

Understanding the Mechanism of Influence of TQM Practices on Financial Performance: the Mediating Effect of Innovation Performance

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Abstract: *This study explores the mechanism of influence of total quality management (TQM) practices on a company's financial performance (FP), considering innovation performance (IP) as a mediator variable. In addition, the proposed model seeks to determine whether the competition intensity (CI) moderates the relationship between TQM practices and FP. Based on the sample of 593 companies from various sectors in Bosnia and Herzegovina, structural equation modeling is used to analyze the relationships between the variables in the model. The results of this paper reveal the implicit and often omitted impact of IP on FP taking into account TQM practices, suggesting that the impact of TQM practices is manifested through full mediation of IP. The moderating effect of CI in the relationship between TQM practices and FP was not supported. The results indicate the role and the importance of IP in the mechanism of influence of TQM practices.*

Keywords: total quality management; TQM; innovation performance; financial performance; full mediation effect

JEL Classification: L15, L25, D22

Introduction

With the increase in the level of competition in the global market, the concept of quality has been gaining prominence for companies (Wali et al., 2003). This is partic-

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ularly valid for the concept of total quality management (TQM), which has become one of the compulsory issues in the field of operations management. Various existing literature suggests that companies that apply TQM and continue to improve product quality can improve their competitive position, business success and differentiate their products (Mohanty and Lahke, 1998; Fernández Pérez and Gutiérrez Gutiérrez, 2013). Proponents of TQM suggest that there is a positive relationship between TQM implementation and a company's financial performance (FP).

Although a large number of studies have been conducted in the literature, there are conflicting views on the effects of implementing TQM practices in companies. While several studies (Beaumont and Sohal, 1999; Macinati, 2008; Corredor and Goñi, 2011; Duarte et al., 2011; Kober et al., 2012) conclude that TQM practices do not contribute to the company's performance or that a link between individual TQM practices and performance is rather weak (Terziovski and Samson, 1999; Arumugam et al., 2008; Cetindere et al., 2015; Psomas and Jaca, 2016), other studies (Hendricks and Singhal, 1996; 1997; Sabella et al., 2014; Calvo-Mora et al., 2014; García-Bernal and Ramírez-Alesón, 2015; O'Neill et al., 2016) confirm that the improvements are manifold, regarding both financial and non-financial indicators of a company's performance. In that regard, García-Fernandez et al. (2022) state in their literature review that, referring to at least three studies, "the relationship between quality and financial performance is not so clear." (p.1). Shafiq et al. (2019) suggested further profound research on the effects of TQM practices on a company's performance, arguing that the link between TQM and FP should be explored in different social, cultural, and economic settings to reveal the divergence/convergence argument in TQM implementation, and inviting researchers to conduct additional studies on the topic.

Given the foregoing, the question of whether the commitment to TQM alone leads to positive results is worth considering in additional studies, especially when the interplay between TQM, performances, and some third variable is considered. The study conducted by García-Fernandez et al. (2022) provides the state of the art on the relationship between the variables that are of interest for this study and concludes that only a few studies have analyzed the relationship between them, inviting researchers "to continue analyzing the potential relationships between these variables" (p.2.). By engaging in an analysis of the joint relationships, such studies can contribute to strengthening the theoretical framework. As such, this paper integrates the results of previous studies and defines a model that proposes the indirect influence of TQM practices on FP through a third variable, innovation performance (IP), which might have a mediating influence on the relationship between TQM practices and FP. That is, the goal of this paper is to explore the mechanism of influence of TQM practices on a company's FP, taking into account IP. As noted by Kafetzopoulos et al. (2019) and García-Fernandez et al. (2022) these kinds of relationships have rarely jointly been examined in one single study and have important implications for academics and managers in today's dynamic and competitive environment.

In addition, the proposed model seeks to determine whether the competition intensity (CI) moderates the relationship between TQM practices and FP. In other words, our model postulates that CI can alter the impact of TQM practices on FP, making it weaker or stronger depending on the number of competitors and CI. The issue of the impact of CI on the effects of the implementation of TQM practices on the FP of companies has received little attention in the empirical literature (Chong and Rundus, 2004; Patiar et al., 2012). The need to address this gap in the literature stems from the importance of investigating how market competition affects the effectiveness of TQM (Patiar et al., 2012). Answers to these questions will contribute to the understanding of how the implementation of TQM practices affects FP. We also look at the CI as a quasi-moderator, i.e., a variable that does not only interact with the independent variable, but also is an independent variable itself.

This study adds value to the existing literature on TQM and IP by analyzing the relationship between TQM, IP, and FP and the importance of CI in their impact on FP. Previous research on this relationship solely focused on one industry (Kafetzopoulos et al., 2019; Hussain et al., 2020), companies of one size (Antunes et al., 2017; Hussain et al., 2020), or only the companies that have obtained ISO 9000 certification (Sadikoglu and Zehir, 2010). In this context, this study offers broader coverage, taking into account companies from different industries, companies of different sizes, and making no distinction between companies that possess or do not possess ISO certification.

Different social, cultural, and economic settings require that the effects of TQM practices on a company's performance are evaluated in various countries (Lagrosen, 2002; Prasad and Tata, 2003; Flynn and Saladin, 2006; Kull and Wacker, 2010; Shafiq et al., 2019). In this context, but in addition to the introduction of IP as a mediator, this paper contributes to the existing literature by presenting the results from a country with a specific social, cultural, and economic context. Bosnia and Herzegovina belongs to the category of an upper-middle-income group (classification according to World Bank indicators) and in the category of growing markets and developing countries (indicators of the International Monetary Fund). Some of the most challenging issues facing companies in Bosnia and Herzegovina are the high unemployment rate, low wages, pronounced migrations of the workforce to the EU, high corruption, and complicated legislation as a result of complex government structure (EC, 2019). Examining the relationship between constructs of our interest in such a context can be beneficial in strengthening the relationship between them by providing evidence in such a business environment. For example, corruption, as concluded by Dutta and Sobel (2016), is harmful to an economy and entrepreneurship, creating a "climate opposite of what a predictable 'rule of law' regime would provide, and lowers income and prosperity of consumers." Such impact can also be manifested in operations, and, consequently, TQM implementation. High unemployment rates and pronounced migrations can lead to a higher turnover in companies, making it harder to maintain consistent quality practices due to frequent changes.

