

Quality management: a compulsory requirement to achieve effectiveness

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Quality management (QM), knowledge management (KM), and organisational culture make up critical resources for sustained competitive advantage of the organisation. Individually, each contributes to perceived organisational effectiveness (POE).

A review of the literature suggests that alignment between these factors is of paramount importance to increase the overall effectiveness of the organisation and that there might be several paths for the organisation to achieve this goal. Therefore, our research aims to determine which combinations of the following organizational resources and capabilities (QM, KM, Values, and Values Fit) should be included to achieve a better POE.

To examine joint effects of several factors, configuration theory logic was adopted. The analysis was relying on complementarity between qualitative and quantitative data. A total of 73 cases were analysed by a qualitative comparative analysis (QCA).

This analysis suggested that alignment between QM and KM, on the one hand; and among QM, values, and value fit, on the other hand, is key to improve POE. Our findings indicate that QM is a crucial condition of POE. These results offer interesting and useful implications for both academics and managers.

Keywords: Quality management, knowledge management, values, organizational effectiveness, dynamic capabilities.

1.- Introduction

Quality Management has been found to be an important aspect for improving organisational effectiveness and achieve sustainable competitive advantage. According to resource-based view (RBV) of the firm, internal characteristics and resources of the company make up critical sources of sustained competitive advantage of organisation (Barney, 1991). Thus, the field of strategic management focuses on how the fit between internal organisational context and strategy explains variances in organisational performance. While internal organisational characteristics (i.e., strategy, structure, culture, and governance) are rather stable (Pettigrew, 1979), it is not clear what mechanism and what paths a company may use to adapt its internal organisational characteristics—resources and capabilities, to the external context, creating sustainable competitive advantage that is difficult to imitate or substitute. This article bases on the complementarity among QM, KM, and culture, as conditions that allow the company to dynamically adapt internal resources to external environment.

Deming (2000), Juran (1992), Feigenbaum (1991), and Crosby (1990) suggest focusing on improving quality to gain competitive advantage. Accordingly, various studies have been trying to establish the connection between total quality management (TQM) and the following different types of organisational performance: (1) quality performance, (2) organisational performance; and (3) innovation performance. From now on, the terms TQM and QM will be used indistinctly, since the term TQM has coined in the eighties and used extensively. First of all, the connection between TQM and quality performance seems to be well-established (Agus & Hassan, 2011; Zehir, Ertosun, Zehir, & Müceldilli, 2012). Second, the connection between TQM and organisational performance seems to be confirmed (Akgün, Ince, Imamoglu, Keskin, & Kocoglu, 2014;

Fuentes-Fuentes, Albacete-Sáez, & Lloréns-Montes, 2004; Montes, Jover, & Fernández, 2003; Sadikoglu & Zehir, 2010). However, this connection seems to be mediated by internal organisational variables related to human resource management (HRM), innovation performance (Akgün et al., 2014; Sadikoglu & Zehir, 2010) and learning capabilities (Akgün et al., 2014). Finally, the relation between TQM and innovative performance is the most disputed one, and seems to be related to Knowledge management (KM) (Hung, Lien, Yang, Wu & Kuo, 2010), organisational learning (Hung, Lien, Fang, & McLean, 2010) and job satisfaction (Trivellas & Santouridis, 2009). Thus, it seems that not only that the implementation of TQM is not an easy task for an organisation, but also that its contribution to organisational success might be a function of other variables related with company culture and the management of knowledge.

Adopting a knowledge-based view (KBV) of the firm, previous research suggested that KM might lead to gaining sustainable competitive advantage through constant innovation (Nonaka, 1994). The effect of KM might be both direct and indirect. On the one hand, the direct effect of KM on organisational performance (Choy, Yew & Lin, 2006; López-Nicolás & Meroño-Cerdán, 2011; Rasula, Vuksic, & Stemberger, 2012; Al-Hakim & Hassan, 2016) and specifically on innovation performance (Alegre, Sengupta, & Lapiedra, 2013; Gloet & Terziovsky, 2004; Al-Hakim & Hassan, 2016) has been established by a variety of studies. On the other hand, indirectly, KM was found to mediate the impact of organisational strategy, culture, and structure on organisational effectiveness (Zheng, Yang & McLean 2010). Further, KM mediates the effect of organisational context on organisational performance (Dröge, Claycomb & Germain, 2003). KM effectiveness mediates the effect of HRM on organisational innovativeness (Tan & Nasurdin, 2011) and KM capacity mediates the effect between strategic Human Resource (HR) and organisational innovativeness (Chen & Huang, 2009). KM, together

with HRM and organisational learning, affect OE through increased organisational capabilities (Theriou & Chatzoglou, 2008).

Thus, it seems that KM affects organisational performance through innovativeness (Alegre et al., 2013; Gloet & Terziovsky, 2004; López-Nicolás & Meroño-Cerdán, 2011; Al-Hakim & Hassan, 2016). However, generally, innovativeness without quality and constant evolution is useless. Similarly, TQM contributes to good organisational results through quality performance, but evolution without innovation cannot be a competitive advantage in the long run. Both TQM and KM are embedded in organisational culture; thus, organisational values that are consistent with these practices and accepted by employees, play key roles on whether TQM and KM would achieve the desired outcome.

