

QUALITY PAPER

The impact of certification on the elements of TQM exploring the influence of company size and industry

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Abstract

Purpose – This study examines whether certification improves the dimensions of total quality management (TQM) and whether the impact of certification is similar across companies of different sizes and industries. The benefits of certification for companies have been widely discussed in recent years. The general debate has been partly marked by the dispute about whether companies will benefit more from certification or the implementation of TQM. This debate has led to numerous studies on the benefits of certification; however, few studies simultaneously have examined traditional TQM issues and the requirements of the new quality standard, ISO 9001:2015, as well as the updated European Foundation for Quality Management (EFQM) criteria.

Design/methodology/approach – This study was conducted via a survey of Finnish SMEs and covered both industrial and service companies. The study comprehensively compared industrial companies with service companies and small companies with medium-sized companies.

Findings – In industrial and small enterprises, certification clearly has a positive effect on the dimensions of TQM, but a similar effect was not observed in medium-sized enterprises or in the service sector.

Originality/value – This is one of the first studies to examine the effect of certification on TQM in different types of SMEs while simultaneously considering EFQM and ISO 9001:2015 in Finland. The significant originality of this research lies in the formation of a comprehensive research framework for the dimensions of TQM.

Keywords Total quality management, TQM, Certification, EFQM

Paper type Research paper

Introduction

Numerous studies in the field of total quality management (TQM) practices have indicated a positive effect of these practices on the performance of companies (Ahire *et al.*, 1996; Adebajo and Kehoe, 1999; Kaynak, 2003; Hanson and Eriksson, 2002; Sadikoglu and Zehir, 2010; Al-Dujaili, 2013). Despite the continuous development of TQM research and the abundant literature in the field of TQM practices, the concept of TQM has not been defined in detail and compared with other performance-related procedures. For this reason, the latest research trends concerning quality management have focused on defining the paradigms and perspectives of TQM in order to intensify the academic debate and open new research lines to clarify the theoretical foundations of quality management and contextualize the findings obtained (Calvo-Mora *et al.*, 2020; van Kemenade and Hardjono, 2019). When considering prior studies, it can be recognized that the concept of TQM consists of various factors and forms and needs to be reorganized.



Therefore, this study was first accompanied by a comprehensive literature review to determine the basic factors of TQM. This was followed by the supplementation of the original factors with additional elements that emerged from the literature that were observed to influence the performance of companies. This extension means that the study fully covers not only the traditional TQM elements but also the requirements of the European Foundation for Quality Management (EFQM) and quality standard ISO 9001:2015. In this study, traditional TQM practices were extended to include stakeholder management, the use of digitalization, risk management and a review of the effectiveness of the implementation of ratified procedures. Stakeholder management and risk management are requirements of both the quality standard and EFQM. Also, [Polese et al. \(2019\)](#) emphasize stakeholder engagement and commitment because TQM includes building an environment in which all parties work to improve performance. Committing employees alone to improving performance is not enough, as customer focus and long-term supplier relationships also must be taken into account when improving quality. The promotion of digitalization is viewed as an important development throughout the EU, and the deployment of agreed-upon procedures is one of the issues to be ensured in certification. It also has been found that the new quality standard, ISO 9001:2015, places less emphasis on documentation, and more emphasis on stakeholder management, risk-based thinking and data management should help move toward TQM ([Fonseca, 2015](#)). Thus, ISO 9001 system certification could be expected to impact TQM dimensions.

Prior studies, such as [Biazzo et al. \(2003\)](#), have suggested that certification could be a first step toward TQM. Thus, this study will focus on the effects of certification on the dimensions of expanded TQM. This issue is relevant because even if companies are forced to apply for certification due to their customer requirements, in other words external motivation, they can still plan to develop their system placing the greatest emphasis on internal performance (i.e. internal, company-driven motivation). [Castillo-Peces et al. \(2018\)](#) have shown in their studies that internal motivation for the implementation of the ISO 9001 system produces a better outcome in terms of performance than external motivation. It has been demonstrated that TQM plays a significant role in firm performance ([Dubey and Gunasekaran, 2015](#); [Ahmed and Idris, 2020](#)). TQM's success and its organization-wide acceptance essentially are influenced by managerial commitment, which affects organizational diffusion of TQM through acceptance, routinization and assimilation ([Dubey et al., 2018](#)). Due to TQM's complexity and indeterminacy, it is necessary to examine how TQM performance can be maximized and whether certification, described as the first TQM step, impacts TQM dimensions' effectiveness.

The benefits of certification have been thoroughly discussed, and several studies have been conducted. For example, [Leung and Chan \(1999\)](#) showed the general benefit of the certificate, [Shafiq et al. \(2014\)](#) reported the positive impact of certification on firm profitability. [Gotzamani and Tsiotras \(2002\)](#), in turn, suggested that certification provides operational benefits to a company. Several studies have shown that ISO 9001 certification had positive effects on the performance of companies through various functions. While some studies suggest the positive impact of certification on management, image and quality culture ([Douglas et al., 2003](#); [Padma et al., 2008](#); [Gotzamani and Tsiotras, 2002](#)), others highlight that certification improves the efficiency of processes and supply chains ([Fernandes et al., 2017](#); [Georgiev and Georgiev, 2014](#); [Santos and Millán, 2013](#)). Additionally, working methods have been clarified due to certification. For example, the effects of certification on customer requirements identification, customer quality, customer satisfaction and management of the entire customer focus have been emphasized in many studies ([Zuckerman, 1995](#); [Caro et al., 2009](#); [Gotzamani and Tsiotras, 2002](#); [Padma et al., 2008](#); [Santos and Millán, 2013](#)). [Aba et al. \(2016\)](#) studied ISO 9001 certification's economic impact on US companies over a five-year period. Their study included companies' status a year before certification, during certification and three years after certification. Their research shows that certified companies' performance is better than that of non-certified companies throughout the study period. The researchers assumed that

certified companies' better performance compared with non-certified companies a year before certification is due to companies' implementation of TQM procedures.

The positive effects of certification on personnel, such as personnel management, training and employee competency, have been reported in prior studies (Curkovic and Pagell, 1999; Padma *et al.*, 2008; Zuckerman, 1995; Casadesús *et al.*, 2001). Additionally, improvements in supplier cooperation after certification have been observed (Georgiev and Georgiev, 2014; Prajogo *et al.*, 2012; Leung and Chan, 1999), as well as impacts on continuous improvement (Padma *et al.*, 2008; Santos and Millán, 2013). According to Santos and Millán (2013), the effect of certification on continuous improvement is the most important of the observed effects. However, Sciarelli *et al.* (2020) state that to ensure the implementation of a quality system, a comprehensive and value-based TQM framework should be designed that includes a mission and objectives to address performance goals.