Another specific issue in Bosnia and Herzegovina is related to support for the implementation of quality and innovation practices by various government levels, which are rather low in the context. For example, SMEs in Bosnia and Herzegovina mostly rely on their own resources, as there “are no public funds available to stimulate SMEs to undertake innovative projects that might be financially risky.” (OECD, 2019, p.528). However, it does not mean that companies do not undertake innovation practices, as the findings by Markovic et al. (2021) show that during COVID-19 crisis, SMEs innovated many aspects of their business, embracing new collaborations with business customers and competitors, as well as collaborative mindset opposed to the traditionally competitive way of doing business. Rahimic and Ustovic (2011) showed that international companies from Bosnia and Herzegovina pay more attention to quality on B2B markets, considering it as an option for a differentiation, while domestic companies are more focused on the cost leadership strategic option. Greater customer satisfaction has been even observed in units of local self-government with an implemented ISO 9001 (Kakeš and Fazlovic, 2016). Bosnia and Herzegovina is also “yet to implement a mechanism for the overall co-ordination of its quality infrastructure pillars” (OECD, 2019, p. 571), but non-harmonized legislation and bodies exist at lower levels (entities). Such differences in economic, socio-cultural, political, and technological contexts should be noted, as our study provides strong empirical evidence in such a context, supporting the relationship between TQM, a company’s performance and IPs, which is often omitted variable in the research of TQM.

Theoretical Background

In the last three decades, there has been an increased interest in TQM as a strategy that can provide companies with a competitive advantage (Prajogo and Cooper, 2010), even though there is no unique view of the TQM’s dimensions, i.e., meaning that the various definitions of TQM are used in the literature (Yusof and Aspinwall, 2000; Bou-Llusar et al., 2009). Overall, companies implement TQM either as a holistic and philosophical perspective that guides them with certain principles and goals for improving business processes, or they see it through a practical perspective as a set of management practices, tools, and techniques that can be implemented in their operations. In that sense, the key determinants of the TQM concept can be classified into two broad categories (Bou-Llusar et al., 2009): the social or soft dimension of TQM, and the technical or hard dimension of TQM. The management of social or technical TQM issues cannot be performed in isolation and the literature suggests that the optimal combination of TQM core concepts will lead to better organizational performance.

The relationship between TQM and FP can be viewed through the resource-based theory (RBT). RBT has become an important theoretical paradigm in almost all areas

of operations management research, including performance management (Hitt et al., 2016a). Performance management is of particular interest to this study as it reflects how operations management activities influence the outcome of the performance. As noted by Hitt et al. (2016b), RBT can be used to explain “how involving supplier and customers adds value to this non-practice”, identifying the important value of recent developments in RBT for future research. One consideration mentioned in Hitt et al. (2016b) is related to the need of examining practices in the relationship with other practices, as “specific practices alone may not always add value” (p. 109). In the context of TQM application, by investing in TQM, an organization builds unique resources and capabilities that should ensure better FP than organizations that do not possess such resources and capabilities. Thus, RBT provides a comprehensive framework for understanding how a company can achieve a competitive advantage through its resources and capabilities. On the other hand, the implementation of the TQM program requires very radical reforms, sometimes insurmountable, in basic organizational areas such as culture and leadership styles (Mohanty, 1997). Many companies that are potential adopters of TQM practices find it difficult to imitate these practices due to various factors including the social complexity of certain organizations, uncertainty about the cause-and-effect relationship between TQM implementation and organizational performance (causal ambiguity), the time needed to understand and assimilate a new program, its subsequent costs and so on (Barney, 1986; 1991; Dierickx and Cool, 1989; Peteraf, 1993). Given the above, the assumption is that the implementation of TQM and innovation practices may be examined through the lenses of RBT.

Hypothesis Development

TQM and financial performance

Although the relationship between quality management practices and FP has been widely documented in the previous research, the literature is not unanimous regarding the positive relationship between quality management and FP (García-Fernández et al., 2022). While some authors provided evidence of the positive effect of TQM practices on FP (Hendricks and Singhal, 1996; 1997; Sabella et al., 2014; Calvo-Mora et al., 2014; García-Bernal and Ramírez-Alesón, 2015; O’Neill et al., 2016), others concluded that the relationship is rather weak (Terziovski and Samson, 1999; Arumugam et al., 2008; Cetindere et al., 2015; Psomas and Jaca, 2016) or non-existing (Beaumont and Sohal, 1999; Macinati, 2008; Corredor and Goñi, 2011; Duarte et al., 2011; Kober et al., 2012). The first group of authors (Hendricks and Singhal, 1996; 1997; O’Neill et al., 2016) analyzed the difference in FP between companies that implemented and those that did not implement TQM practices, concluding that compa-

nies with implemented TQM practices showed much better FP than companies that did not implement TQM practices. Furthermore, Sabella et al. (2014), Calvo-Mora et al. (2014), and García-Bernal and Ramírez-Alesón (2015) analyzed the relationship between TQM practices and FP and provided evidence of the positive relationship between TQM practices and various forms of FP (financial obligations of a company, remuneration, and benefits; key business results; shareholders' profit maximization and stakeholders' wealth maximization). The results of the second group of authors do not show a clear impact of TQM practice on the FP of the company. Several authors (Samson and Terizovski, 1999; Arumugam et al., 2008; Cetindere et al., 2015; Psomas and Jaca, 2016) concluded that there was some link between TQM and FP, but the link was rather weak. In that regard, only one (Psomas and Jaca, 2016), two (Arumugam et al., 2008; Cetindere et al., 2015) or three TQM practices (Samson and Terziovski, 1999) had a positive effect on FP, while other practices showed a negative or non-existing relationship. Lastly, the third group of authors (Beaumont and Sohal, 1999; Macinati, 2008; Corredor and Goñi, 2011; Duarte et al., 2011; Kober et al., 2012) did not find a significant relationship between TQM practices and FP of the company. Beaumont and Sohal (1999) concluded that the use of quality management practices does not correlate with changes in profits or attitudes towards existing profit levels. Duarte et al. (2011) found no positive relationship between operating practices and FP of firms, and Kober et al. (2012) did not find a positive relationship between TQM and return on equity (ROE) or return on assets (ROA). Similar to the previous authors, Mancinati (2008) did not find a significant relationship between financial results and quality management, while Corredor and Goñi (2011) concluded that TQM pioneers experienced performance gains, because of the early implementation of the system. However, late adopters did not experience similar results.

