Organizational culture for total quality management

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This study aimed to find empirical evidence about the organisational culture that fits best with a total quality management (TQM) system. Based on the classification developed by Cameron and Quinn (1999), we propose an alternative type of culture: the 'mixed culture' or 'culture for quality', which would be between adhocratic and clan cultures. It would have a double orientation – external and internal – and it would promote flexibility. The results of an empirical study of 451 companies were analysed using hierarchical linear regression methodology. The measurement of constructs used in this research was based on a review of the literature. Empirical evidence was found for the positive impact of adhocratic culture on TQM. Contrary to expectations, the clan culture has no significant effect on TQM. In addition, the mixed culture or 'culture for quality' is the most appropriate for a TQM system. The expected effect of control-oriented cultures was also found. In this case, both the market culture and the hierarchical culture have a negative effect on the quality management system. Finally, it was found that TQM has a significant positive effect on business performance. This effect is consistent with the literature reviewed. Consequently, managers must know the rules, values and customs that actually exist in their organisations as well as those that are more consistent with quality management. Companies with a quality orientation should promote the values and beliefs of the clan and adhocracy cultures.

Keywords: quality management; organisational culture; postal survey

1. Introduction

Over recent decades, total quality management (TQM) has been described in numerous publications (Bou Llusar, Escrig Tena, & Roca Puig, 2001; El Shenawy, Baker, & Lemak, 2007; Hendricks and Singhal, 2001; Terziovski & Samson, 2000) as a management tool which provides companies a competitive advantage and allows them to generate higher profits.

The literature has defined the concept and dimensions of TQM and distinguished the more technical and intangible aspects, such as the culture required to make the system work. Indeed, organisational culture is one of the most important variables in the success or failure of TQM implementation (Dean and Bowen, 1994; De Cock, 1998; Deming, 1986; Juran, 1988, 1989; Kujala & Lillrank, 2004; Metri, 2005; Nasserowski & Coleman, 1997; Powell, 1995; Tata & Prasad, 1998). As noted by Tata and Prasad (1998), organisational culture and structural factors are the most significant determinants of the success of TQM. In fact, the literature suggests that only a third of TQM programmes are successful, and that the others fail mainly because of a mismatch of these two variables, cultural and structural factors (Burdett, 1994; Ehigie & McAndrew, 2005; Grant, Shani, & Krishnan, 1994).

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Organisational culture has also been a major topic of research, involving many classifications and definitions. Among these, the typology of Cameron and Quinn (1999) is one of the most important (Henri, 2006). Those authors rely on the 'Competing Values Framework' proposed by Quinn (1988) to create what they call 'a tool for the assessment of organizational culture', with four types of cultures: clan, adhocracy, market and hierarchy. These four cultures are defined according to two dimensions.

One dimension shows how far the organisation has a focus on control, stability and order. This dimension provides a scale from those organisations or units that emphasise mechanical stability, predictability and order to those which are functional with high levels of flexibility, change and adaptability. The second dimension shows the tendency towards the interior (integration of units) or exterior (stimulating differentiation and rivalry).

The aim of this study was to analyse precisely what kind of culture is best suited to a TQM system, using an empirical study to demonstrate the links. To do this, we first discuss the relevant literature in the fields of TQM and organisational culture to identify the kind of culture that can be expected to promote the success of a TQM system, based on previous studies, and we then test for a positive relationship between TQM and organisational performance. We discuss the methodology used to conduct the empirical study. The third part of this paper analyses the results and presents the conclusions and limitations of the study and sketches possible lines for future research.

There is little empirical evidence to support the effect that the culture can have on TQM implementation and most papers focus only on traditional classification of the organisational culture. We have drawn on previous studies based on the model of Cameron and Quinn (1999) who also proposed additional cultures (Deshpandé, Farley, & Webster, 1993; Lau & Ngo, 2004; Moorman, 1995; Obenchain & Johnson, 2004; Stock, McFadden, & Gowen, 2007). Our results partially support the findings of other authors, such as Zu, Robbins, and Fredendall (2010), Dellana and Hauser (1999) and Chang and Wiebe (1996), except for the findings related to clan culture.