Since ISO 9001 certification has gained a very strong foothold worldwide, as evidenced by the more than 880,000 certifications completed by the end of 2019 (ISO Survey), the question arises whether certification improves the expanded dimensions of TQM and whether the impact of certification is similar across companies of different sizes and industries. In light of this uncertainty, study aimed to examine the significant differences between certified and uncertified companies with respect to their success in the expanded dimensions emphasized by TQM in various contexts, such as industry and company size.

Definitions of key concepts

Certification

Certification means conformity assessment. Often, requirements are set out in the standards that guide companies toward achieving certification. The focus of certification might be, for example, rebuilding the entire management system in accordance with the ISO 9001 quality standard. The purpose of SFS-EN ISO 9001 certification is to increase trust in the organization's products and services and to increase trust throughout the supply chain. In a certification audit, the certification body assesses whether the object to be certified meets the certification requirements. After the requirements have been satisfied, the certification organization admits confers a certificate on the company, which shows that the organization meets the criteria used in the assessment. The validity of certification requires reassessments and periodic re-certification. (FINAS, 2016; SFS -EN ISO 19001, 2018).

TQM

TQM means total quality management; it consists of several parts and is generally thought to be a "management philosophy and mindset". It is perceived to develop organizations into world-class companies. TQM is said to help organizations that want to improve customer satisfaction, reliability, productivity and market share (Sharma and Gadenne, 2008). In the 1950s, Deming introduced the TQM quality philosophy adopted by the Japanese, which enabled Japanese manufacturers to make better progress in quality-related matters than American manufacturers (Fotopoulos and Psomas, 2008). With the success of the Japanese, American companies lost market share and investment in TQM expanded in the United States. The use of TQM received widespread attention, and by the late 1980s it had been implemented by numerous large American corporations (Powell, 1995 and Ahire *et al.*, 1996).

In contrast to certification, no common principles have been agreed upon for the implementation of TQM, and available guidance is quite vague (Gotzamani and Tsiotras, 2002). In order to outline TQM in this study, researchers' views on relevant issues related to TQM were sought from previous studies. The studies utilized were Tari (2005), Sila (2007), Zakuna *et al.* (2010) and Sadikoglu and Olcay (2014). Most views could be grouped under the following issues: management/leadership, data and reporting, customers, personnel,

Research	Management/ Leadership	Data and reporting	Customer	Personnel	Processes	Product/ service	Materials and suppliers	Continuous improvement	Other things
Saraph <i>et al.</i> (1989)	Role of top management, quality policy and quality department	Quality data and reporting		Training, Employee relations	Process management	Product/ service design	Supplier quality management		
Flynn <i>et al.</i> (1994)	Top management support	Quality information	Customer involvement	Workforce management	Process management	Product design	Supplier involvement		
Badri <i>et al.</i> (1995)	Role of top management, quality policy and quality department	Quality data and reporting		Training	Process management	Product /service design	Supplier quality management		
Powel (1995)	Top management commitment. Open and lean organization	Objectives and interest in data	Fulfilling customer requirements regardless of inputs	Training	Flexible manufacturing. Improving processes. Waste reduction. Efficiency		Ensure the supplier is able to produce the required products		TQM communication. Benchmarking. Zero mistake idea
Black and Porter (1995, 1996)	Corporate quality culture. Strategic quality management. External interface management		Customer management. Customer satisfaction orientation	People management. Employee empowerment	Operational quality planning. Teamwork structures for process improvement		Supplier partnership	Quality improvement measurement systems. Communication of improvement information	
Ahire <i>et al.</i> (1996)	Top management commitment. Design quality management	Internal quality information usage	Customer focus	Employee involvement, training and empowerment	Statistical process control usage	Product quality	Supplier quality management. Supplier performance		

(continued)

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

Research	Management/ Leadership	Data and reporting	Customer	Personnel	Processes	Product/ service	Materials and suppliers	Continuous improvement	Other things
Grandzol and Gershon (1998)	Leadership		Customer focus. Customer satisfaction	Employee fulfillment. Learning. Employee satisfaction	Process management	Product/ service quality		Continuous improvement	Internal/external cooperation. Public responsibility
Quazi <i>et al.</i> (1998)	Top management responsibility. Quality goals and policy. Role of the quality department	Quality data and reporting	Integrating customer requirements	Training. Role of the employee	Process management. Inspection policy. Quality related performance	Product/ service design	Partnership with supplier. Supplier selection and relationship. Supplier capability Supplier quality	Continuous improvement	
Rao <i>et al.</i> (1999)	Top management commitment Management, leadership. Measurement and feedback	Quality information availability	Customer orientation	Employee training and involvement Education and training. Human resource development	Process design. Internal quality results System and process improvement tools and techniques	Product design	Supplier quality assurance	Continuous improvement process	External quality results. Quality citizenship
Yusof and Aspinwall (2000)				Support of human resource development	Quality results. Quality assurance of products and services		Supplier quality		
Parast <i>et al.</i> (2006)	Quality leadership. Strategic planning process of quality management Leadership	Quality information and analysis	Customer focus and satisfaction						
Sila (2007)		Information and analysis	Customer focus	Human resource management	Process management. Organizational effectiveness		Supplier management		Financial and market results
Sedikoglu and Olcay (2014)	Leadership. Strategic quality planning		Customer focus	Employee involvement. Training	Process management		Supplier quality management	Continuous improvement	Knowledge management

processes, product/service, material/suppliers and continuous improvement. The results are shown in [Table 1](#). It can be seen from [Table 1](#) that there was no consensus among the researchers on the content of TQM, as only the “Management/Leadership” column is represented in the views of each researcher.

In the twenty-first century, the division into soft and hard aspects has become more common in TQM. [Vouzas and Psychogios \(2007\)](#) stated that the above aspects are observable in several TQM definitions. Hard TQM can be understood as technical and refers to tools and techniques, while soft TQM can be understood as a more philosophical implementation of management models. [Georgiev and Ohtaki \(2019\)](#) state that soft TQM aspects are intangible and difficult to measure, while hard aspects are more like production techniques. Although in theory, the division seems simple, [Vouzas and Psychogios \(2007\)](#) stated that no consensus exists on how different things should be divided into soft and hard aspects.

[Fotopoulos and Psomas \(2008\)](#) present one solution by stating that aspects of soft TQM are long-term issues that need to be included in companies’ deployment plans for TQM projects. TQM’s hard aspects must support the exploitation of soft aspects. [Fotopoulos and Psomas \(2008\)](#) divided hard and soft aspects as follows:

- (1) Hard TQM: These include cause-and-effect diagrams, scatter diagrams, affinity diagrams, relationship diagrams, force-field analyses, run charts, control charts, quality function deployment, failure mode and effect analyses. According to the researchers, TQM’s hard aspects, which comprise different tools, cannot lead to desired results alone.
- (2) Soft TQM: These include commitment from top management, strategic quality planning, employee involvement, supplier management, customer focus, process orientation, continuous improvement, fact-based decision making and human resource development.

