Why and How TQM Leads to Performance Improvements

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Evidence shows that total quality management (TQM) improves organizational performance, but researchers disagree on why and how such improvements occur and on who really benefits (shareholders, employees, customers, society). This study tests hypotheses relating to TQM adoption and the path from wealth creation to wealth appropriation, making a distinction between shareholders' profit maximization and stakeholders' wealth maximization as drivers of the adoption. The authors estimate a model of the direct and indirect consequences of TQM adoption on organizational performance, and then test for a normative versus instrumental motivation driving the TQM adoption decision. They test their hypotheses using a sample of 208 Spanish firms analyzed with structural equation modeling. The results indicate that TQM improves operational performance and all stakeholders share the benefits of this improvement. The authors explain the path from TQM adoption to firm performance, clarify the goals firms may be pursuing when adopting organizational innovations such as TQM, and identify who the beneficiaries are and why and how they benefit from TQM adoption.

Key words: adoption, shareholders, stakeholders, total quality management, wealth creation, welfare

INTRODUCTION

Most literature on total quality management (TQM) establishes the existence of a positive relationship between TQM adoption and performance (Ebrahimi and Sadeghi 2013). However, developing sound empirical and theoretical models that describe cause-and-effect relationships and provide managers with a better understanding of the impact of their decisions throughout an organization remains a significant research opportunity (Evans, Foster, and Linderman 2014). Specifically, researchers disagree on why and how improvements derived from TQM occur and who really benefits from them. This study examines the path from TQM adoption to firm performance. In particular, the authors try to respond to the question of whether firms' adoption of TQM responds to the anticipated positive effects on shareholders' profits or to a moral obligation of creating wealth for all stakeholders. This paper views TQM from a stakeholder perspective, which sees TQM as a management model centered on continuous quality improvement that drives the firm's strategy and internal organization and has consequences for all agents with an interest in the firm's decisions (stakeholders).

This stakeholder perspective retains the core prescriptions from the operational performance and customer satisfaction perspectives of quality but also expands the scope of TQM to include an all-stakeholders' wealth maximization criterion in the decision making (Gentili, Stainer, and Stainer 2003). Some authors go even further and believe that an orientation toward quality is synonymous with ethical behavior by managers and employees such that TQM adoption is perfectly aligned with social welfare (Sciarelli 2002) and shares the philosophical roots and expected outcomes of corporate social

responsibility (CSR) (McAdam and Leonard 2003; Ghobadian, Gallear, and Hopkins 2007). However, these authors do not clarify whether the stakeholders' welfare orientation in adopting TQM adheres to instrumental reasons or normative (ethical) considerations (Donaldson and Preston 1995). Instrumental reasons apply in contexts that benefit the stakeholders as a way of increasing profits for shareholders. Normative considerations dominate when the ultimate objective of the firm is total welfare maximization, taking into account the benefits and costs of all stakeholders. Both perspectives have been considered by researchers studying the complementarity between TQM and CSR (McAdam and Leonard 2003). Recently, Duckworth (2015) recommends that quality researchers expand their scope to include social responsibility factors and outcomes.

Based on the stakeholder perspective, the authors propose a model of TQM adoption with implications for shareholders, customers, employees, and society. The model includes the direct effects of TQM adoption on benefits for respective stakeholder groups as a whole, and the indirect effects, such as when operational performance may contribute to customer satisfaction and consequently to higher incomes and profits that, over time, can increase shareholder wealth. Whether direct or indirect effects dominate in the estimation of the model allows estimation of whether firms adopt TQM for normative or instrumental reasons. If TQM maximizes wealth creation for all stakeholders it would mean that TQM adoption responds to normative motives; if, however, TQM ultimately maximizes value creation only for shareholders through more efficient operations, more satisfied employees and customers, and/or an enhanced corporate reputation from social initiatives, it would mean that TQM adoption responds to instrumental motives.

To the best of the authors' knowledge, this is the first study that provides an answer to the welfare creation process of TQM adoption in firms. Moreover, by identifying this process (path) another two important questions are analyzed: *why* and *how* TQM leads to performance improvements. The first question (why) aims to identify the set of causal relations—direct and indirect—that help explain TQM's influence on firm performance. These relations can be used to justify TQM's capacity to create wealth. The second question (how) aims to clarify the goals firms may be pursuing when adopting organizational innovations such as TQM. In particular, the authors analyze if TQM adoption implies a change in the firm's objective function and hence in who should be considered the ultimate, legitimate beneficiaries of the firm's activities. That is, does managers' concern for the welfare of employees, customers, and society as a whole respond to the objective of maximizing total stakeholder wealth? Or to the contrary, is the welfare of these stakeholders just an intermediate step in the ultimate goal of profit maximization?

Summing up, the main contribution in this paper is that the authors explain the path from TQM adoption to firm performance, clarify the goals firms may be pursuing when adopting organizational innovations such as TQM, and identify who the beneficiaries are and why and how they benefit from TQM adoption.

THEORETICAL DEVELOPMENT

TQM and Operational Performance

The TQM techniques to improve operational performance include scientific methods for work organization, monitoring, and value analysis of work processes; identification of the points of highest leverage for quality improvement; continuous evaluation of alternative solutions to diagnosed problems; and full and detailed documentation of the results obtained after the changes are implemented (Hackman and Wageman 1995). Firms adopting TQM are able to identify and eliminate the ultimate cause of operational problems (Flynn, Schroeder, and Sakakibara 1995), increase output uniformity or standardization of quality (Anderson, Rungtusanatham, and Schroder 1994), improve product quality (Flynn, Schroeder, and Sakakibara 1995), and reduce the complexity of the processes (Ahire and Dreyfus 2000). Moreover, TQM adoption allows firms to reduce the variability of the production process, which implies improvements in cycle times and product design (Reed, Lemak, and Montgomery 1996).