Starting from the resource-based theory, and following the recommendation to investigate the relationship between TQM practices and performance in the context of a different country (Forza and Flippini, 1998; Sila and Ebrahimpour, 2005; Flynn and Saladin, 2006), the following first hypothesis is formulated:

H1. TQM practices have a positive impact on the financial performance of a company.

TQM and innovation performance

The implementation of TQM practices and innovations, in essence, contain similar elements (Bon and Mustafa, 2013), such as striving for continuous improvement, achieving customer satisfaction, and an open culture (Kaynak, 2003; Prajogo and Sohal, 2003; Kim et al., 2012). However, the two concepts differ as TQM improves the processes and outputs by increasing the quality, and as innovation introduces new products and services, or modifies the existing features of the products and services, something that is not necessarily related to the improved quality. Kim et al. (2012,

p.297) state that “the adoption of QM in innovative activities helps an organization update changes in customer needs, minimize non-value activities and reduce new product development time and costs. QM consequently generates customer satisfaction, innovation, and improved business performance”.

TQM practices can create an environment that encourages product innovation but also process innovation and enhance the overall level of innovation in the organization. Singh and Smith (2004) state that organizations that effectively implement TQM need to be more innovative than those that do not. Arguments supporting this view argue that companies that embrace TQM in their systems and their learning culture create fertile ground for innovative behavior because it embodies the ingredients needed to establish and develop innovation (Prajogo and Sohal, 2003; 2004). Given that TQM is a philosophy that promotes a new way of thinking among employees, organizations that have adopted this philosophy may create the necessary prerequisites to increase IP in the company. Therefore, the second hypothesis is formulated as follows:

H2: TQM practices have a positive impact on innovation performance.

Innovation performance and financial performance

Given the global competition in modern business environments, innovation is the key to a company’s competitive advantage (Prajogo and Ahmed, 2006; Chen et al., 2009). Companies that continuously behave innovatively can create new products, services, or improve technological processes, which ultimately create a competitive advantage and improve performance (Hurley and Hult, 1998).

The term innovation is often defined as the adoption of an idea or behavior that is new to the organization (Damanpour, 1988). The newer definition defines innovation as the production or adoption, assimilation, and exploitation of innovations that add value in the economic and social spheres; renewal and expansion of products, services, and markets; development of new production methods; and the establishment of new management systems (Crossan and Apaydin, 2010). There are different typologies of innovation in the literature. Kim et al. (2012) list three dominant typologies of innovation: technological versus administrative innovation, product innovation versus process innovation, and radical innovation versus incremental innovation.

Previous research (Hult et al., 2004; Lichtenthaler, 2009; Hung and Chou, 2013; Tsai and Yang, 2014) dealt with the relationship between IP and companies’ performance. Adopting innovations generally contributes to improving the performance or efficiency of a company (Damanpour, 1991). Tsai and Yang (2014) list three valuable features of innovative companies that can lead to business improvement. First, innovative companies are open to new ideas, changing values, encouraging the acceptance of business risks and new ways of addressing market needs; second, highly innovative companies are more able to develop creative solutions that are superior to

competitors' solutions; and third, innovative firms are more likely to continuously improve business, production methods, and product development processes.

Hurley and Hult (1998) suggest that the innovativeness of the company enhances the innovative capacity of the company, which ultimately leads to better performance. Innovation is a means to change the organization, either in response to changes taking place in the internal or external environment or as preventive measures taken to affect the environment (Hult et al., 2004). As environments evolve, companies must adopt innovations over time, and the most important innovations are those that enable the company to achieve some kind of competitive advantage, thus contributing to the company's performance (Damanpour, 1991; Henard and Szymanski, 2001).

Based on the above, the following hypothesis is defined:

H3: Innovation performance has a positive impact on financial performance.

TQM, innovation performance, and financial performance

Many authors neglect mediation effects when researching the relationship between implemented TQM practices and companies' performance (Shan et al., 2016). Shan et al. (2016) have proposed firm innovation as a mediating variable in the relationship between TQM and companies' performance since innovation plays an important role in achieving the proper implementation of TQM. On the other hand, TQM practices help managers to develop a culture and environment that supports innovation. The authors developed a conceptual model and stated that it is necessary to analyze innovation as a potential mediator between TQM practices and company performance.

Antunes et al. (2017) analyzed the relationship between innovation and TQM and the effect of innovation on companies' organizational performance and concluded that companies adopting process innovation strategies achieve operational and FP improvements, while product innovation only improves the financial results of a company. They also conclude that TQM practices encourage the definition of product and process innovation strategies. On the other hand, it was found that only firms that adopt innovation strategies of their processes promote the adoption of TQM practices, while there is no statistically significant link between product innovation and the implementation of TQM practices. According to the results of their research, Sadikoglu and Zehir (2010) confirmed that the implementation of TQM practices improves the business performance of the company indirectly through IP. TQM practices guide a company in determining current or changing customer needs and expectations, evaluating competitors, and introducing new products or services to improve company performance. In a recent study, Kafetzopoulos et al. (2019) analyzed the relationship between the enablers of the EFQM model and business performance, taking into consideration the mediating role of innovation in this relationship. Taking into account 580 companies in Greece, the authors concluded that IP partially mediates the effect of excellence enablers on business performance. Similar results were

confirmed by Hussain et al. (2020). Analyzing manufacturing companies in Pakistan, the authors confirmed a partial mediation effect of innovation in the relationship between TQM and FP.

As noted above, TQM and innovations essentially include similar elements (Bon and Mustafa, 2013). Concerning the company's performance, there is a positive impact of TQM practices (Dubey and Gunasekaran, 2015; O'Neill et al., 2016; Panuwatwanich and Nguyen, 2017) and innovations (Lichtenthaler, 2009; Tsai and Yang, 2014). Innovations are one of the most important elements for achieving the implementation of TQM practices, while on the other hand, TQM practices develop a culture and environment that supports innovations (Shan et al., 2016). Based on the previous discussion, the next hypothesis postulates that organizations that have adopted TQM philosophy create the necessary prerequisites to increase innovation performance and ultimately FP:

H4: Innovation performance mediates the relationship between TQM practices and financial performance.