[Fotopoulos and Psomas \(2008\)](#) noted that for a company, soft TQM carries more weight than hard TQM and success in implementing continuous improvement, fact-based management and organizational involvement becomes particularly important.

The European Foundation for Quality Management (EFQM) model

Despite the fact that there is no consensus on the specific content of TQM, the European Foundation for Quality Management (EFQM) has developed a European multidimensional quality management model, the principles of which are derived from the TQM philosophy ([Nabitz et al., 2000](#)), and it is the most widely used model in Europe for evaluating corporate TQM systems ([Heras-Saizarbitoria et al., 2011](#)). The EFQM model is a set of systematically presented criteria that represent different organizational areas within firms ([Ruiz-Carrillo et al., 2005](#)), and for this reason the EFQM model is better structured than traditional TQM. The EFQM model was updated in 2019 and is divided into three areas: direction, operation and results.

The [EFQM model \(2019\)](#) provides guidance for establishing a core mission, vision and strategy, as well as organizational culture, pioneering and leadership. Mission, vision and strategy are concretized into five tasks: (1) define the mission and vision, (2) identify and understand the needs of stakeholders, (3) perceive and understand the operating environment, the company’s capabilities and major challenges, (4) develop a strategy and (5) build a management system to guide the organization’s governance and performance. Organizational culture, pioneering and leadership are concretized into four tasks: (1) guide organizational culture and uphold values, (2) make all changes possible, (3) encourage creativity and innovation and (4) involve and engage stakeholders in the mission, vision and strategy implementation.

The operations of the [EFQM \(2019\)](#) model include stakeholder engagement, sustainable value creation, performance management and renewal. Stakeholder commitment is concretized into five target groups and tasks: (1) Customers—i.e. build sustainable customer relationships; (2) Personnel—i.e. attract and commit to develop and retain personnel; (3) Stakeholders who guide and regulate the economy—i.e. ensure and maintain ongoing support from these stakeholders; (4) Society—i.e. contribute to the development and mental and material well-being of society; and (5) Partner suppliers and subcontractors—i.e. build relationships and secure support for sustainable value creation. Creating sustainable value is concretized into four tasks: (1) assess design value and create value, (2) communicate and sell value, (3) produce value and (4) define and produce the overall experience. Performance management and renewal are concretized into five tasks: (1) direct performance and manage risks, (2) continuously assess the organization's readiness to meet future needs, (3) drive innovation and leverage technologies, (4) harness access to data and knowledge and (5) manage assets and resources.

The [EFQM \(2019\)](#) model includes the views of stakeholders as well as strategic and operational performance in its assessment of results. Thus, this study is a combination of a study of TQM, the factors of the [EFQM \(2019\)](#) model, and the studies presented in [Table 2](#) related to risk management, stakeholder management, digitalization and systems deployment. A theoretical framework has been developed based on these components to study the effects of certification on the dimensions of TQM. The rationale for the theoretical framework is presented in the next section.

Theoretical framework

TQM dimensions

This section explains the TQM dimensions selected for this study. Prior studies of TQM classify the dimensions in a variety of ways. Thus, prior TQM studies were reviewed to determine the dimensions of TQM. A comprehensive framework was developed based on this review and describes the dimensions that TQM emphasizes in order to achieve higher performance. The TQM dimensions selected for the study and their identification are presented in [Table 2](#).

Impact of certification on the TQM dimensions

As previously discussed in the background of the study, it has become clear that many studies have been carried out on certified quality systems. A wide range of benefits have been reported, and since this study compares the status of factors affecting the performance of certified and uncertified firms, findings from prior studies regarding the effects of certification on performance factors have been explored.

[Douglas et al. \(2003\)](#) examined more than 100 certified service and industrial companies in the UK and found that certification improved organizational consistency and management oversight. [Padma et al. \(2008\)](#) extensively studied the impact of ISO certification on organizational performance in the Indian industry, using management views as their source material. They considered the impact of certification on management engagement, customer focus development, quality process management, continuous improvement, measurement and control and personnel management. The target group of their study was small, medium and large companies. Their research showed a significant improvement in results across all issues and across all size companies. [Leung and Chan \(1999\)](#) examined the effects of certification on Hong Kong companies. They reported that the majority of respondents found certification useful. In their research, they highlighted shortening delivery times, volume growth, increased sales and improved communication with both customers and subcontractors as benefits of certification.

TQM dimensions	Literature supporting selection	Identification used in this study
Management/ Leadership	Saraph <i>et al.</i> (1989), Flynn <i>et al.</i> (1994), Badri <i>et al.</i> (1995), Powel (1995), Black and Porter (1995, 1996), Ahire <i>et al.</i> (1996), Grandzol and Gershon (1998), Quazi <i>et al.</i> (1998), Dow <i>et al.</i> (1999), Rao <i>et al.</i> (1999), Rahman (2000), Yusof and Aspinwall (2000), Wilson and Collier (2000), Prajogo and Sohal (2003), Parast <i>et al.</i> (2006), Sila (2007), Sadikoglu and Olcay (2014), EFQM (2019)	Organizational awareness of goals; Monitoring the achievement of goals; Goal metrics and awareness of goals/goal metrics; Management feedback on success; Clarity of responsibilities and authority; Management support to achieve goals; Quality of internal cooperation; Problem solving; Equal partnership; Supporting initiatives; Clarity of strategy
Customer Focus	Flynn <i>et al.</i> (1994), Powel (1995), Black and Porter (1995, 1996), Ahire <i>et al.</i> (1996), Grandzol and Gershon (1998), Quazi <i>et al.</i> (1998), Dow <i>et al.</i> (1999), Rao <i>et al.</i> (1999), Rahman (2000), Wilson and Collier (2000), Prajogo and Sohal (2003), Parast <i>et al.</i> (2006), Sila (2007), Sadikoglu and Olcay (2014), EFQM (2019)	Customer satisfaction assessment procedures; Customer satisfaction; Customer satisfaction analysis; Action plans to improve customer satisfaction
Personnel	Saraph <i>et al.</i> (1989), Flynn <i>et al.</i> (1994), Badri <i>et al.</i> (1995), Powel (1995), Black and Porter (1995, 1996), Ahire <i>et al.</i> (1996), Grandzol and Gershon (1998), Quazi <i>et al.</i> (1998), Dow <i>et al.</i> (1999), Rao <i>et al.</i> (1999), Rahman (2000), Yusof and Aspinwall (2000), Wilson and Collier (2000), Prajogo and Sohal (2003), Parast <i>et al.</i> (2006), Sila (2007), Sadikoglu and Olcay (2014), EFQM (2019)	Staff knowledge of opportunities to influence customer satisfaction; Mapping of training needs; Training programs to achieve goals; Handling educational success; Level of staff competence; Level of staff motivation
Processes	Saraph <i>et al.</i> (1989), Flynn <i>et al.</i> (1994), Badri <i>et al.</i> (1995), Powel (1995), Black and Porter (1995, 1996), Ahire <i>et al.</i> (1996), Grandzol and Gershon (1998), Quazi <i>et al.</i> (1998), Rao <i>et al.</i> (1999), Yusof and Aspinwall (2000), Rahman (2000), Wilson and Collier (2000), Prajogo and Sohal (2003), Parast <i>et al.</i> (2006), Sila (2007), Sadikoglu and Olcay (2014), EFQM (2019)	Process efficiency; Measuring success and performance; Process performance information; Competitiveness of processes compared to competitors; Opportunities to improve processes; Self-assessment of process performance; Finding areas for improvement by comparing to competitors
Procurement and Materials	Saraph <i>et al.</i> (1989), Flynn <i>et al.</i> (1994), Badri <i>et al.</i> (1995), Powel (1995), Black and Porter (1995, 1996), Ahire <i>et al.</i> (1996), Quazi <i>et al.</i> (1998), Dow <i>et al.</i> (1999), Rao <i>et al.</i> (1999), Rahman (2000), Yusof and Aspinwall (2000), Parast <i>et al.</i> (2006), Sila (2007), Sadikoglu and Olcay (2014), EFQM (2019)	Procurement efficiency; Material deficiencies; Value of inventories; Quality of suppliers; Identity of materials
Products	Saraph <i>et al.</i> (1989), Flynn <i>et al.</i> (1994), Badri <i>et al.</i> (1995), Ahire <i>et al.</i> (1996), Grandzol and Gershon (1998), Quazi <i>et al.</i> (1998), Rao <i>et al.</i> (1999), EFQM (2019)	Competitiveness of products/services; Product price/quality ratio; Customer complaints about products/services; Product/service development activity; Progress of products/services compared to competitors