Most researchers confirm the positive relation between TQM adoption and operational performance (for example, Tanninen, Puumalainen and Sandström 2010; Yunis, Jung, and Chen 2013; Sadikoglu and Olcay 2014). The authors' first research hypothesis seeks to confirm the prior supported relationships between TQM adoption and operational performance:

- H_1: TQM adoption has a direct and positive effect on operational performance (improving efficiency).

TQM and Customer Satisfaction

Customer satisfaction adds value from the customers' viewpoint by reducing their complaints and increasing their satisfaction. One of the core principles of TQM is the customer orientation of all the activities to produce and deliver products and services that better satisfy customers' present and future needs and expectations, and thereby improve their satisfaction (Reed, Lemak, and Montgomery 1996; Sadikoglu and Zehir 2010). Thus, TQM takes into account what firms must do to better understand customer needs, requirements, and expectations to not only offer them products and services that provide superior value, but also to respond faster to customer needs (Agus and Hassan 2011). Some effective TQM practices include establishing ongoing direct relationships with customers, improving coordination through information sharing and more effective personalized communication channels (Sadikoglu and Zehir 2010), and engaging employees in customer satisfaction activities (Sila 2007) as a way of reducing response time to changes in demands and needs (Powell 1995). Thus, a customer orientation implies that a firm sustains its competitive advantage in creating value for the buyers of its product by achieving a better fit between the attributes of the product and service and the needs of the buyers (Anderson, Rungtusanatham, and Schroeder 1994) on an ongoing basis.

The authors' second research hypothesis seeks to confirm the prior supported relationships between TQM adoption and customer satisfaction:

- H_2: TQM adoption has a direct and positive effect on customer satisfaction.

Indirect effects, especially those resulting from improved operational performance, can complement the direct positive effect of TQM practices on customer satisfaction. In fact, customer satisfaction would result from improving a firm's competitive position in terms of quality, cost, delivery, and flexibility (Han, Chen, and Ebrahimipour 2007). Thus, production must be focused on the customer to produce high quality and reliable products and services on time with increased efficiency and productivity (Sadikoglu and Olcay 2014). The quality of the products and services improves at the same time as the firm incurs lower costs (Ittner and Larcker 1996) and reduces delivery times (Sila 2007); these improvements in operational performance can be partially transferred to customers in the form of lower prices. Han, Chen, and Ebrahimipour (2007) and Moon et al. (2011), among others, find a positive relation between operational performance and customer satisfaction. Based on the aforementioned, the authors formulate the following research hypothesis:

- H_3: Operational performance has a direct and positive effect on customer satisfaction.

TQM and Other Stakeholders' Performance

Employees and society are the other stakeholders that could benefit from TQM adoption. In a total quality setting, the intrinsic benefits of employee participation in decision making and problem solving leads to higher employee satisfaction (Snipes et al. 2005), less job insecurity (Sadikoglu and Zehir 2010), pride in their work, and a greater sense of belonging to the organization (Ugboro and Obeng 2000). Employees would then feel they are valued, respected, and important (Sadikoglu and Zehir 2010) and TQM would enhance employee confidence.

With respect to society, management models based on TQM such as that of Malcolm Baldrige or the European Foundation of Quality Management (EFQM) Excellence Model recognize the importance of society to business excellence, so they explicitly and implicitly use the terms social impact, public responsibility, and

corporate responsibility as surrogates for societal stakeholders (Idris 2011). If a firm develops its strategies for quality and its organizational objectives taking into account their possible effects on the environment and living standards of the society, it can reduce or eliminate pollution and noise, protect the environment, and earn a good reputation in the society (Sadikoglu and Olcay 2014). Based on this the authors formulate the following research hypothesis:

- H_4: TQM adoption has a direct and positive effect on other stakeholders' performance (improving employee satisfaction and social benefits).

The TQM practices implemented to improve operational performance determine the culture of quality in which employees perform their work. Firms may also share gains from lower operating costs with employees by increasing salaries or other benefits. In addition, a strong commitment to lean production could increase the concern for lowering environmental impact and reducing productive resource waste. As Sadikoglu and Olcay (2014) observe, knowledge of the environmental impact of the products and services or processes can be used in monitoring and improving product or process design, such as reducing or eliminating the parts and components of the products and services that are environmental or health hazards. Thus, employees and society may also obtain indirect gains from TQM adoption by sharing the benefits of operational efficiency. Based on the aforementioned, the authors formulate the following research hypothesis:

- H_5: Operational performance has a direct and positive effect on other stakeholders' performance (improving employee satisfaction and social benefits).

TQM and Financial Performance

Powell (1995) found that TQM provides firms with value creation capabilities, increasing their competitive strength and providing a sustainable competitive advantage. Recent papers such as El Shenawy, Baker, and Lemak (2007) and Yunis, Jung, and Chen (2013) confirm this. For many firms, adopting TQM implies a complete change in their business and organizational models; although costly, this helps the firm achieve a stronger competitive advantage. Thus, the firm becomes more competitive, which should translate into better financial performance (Han, Chen, and Ebrahimpour 2007).