2.   Literature review

As a prelude to the study of the relationship between organisational culture and TQM, it is first necessary to briefly present the literature on each of these concepts to identify the state of the art in the research that specifically examines this relationship.

2.1   *Total quality management*

TQM has been considered as an important mechanism for promoting the smooth running of companies and attaining a competitive advantage. This importance has guided researchers to study this management philosophy and analyse how to implement it successfully (Ehigie & McAndrew, 2005). According to Flynn, Schroeder, and Sakakibara (1994), TQM can be defined as an integrated effort to achieve and maintain high-quality products based on the maintenance of continuous process improvement and error prevention at all levels and in all functions of the organisation with the aim of reaching and even exceeding customer expectations. As these and other authors show (Ahire, Golhar, & Waller, 1996; Anderson, Rungtusanatham, & Schroeder, 1994; Black & Porter, 1996), TQM is a multidimensional concept. Within its component dimensions, the researchers emphasise two types of elements. The first are the more technical aspects of quality management and the second are the intangible aspects. In the first category are, for example, the statistical

control techniques or Ishikawa's tools for problem-solving. The intangible elements include leadership, corporate culture, management commitment, the 'open' organisation, teamwork and empowerment. These two categories are commonly known as 'hard' (techniques) and 'soft' (intangibles) (Bou-Llusar, Escrig-Tena, Roca-Puig, & Beltrán-Martín, 2009; Fotopoulos & Psomas, 2009). The general conclusion of these works is that the most influential dimensions are those that Powell (1995) and Abdullah, Uli, and Tarí (2008) describe as intangibles: leadership, organisational skills and culture, management commitment, open organisation and empowerment.

2.2 *Organisational culture*

Organisational culture is one of the key elements for implementing TQM practices. Some researchers have focused their efforts on studying this concept.

First, the concept of 'culture' exists at various levels, including national culture and organisational culture (Catanzaro, Moore, & Marshall, 2010). The last has frequently been defined generically as, 'the set of norms, beliefs and values shared by members of the organization' (e.g. Cameron & Quinn, 1999; Detert, Schroeder, & Mauriel, 2000; Stock et al., 2007; Yu, 2007). However, organisational culture is a broad concept and, according to De Long and Fahey (2000), it would imply different levels, such as values, rules and practices. Furthermore, organisational culture affects members of an organisation by influencing behaviour and performance outcomes, and the organisation's external environment (George, Sleeth, & Siders, 1999).

Many types of organisational culture have been described since this concept first appeared in the literature (e.g. Frohman, 1998; ÓRelly, Chatman, & Caldwell, 1991; Schein, 1996). Given the need to use a model for classifying types of culture and studying their effect on TQM, we have chosen to use the competing values model of Cameron and Quinn (1999). This model defines a widely accepted typology of organisational cultures that has been used in many empirical studies (Deshpandé et al., 1993; Lau & Ngo, 2004; Obenchain & Johnson, 2004; Stock et al., 2007; Zu et al., 2010). The definition of culture in this model is accomplished through two dimensions extracted from the 39 performance indicators developed by Campbell (1977). The first dimension relates to the orientation of the company to stability versus flexibility, according to the importance given to control and order (stability) or innovation and dynamism to adapt to environmental changes (flexibility). The second dimension refers to the orientation of the company, which may be external, when it is primarily concerned about customers, competitors and the environment, or internal, when the focus is on the people, products and processes of the organisation.

By combining these two dimensions or competing values, Cameron and Quinn (1999) propose four types of culture: clan, adhocratic, hierarchy and market. *Clan culture* is based on flexibility and internal focus. In it, the organisation acts like a family, promoting teamwork, commitment and involvement. *Adhocratic culture* fosters flexibility, but its orientation is external. Its objectives include creativity, risk taking, individuality and initiative. *Market culture* looks for an external perspective through which to differentiate it from competitors, intended to produce a market leader, but uses stability and control to achieve its goals of internal and external competitiveness and productivity. Finally, *hierarchical culture* is based on stability and control along with an internal focus. It is characterised by a large number of standards with the objective of achieving efficiency, process standardisation, product standardisation and so on.