Moderating effect of competition intensity

The uncertainty of the external environment stems from the organization's ability to assess the environment (Milliken, 1987). Freel (2005) defines the dynamics of the environment as constant changes in market conditions regarding technology, competition, and product demand. Dess and Beard (1984) view the dynamics of the environment as a process that is associated with unpredictable changes in the environment which, as a result, affects the work of the organization. In a dynamic environment, rational decision-making is very difficult, suggesting that the environment should have a moderating role in the research models. Johns (2006) noted that the influence of context on organizational behavior is not sufficiently respected among members of the scientific community while the literature review provided by Fuentes-Fuentes et al. (2004) indicates that there is little consensus around its conceptualization and measurement of the construct.

Market competition is considered a key situational factor in the total number of factors that make up the business environment (Das et al., 2000). As the intensity of competition in the market increases, companies face increasing competitive threats and challenges. The business environment, which is characterized by dynamic change and competition, creates a certain level of uncertainty about the improvements that should result from the implementation of the TQM concept. In this context, although companies implement the same TQM practices, the intensity of the impact of TQM practices on the FP of companies may be stronger or weaker depending on the intensity of competition (Chong and Rundus, 2004).

Chong and Rundus (2004) come to the result that the greater the degree of market competition, the stronger the positive link is between TQM practices, customer fo-

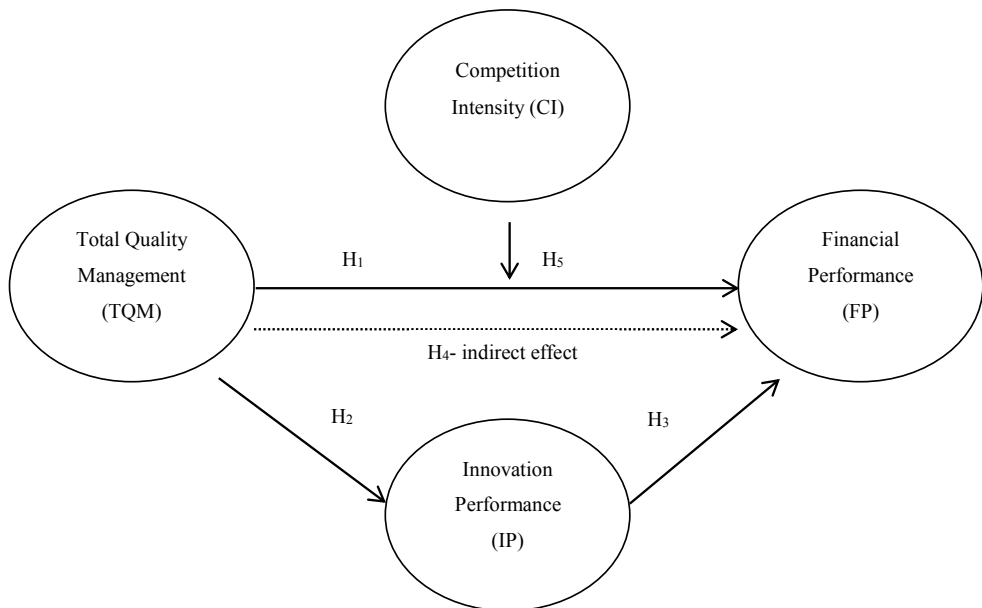
cus, product design, and organizational performance of the company. Sadikoglu and Zehir (2010) propose the degree of competition as a moderator for the evaluation of a complex relationship among these variables.

Based on the discussion, the following hypothesis is formulated:

H5: Competition intensity moderates the relationships between TQM practices and financial performance.

Based on the previously discussed relationships between different variables from the literature, we developed a conceptual model presented in Figure 1, a graphical representation of the study's hypotheses.

Figure 1: Research model



Source: Authors

Methodology

In order to determine the population of the research, we primarily relied on the analysis of the number of companies that are relevant to this research. The basic criterion for selecting a company was that the company has 10 or more employees. Micro companies (0-9 employees) were not taken into account, because the potential negative consequences of information or coordination problems are practically non-existent in firms with a small number of employees (García-Bernal and García-Casarejos, 2014).

According to the official data of the Agency for Statistics of Bosnia and Herzegovina, the total number of active enterprises, i.e., those that submitted financial reports for 2018, was 35,490. As previously mentioned, micro-companies were not taken into account, and the final population size was 8,979 companies (the number of companies in the sample is calculated as a difference between a total of 35,490 active companies and 26,511 micro-companies). In the context of the company's activities, guided by the structure of business statistics of the Agency for Statistics of Bosnia and Herzegovina, industries were grouped to provide clearer results. The industries were divided into five main groups: manufacturing, services, trade, agriculture, and construction.

Two series of electronic questionnaires were sent in September and October 2018. Surveys were sent in intervals of 15 days in order not to be identified as spam. The target groups were production managers or quality managers, or the company's director. This target group has the best insights regarding companies' strategic and operations decisions, i.e., the work practices used in the company, the innovative performance, the FP, and the CI of the company. Ultimately, 685 responses were collected representing an overall response rate of 12.62 percent. After the data screening procedure, the final sample consisted of 593 companies. Table 1 shows the collected research sample.

Table 1: Sample of research according to the criteria of company activity

Activity	Frequency	Percentage
Construction	90	15.2%
Manufacturing	159	26.8%
Agriculture	12	2.0%
Trade	82	13.8%
Services	250	42.2%
Total	593	100.0%

The most numerous are companies in the field of services with 42.2 percent (250 companies), followed by manufacturing with 26.8 percent (159 companies), construction with 15.2 percent (90 companies), and trade with 13.8 percent and 82 companies. Agriculture is the least represented in the sample with 2 percent (12 companies). According to the company's offices, most companies were located in the entity of Federation of B&H with 76.1 percent (451 companies), 23.3 percent (138 companies) in the entity of the Republic of Srpska, while only 0.7 percent or 5 companies were located in Brcko District. The largest number of companies in the sample are small companies (from 10-49 employees) which make up 70.2 percent of the total sample (416 companies), followed by medium-sized companies (from 50 - 249 employees) with 23.4 percent (139 companies), and the smallest are large companies, companies with 250 and more employees, which make up 6.4 percent of the sample, i.e., 38

companies. Over 50 percent of companies do not have an ISO certificate (57.3 percent - 340 companies), while 42.7 percent (253 companies) of the company have an ISO certificate.