Several papers obtain a positive correlation between TQM adoption and financial development. For example, Hendricks and Singhal (2001) and Nicolau and Sellers (2010) find that stock prices respond positively to announcements that a firm has adopted a quality model or received a quality award. Based on this information, the authors formulate the following research hypothesis:

- H_6: TQM adoption has a direct and positive effect on financial performance (improving shareholder performance).

The improvements in operational performance as a result of TQM adoption can also have a direct, positive effect on financial performance (for example, Flynn, Schroeder, and Sakakibara 1995; Ittner and Larcker 1996). Internal quality can directly affect costs and revenues (Sila 2007). Continuously improving processes and product and service quality will reduce scrap, waste, and nonvalue-added activities (Kaynak 2003). Quality lowers costs through a higher proportion of defect-free products, fewer materials used, less time wasted on rework, and lower warranty costs. Moreover, the commitment to quality is a means of increasing the reliability of the firm's products (that is, through uniform compliance with specifications) and improving the firm's reputation (Reed, Lemak, and Montgomery 1996). Higher product reliability and lower volatility at the operating levels of internal processes reduce the firm's exposure to economic risk (Flynn, Schroeder, and Sakakibara 1995) and its cost of capital. These translate into improved financial performance: higher profitability and higher shareholder returns (Ittner and Larcker 1996; Han, Chen, and Ebrahimpour 2007; Moon et al. 2011). Recently, based on a literature review, Arumugam, Antony, and Linderman (2014) concluded that a relationship between operational performance and financial performance exists. Based on these findings, the authors formulate the following research hypothesis:

- H_7: Operational performance has a direct and positive effect on financial performance (improving shareholder performance).

The question of whether customer satisfaction has a direct, positive impact on financial performance has been previously analyzed (for example, Anderson, Rungtusanatham, and Schroeder 1994; Agus, Krishnan, and Kadir 2000; Han, Chen, and Ebrahimpour 2007; Moon et al. 2011). As Sila (2007) notes, the basic argument is that improvements in customer satisfaction create customer loyalty, which results in repeat purchases and increased sales. The brand value and the reputation of the firm also increase and the elasticity of demand can then decrease (Kaynak 2003). Thus, customer satisfaction can enable the firm not only to increase its market share but also to apply higher markups when pricing its products, and ultimately to raise profitability (Ittner and Larcker 1996; Luo and Bhattacharya 2006). Based on the aforementioned, the authors formulate the following research hypothesis:

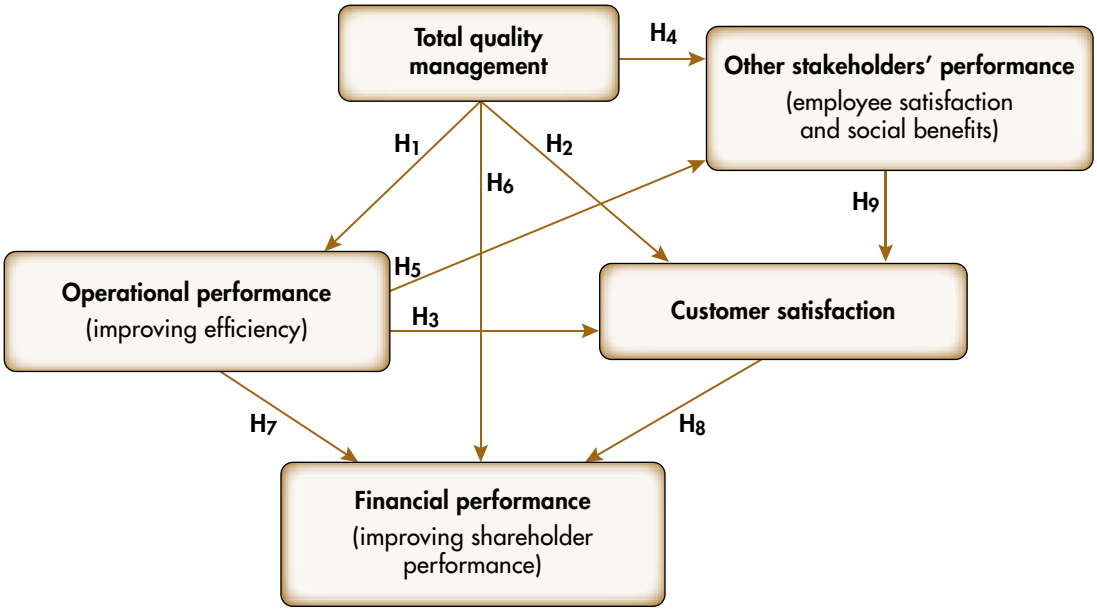
- H_8: Customer satisfaction has a direct and positive effect on financial performance (improving shareholder performance).

A better corporate reputation, resulting from more satisfied employees and services rendered to the benefit of society, may have an indirect effect on financial performance through a positive effect on customer satisfaction. This takes as its point of departure the association that has recently been established between TQM and CSR (McAdam and Leonard 2003) and the more straightforward argument that society's satisfaction is a necessary condition for customer satisfaction. A customer is not only an economic agent but also a member of society. Thus, customers are likely to be more satisfied by products and services offered by socially responsible firms, and their perception of the firm will improve (Luo and Bhattacharya 2006). Based on this information, the authors formulate their final research hypothesis:

- H_9: Other stakeholders' performance (improving employee satisfaction and social benefits) has a direct and positive effect on customer satisfaction.