2.3   *Organisational culture and TQM*

Although the importance of organisational culture for TQM has been widely suggested in the literature, this relationship raises some questions. First, Cameron and Quinn (1999) point out that those competing values that could help the organisation to implement a TQM system could be present in each culture: empowerment, teamwork, employee involvement, HR development, open communication (clan culture); creating new standards, developing products, continuous improvement, customer orientation, finding creative solutions (adhocracy culture); error detection, control processes, systematically solving problems, apply quality tools, measurement (hierarchical culture); measuring consumer preferences, productivity gains, involving customers and suppliers, increasing competitiveness, creating collaborators (market culture). This implies the need for all types of culture.

However, other authors have studied the cultural factors that are most suited to the implementation of a TQM system (Prajogo & McDermott, 2005). Among them, Irani, Beskese, and Love (2002), Anderson et al. (1994) and Detert et al. (2000) believe that organisations with clan culture are the most favourable to implementing a TQM programme successfully. Similarly, Page and Curry (2000) and Lakhe and Mohanty (1994) emphasise that in order to implement TQM successfully, the organisational culture must change and be characterised by its customer orientation, the support of senior management, employee engagement and internal guidance, variables that are present in the clan culture (Buch & Rivers, 2001; Naor, Goldstein, Linderman, & Schroeder, 2008; Prajogo & McDermott, 2005; Schneider, Brief, & Guzzo, 1996a, 1996b; Waldman, 1993). Moreover, the clan culture has an internal focus that favours TQM (Cartwright, 1993; Prajogo & McDermott, 2005; Webley & Cartwright, 1996). Furthermore, Neal, West, and Patterson (2005) indicate that the organisational climate favours training and motivation, variables that form part of the clan and adhocratic cultures. This will support the success of a TQM system, according to Yeo and Neal (2004), Arthur (1994), Delery and Doty (1996) and Osterman (1994). Finally, clan culture fosters employee and senior management commitment, customer orientation, continuous improvement and motivation and training of workers (Ahire et al., 1996; Anderson et al., 1994; Black & Porter, 1996; Dean & Bowen, 1994; Naor et al., 2008).

In the case of adhocratic culture, in addition to the previous characteristics, the anticipation of customer needs, continuous innovation that has a positive relationship with information availability (Damanpour, 1991; Kanji & Asher, 1996) and flexibility might facilitate the success of TQM. In this respect, Douglas and Judge (2001) found empirical evidence that the great inquisitiveness (external orientation) of the adhocratic culture has a positive relationship with TQM implementation and success. Also, adhocracy promotes continuous innovation, a highly educated workforce, great autonomy and motivation and availability of useful information (Flynn et al., 1994; Lo, 2002; ÓRelly et al., 1991). Some studies indicate that organisations with adhocratic culture that use quality systems obtain better results (Lagrosen & Lagrosen, 2003).

Other studies have shown that customer orientation and continual improvement, two of the variables present in both clan and adhocratic cultures, and not present in market and hierarchical cultures, are those that have a major effect on TQM success (Jabnoun & Sedrani, 2005). Given the various dimensions of TQM (Flynn et al., 1994; Mehra, Hoffman, & Sirias, 2001; Saraph, Benson, & Schroeder, 1989) the clan and adhocratic cultures contain most of them.

Similarly, Mosadegh Rad (2006) found that bureaucratic cultures, in which control is important, such as the hierarchical and the market culture, were characterised by TQM

programmes that had little success. There is empirical evidence that indicates a negative relationship between formalisation and hierarchy on the one hand and innovation on the other (Aiken, Bacharach, & French, 1980; Damanpour, 1991; Pierce & Delbecq, 1977). Therefore, given that innovation is required to achieve customer orientation, and therefore this variable is essential in TQM, we would expect a negative relationship between these types of culture, in which control and formalisation are important, and TQM success. The market culture has an orientation towards fixed objectives and the search for the lowest transaction costs with respect to suppliers, customers and workers, which may adversely affect the successful implementation of TQM.