(continued)

Table 2.
TQM dimensions
selected for the study,
literature related to
their selection and their
identification

TQM dimensions	Literature supporting selection	Identification used in this study
Risk Management	Moore <i>et al.</i> (2000), Fatemi and Luft (2002), Gillmore <i>et al.</i> (2004), Ellegaard (2008), Altman <i>et al.</i> (2010), Sukumar <i>et al.</i> (2011), Thun <i>et al.</i> (2011), Wilson and Altanlar (2013), EFQM (2019)	Identification of risks to operations/products; Maintenance of risk assessments; Monitoring of corrective actions related to the risks; Reduction of risks to operations/products
Continuous Improvement	Black and Porter (1995, 1996), Grandzol and Gershon (1998), Yusof and Aspinwall (2000), Sadikoglu and Olcay (2014), EFQM (2019)	Overall level of continuous improvement in the system; The level of operational development; Control of corrective actions; Informing staff of changes; Rewarding staff for successful projects
Stakeholder Management	Frooman (1999), Berman <i>et al.</i> (1999), Whysall (2000), Preble (2005), EFQM (2019)	Stakeholder identification; Identification of stakeholder expectations and requirements; Objectives to meet stakeholder requirements; Action plans to meet stakeholder requirements; Monitoring the implementation of stakeholder requirements
Digitalization	Kotarba (2017), Muro <i>et al.</i> (2017), Joensuu-Salo <i>et al.</i> (2018), Meisnera (2018), Martín-Peña <i>et al.</i> (2019)	The importance of digitalization, the changes it brings and harnessing the potential of digitalization to improve performance; Digitalization and shop floor management (SFM) in operation and development of internal processes through digitalization; Digitalization utilization rate and metrics; Identification of stakeholder requirements in the field of digitalization
System Deployment	Gotzamani and Tsiotras (2002), Chow-Chua <i>et al.</i> (2003), Terziowski and Power (2007), Jeroen <i>et al.</i> (2001), Poksinska (2006), Zeng <i>et al.</i> (2007), Prajogo <i>et al.</i> (2012)	Adherence to ratified practices; Effectiveness of the implementation of agreed practices; Monitoring compliance with ratified practices; Effectiveness of practices; Staff awareness of the importance of adherence to practices

Table 2.

Prajogo *et al.* (2012) examined the views of management in ISO 9001 certified companies in Australia and found that effective system implementation had a positive impact on the management of all processes. The positive effect also extended to more effective interactions with suppliers and customers. Fernandes *et al.* (2017) have conducted a very extensive literature review on the benefits of combining supply chain management and quality management. They reported that the implementation of a quality management system in parts of the supply chain improves the performance of the company. Georgiev and Georgiev (2014) stated after examining Bulgarian companies that the impact of ISO 9001 on company performance in areas such as internal processes, customers, suppliers and subcontractors was significant. Shafiq *et al.* (2014) studied the effects of ISO 9000 certification on the organizational performance of the textile industry in Pakistan. Their research showed that there was a statistically significant difference in the profitability of certified and uncertified companies.

Zuckerman (1995) stated that firms reported they had benefited from their quality system. The main benefits he highlighted were defining the company's capabilities, more precisely defining customer requirements, assuring the customer of order-based delivery, monitoring employee capabilities, outsourcing work, better tracking of purchase orders, achieving commercial advantage and reducing customer complaints.

Caro *et al.* (2009) examined customer perceptions of the quality of Spanish insurance companies. ISO 9000 certification made it possible to perceive and understand customer

quality, manage satisfaction and internalize the company's image. These issues were perceived by customers to be better in certified than uncertified insurance companies and were related to service quality and corporate image. [Gotzamani and Tsiotras \(2002\)](#) reported improvements in customer satisfaction in Greek companies after quality system certification. In addition to improved customer satisfaction, certification improved the company's quality culture and product quality. They also noted that certification offered companies other operational benefits.

[Curkovic and Pagell \(1999\)](#) stated that the system required training of all staff to improve quality, so companies increased the value of their most important resource. [Gotzamani and Tsiotras \(2002\)](#) stated that certification is rewarding for the entire company and, in addition, it improves employee morale and consideration for quality. They stated that certification also improves a company's quality culture. [Casadesús et al. \(2001\)](#) highlighted the positive effects of certification on personnel in their study of the Spanish industry. They also stated that the benefits of certification included improved procedures, clarification of responsibilities, increased trust, better commitment to work, improved job satisfaction and communication, as well as improved customer relationships and customer service.

[Santos and Millán \(2013\)](#) studied Portuguese certified companies and stated that the main benefits of certification were clearer work procedures, improved standardization, improved corporate image, increased customer confidence in company quality and improved customer satisfaction. They also reported that the development of continuous improvement procedures was the most important benefit of certification.