Figure 1 represents all the previous hypotheses and their proposed relations, and hence the complete model analyzed in this work (ad-hoc model). This figure illustrates—through one set of hypotheses (H_1, H_2, H_4, and H_6)—the possible direct effects of TQM on the different types of performance

Figure 1 Model of TQM wealth creation from stakeholder perspective



and—through a second set of hypotheses (H_3, H_5, H_7, H_8, and H_9)—the possible indirect effects of TQM on organizational performance.

Direct and indirect effects of TQM adoption on all performance dimensions (operational performance, financial performance, customer satisfaction, and other stakeholders' performance) would support the stakeholder perspective of TQM and identify the welfare-creation path of TQM. With respect to shareholders, there are two competing explanations for how TQM adoption improves financial performance. The normative explanation assumes that TQM adoption has the objective of improving all stakeholders' satisfaction because their interests are legitimate in themselves, and in the firm's objective function they are the ultimate beneficiaries of the TQM adoption. In this case, TQM adoption would have a direct, positive effect on the performance of all stakeholders. The instrumental explanation is that the ultimate objective of TQM adoption is to increase shareholder profits and that the other stakeholders only benefit because sharing benefits with them is a means to increase shareholder profits. In the authors' model, this would imply that TQM does not directly affect financial performance, but does so indirectly through nonfinancial stakeholder performance measures. Both explanations of financial performance view improved financial performance as the outcome of TQM adoption, but only the normative explanation suggests there are direct paths from TQM adoption to all types of performance measures, including financial performance. Moreover, in the normative explanation nonfinancial stakeholder performance measures should not have effects on financial performance.

METHODS

Data Collection Process

This study uses a cross-sectional survey methodology. The data were collected via questionnaires from a sampling frame of 3951 Spanish firms having at least 10 employees, provided by the Iberian Balance sheet Analysis System (SABI).

The questionnaire was previously revised and pretested with a pilot study and feedback from eight TQM experts (three academics and five CEOs with experience in quality management). The final questionnaire included items from previous TQM literature (mainly from Rao, Solis, and Raghunathan 1999) and items that were specific to this study (for example, other stakeholders' performance indicators).

Questionnaires were mailed in the spring of 2005 with a letter asking either the CEO or the quality manager to respond, and a return envelope addressed directly to the researchers to ensure respondent confidentiality and anonymity. The authors could not post a second follow-up letter since they did not know which firms responded to the survey. Three months later, the total number of respondents was 216. In eight cases some questions were left unanswered, so they were excluded, reducing the sample to 208 firms.

The majority of respondents were quality managers (58.2 percent); the rest of the responses were from the CEO (26.4 percent), the owner of the firm (10.6 percent), or another manager (4.8 percent). Most of the firms have a quality department (74 percent). In line with the population of Spanish firms, 95 percent of the firms are small and medium enterprises, and only 5 percent are large firms. Finally, the distribution of firms in terms of economic activities is 45.3 percent from industrial sectors and 54.7 percent from service sectors.

Methodology

The empirical validation of the model was carried out using structural equation modeling (SEM). SEM allows for the introduction of latent variables that can only be measured through observable indicators. In this research, the variables TQM adoption, operational performance, other stakeholders' performance, customer satisfaction, and financial performance cannot be directly observed. Moreover, SEM takes into account the existence of measurement error and offers the possibility of simultaneously estimating all the relations proposed in the theoretical model, hence attaining a complete representation of the model. Thus, SEM is a suitable methodology to test—in a single model—the relations between TQM adoption and the performance dimensions and their indicators (factorial approaches)

and the causal relations between TQM adoption and the performance dimensions (causal approaches). The authors used the statistical software EQS 6.1 (see Bentler 1995), with the maximum likelihood estimation method. SEM was used in previous studies focusing on the TQM-performance relation (for example, Salaheldin 2009; Moon et al. 2011; Yunis, Jung, and Chen 2013).

The authors used a two-step analysis procedure. The first step involved building the measurement model (that is, confirmatory factor analysis) to deal with reliability and validity in measuring the latent constructs of TQM adoption and the performance dimensions, while the second step involved building the structural model (see Figure 1) that is concerned with the direct and indirect relations among the latent constructs.

Table 1 Dimension of level of TQM adoption [F1]

Variable	Name	Statistics		Measurement model	
		Mean	*SD*	F1	R^2
V1	Level of TQM implementation	5.7	1.96	0.98	0.96
V2	Level of intensity of TQM use	3.2	1.01	0.66	0.44
	Fornell and Larcker (1981)			0.70	
	(Omega) McDonald (1999)			0.82	

Variables and Their Measurement

The latent variable TQM adoption is labeled "level of TQM adoption" (F1) and includes two dimensions: level of TQM implementation (V1) and level of intensity of TQM use (V2). Responses for V1 in the questionnaire were: not anticipated; anticipated in the long term (more than five years); anticipated in the medium term (one to five years); anticipated in the short term (less than one year); in process of implementation; implemented but not certified; and implemented and certified. Responses for V2 were TQM not adopted (value of 1); only adoption of TQM practices demanded by the main customers (2); voluntary adoption of basic/traditional TQM principles and tools (3); adoption of business excellence principles (4); and adoption of ethical principles (5). The authors also tested the reliability and convergent validity of V1 and V2 with respect to the latent variable F1 by estimating the parameters using first-order confirmatory factor analysis. The results in Table 1 confirm that the data can be reduced to one dimension with two tau-equivalent reflective indicators (equal factor loadings).