There are also studies showing that hierarchical status does not lead to successful TQM implementation (Kumar & Sankaran, 2007; Sinha, 1995; Tata & Prasad, 1998; Walumbwa & Lawber, 2003) and that cultures with high bureaucracy do not encourage TQM because of their lack of customer orientation (Lagrosen & Lagrosen, 2003). On the other hand, since the hierarchical culture emphasises the normalisation of processes and standardis- ation of products, we might expect this culture to promote quality management. However, these factors may be more related to the implementation of ISO 9000 standards than to the implementation of a TQM programme. In this regard, Powell (1995) believes that TQM tools and techniques (the 'hard' aspects of a TQM system) are not conducive to company success, as this depends on difficult-to-imitate variables, such as open culture, autonomy of workers and management commitment, which are found mainly in clan and adhocratic cultures, as indicated above.

In summary, we propose that organisational culture influences TQM, but its effect depends on the type of culture:

H1: Organizational culture is related to TQM.
H1a: The clan culture has a positive relationship with TQM.
H1b: The adhocratic culture has a positive relationship with TQM.
H1c: The market culture is negatively associated with TQM.
H1d: The hierarchical culture is negatively associated with TQM.

After reviewing the existing literature, it has been concluded that clan and adhocratic cultures are those most suited to a TQM system. As we indicated in the previous sections, the concept of culture is an open term (Frohman, 1998; Hofstede, 1993; ÓRelly et al., 1991; Schein, 1996). However, our point of view is that this classification of cultures is not flexible enough for the purpose of this paper. We consider that the clan culture, even though it contains some elements that favour TQM, such as teamwork, lacks external orientation, which is fundamental for customer orientation, one of the most relevant dimensions in TQM. Consequently, we propose a fifth type of culture that would fall somewhere between the clan and adhocratic cultures, and would have an internal and external perspective combined with flexibility.

This process allows us to consider an 'intermediate culture' that shares the variables included in both clan and adhocratic cultures (Deshpandé et al., 1993; Lau & Ngo, 2004; Moorman, 1995; Obenchain & Johnson, 2004; Stock et al., 2007). We will call this the 'mixed culture' (culture for TQM). Thus, the second hypothesis we propose is as follows:

H2: A mixed culture (culture for TQM) has a positive relationship with TQM.

2.4   *TQM and company performance*

Although the main objective of this research is to examine the relationship between organisational culture and TQM, the underlying hypothesis is that TQM contributes to

improving the organisational performance of companies. Thus, in this paper, we also intend to confirm the results of previous studies that found a positive effect of TQM on company performance with a different data set in a different context, by way of replication. As noted above, there are some studies that have examined the effect of implementing a TQM system on business results, and these have generally concluded that TQM companies have a competitive advantage (Bou Llusar et al., 2001; Choi & Eboch, 1998; El Shenawy et al., 2007; Feng, Prajogo, Chuan Tan, & Shoal, 2006; Hendricks and Singhal, 2001; Powell, 1995; Terziovski & Samson, 2000). Consequently, our intention is to confirm the following hypothesis:

H3: TQM has a positive relationship with organizational performance.

3.   Methodology

3.1   *Data collection*

The target population consists of Spanish companies located in the southeast of the country, with 50 or more workers, that are included in the Sistema de Análisis de Balances Ibéricos database (which contains financial information for 480,000 Spanish companies, with up to 10 years of data, updated daily). The overall study population consists of 1600 companies.

The information collection was carried out using a personal interview with the general managers of the companies in the population, using a pre-structured questionnaire with closed questions.

The total number of valid questionnaires returned was 451, which represents 25.2% of the total population. From these responses, 251 correspond to industrial enterprises (55.6%) and 200 to service companies (44.3%). The representativeness of the sample was tested against the total population, both in terms of its composition by sector and by size of business and results. No significant differences were found between those two groups, suggesting no response bias.