The questionnaire consisted of questions that measure the variables of interest, previously verified in the literature: TQM practices (Santos-Vijande and Álvarez-González, 2007), IP (Hung et al., 2011), perceived FP (Powell, 1995), and CI (Jaworski and Kohli, 1993). The original statements that make up the above constructs were in English and were translated using double translation, and in consultation with experts revised so that there would be no deviations or biases. McGorry (2000) states that double translation is effective because the instrument passes through several filters produced by the researchers themselves.

For this research, the most appropriate method to test hypotheses is structural equation modeling (SEM). SEM is a statistical methodology that takes an affirmative (i.e., hypothesis testing) approach to the analysis of a structural theory related to a phenomenon. Typically, this theory represents “causal” processes that generate observations of multiple variables (Bentler, 1988).

Results and Discussion

For the data analysis, a two-step approach (Anderson and Gerbing, 1988) was used. Firstly, using confirmatory factor analysis the evaluation of measurement models was performed (unidimensionality, reliability, and convergent and discriminant validity), and then the hypotheses were tested using SEM.

Reliability and validity assessment

In this research, TQM represents a higher-order latent construct, while FP, IP and CI represent the first-order construct. Goodness-of-fit statistics provide evidence that all the values are in accordance with accepted values in the literature (Table 2). Browne and Cudeck (1992) suggest that every value below 0.9 for RMSEA assumes a good model fit; (2) Hu and Bentler (1999) note that for SRMR every value below 0.8 is considered acceptable; (3) Hair Jr. et al. (2014) state that CFI values above 0.9 indicate an acceptable fit. Using Fornell and Larcker's (1981) convergent validity criteria, which suggests that the average variance extracted (AVE) for an individual construct is more than 0.5 and the composite reliability (CR) with values CR for each latent variable above the recommended value of 0.7 (Hair et al., 2009) it was concluded that all the listed constructs meet the minimum criteria.

Table 2: Measurement models

Factor/item	Standardized loadings	z-value	AVE	CR	Cronbach's Alpha	Goodness of fit statistics
1. TQM (A second-order latent variable)			0.653	0.904		CFI 0.924 RMSEA 0.059 SRMS 0.050
1.1. Leadership	0.783	34.54***	0.594	0.878	0.872	
1.1.1. L1	0.631	23.47***				
1.1.2. L2	0.662	26.12***				
1.1.3. L3	0.803	46.16***				
1.1.4. L4	0.842	57.08***				
1.1.5. L5	0.880	69.27***				
1.2. Human Resources	0.828	41.44***	0.573	0.903	0.900	
1.2.1. HR1	0.671	27.22***				
1.2.2. HR2	0.748	36.93***				
1.2.3. HR3	0.797	45.65***				
1.2.4. HR4	0.846	58.64***				
1.2.5. HR5	0.797	46.42***				
1.2.6. HR6	0.727	33.83***				
1.2.7. HR7	0.696	29.94***				
1.3. Policy and strategy	0.808	39.57***	0.580	0.906	0.898	
1.3.1. PS1	0.785	43.75***				
1.3.2. PS2	0.788	44.23***				
1.3.3. PS3	0.766	40.18***				
1.3.4. PS4	0.813	50.31***				
1.3.5. PS5	0.817	51.47***				
1.3.6. PS6	0.641	24.48***				
1.3.7. PS7	0.702	30.86***				
1.4. Processes and resources	0.892	53.32***	0.540	0.921	0.918	
1.4.1. PR1	0.761	39.50***				
1.4.2. PR2	0.742	36.33***				
1.4.3. PR3	0.704	31.60***				
1.4.4. PR4	0.727	34.13***				
1.4.5. PR5	0.762	40.11***				
1.4.6. PR6	0.779	43.19***				
1.4.7. PR7	0.776	42.41***				
1.4.8. PR8	0.682	28.56***				
1.4.9. PR9	0.695	29.85***				
1.4.10. PR10	0.722	33.77***				
1.5. Partnership	0.720	25.21***	0.556	0.785	0.745	
1.5.1. PA1	0.857	43.24***				
1.5.2. PA2	0.789	36.19***				
1.5.3. PA3	0.556	17.04***				

Factor/item	Standardized loadings	z-value	AVE	CR	Cronbach's Alpha	Goodness of fit statistics
2. Innovation Performance (A first-order latent variable)			0.605	0.932	0.932	CFI 0.972 RMSEA 0.086 SRMS 0.027
2.1.IP1	0.804	49.04***				
2.2.IP2	0.839	58.88***				
2.3. IP3	0.842	60.77***				
2.4. IP4	0.787	45.38***				
2.5. IP5	0.703	31.29***				
2.6. IP6	0.788	45.22***				
2.7. IP7	0.739	36.42***				
2.8. IP8	0.766	40.80***				
2.9. IP9	0.721	33.67***				
3. Financial Performance (A first-order latent variable)			0.740	0.916	0.916	CFI 0.980 RMSEA 0.019 SRMS 0.010
3.1. FP1	0.877	77.74***				
3.2. FP2	0.695	30.71***				
3.3. FP3	0.930	112.57***				
3.4. FP4	0.919	103.61***				
4. Competition Intensity (A first-order latent variable)			0.592	0.878	0.876	CFI 0.991 RMSEA 0.087 SRMS 0.018
4.1. CI1	0.708	30.18***				
4.2. CI2	0.851	56.50***				
4.3. CI3	0.647	24.33***				
4.4. CI4	0.877	64.66***				
4.5. CI5	0.741	34.58***				

Table 3 presents the test of convergent and discriminant validity. Analyzing the values of Cronbach's alpha, the results show that all constructs have values above the 0.7 cut-off value (Hair et al., 2009). Discriminant validity was performed using the Fornell-Larker test (1981) and the values of the correlation coefficients between the constructs are less than the square root of the AVE of all individual constructs. The presence of a satisfactory level of discriminant validity was confirmed.