The operational performance and stakeholder benefits consequences of TQM adoption were measured with four latent variables. These variables corresponded to each of the analytical perspectives found in the literature on the potential beneficiaries from TQM adoption: 1) operational performance (F2), representing the cases where the goal of TQM adoption was to improve the efficiency of the production process; 2) customer satisfaction (F4), where the main goal was to improve the value of the products for potential buyers; 3) financial performance (F3), where the goal was to increase shareholders' profits; and 4) other stakeholders' performance (F5), where the goal was to benefit employees and society in general.

The variables used to measure the different dimensions of firm performance have been used in numerous papers (examples of authors are given in parentheses for each variable), but they have never been considered jointly as they are here in this paper. The five measurable variables that capture operational performance (F2) are: waste reduction (V3) (for example, Salaheldin 2009); cost reduction (V4) (for example, Salaheldin 2009); time reduction (V5) (for example, Rao, Solis, and Raghunathan 1999); reprocessing-time reduction (V6) (for example, Rao, Solis, and Raghunathan 1999); and productivity improvement (V7) (for example, Tanninen, Puumalainen, and Sandström 2010).

Customer satisfaction (F4) was captured by two variables: complaints reduction (V11) (for example, Sadikoglu and Zehir 2010), and a direct measure of customer satisfaction (V12) (for example, Duh, Hsu, and Huang 2012).

Financial performance (F3) was built from three measurable variables that have been found to be positively correlated with financial performance

indicators in other studies: maintain the firm's businesses (V8), representing the survival and continuity of business activity (for example, Rao, Solis, and Raghunathan 1999); profitability (V9) (for example, Tanninen, Puumalainen, and Sandström 2010); and competitive position (V10), the strength of the firm's competitive position relative to its competitors (for example, Powell 1995).

Finally, the construct of the latent variable representing other stakeholders' performance (F5) involved two variables: social benefits (V13), measuring the benefits to society of TQM adoption (for example, Sadikoglu and Olcay 2014); and employee satisfaction (V14), measuring the benefits to employees (for example, Sadikoglu and Zehir 2010).

These 12 variables were measured on a seven-point Likert scale (1 = TQM adoption would have no effect on the respective variable, and 7 = TQM adoption would have a very strong positive effect on the respective variable). Since the variables used can be correlated, their dimensionality is reduced through a confirmatory factor analysis with four factors imposed from the outset, one for each latent variable of performance: operational performance (F2), financial performance (F3), customer satisfaction (F4), and other stakeholders' performance (F5). Table 2 shows the main statistics of the variables and the results of the confirmatory factor analysis.

The goodness-of-fit statistics confirm the reliability and convergent validity of the constructs in terms of

Table 2 Dimensions of organizational performance

Dimension	Variable	Name	Statistics		Measurement model				
			Mean	*SD*	F2	F3	F4	F5	R^2
Operational performance (F2)	V3	Waste reduction	*5.0*	*1.74*	0.63				0.40
	V4	Cost reduction	*5.7*	*1.40*	0.73				0.53
	V5	Time reduction	*5.5*	*1.52*	0.81				0.66
	V6	Reprocessing reduction	*5.7*	*1.50*	0.67				0.45
	V7	Productivity improvement	*6.2*	*1.04*	0.73				0.54
Financial performance (F3)	V8	Maintain the firm's businesses	*6.0*	*1.14*		0.75			0.56
	V9	Profitability	*6.1*	*1.16*		0.86			0.74
	V10	Competitive position	*6.2*	*1.05*		0.76			0.57
Customer satisfaction (F4)	V11	Complaints reduction	*6.3*	*1.04*			0.79		0.63
	V12	Customer satisfaction	*6.5*	*0.90*			0.93		0.86
Other stakeholders' performance (F5)	V13	Social benefits	*5.3*	*1.48*				0.72	0.52
	V14	Employee satisfaction	*5.8*	*1.28*				0.99	0.98
	Fornell and Larcker (1981)				**0.51**	**0.62**	**0.75**	**0.70**	
	(Omega) McDonald (1999)				**0.84**	**0.83**	**0.85**	**0.82**	

Recommended levels: more than 0.5 (Fornell and Larcker) and more than 0.7 (Omega)

Correlations matrix	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
V3	**1**											
V4	**0.423**	**1**										
V5	**0.485**	**0.677**	**1**									
V6	**0.485**	**0.476**	**0.573**	**1**								
V7	**0.445**	**0.500**	**0.559**	**0.435**	**1**							
V8	0.346	0.272	0.262	0.313	0.397	**1**						
V9	0.423	0.381	0.430	0.424	0.621	**0.644**	**1**					
V10	0.314	0.318	0.353	0.248	0.502	**0.589**	**0.637**	**1**				
V11	0.365	0.233	0.220	0.303	0.300	0.409	0.389	0.353	**1**			
V12	0.256	0.174	0.213	0.293	0.360	0.397	0.377	0.424	**0.738**	**1**		
V13	0.373	0.252	0.325	0.197	0.399	0.348	0.392	0.382	0.363	0.448	**1**	
V14	0.345	0.236	0.337	0.263	0.512	0.332	0.418	0.343	0.497	0.611	**0.720**	**1**

