#), all aspects of TQM, namely top management commitment, employees' empowerment, training and education, teamwork and employees' involvement, have a direct and positive effect on personnel satisfaction, consistent with the results of the current study. Both studies show the importance of management/leadership in good personnel satisfaction. [Ahmed and Idris \(2020\)](#) also emphasize the importance of good personnel satisfaction in competing for employees in the future. Therefore, top management should identify carefully which procedures maximize the implementation of TQM principles.

However, the study also revealed that putting an emphasis on Customer Focus yields a negative effect on personnel satisfaction. This can be the result of a company's urge to put all emphasis on meeting customer needs and forgetting to take care of its employees. In this sense, customer focus may mean too much pressure for employees in terms of working tasks and go some way to explaining the negative impact on personnel satisfaction. The results also show a negative impact of risk on personnel satisfaction. This is a novel finding as no prior research has found such an effect. The reason for this negative effect could be the insecurity that risk management can cause in companies. If all possible risks interfering with the company operation are continuously detected, personnel may start feeling insecure in their work and have doubts about the future of the company. This type of uncertainty can in turn cause decreased personnel satisfaction. As noted earlier, [Sukumar et al. \(2011\)](#) has reported low risk management training for SMEs, which may also be one reason for this result. However, top management needs to pay attention to the balance of the different dimensions. Businesses must not allow heavy investment in one important area to adversely impact other, equally important, parts of the organization. Management should ensure that it has measurement information on the state and evolution of the various dimensions so that they can effectively manage their management system.

Third, the study shows that none of the TQM dimensions affected company reputation. In addition, none of the three control variables explain reputation in a statistically significant way. The result of this study considering the influence of TQM on reputation are thus in conflict with previous studies, such as [Beheshti and Lollar \(2003\)](#), [Yusuf et al. \(2007\)](#) and [Mourougan and](#)

Sethuraman (2017). The closest to statistical significance was found to be the product, which also has the highest correlation with reputation. Note that company reputation plays a significant role in companies' success when intensifying competition. This study shows that TQM and certification have no effect on company reputation in Finnish SMEs. The weak effect of TQM on reputation is explained by the fact that most Finnish SMEs serve as subcontractors to larger companies, in which case the most significant requirement is to deliver customers' specified products on time. As improving reputation is a long-term task, new TQM systems have not had time to show their strengths as reputation enhancers. The fact that certification does not affect company reputation but the quality standard ISO 9001: 2015 includes all the main points of TQM indicates that certifiers accept weak systems for certification and companies receive certification without proper evidence of improvement (Poksinska, 2010).

In this context, although TQM has a positive effect on company operations, its effect alone is usually insufficient, and a well-functioning innovation strategy can help to implement TQM and deliver results (Khalfallah *et al.*, 2022). Finnish SMEs may have too much confidence in the possibilities provided by TQM and certification, and thus, some of the benefits may not be received.

6. Conclusions

This study demonstrates the relationship between comprehensive TQM and customer satisfaction, personnel satisfaction and company reputation. The study contributes to the TQM literature by investigating the role of TQM in company performance by utilizing a comprehensive framework of contemporary TQM dimensions. The specific theoretical and managerial contributions are given below.

6.1 Theoretical implications

First, the study shows that TQM is positively connected to customer satisfaction as Customer Focus, Products development were significant determinants of customer satisfaction. Second, the study shows that two TQM dimensions, Management/leadership, Personnel development, are positively related to personnel satisfaction, whereas two TQM dimensions, excessive Customer Focus, Risk Management, are negatively related to personnel satisfaction. Third, the study concludes that TQM is not correlated to reputation. Finally, the results show that certification has no effect on customer satisfaction, personnel satisfaction or reputation. The results of the study also show that neither the number of employees in the company nor the company's industry has any effect on customer satisfaction, personnel satisfaction or company reputation.

Deming developed the basic ideas of TQM as early as the 1950s. In Europe, the EFQM has become a basic document describing TQM, consisting of five areas of procedural criteria and two result areas. The ISO 9001 standard, updated in 2015, has converged with the TQM idea by linking issues related to the organization's context and the handling of risks and opportunities to the requirements. These issues need to be addressed in nearly 1m certified systems worldwide. This study combines the dimensions of TQM that emerged from an extensive literature review with the requirements of EFQM and ISO 9001, creating a well-justified scope for examining the effects of TQM in future TQM studies.

6.2 Managerial implications

This study provides new insights for SME leaders to consider TQM-related elements in their own company development activities to ensure a holistic approach to continuous improvement. The results of the study show that a company's management should plan carefully what issues and procedures should be developed and that management should not

be confident that a company's TQM or certified system would be sufficient to correct the issues. Specifically, corporate management should consider the non-existent effect of a certified system. Once this fact has been identified, the management of SMEs should consider how they can increase the effectiveness of their certified quality system as it will involve annual costs in any case. Given the large number of certified systems, this finding is important worldwide, not just in Finland.

6.3 Future research directions

Future research focusing on a similar topic is recommended to find out why certification does not increase customer satisfaction, even though the requirement for certification may come from the customers themselves and the 2015 updates to standard ISO 9001 used for certification are in accordance with the TQM principles. Another area of future research highlighted is continuous improvement: its mechanism of action, why it has a modest impact on personnel satisfaction and why raising its level would appear to have a negative influence on customer satisfaction. A third recommendation for future research is the impact of customer focus and risk management mechanisms on personnel satisfaction as the *t*-values for these dimensions were found to be negative. In addition, where possible, surveys could be designed with either full or partial stakeholder representation as respondents. This perspective could provide additional insights into the current understanding. Future studies could also test the interconnections between TQM dimensions and additional procedures that could be used to enhance the effectiveness of TQM.

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Corresponding author

Minna Saunila can be contacted at: minna.saunila@lut.fi

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