Table 3: Convergent and discriminant validity

Latent variable	Cronbach's alpha	Squared correlations (SC) among latent variables							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Leadership	0.872	0.770							
(2) People	0.900	0.686	0.757						
(3) P&S ^a	0.898	0.683	0.657	0.761					
(4) Partnership	0.918	0.485	0.537	0.537	0.746				
(5) P&R ^b	0.745	0.671	0.716	0.734	0.734	0.735			
(6) IP ^c	0.932	0.400	0.550	0.449	0.413	0.540	0.778		
(7) FP ^d	0.916	0.186	0.331	0.250	0.234	0.237	0.566	0.857	
(8) CI ^e	0.876	0.161	0.192	0.209	0.284	0.216	0.111	0.091	0.770

^aPolicy and Strategy ^bProcesses and Resources ^cInnovation Performance ^dFinancial Performance; ^eCompetition Intensity

Note: square root of AVE values is shown on the diagonal in bold

The baseline model estimation

For the analysis of the model software STATA 15.1 was used. The main conceptual model was estimated for the test of the first four hypotheses, i.e., direct effects. The analysis of the first hypothesis revealed that TQM has a statistically insignificant effect ($\beta = -0.061$; $p > 0.1$) on the FP of the company. This implies that our initial assumption that TQM has a positive direct effect was not supported (H1). However, such results are in line with our expectations that TQM's effect on the FP should be analyzed with the additional variables as a mediator (García-Fernandez et al., 2022; Mahmud et al. 2019; Wilson and Slobodzian, 2019). In fact, García-Fernandez et al. (2022) concluded that "authors might consider in future research the mediating relationships of innovation and operational performance in the relationship between quality management and financial performance" (p.16), indicating that the current body of literature lacks joint analysis of the relationships between quality management, innovation, and performance. Our analysis is also in line with Mahmud et al.'s (2019) article, the study that indicated that no direct association between quality management and innovation, operational or FP exists, but this relationship is mediated by innovation. A similar conclusion was reached by Kafetzopoulos et al. (2019), stating that the impact of quality practices on operational and FP is mediated through product and process innovation.

The effect of TQM practices on IP was found to be significant. Hence, the results provide strong empirical support to H2 ($\beta = 0.605$; $p < 0.01$), suggesting that TQM practices have a positive and significant effect on IP. The obtained results are in accordance with previous research (Thai Hoang et al., 2006; Santos-Vijande and Álvarez-González, 2007; Martínez-Costa and Martínez-Lorente, 2008; Sadikoglu and Zehir, 2010). Companies that accept TQM in their systems and their culture of learning create a fertile ground for innovative behavior, as it incorporates the necessary

ingredients for the establishment and development of innovation (Prajogo and Sohal, 2003; 2004). By implementing TQM practices, companies enable the creation of a suitable environment that overcomes the possible barriers that TQM can create for innovation. Companies that strive to develop innovation and IP should first implement TQM practices. In addition, H3 also receives strong empirical support, meaning that IP is positively associated with the FP of a company ($\beta = 0.590$; $p < 0.01$). Therefore, we can conclude that increasing the IP of the company should increase the FP of the company. The obtained results are following previous research (Hult et al., 2004; Kostopoulos et al., 2011; Tsai and Yang, 2014). Given the increased customer requirements and increasing competition in the market, companies that introduce innovative products, with new features and capabilities, have a great opportunity to achieve a higher level of sales and more stable growth of the company. In other words, innovation is a mechanism through which a company gains superior insight into and access to company-specific resources with a positive future value (McGrath et al., 1996) and thus can achieve higher margins on more innovative products (Andries and Faems, 2013). On the other hand, by innovating processes, the company strives to reduce the costs associated with the processes, thus leading to an increase in FP.

The fourth hypothesis was tested by mediation impact analysis. As shown in Table IV, the indirect effect of TQM on FP through IP was statistically significant and positive ($\beta = 0.356$; $p < 0.01$). Following the procedure for mediation analysis recommended by Baron and Kenny (1986), the results indicate that the direct effect between TQM and FP becomes negative but insignificant when the mediator is introduced in the model (Figure 2b). Given that the total effect of the impact of TQM practices on FP is statistically significant and positive ($\beta = 0.296$; $p < 0.01$) indicates the full mediation (Figure 2a). Full mediation occurs when the direct significant relationship between the independent and dependent variables becomes insignificant after the introduction of the mediator variable into the model (Baron and Kenny, 1986; Hair Jr. et al., 2014). Therefore, IP represents a significant mediator between TQM practices and FP. We argue that the implementation of TQM is a demanding process that requires significant company resources and, as consequence, higher costs. The direct effect of TQM on FP is difficult to observe without considering innovations of products and processes. TQM practices improve IP because through the improvement of leadership, employees, policies and strategies, processes and resources, and partnerships (key elements of TQM) they inevitably raise the level of IP of the company. The key elements of the innovation process within the company, which arise in a TQM-supported business environment, are the result of valuable, rare, and difficult to imitate intangible resources created. Ultimately, by innovating the processes, the company strives to reduce the costs associated with the processes, thus leading to an increase in FP. In this case, IP has the effect of full mediation, i.e., the positive impact of TQM practice on FP (total effect) is manifested through the improvement of IP. Thus, the importance of IP was confirmed, because TQM through IP has a positive effect on the FP of the company,

which is not the case with the direct effect. Additional verification of the mediation effect was performed by conducting a Sobel test (Sobel, 1982). A significant z-value (10.803; $p < 0.01$) provided additional evidence of the full mediation effect of IP in the relationship between TQM and FP.