Table 3 Statistics and goodness-of-fit indices of factor model of performance variables

S-Bχ^2	df	p-value	GFI	AGFI	SRMR	NFI	CFI	RMSEA
88.553	49	0.0005	0.900	0.840	0.067	0.992	0.996	0.062
Recommended level (Schumacker and Lomax 1996)			Close to 0.9	Close to 0.9	Less than 0.08	Close to 0.9	Close to 1	Less than 0.1

S-Bχ^2: Satorra-Bentler Robust Chi-square; **df:** degree of freedom; **GFI:** goodness-of-fit index; **AGFI:** adjusted GFI; **SRMR:** standardized root mean square residual; **NFI:** robust normed fit index; **CFI:** robust comparative fit Index; **RMSEA:** robust root mean square error of approximation.

Table 4 Statistics and goodness-of-fit indices of structural model

S-Bχ^2	df	p-value	GFI	AGFI	SRMR	NFI	CFI	RMSEA
113.627	71	0.001	0.902	0.855	0.062	0.991	0.997	0.054
Recommended level (Schumacker and Lomax 1996)			Close to 0.9	Close to 0.9	Less than 0.08	Close to 0.9	Close to 1	Less than 0.1

capturing the four latent dimensions of performance (see Table 3).

RESULTS

The authors' data analyses included performing the confirmatory factor analysis (factorial approaches) and the simultaneous estimation of the causal relations among the latent variables (causal approaches). Figure 2 shows a summary of the percentage of explained variance, R2, and estimated coefficients significantly different from zero for the explanatory variables in each performance latent variable. The statistics and goodness of fit of the model confirm the overall goodness of fit of the estimation (see Table 4).

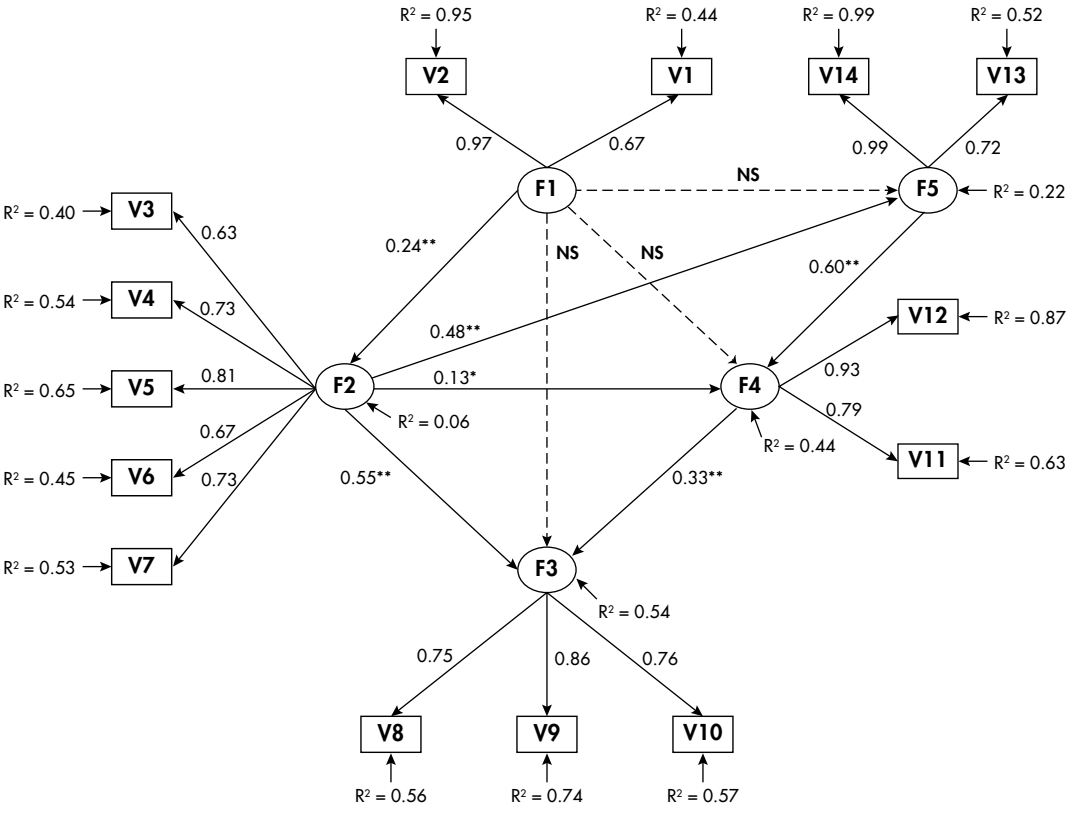
According to the results shown in Figure 2, the level of TQM adoption (F1) has a direct and positive effect on the latent variable operational performance (F2). The estimated coefficient of the latent variable F1 in the regression where the dependent variable is F2 is 0.24 ($p < 0.05$) and the R2 is 0.06. Thus, the higher the level of TQM adoption (that is, the value of F1), the higher the operational performance obtained; this supports hypothesis 1. Other papers obtained similar results with different data (for example, Sila 2007).

The findings do not support H_2, H_4, or H_6, so TQM adoption does not have a direct, positive effect on customer satisfaction, other stakeholders' performance, or financial performance (F1 has no statistically significant effect on F4, F5, or F3, respectively).