3.2   *Variables*

3.2.1   *Total quality management*

TQM is a multidimensional construct (Ahire et al., 1996; Black & Porter, 1996; Dean & Bowen, 1994; Flynn et al., 1994; Saraph et al., 1989). It includes dimensions such as leadership, quality information, process control, continual improvement, training in quality tools and teamwork, maintaining relationships with suppliers based on quality and customer orientation.

Based on this premise, we have developed a scale to measure quality management consisting of eight items. These items use a five-point Likert scale. After verifying their reliability (Cronbach's $\alpha = 0.90$), we proceeded to create a new variable as the mean of these indicators.

3.2.2   *Organisational culture*

Our measure of organisational culture is based on the Organizational Culture Assessment Instrument developed by Cameron and Quinn (1999). This measure has been used in previous research on organisational culture (Deshpandé et al., 1993; Lau & Ngo, 2004; Muijen et al., 1999) and some authors have validated it (Howard, 1988; Quinn & Spreitzer,

1991). For each of these cultural traits, the instrument identifies four items related to the four types of culture. In this case, the manager must allocate 100 points among the four responses, which is to say, among the four types of culture. Finally, the type of culture is calculated as the average score on the items for each cultural trait for each type of culture.

3.2.3   *Performance*

There is no single measure for performance (Becker & Gerhart, 1996), and consequently it is necessary to use several indicators, so that each provides a partial view of overall performance. Variables like market share, profitability, quality improvement and product success are frequently used in similar studies (Han, Kim, & Srivastava, 1998). Since there is evidence for the high correlation between subjective and objective measures of performance (Dess & Robinson, 1984), we have used the method proposed by Quinn and Rohrbaugh (1983) and Quinn (1988) for measuring the organisational performance through 12 items taken from the four models suggested by these authors. Each item was rated on a five-point Likert scale. The 'global performance' variable has been defined as the average of previous scales and used as a benchmark for the overall company performance (Cronbach's $\alpha = 0.76$).

3.2.4   *Control variables*

After having reviewed the literature, we have included as control variables the firm size, age and sector. These measures have been identified in the literature related to TQM, and are typically measured as the size of the company defined as the average number of employees (Hurtle & Hult, 1998), age measured as the number of years that the company has been operating in the market (De Long & Fahey, 2000; Yu, 2007) and sector defined by a dummy variable whose value is zero when the firm belongs to the service sector and unity for manufacturing (Powell, 1995; Stock et al., 2007).

Table 1 presents the main descriptive statistics of the variables used in this research.

3.3   *Analysis*

This study analyses the effect that organisational culture has on TQM, what kind of organisational culture is most appropriate, and how TQM influences business performance. To test the hypotheses, we used hierarchical linear regression analysis, first introducing the control variables, and then the independent variables (the type of corporate culture or TQM).

Prior to the statistical analysis, the assumptions required for the correct application of regression analysis (linearity of the phenomena measured, constant variance error term, independence of the error terms and normal distribution of error terms) were tested (Hair, Anderson, Tatham, & Black, 2008).

4.   Results

Table 2 presents the results of the regression analysis. Model 0 includes only the control variable effects on quality management, and the other models test the first and second research hypotheses.

Our results show, contrary to expectations, that the clan culture (Model 1) has no significant effect on TQM. However, there was empirical evidence of the impact of

Table 1.   Descriptive statistics.