Based on the above, it can be concluded that prior studies have shown that certification improves the performance of companies, regardless of their geographical location, industry or company size. However, it should be acknowledged that some prior studies have also yielded opposing results. [Poksinska \(2010\)](#) stated that organizations may have a very different degree of maturity for standardizing their operations and because the requirements of ISO 9001 are general, an organization can claim to operate according to the standard and obtain a certificate without developing its operations.

[Christmann and Taylor \(2006\)](#) grouped certifications according to how firms adopted quality-related procedures. They call symbolic implementation cases where quality procedures are not in daily use. Deployment, where procedures are in daily use, researchers call these substantive implementation. Concluded by an external certification, based on audits of the third-party question arises as to the auditor's legitimacy and independence. Like [Poksinska \(2010\)](#), [Christmann and Taylor \(2006\)](#) also state that a company can obtain a certificate even if the system to be certified is separate from the practical operation. [Christmann and Taylor \(2006\)](#) also reported that companies that do not meet the standards' requirements may need to pass periodic certification inspections. Therefore, researchers believe that it is essential for companies to take a strategic approach toward adoption of standards by choosing a quality level that corresponds with their perceptions of costs and benefits.

[Rahman \(2000\)](#) investigated the effects of TQM quality management factors on Australian certified and uncertified SMEs. He showed in his study that of the quality management criteria, only process management was clearly more important for certified companies than for uncertified companies. All other quality management criteria were approximately the same in certified and uncertified companies. This also shows that certification does not automatically raise the level of quality management in a company.

[Boiral and Gendron \(2011\)](#) state that ISO audits do not focus on improving performance, but rather on adherence to a quality management system. Like [Christmann and Taylor \(2006\)](#), [Boiral and Gendron \(2011\)](#) highlighted auditors' professionalism and independence as potential problems, although ISO 19011 and ISO 17021 seek to manage this problem. They also report that decoupling auditing from practical operations may cause customers to

misunderstand the level of the company's operations. Audits' accuracy also can be questioned because audits are quite short and often focus on reviewing documents.

Methodology

The survey data were collected from Finnish SMEs through an Internet-based survey. When designing the survey, the TQM framework that emerged in the literature review was refined as previously described so that it was categorized in terms of (1) management/leadership, (2) customer focus, (3) personnel, (4) processes, (5) material/suppliers, (6) product/service, (7) risk management, (8) continuous improvement, (9) digitalization, (10) stakeholder management, (11) system deployment. For each of the 11 TQM dimensions, 4–11 items were constructed. The total number of items was 61. Answers to the items were asked on a Likert scale of 1–5, where 1 = strongly disagree and 5 = strongly agree. In addition, the survey included specific questions about the respondent's organizational status, the industry and size of the company.

The study was conducted in Finnish SMEs with a maximum number of employees of 250 and a turnover of less than EUR 50 million, and a balance sheet value of EUR 43 million, as defined by EU Commission Regulation No. 651/2014 for SMEs. However, only companies with more than five employees were included in this study although companies with less than five employees are also SMEs. Companies with less than five employees did not qualify for the study because these companies' practices are believed to overly reflect the CEO's approach and not the organization's overall impact. Responses from companies with more than 250 employees and less than 5 employees were removed from the dataset. A brief presentation of the study and its objectives was sent to the CEOs of 6,889 SMEs.

The survey utilized two reminder messages and resulted in 287 responses obtained from these companies' CEOs. Overall, the response rate was 4.2%. Of the respondents, 174 (60.6%) represented industrial companies, of which 88 were certified and 86 were uncertified. One hundred and thirteen responses were received from the service companies, which represented 39.4% of the responding companies. Of the service companies, 24 were certified and 89 were uncertified. In total, 112 of the companies were certified and 175 were uncertified.

Of the 112 certified companies surveyed, seven have had a certificate for one year, five for two years, two for three years, seven for four years, 11 for five years and 76 for more than five years. Three companies did not report how long their certificates have been valid. At the time of the survey, all certified companies have been forced to either build their system according to ISO 9001: 2015 or upgrade it to meet this standard's requirements. Considering that all TQM dimensions in this study are included in the ISO 9001 standard, except for digitalization, the real impact from certification on TQM dimensions and the requirements of the standard will be revealed in Finnish SMEs as a result of this study.

Data means were analyzed by a one-way analysis of variance (ANOVA). The analysis examined the differences between certified and uncertified companies, targeting (1) the entire dataset, (2) service companies and (3) industrial companies. In addition, the analysis examined the effects of certification on TQM dimensions in different company size classes and in the context of the number of employees.

Results

This section presents the data collected from the study described above. Results are presented as means and standard deviations of the sums of measures of the TQM dimensions in certified and uncertified companies. The *p* and *F* values from the analysis of variance are also included in the tables below. Further, the tables indicate the significance of each case in accordance with the criteria set out in the table.

Table 3 shows that when all the companies surveyed were grouped into certified and uncertified companies, there were significant differences in the levels of TQM dimensions in

TQM Dimension	Certified		Uncertified		<i>p</i>	<i>F</i>	Significance
	Mean	Std. dev	Mean	Std. dev			
Management	3.91	0.376	3.87	0.349	0.6159	0.2523	
Customer Focus	3.62	0.517	3.42	0.613	0.0302	4.7442	*
Personnel	3.59	0.426	3.45	0.431	0.0872	2.9459	
Process	3.69	0.486	3.47	0.475	0.0084	7.0404	**
Procurements and Materials	3.88	0.446	3.90	0.387	0.8003	0.0641	
Product/Service	4.00	0.403	4.06	0.331	0.3861	0.7534	
Risk Management	3.85	0.548	3.65	0.536	0.0300	4.7566	*
Continuous Improvement	3.72	0.568	3.48	0.560	0.0082	7.0777	**
Stakeholder Management	3.78	0.562	3.71	0.607	0.4202	0.6517	
Digitalization	2.99	0.959	3.25	0.828	0.0264	4.9827	*
System Deployment	3.89	0.521	3.81	0.408	0.3145	1.0155	

Note(s): Significance: * $0.01 < p \leq 0.05$; ** $0.001 < p \leq 0.01$; *** $p \leq 0.001$

Table 3.
TQM in all studied companies: Comparing certified and uncertified firms

terms of customer focus (*), process (**), risk management (*), continuous improvement (***) and digitalization (*). In the significant TQM dimensions, with the exception of digitalization, the mean scores of certified firms were better than the mean scores of uncertified firms.

Table 4 shows that when industrial companies were grouped into certified and uncertified companies, there were significant differences in the levels of the TQM dimensions in terms of customer focus (**), personnel (*), process (*) and continuous improvement (*). In all of these aspects, certified companies received better mean scores than uncertified firms.