The results lead to a different conclusion for the indirect effects of TQM on the benefits for the stakeholders. The latent variable operational performance (F2) explains 22 percent of the variance of other stakeholders' performance (employees and society; F5), with an estimated regression coefficient of 0.48 ($p < 0.05$); this finding supports hypothesis 5 and is consistent with the literature (for example, Gentili, Stainer, and Stainer 2003). Operational performance (F2) and other stakeholders' performance (F5) together explain 44 percent of the variance of the latent variable customer satisfaction (F4); each of the explanatory variables has a statistically significant, positive coefficient (respectively 0.13, $p < 0.10$; and 0.60, $p < 0.05$). Thus, the results support H_3, which is consistent with the findings in Moon et al. (2011), and H_9.

The model explains 54 percent of the observed variability in the latent variable financial performance (F3); the two explanatory variables with statistically significant coefficients are: the latent variable operational performance (F2), with coefficient 0.55 ($p < 0.05$), and the latent variable customer satisfaction (F4), with coefficient 0.33 ($p < 0.05$). These results support hypothesis 7, which proposes a positive effect of operational performance on financial performance (as in Han, Chen, and Ebrahimpour 2007), and hypothesis 8, which proposes a positive effect of gains in customer satisfaction on financial performance (as in Agus, Krishnan, and Kadir 2000; Sila 2007). The

Figure 2 Accepted model of TQM wealth creation from stakeholder perspective



* Relations significant at 10% level.
** Relations significant at 5% level.
NS Nonsignificant relations

Variable code	Name and description of variable
V1	Level of TQM implementation
V2	Level of intensity of TQM use
V3	Waste reduction
V4	Cost reduction
V5	Time reduction
V6	Reprocessing reduction
V7	Productivity improvement

Variable code	Name and description of variable
V8	Maintain the firm's businesses
V9	Profitability
V10	Competitive position
V11	Complaints reduction
V12	Customer satisfaction
V13	Social benefits
V14	Employee satisfaction

Variable code	Name and description of variable
F1	Level of TQM adoption
F2	Operational performance
F3	Financial performance
F4	Customer satisfaction
F5	Other stakeholders' performance

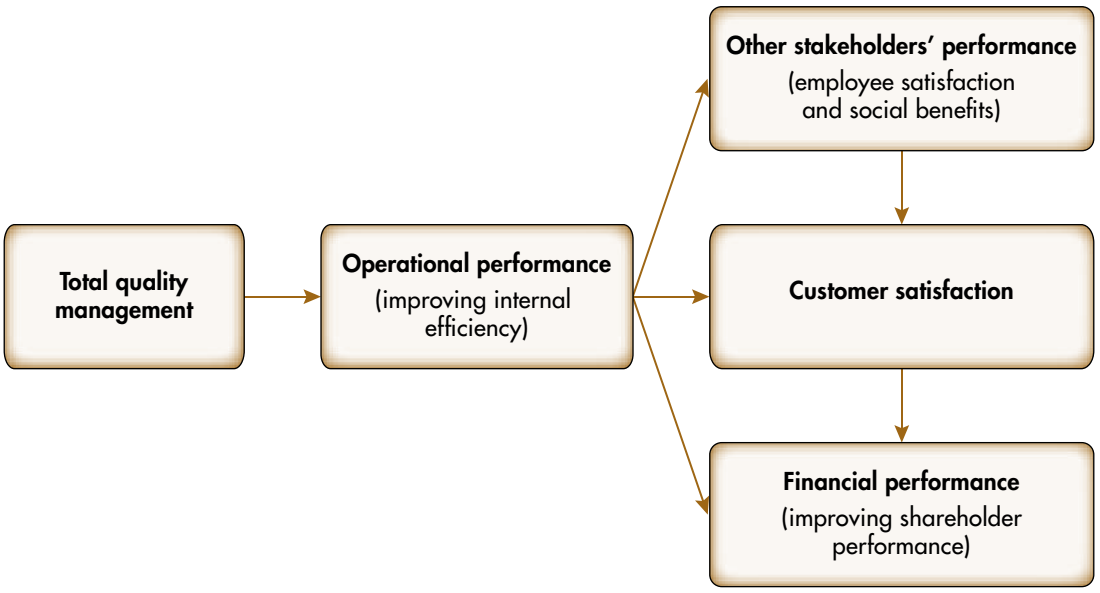
authors interpret the joint significance of operational performance and customer satisfaction on financial performance as complementary effects of the two variables on financial performance.

The results (see Figure 2) confirm the stakeholder perspective of TQM, since all stakeholders benefit from TQM adoption. But the improvements in the performance of the nonfinancial stakeholders (customers, employees, and society) are only a means to further increase shareholder profits. Thus, firms adopt and implement TQM with the ultimate purpose of improving their financial performance (shareholder profits). This result is similar to that obtained by Duh, Hsu, and Huang (2012).

Specifically, other stakeholders' performance increases customer satisfaction and customer satisfaction increases financial performance. Furthermore, the authors establish the importance of the operational perspective as a driver in the wealth creation of TQM. In fact, the only direct effect of TQM adoption is on operational performance and these improvements in internal efficiency are partially shared by all stakeholders.

Finally, Figure 3 summarizes the path from TQM adoption to firm performance that confirms that the

Figure 3 Proposed TQM performance model



instrumental dimension of TQM (shareholder profit maximization) dominates over the normative one (stakeholder wealth maximization).