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. TQM	3.4	0.848	1									
2. Clan	34.7	16.232	0.009	1								
3. Adhocratic	20.8	10.246	0.240***	−0.205***	1							
4. Market	19.2	10.945	−0.114**	−0.590***	−0.037	1						
5. Hierarchy	25.4	14.183	−0.092*	−0.539***	−0.459***	−0.067	1					
6. Mixed	28.5	12.215	0.250***	0.635***	0.380***	−0.449***	−0.653***	1				
7. Sector	0.6	0.497	0.096**	−0.026	0.056	−0.035	0.013	−0.026	1			
8. Age	21.9	15.267	0.051	0.007	0.047	−0.116**	0.046	0.002	0.082*	1		
9. Size	70.7	180.471	0.106**	−0.115**	0.054	0.121***	−0.001	−0.038	0.017	0.105**	1	
10. Performance	3.77	0.501	0.359***	0.158***	0.209***	−0.122***	−0.234***	0.295***	−0.041	−0.019	0.031	1

*$p < 0.1$.
**$p < 0.05$.
***$p < 0.01$.

Table 2. Hierarchical linear regression analysis for testing Hypotheses 1 and 2.

Variables	Model 0A	Model 1	Model 2	Model 3	Model 4	Model 5
Sector	0.099**	0.099**	0.083*	0.095**	0.099**	0.101**
Age	0.031	0.031	0.022	0.016	0.035	0.029
Size	0.092*	0.093*	0.081*	0.110***	0.093*	0.108**
Clan culture		0.005				
Adhocratic culture			0.242***			
Market culture				−0.118**		
Hierarchical culture					−0.087*	
Culture for quality						0.255***
F	3.074**	2.303*	9.196***	3.834***	3.155	10.049***
R^2	0.014	0.012	0.070	0.025	0.019	0.077
ΔR^2		0.000	0.058***	0.013**	0.008*	0.065***

*$p<0.1$.
**$p<0.05$.
***$p<0.01$.

Table 3. Hierarchical linear regression analysis for testing Hypothesis 3.

Variables	Model 0B	Model 6
Sector	−0.028	−0.065
Age	−0.018	−0.03
Size	0.035	0.001
TQM		0.37***
F	0.324	16.945***
R^2	0.002	0.136
ΔR^2		0.134***

*$p<0.1$.
**$p<0.05$.
***$p<0.01$.

adhocratic culture on TQM. Consequently, flexibility and external orientation are positively related to TQM.

The expected effect of the control-oriented cultures was also confirmed. In this case, both the market culture and the hierarchical culture had a negative effect on the quality management system.

Finally, our results support the view that a mixed culture, derived from the clan and adhocracy cultures, has a greater effect on quality management. In this case, we can see that the regression coefficient of the mixed culture and the explanatory power of the model are higher (Model 5). Therefore, Hypothesis 2 of this research is accepted.

Table 3 presents the results of testing Hypothesis 3. It shows that TQM has a significant and positive effect on business performance. This effect is consistent with the findings reported in the literature.

5. Conclusions

Organisational culture is one of the intangible elements that can differentiate the company from its competitors and help to make the organisation competitive (Barney, 1986). This is a key element for the company and facilitates the adoption of business strategies.

TQM is a philosophy that encompasses the entire enterprise and seeks to improve quality in all organisational processes. In this sense, the organisational culture is closely related to quality management (Abdullah et al., 2008; Zu et al., 2010).

Within the four types of organisational culture defined by Cameron and Quinn (1999), adhocratic culture is the one with a higher positive impact on quality management in the company. Companies with high levels of adhocratic culture are characterised by Schneider et al. (1996a, 1996b) as being dynamic and enterprising and having a staff willing to take risks and bet on their ideas. Its values include commitment to innovation and continuous change. The values, norms and customs in this culture are enhanced by the presence of directives that are an example of entrepreneurship and innovation. This result is consistent with previous research, such as that conducted by Page and Curry (2000) or Lakhe and Mohanty (1994), who note that for successful implementation of TQM, an organisational culture that promotes customer focus is needed (e.g. Bou-Llusar et al., 2009; Damanpour, 1987; Kanji & Asher, 1996; Kumar & Sankaran, 2007; Naor et al., 2008; Prajogo & McDermott, 2005; Yeo & Neal, 2004; Zu et al., 2010), and this is true for the adhocratic culture. In addition, support from senior management and employee motivation promote success (Buch & Rivers, 2001; Lo, 2002; Waldman, 1993).