It can be seen from Table 5 that when service companies were grouped into certified and uncertified companies, there were no significant differences in the levels of the TQM dimensions. The results show that the mean scores of uncertified companies were even better in terms of management, product/service and digitalization propositions than the mean scores of certified companies. However, this difference was not statistically significant.

It can be seen from Table 6 that when companies in the size class 5–49 were grouped into certified and uncertified companies, there were significant differences in the levels of the TQM dimensions in terms of process (***) and continuous improvement (*). In both cases, certified companies receive better mean scores than uncertified companies. In responses to product/service and digitalization factors, the mean scores for uncertified companies were better than for certified companies. However, this difference was not statistically significant.

TQM dimension	Certified		Uncertified		<i>p</i>	<i>F</i>	Significance
	Mean	Std. dev	Mean	Std. dev			
Management	3.93	0.338	3.90	0.313	0.6941	0.1552	
Customer Focus	3.60	0.438	3.30	0.618	0.0061	7.7159	**
Personnel	3.55	0.411	3.31	0.393	0.0126	6.3599	*
Process	3.73	0.439	3.48	0.557	0.0228	5.2785	*
Procurements and Materials	3.84	0.408	3.91	0.366	0.4971	0.4630	
Product/Service	4.01	0.420	4.01	0.390	0.9877	0.0002	
Risk Management	3.80	0.453	3.61	0.511	0.0691	3.3467	
Continuous Improvement	3.73	0.542	3.45	0.530	0.0125	6.3701	*
Stakeholder Management	3.77	0.548	3.61	0.742	0.1849	1.7724	
Digitalization	2.93	0.970	3.08	0.914	0.3140	1.0199	
System Deployment	3.88	0.523	3.75	0.423	0.2123	1.5672	

Note(s): Significance: * $0.01 < p \leq 0.05$; ** $0.001 < p \leq 0.01$; *** $p \leq 0.001$

Table 4.
TQM in industrial companies: Comparing certified and uncertified firms

Table 5.
TQM in service
companies: comparing
certified and
uncertified firms

TQM dimension	Certified		Uncertified		<i>p</i>	<i>F</i>	Significance
	Mean	Std. dev	Mean	Std. dev			
Management	3.81	0.522	3.87	0.369	0.6475	0.2102	
Customer Focus	3.70	0.831	3.56	0.585	0.4505	0.5734	
Personnel	3.71	0.484	3.61	0.430	0.5311	0.3949	
Process	3.55	0.659	3.48	0.412	0.6610	0.1934	
Procurements and Materials	4.00	0.600	3.89	0.413	0.5033	0.4510	
Product/Service	3.97	0.350	4.13	0.253	0.1905	1.7350	
Risk Management	4.00	0.897	3.72	0.550	0.1319	2.3042	
Continuous Improvement	3.68	0.692	3.54	0.593	0.4258	0.6389	
Stakeholder Management	3.83	0.632	3.83	0.468	0.9661	0.0018	
Digitalization	3.22	0.893	3.44	0.718	0.2746	1.2056	
System Deployment	3.98	0.558	3.90	0.357	0.5858	0.2987	

Note(s): Significance: * $0.01 < p \leq 0.05$; ** $0.001 < p \leq 0.01$; *** $p \leq 0.001$

Table 6.
TQM in small
companies: comparing
certified and
uncertified firms

TQM dimension	Certified		Uncertified		<i>p</i>	<i>F</i>	Significance
	Mean	Std. dev	Mean	Std. dev			
Management	3.93	0.208	3.88	0.315	0.5221	0.4112	
Customer Focus	3.55	0.467	3.36	0.610	0.0984	2.7549	
Personnel	3.52	0.367	3.45	0.423	0.4526	0.5662	
Process	3.70	0.271	3.45	0.448	0.0096	6.8280	**
Procurements and Materials	3.89	0.356	3.88	0.376	0.9502	0.0039	
Product/Service	4.05	0.283	4.07	0.339	0.8063	0.0602	
Risk Management	3.83	0.397	3.65	0.453	0.0665	3.4026	
Continuous Improvement	3.73	0.455	3.47	0.495	0.0130	6.2800	*
Stakeholder Management	3.78	0.556	3.72	0.580	0.5898	0.2915	
Digitalization	3.03	0.851	3.23	0.820	0.1480	2.1083	
System Deployment	3.98	0.346	3.81	0.393	0.0525	3.8030	

Note(s): Significance: * $0.01 < p \leq 0.05$; ** $0.001 < p \leq 0.01$; *** $p \leq 0.001$

It can be seen from [Table 7](#) that when companies in the 50–250 size range were grouped into certified and uncertified companies, no significant differences were observed in the levels of the TQM dimensions. The results show that the mean scores of uncertified companies were better for the dimensions of customer focus, procurement and materials, product/service, digitalization and system deployment. However, this difference was not statistically significant.

Discussion

As prior research has proven, with TQM being a crucial determinant of company performance ([Dubey and Gunasekaran, 2015](#); [Ahmed and Idris, 2020](#)), it is important to study the means through which TQM can be improved. This study examines whether certification improves TQM dimensions and whether certification's impact is similar across companies of different sizes and industries.

All companies

The results of all companies that participated in the study ([Table 3](#)) show that significant differences were found between certified and uncertified companies in the dimensions of customer focus (*), processes (**), risk management (*), continuous improvement (***) and

TQM dimension	Certified		Uncertified		<i>p</i>	<i>F</i>	Significance
	Mean	Std. dev	Mean	Std. dev			
Management	3.87	0.623	3.79	0.554	0.6898	0.1607	
Customer Focus	3.73	0.579	3.78	0.497	0.8047	0.0616	
Personnel	3.69	0.504	3.48	0.496	0.2361	1.4279	
Process	3.68	0.804	3.54	0.648	0.5232	0.4116	
Procurements and Materials	3.85	0.584	3.98	0.459	0.4948	0.4709	
Product/Service	3.94	0.574	4.05	0.293	0.4991	0.4615	
Risk Management	3.86	0.777	3.64	1.051	0.3412	0.9182	
Continuous Improvement	3.70	0.744	3.51	0.967	0.3803	0.7797	
Stakeholder Management	3.79	0.582	3.64	0.787	0.4572	0.5589	
Digitalization	2.94	1.131	3.37	0.896	0.0958	2.8508	
System Deployment	3.76	0.755	3.83	0.514	0.7286	0.1213	

Note(s): Significance: * $0.01 < p \leq 0.05$; ** $0.001 < p \leq 0.01$; *** $p \leq 0.001$