CONCLUSIONS

This paper compared the instrumental and normative explanations for TQM adoption to each other using the model proposed in Figure 1. The results indicate that TQM adoption has a direct, significant influence only on operational performance. This suggests that it is the efficiency gains from the internal and operational perspective that subsequently lead to improvements in the rest of the performance dimensions (financial performance, customer satisfaction, and other stakeholders' performance). Consequently, operational performance improvements are the main driver of TQM adoption.

The authors find that firms adopt TQM because it improves operational performance (that is, why TQM leads to performance improvements). In addition, their results clarify the goals that firms may be pursuing by adopting organizational innovations such as TQM. In particular, they find that TQM adoption implies a substantial change in the firm's objective function, where the financial stakeholders and nonfinancial stakeholders are considered beneficiaries of the firm's activities. But these results confirm that an instrumental motive drives managers, since the interests of the nonfinancial stakeholders are considered because this allows the firm to better satisfy the interests of the financial stakeholders (that is, how TQM leads to performance improvements). So, TQM adoption does not modify the dominant paradigm of the capitalist firm, which has a shareholder profit-maximizing orientation, but exploits the existence of complementarities between the satisfaction of the interests of all the groups affected by the firm's activities (nonzero sum game) to achieve the ultimate objective (that is, financial performance improvements) more effectively and more efficiently. The importance of exploiting these complementarities in TQM adoption processes was noted by García-Bernal et al. (2004).

These results could also form the basis for future research for both TQM and CSR researchers, since, as the authors have noted previously, CSR is closely related to TQM and stakeholder welfare maximization. These findings suggest that some CSR practices may also be instrumental. Another line of future research could be to study specific TQM models such as that of Malcolm Baldrige or EFQM to analyze

whether these models imply an effective change in the firm's objective function and in what sense (instrumental or normative).

The inferences for quality management practitioners and managers in general seem clear. TQM adoption is a welfare-enhancing organizational innovation because it creates net positive wealth for all stakeholders (nonzero sum game). Although the normative stakeholder perspective could be the best in terms of wealth creation (maximum welfare), the instrumental dimension of TQM adoption allows firms to create welfare beyond the purely financial aspect. The instrumental and financial perspectives share the objective function (shareholder profit maximization), but TQM adoption using the instrumental stakeholder perspective benefits not only the shareholders but the rest of the stakeholders as well (although indirectly). Moreover, as Jensen (2001) shows, pursuing a single-valued objective function (shareholder profits) allows the managers to avoid the conflicts and inefficiencies that are a result of trying to reconcile stakeholders' conflicting interests, which simplifies managers' ability to meet their objectives.

These results could also be an incentive for policy makers to invest resources in encouraging and helping the diffusion of organizational innovations like TQM (as happens in some Spanish regions). Looking at the results of Figure 3, the authors conclude that TQM adoption is self-reinforcing for firms because it improves the firm's financial performance, while also improving the nonfinancial measures, so one can conclude that TQM adoption leads to an increase in wealth creation as a whole, and consequently an increase in social welfare. In some Spanish regions, the regional governments incentivize the adoption of TQM-based management models like the EFQM Excellence Model by setting up excellence programs that provide firms with training and external consultancy to help them implement such models.

Finally, while this model is based on the main TQM effects, some previous papers have shown that there are moderating variables. A more complex model incorporating them may be required to better capture the intrinsic stakeholder commitment orientation. Moreover, the firms included in this study come from a single country; the size of the sample is limited, so one cannot control for size or industry effects; and the survey was carried out several years ago in a pre-crisis period. Finally, there is only one respondent per survey, so the authors' results could be partially due to common method variance. Nor did they pre-test their instrument using Q-sort methodology or other methods to independently compare items to the construct definitions, so these aspects could be more solidly validated in future work. Replicating their analyses with larger samples would reinforce their results and conclusions with respect to the validity of the different constructs the authors propose and use here. All this could limit the generalizability of the results. Despite these limitations, the authors believe that this study is a useful step in analyzing TQM adoption.

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APPENDIX

Code	Observed Variable	Measurement Instrument (Likert scale)
V1	Level of TQM implementation	Responses were: not anticipated (value of 1); anticipated in the long term (+5 years) (2); anticipated in the medium term (1–5 years) (3); anticipated in the short term (< 1 year) (4); in process of implementation (5); implemented but not certified (6); and implemented and certified (7)
V2	Level of intensity of TQM use	Responses were: TQM not adopted (value of 1); only adoption of TQM practices demanded by the main customers (2); voluntary adoption of basic/traditional TQM principles and tools (3); adoption of business excellence principles (4); and adoption of ethical principles (5)
V3	Waste reduction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption reduces waste generated by firm
V4	Cost reduction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption reduces firm's operational costs
V5	Time reduction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption reduces firm's production times
V6	Reprocessing reduction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption reduces reprocessing of defective products
V7	Productivity improvement	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption improves firm's productivity
V8	Maintain the firm's businesses	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption allows firm to maintain its current business activities
V9	Profitability	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption improves firm's profitability
V10	Competitive position	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption improves firm's competitive position
V11	Complaints reduction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption reduces levels of customer complaints
V12	Customer satisfaction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption improves levels of customer satisfaction
V13	Social benefits	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption has positive repercussions for society
V14	Employee satisfaction	Firm should score on Likert scale from 1 (lowest score) to 7 (highest score) to what extent it perceives that TQM adoption improves levels of employee satisfaction