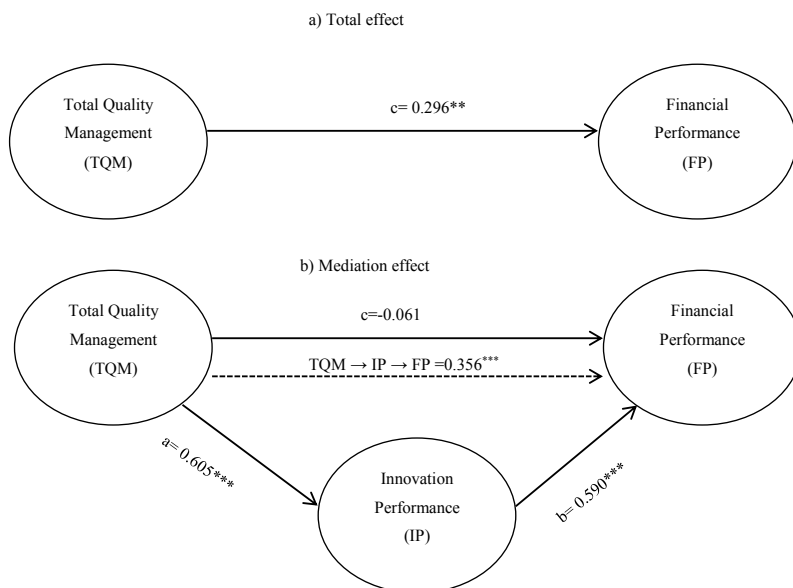
Table 4: Path estimation for the baseline model – without the interaction effect

Path	The baseline model β (z-value)
The main conceptual model	
H1: TQM practices \rightarrow FP	-0.061 (-1.18)
H2: TQM practices \rightarrow IP	0.605 (10.30***)
H3: IP \rightarrow FP	0.590 (10.40***)
H4: TQM \rightarrow IP \rightarrow FP	0.356 (7.75***)
Control variables:	
Agriculture \rightarrow FP	0.050 (1.34)
Service \rightarrow FP	0.023 (0.53)
Construction \rightarrow FP	0.047 (1.12)
Trade \rightarrow FP	0.063 (1.50)
R ²	31.27%

Goodness-of-fit statistics: $\chi^2/df = 2.42$; RMSEA 0.049; SRMR 0.053; CFI 0.916; TLI 0.911.

Note: *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$

Figure 2: Total and mediation effect



Note: *** $p < 0.01$

Source: Authors

The final step of analysis included the moderating impact of CI on the relationship between TQM practices and FP. Following the moderation calculation approach by Hair et al. (2009) the moderator variable is statistically insignificant ($\beta = -0.022$, $p > 0.10$). Hence, H5 is not supported. Sharma et al. (1981) distinguish between two types of moderator variables: quasi moderator and pure moderator variables. Our analysis did not find support for any type of moderation, i.e., CI does not interact with the TQM to modify the form of the relationship between TQM and FP, but also a moderator variable itself is not related to FP when introduced in the second model.

Table 5: Path estimation for the models with the interaction effect

	Model	
	CI as a pure moderator ¹	CI as a quasi moderator ²
Path	β (z-value)	β (z-value)
The main conceptual model		
H1: TQM practices \rightarrow FP	-0.064 (-1.23)	-0.066 (-1.25)
H2: TQM practices \rightarrow IP	0.606 (19.76***)	0.605 (19.45***)
H3: IP \rightarrow FP	0.588 (12.86***)	0.589 (12.88***)
H4: TQM \rightarrow IP \rightarrow FP	0.356 (7.75***)	0.356 (7.74***)
H5: TQM*CI \rightarrow FP	-0.022 (-0.61)	-0.022 (-0.59)
CI \rightarrow FP		0.010 (0.24)
Control variables:		
Agriculture \rightarrow FP	0.050 (1.33)	0.049 (1.31)
Service \rightarrow FP	0.23 (0.52)	0.021 (0.47)
Construction \rightarrow FP	0.047 (1.13)	0.045 (1.04)
Trade \rightarrow FP	0.061 (1.47)	0.058 (1.34)
R ²	31.24%	31.03%

¹ Goodness-of-fit statistics: $\chi^2/df = 2.39$; RMSEA 0.048; SRMR 0.052; CFI 0.915; TLI 0.910.

² Goodness-of-fit statistics: $\chi^2/df = 2.36$; RMSEA 0.048; SRMR 0.072; CFI 0.907; TLI 0.902.

Note: *** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$

Conclusion

Extensive research of the literature in the field of TQM has identified still on-going discourse regarding the effects of TQM on a company's performance. Our research identified several areas to which this paper contributes. First, the value of the TQM concept in terms of its impact on FP requires additional attention even today, especially when considered in models with mediating variables. There is a need for studies that seek to identify variables that have a mediating impact on the relationship between TQM practices and company performance (García-Fernandez et al., 2022; Shan et al., 2016). This complex interplay is worth examining, as it provides clear guidelines to the researchers and practitioners for understanding the mechanism of

TQM effects on the FP of the company. This paper integrates the results of previous research and defines a model according to which the impact of TQM practices on FP is not direct, but there is a third variable, IP, which has a mediating impact on the relationship between TQM practices and FP. With IP included in the model, 31.27 percent of the variance of the latent variable FP was explained, representing a growth of 22.46 percent compared to the initial model (TQM \rightarrow FP). The results of the Sobel test (Sobel, 1982) reveal that the mediated effect is about 5.8 times as large as the direct effect of TQM on FP. In that regard, an important theoretical implication of the study is the need to jointly analyze the relationship between TQM, IP and FP in order to understand how TQM adds value. In accordance with RBT, TQM alone is not enough to create a rare and valuable resource that might result in an improved FP, but it is an important trigger for an IP, which then leads to better FP. As specific practices alone may not be adding value, these findings offer some insight into the relationship between this TQM practices, IP, and FP. Two broader areas in Operations management, performance management and product and service innovation, might benefit from this study, which were indicated as critical areas of Operations management by Hitt et al. (2016a). Additionally, our results confirm that even in the context of a complex business environment (the lack of support and incentives from various government levels, pronounced corruption, high unemployment rates, and high emigration trends), companies that invest in the quality of their products and processes can expect an increase in innovation practices and, consequently, better financial results, and these results are in line with the results of Shafiq et al. (2019). We provide strong empirical evidence that TQM is an important factor in enabling FP through the innovation of products and services. Therefore, the results of this paper reveal the implicit and omitted impact of IP on FP taking into account TQM practices. This full mediation effect that is produced by IP represents a significant contribution to our understanding of the mechanism of impact of TQM practices on a company's FP. Also, the results indicate the importance of IP in the process of implementing TQM practices.