Table 7.
TQM in medium-sized companies: comparing certified and uncertified firms

digitalization (*). Certified companies performed better than uncertified companies in the dimensions of customer focus, processes, risk management and continuous improvement. The mean score of uncertified companies was better than the mean score of certified companies for the digitalization dimension (*). In addition, it should be noted that uncertified companies scored better in the dimensions of procurement and materials, products/services and digitalization even though the differences in these dimensions were not statistically significant. The dimensions that attained statistical significance were not particularly surprising. With the exception of risk management and digitalization, all others are part of the seven quality management principles defined by ISO (Fonseca and Dominques, 2016; Anttila and Jussila, 2017). The low mean score for digitalization for certified companies can be explained by the fact that certifiers put pressure on companies to continuously improve data collection, storage and analysis, so the impression may be formed that company procedures are inadequate. Conversely, without external pressure, uncertified companies may feel that existing procedures are sufficient. A new requirement for the quality standard has also been the identification of stakeholders and the consideration of their requirements, so it seems strange that the mean scores for certified and uncertified companies in this area were not higher. The SD of the digitalization dimension is clearly the largest for all respondents in this study. This may be due to the fact that the exploitation of digitalization is still in its infancy for both certified and uncertified companies. Based on the seven quality principles of the 2015 (Fonseca and Dominques, 2016; Anttila and Jussila, 2017) updated standard, it seems a little strange that certified companies were not further ahead of uncertified companies in management matters (3.91 vs 3.87).

In summary, can be stated as echoed by Padma *et al.* (2008), Douglas *et al.* (2003) and Santos and Millán (2013), that certification benefits companies, although uncertified companies perform very well on several TQM dimensions. These findings, which include all industries and service companies with less than 250 employees, refute Rahman's (2000) research that declared that certification would only affect the processes dimension of TQM.

Industrial companies

The results of the certified and uncertified industrial companies (Table 4) show that there was a statistical difference in the TQM dimensions of customer focus (**), personnel (*), processes (*) and continuous improvement (*). This result is in line with prior studies. For example, Padma *et al.* (2008) reported an improvement of the mean scores of these elements after certification. For industrial companies, Prajogo *et al.* (2012) reported process efficiencies that

were also observed in this study. They extended their view of the impact of certification to suppliers and customers as had been previously explored in a study by [Leung and Chan \(1999\)](#). This study shows that the impact of certification extends only to customer focus and thus does not support the notion of impacts to suppliers.

The p value of risk management (0.0691) narrowly misses the threshold for statistical significance. [Fonseca et al. \(2016\)](#) stated that the use of risk-based thinking requires the identification of risks and opportunities that may affect the quality management system and the results it achieves. This drives organizations to manage the identified risks. Therefore, the results of this study are unsurprising. [Anttila and Jussila \(2017\)](#) stated that according to the new ISO 9001 standard, risk-based thinking is clearer than in previous versions of the standard. This means that risk-based management is easier to apply in practice, although statistical significance was not achieved in this study. According to [Medić et al. \(2016\)](#), the term “risk-based thinking” in ISO 9001: 2015 refers to quality planning, system implementation, system maintenance and continuous improvement. This requirement contributes to the implementation of a quality system that prevents nonconformities. For this reason, it is somewhat strange that the level of risk management in the comparisons did not achieve statistical significance.

The results for all companies, particularly the industrial companies, draw attention to the fact that the management dimension results are almost the same for certified and uncertified companies, although the updates to the standard specifically support the management dimension. This finding differs from the results of [Padma et al. \(2008\)](#). Their research also showed an increased level of management in connection with certification. Our study also does not support the observation reported by [Douglas et al. \(2003\)](#) on the effectiveness of management oversight. In the results of industrial companies, it should be noted that the areas of procurement and materials as well as digitalization received a better mean score for uncertified companies than certified companies. This seems strange, since the standard requires that certified companies have control over supplier-related procedures. On the other hand, the Finnish industry has been paying attention to materials and inventory management for years. There is no other apparent reason, other than the pressure from certifiers (described earlier), to explain the fact that the mean score for uncertified companies for digitalization was clearly higher than that for the certified companies. In the responses of both groups, the SD of digitalization was the highest of all the dimensions, which is explained by the fact that the issue is still relatively new and some companies are already at an advanced stage, while others are still in the planning stages.

Assessing the TQM dimensions of industrial companies as a whole, it can be concluded that certification is useful because four TQM dimensions can be shown to be statistically significant and the mean scores of these factors for certified companies were better than the mean scores for uncertified companies. Thus, the results of this study mainly support the views obtained from prior studies, such as [Douglas et al. \(2003\)](#), [Padma et al. \(2008\)](#), [Georgiev and Georgiev \(2014\)](#) and [Shafiq et al. \(2014\)](#).

Service companies

A comparison of the results of the certified and uncertified service companies ([Table 5](#)) shows that the mean scores showed no statistical significance for any of the TQM dimensions. This result is truly surprising because ISO 9001 requires procedures for management, customer relationship management, personnel, process management, procurement of materials, services, risk management, continuous improvement and stakeholder management. Some of these procedures should be documented in a certified system, which could be thought of as further improving their effectiveness. It is also noteworthy that uncertified companies had a better mean in the dimensions of management, product/service and digitalization. The p values of the service companies are clear; none of the factors have p values near 0.05, which

would reflect a clear difference in the answers given by certified and uncertified companies. This particular result for service companies differs significantly from prior studies, such as [Caro et al. \(2009\)](#), who reported positive results for certification in service companies, including improvements in customer quality and customer satisfaction. There is no justification for the idea that certification would benefit service companies, unlike industrial companies.

Industrial companies compared to service companies

Upon comparing the results of certified industrial companies with the results of certified service companies ([Table 4](#) vs [Table 5](#)), it was found that industrial companies were only superior in the dimensions of management, processes, product/service and continuous improvement. In all other TQM dimensions, service companies received better mean scores. Looking at the results of uncertified companies ([Table 4](#) vs [Table 5](#)), only in the management dimension is the mean score of industrial companies better than the mean score of service companies. In process the mean score is the same. The results show that the level of the TQM dimensions is clearly estimated to be higher in uncertified organizations than in certified companies. The findings of this study show that there is a greater difference in the TQM dimensions of certified and uncertified companies in the industry sector than in the service sector. This finding does not fully support the results of previous studies that reported that certification had a positive impact on company performance for both industries ([Douglas et al., 2003](#); [Prajogo et al., 2012](#)) and services ([Caro et al., 2009](#)).

The criteria for ISO 9001 certification are the same regardless of the company's industry, so it is interesting that so many TQM dimensions are perceived to be better in certified service companies than in industrial companies. It is equally interesting that the TQM dimensions of uncertified service companies are at such a high level that there was no statistical difference between certified companies, and that the TQM dimensions were perceived to be clearly better than in industrial companies. It should be noted that the mean scores of the system deployment dimension for both certified and uncertified service companies were higher than for industrial companies. This is likely to have influenced the positive perception of the TQM dimensions for service companies.