On the other hand, hierarchical and market cultures have been shown to have a negative relationship with managing for quality. Excessive focus on control prevents the requirement of TQM that employees should be given greater freedom and responsibility, to get involved and seek continuous improvement and error reduction. Thus, these results are also compatible with those obtained in previous studies (Chin & Pun, 2002; Jabnoun & Sedrani, 2005; Kumar & Sankaran, 2007; Lagrosen & Lagrosen, 2003; Mosadegh Rad, 2006; Sinha, 1995; Tata & Prasad, 1998; Walumbwa & Lawber, 2003). Furthermore, in the case of the market culture, the focus on costs – cost reduction for customers, suppliers and even employees – and the desire to achieve organisational goals, may hinder the implementation and success of TQM (Burdett, 1994; Deming, 1986; Flynn et al., 1994).

Finally, clan culture, which is oriented to flexibility, did not show the expected results. This may be explained by the lack of external focus (Jabnoun & Sedrani, 2005; Thomas & William, 2001), even though this culture has features that are needed for quality management, such as teamwork (Ahire et al., 1996; Flynn et al., 1994; Jiménez-Jiménez & Martínez Costa, 2009; Juran, 1988; Martinez-Lorente & Martínez-Costa, 2003; Powell, 1995).

For this last reason, we have proposed the creation of a mixed culture containing a hybrid internal and external orientation, while pursuing flexibility. These are cultural features of the adhocratic and clan cultures. Our findings confirm this hypothesis and consequently this kind of culture proves to be more appropriate for supporting a quality orientation in the company. Regarding the creation of this new type of culture, we have taken support from previous studies based on the model of Cameron and Quinn (1999), which also proposed additional cultures (Deshpandé et al., 1993; Lau & Ngo, 2004; Moorman, 1995; Obenchain & Johnson, 2004; Stock et al., 2007).

Therefore, our results support the findings of other authors, such as Dellana and Hauser (1999), Chang and Weibe (1996) and Zu et al. (2010), except for the finding relating to clan culture. Our research also advances knowledge of the fit between culture and quality management by analysing this new organisational culture, 'culture for quality'.

These results have implications for business practice. Managers must know the rules, values and customs that actually exist in their organisations and those that are more consistent with quality management. Companies with a quality orientation should promote the

values and beliefs of the clan and adhocracy cultures. This consolidation of values and beliefs should be supported by a set of organisational practices, including HR management. Changes in organisational culture can be difficult to achieve and take time, especially if there is strong resistance to change in the company. On the other hand, companies have the chance to improve their performance through the implementation of a TQM system.

The study is not without limitations. First, the survey was addressed to the general manager of the company. Although this respondent is in a position to take a holistic view across the enterprise, biases can occur because there is only one source of information. In addition, this respondent may not reflect the views of the workers in the company in general.

Secondly, the instrument used to measure organisational culture assumes that there is a single culture throughout the company. However, different departments or sections in the same company commonly maintain an internal culture distinct from the rest of the company. This could lead to the coexistence of different types of culture within a company.

Finally, the sample uses a cross-sectional design, while TQM implementation or changes in organisational culture imply a long process, which is sometimes slow and difficult. In addition, it is also important to note that the value of R^2 is small. On the other hand, it has been argued that results can still be important even if R^2 is small, so long as the changes in variance accounted for (ΔR^2) are statistically significant, as they were in this case. Increases in variance accounted for over the step one model and the coefficients of the additional regressors were significantly different from zero.

We propose the following lines for future research. First, it is suggested that a longitudinal study should be conducted in order to analyse changes in the organisational culture of the company over time, to help in the implementation of a quality management system. Secondly, it would be appropriate to send the questionnaire to different sources within the company, for example, to employees and management. Third, different cultures could appear in one organisation (Koberg & Hood, 1991), which could explain better the behaviour of different employees. Finally, additional variables should be included to develop an understanding of how organisational culture fosters the development of quality management, including human resource practices and market orientation.

Acknowledgements

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