Second, we used the model to determine whether the CI moderates the relationship between TQM practices and FP, providing evidence that the moderation effect is not present. The results of the research are in line with the results from Patiar et al. (2012). The issue of the impact of CI on the effects of the implementation of TQM practices on the FP of companies has received little attention in the empirical literature (Chong and Rundus, 2004; Patiar et al., 2012). These results might imply that competition itself is not as relevant for business success, as long as managers invest in the improvement of the operations' quality and innovate their products and processes.

This paper reveals several important managerial implications. Detailed knowledge of how TQM practices, IP and FP intertwine serve as a basis for decision-makers. Similar to the observation made by García-Fernandez et al. (2022), this study

provides empirical evidence on “the importance of innovations deriving from quality, in order to improve operational FP” (p. 15-16). Given that the ability to manage quality based on TQM philosophy is a unique organizational competence (which, according to the elements of the VRIO concept is valuable, rare, and difficult to imitate), this paper offers evidence that investing in implementing this type of ability is useful to improve primarily IP, and ultimately FP. Company managers should understand that, although the concept of TQM does not directly affect FP, implementing TQM practices can facilitate innovation potential, which can result in better financial results of the company. The results of this research suggest a very close link between IP and the financial success of TQM practices.

A key limitation of this paper relates to how the selected variables are operationalized in the research. First, the paper relies on the perception of the respondents (company managers) and not on the actual situation in the company regarding the use of TQM practices. Second, data on FP are based on respondents’ perceptions. Targeted performance measures such as actual FP can provide a better test of the proposed hypotheses. Nevertheless, previous research confirms that the selected financial scale represents a valid instrument (Powell, 1995).

Future research may consider different dimensions of TQM, as well as innovation, financial, and other performance measures together in an integrated model to provide further explanations of the interaction between these variables. Future research could also use new or additional constructs to explain the relationship between TQM practices and the FP of a company. As recommended by García-Fernandez et al. (2022), some specific variables that should be considered include four dimensions of innovation and different types of results. More specifically, future research could benefit from including incremental and radical product and process innovation as well as operational and FP. In addition to that, authors might also question whether the organizational culture might be included as either mediator or moderator.

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Appendix. Measurement models' items

TQM (Santos-Vijande and Álvarez-González, 2007)

Leadership

- L1. Leaders allocate resources for continuous improvement of the management system.
- L2. Leaders listen and support employees and encourage them to take part in deciding and managing total quality policies and plans.
- L3. Leaders pre-empt change needed in the organization and pinpoint the factors that lead to a need for change.
- L4. Leaders provide a plan detailing the different stages of change, and secure the investment, resources and support needed to achieve change.
- L5. Leaders measure and review the effectiveness of organizational change and share the knowledge that is obtained.

People

- HR1. Employees know that quality is their responsibility, and they are encouraged to meet customers' and the organization's objectives.
- HR2. Continuous improvement is consistently fostered and facilitated.
- HR3. Employees are given tailor-made preparation for their jobs and are qualified to solve quality problems.
- HR4. Staff is continuously trained in the principles of quality, teamwork and job-specific skills.
- HR5. Employees are actively involved in quality related activities and the success of the company, and many of their suggestions are implemented.
- HR6. The company has effective two-way communication links with its employees.
- HR7. The pay and promotion systems acknowledge efforts to improve quality.

Policy and strategy

- PS1. The company draws up strategic action plans (used to regularly review and to establish the organization's short-term and long-term objectives and to pre-empt competitive situations). Their "gold standard" is a commitment to quality.

- PS2. Strategic plans and related policies always consider customers' needs, suppliers' capacities and the needs of any other stakeholders in the company's activities.
- PS3. Detailed information about such things as competitors' actions, other market agents' behaviour, legal and environmental issues, etc. Is collected to help formulate strategy.
- PS4. Information from all the company's processes is analysed when strategy is defined.
- PS5. Progress towards achieving strategic objectives is regularly assessed.
- PS6. SWOT analysis is regularly used to review and update business strategy.
- PS7. Resources are allocated to achieve strategic objectives.

Processes and resources

- PR1. Processes are designed ensuring that skills and capacities are right for company needs.
- PR2. All processes, procedures and products are assessed regularly in an attempt to bring in change and improvement.
- PR3. Our clients' needs are passed on and are understood at all levels.
- PR4. Clients' leave is thoroughly analysed.
- PR5. We use clients' complaints and grievances to improve our products.
- PR6. Present relationships with clients are analysed and regular attempts are made to improve them.
- PR7. We strive to increase our level of commitment towards our client via policies designed to encourage customer loyalty, guarantees, etc.
- PR8. Our company makes ongoing efforts to keep their facilities clean and in order.
- PR9. The company coordinates its strategies and its technological equipment, machinery and know-how.
- PR10. Our company strives to improve operational efficiency by efficient use of technology.

Partnership

- PA1. We have close, long-term relationships with our supplies designed to resolve quality related problems.
- PA2. Our suppliers help to improve our products and/or services and also provide technical assistance.
- PA3. The company is prepared to form alliances with partners and collaborators in the market in an attempt to achieve competitive advantage.

Innovation performance (Hung et al., 2011)

- IP1. The speed of R&D of our company is faster than our competitors.
- IP2. The speed of production improvement is faster than our competitors.

- IP3. The speed of innovating a new logistic way is faster than the competitive.
- IP4. R&D has improved production innovation skills.
- IP5. Compared to our competitors, production in our company is more customized to the customers.
- IP6. Compared to our competitors, the production in our company offers more innovative products to the customers.
- IP7. The company has continuously used innovative technology to improve the quality and speed of production and services to our customers.
- IP8. The job design innovation is more diverse than our competitors.
- IP9. The organizational structure innovation is more flexible than the competitors.

Competitive intensity (Jaworski and Kohli, 1993)

- CI1. Competition in our industry is cutthroat.
- CI2. There are many “promotion wars” in our industry.
- CI3. Anything that one competitor can offer, other can match easily.
- CI4. Price competition is a hallmark of our industry.
- CI5. One hears of a new competitive move almost every day.

Financial performance (Powell, 1995)

- FI1. Over the past years, our financial performance has exceeded our competitors’.
- FI2. Over the past 3 years, our revenue (sales) growth has been outstanding.
- FI3. Over the past 3 years, we have been more profitable than our competitors.
- FI4. Over the past 3 years, our revenue growth rate has exceeded our competitors.