Small companies

Upon comparing the results of certified and uncertified small firms in the study, it was found that there were statistically differences in the results of the continuous improvement (*) and processes (**) dimensions. The mean scores for the certified companies were better than the uncertified companies in all other dimensions except product/service and digitalization. The results of the process and continuous improvement dimensions are expected in the sense that when building a quality system, these dimensions are priorities for development and they reflect the functionality of the system in which the certifiers are interested. These results support the idea that certification would have a positive impact on these TQM dimensions for small firms.

Medium-sized companies

Comparing the results of the certified and uncertified medium-sized companies, it can be seen that the mean scores showed no statistical significance for any of the TQM dimensions. This result also differs from expectations in the sense that of the 11 TQM dimensions, uncertified companies have better mean scores in five dimensions than certified companies. It is important to note that this is the only comparison group where the mean score of the system deployment dimension was better for uncertified companies than for certified companies.

This result is quite striking because certification specifically looks at the effectiveness of the implementation of existing practices, so the expected result was that implementation would receive a better mean score in certified companies than in uncertified companies. The results of this group of companies showed no evidence that certification would improve their TQM dimensions.

Considering the results of the study, grouped by company size, certification had a statistically significant effect for companies with 5–49 people, and there was no effect for companies with 50–250 people. The impact of certification is noticeable in the processes and continuous improvement dimensions. This result is partially parallel to a study conducted by [Rahman \(2000\)](#), in which he reported that certification only affected the processes of SMEs.

Conclusion

This study examined whether certification improved the level of expanded TQM dimensions and whether the impact of certification was similar across companies of different sizes and industries. This work contributes to research on TQM by studying different types of SMEs and forming a comprehensive research framework to assess the TQM dimensions, taking into account the revised quality standard ISO 9001: 2015 and the additional requirements of EFQM for traditional TQM. The results of this study have shown that certification improves the level of some TQM dimensions in industrial and small enterprises (5–49 people). In industrial companies, these elements were customer focus, personnel, processes and continuous improvement. In small businesses, the TQM dimensions that were positively affected by certification were processes and continuous improvement. According to our results, certification did not have a statistically significant effect on any TQM dimensions in service companies and medium-sized companies (50–250 people). This result shows that in these types of companies, certification does not automatically improve the TQM dimensions. In light of this information, it can be concluded that this study, at least to some extent, supports the prior literature on the benefits of certification.

As a novelty value, this study highlighted that the positive impact of certification on the performance factors of companies cannot be generalized; effectiveness depended on the type of company. As already reported, certification does not always automatically raise the level of TQM dimensions, so corporate management must ensure the effectiveness of developed functions' implementation. Thus, managers should focus on assessing the types and levels of the TQM dimensions in their company before expecting benefits from certification. This is especially true for service companies in which certification does not affect the level of TQM dimensions at all. Although companies should develop their systems and think about the development needs of their operations from an internal point of view, it must be remembered that sometimes the motivation for certification may be external, such as customer demand. Even in these situations, companies should consider how to obtain the maximum benefit from the certification for the company and not remain satisfied with obtaining certification and meeting their customers' requirements. This study provides a broader framework than normal TQM, providing completely new findings that include a statistically significant link between certification and risk management, as well as certification and digitalization. The results show that certification improves risk management level more often in industry than in service companies and more often in small companies than in medium-size companies. Surprisingly, certification's impact on digitization was negative. Furthermore, the results were the same and completely clear in all company groups.

Although previous literature on the subject almost invariably concluded that certification positively affects TQM dimensions, such a conclusion cannot be drawn from this study. It would seem that service companies and medium-size companies will not benefit from

certification at all. Particularly in these companies, management should ensure that certification processes are effective and do not become symbolic system implementations. Certifiers also should pay attention to the quality of the processes and not just follow the descriptions. The situation for certifiers is awkward because a single certification body cannot set other higher standards without losing its turnover. For this reason, the national accreditation body (FINAS in Finland) should set clearer definitions for certification bodies and individual certifiers for the level at which the requirements of the standard must be met to achieve certification readiness.

Although previous studies have emphasized the importance of auditors' experience and professionalism, audit rules related to certification reduce the importance of professionalism because they prohibit consulting in the context of auditing (ISO 17021-1). This is problematic because many of the standard's requirements are general, making it difficult for companies to understand what procedures they should implement, while the certifier is prohibited from consulting the client to find the best practice, even if he or she has clear views. This prohibition directs individual auditors to consider only process descriptions and instructions without taking any position on their effectiveness and efficiency within the company, while also accepting practices whose effectiveness is questionable. Although the consulting ban limits auditors, they still can submit development proposals to the company. However, development proposals' weight is not the same as the requirement for corrective action because companies are not required to develop their operations on the basis of development proposals. This causes problems in situations in which the company's certification motivation is external. As long as the consulting ban is in its current form and the experienced auditors' expertise cannot be utilized fully, the benefits of certification for the company will remain weak.

Exploitation of results

All SMEs can use this study's results to ensure that they have designed and implemented procedures that are appropriate and effective for all 11 dimensions of the TQM study. Certifiers can benefit from the research by focusing on training their own staffs, especially on those dimensions in which certification cannot make a statistically significant difference with non-certified companies. The training must be accompanied by procedures that enable the matter to be presented to SMEs in a non-consultative way. Accreditation bodies can benefit from research by reviewing training programs for certification bodies and ensuring that auditors are trained to review the requirements of the standard so that clients feel like they will benefit from certification. Educational institutions that train future quality managers and CEOs can leverage research by training students in the design and effective implementation of procedures that meet the standard's requirements. Consultants who train companies or help them build effective operating systems can emphasize their programs based on research findings so that low-impact TQM dimensions' impact is enhanced. Considering the use of the study presented above, it is clear that certified companies' future TQM levels will be higher than those of non-certified companies, and that a huge number of certified companies will get more value for their money.

Further research

In the future, researchers should ensure that the responses to the TQM dimensions reflect the views of the entire organization, as there is reason to believe that employees see practical issues differently than management. For this reason, it would be fruitful to consider how the views of employees could be better weighted than is the norm for current studies when assessing process performance. In addition, future research should better account for the fact that data from SMEs are significantly influenced by the type of company, so that results from

different types of companies can be distinguished from one another. As this study shows, it cannot be argued that certification has a positive impact on the TQM dimensions of all types of SMEs. There is already a wealth of information on performance issues in general. In the future, research should therefore focus on the individual elements of TQM dimensions, their structure and their impact. If future studies focus on the details of the TQM dimensions with an emphasis on insights obtained from employees, it is likely that the results will better describe the actual functioning of the TQM dimensions and provide more useful information to companies.

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