Thus, KM, QM, and culture are key organisational assets, which have been studied in their relation to organisational effectiveness. However, joint effect of those assets on organisational effectiveness remains understudied. It is important to close this gap in literature, because these resources and capabilities are interrelated, and their effectiveness is conditioned to fit among the elements. Therefore, the ultimate goal of this study is to determine which combinations of components of the following organizational resources and capabilities (QM, KM, Values, and Values Fit) should be included to achieve a better POE. To answer this question, we use a sample of 73 companies located in Spain. Next section describes the literature review, focusing on interrelations among KM, culture and QM and their joint relation on OE.

2.- Theoretical background

The resource-based view posits that firm competitiveness comes from a unique bundle of tangible and intangible resources that are valuable, rare, imperfectly imitable,

and sustainable (Barney, 1991). With the aim to find specific mechanisms or pathways that a company might use to transform internal context, resources, and capabilities into a sustained competitive advantage, the literature review was divided into three parts: (1) the connection between QM and organisational effectiveness; (2) the connection between KM and organisational effectiveness; and (3) the connection between culture and organisational effectiveness.

2.1.- Quality management and organisational effectiveness

QM improvement is a highly desired organisational objective that is related with organisational performance (Ahire, Golhar, & Waller, 1996; Dow, Samson, & Ford, 1999; Samson & Terziovski, 1999). While there exists a robust evidence of a relation between TQM and organisational performance, the relation between TQM and organisational innovativeness is not evident (Prajogo & Sohal, 2001). On the one hand, TQM might establish a system and culture that favours innovation (Dean & Bowen, 1994; Kanji, 1996; Martínez-Costa & Martínez-Lorente, 2008). The opposing argument provides evidence that TQM might hinder organisational innovativeness by limiting it to just incremental innovativeness or reducing it to present customer desires (Prajogo & Sohal, 2001). Further, TQM could hinder creativity due to standardisation, or limit innovative capacity due to cost efficiency (Harari, 1993; Leavengood & Anderson, 2011; Prajogo & Sohal, 2001). This confusion might be explained by a fact that the relation between TQM and organisational performance might also depend on other factors or combination of factors. In the similar vein, Prajogo and Sohal (2006) suggest that TQM plays the mediating role between strategy and company performance; therefore, it should be complemented by other resources to more effectively leverage organisational performance, particularly innovation.

To date, the link between TQM and KM was explored more theoretically (Hsu & Shen, 2005; Lin & Wu, 2005; Ooi, I, & Yee-Loong Chong, 2009), than practically (Molina, Montes, & Fuentes, 2004). From the theoretic point of view, TQM and KM share a number of similarities, but also differences (Hsu & Shen, 2005) that make possible their effective complementary adoption within the company. In theory, a correct implementation of KM practices, in every area of QM, might set conditions for increased effectiveness and sustained innovativeness of the company (Linderman, Schroeder, Zaheer, Liedtke, & Choo, 2004).

2.2.- Knowledge management and organisational effectiveness

KM is recognised as an important tool in sustaining competitive advantage and value creation for stakeholders of the organisation. Themes relating KM to competitiveness, innovativeness, and effectiveness increasingly appear in the academic literature (Carneiro, 2000; McAdam, 2000; Meso, Troutt, & Rudnicka 2002; Stähle & Hong, 2002). Several empirical studies confirm a significant relationship between KM and increased organisational performance (Darr, Argote & Epple, 1995; McEvily & Chakravarthy, 2002; Zheng et al., 2010).

However, it should be noted, that while in some studies, the evidence holds that KM has a direct effect on effectiveness (Darr et al., 1995), in others, KM has a mediate effect (Zheng et al., 2010). Thus, socialisation and externalisation of knowledge might be affected by cultural expectations. Which opinions are shared and what information is retained, would depend on general cultural context and on a firm's specific cultural context (Zheng et al., 2010). Further, knowledge combination and knowledge internalization would depend on the speed of the knowledge flow. Finally, which information would be paid attention to would depend on the policy of the company.

Because the nature of knowledge varies depending upon knowledge processes, locations or time (Nonaka, Toyama, & Konno, 2000; Wiig, De Hoog, & Van Der Spek, 1997), KM is dynamic in nature. Within a variety of knowledge processes (i.e., creation, manifestation, use, and transfer (Wiig, 1995)), knowledge creation is a critical competitive tool that enables a company to achieve sustainable competitive advantage (Choi & Lee, 2002; Nonaka et al., 2000). Organisational capability to create knowledge and the overall effectiveness of KM systems, depends on their fit with external and internal characteristics of the company (Choi & Lee, 2002). Although KM, in general, is considered in this research, KMC—theoretically relied on Nonaka's (1994) SECI model—lies at the heart of this investigation, primarily because the process of knowledge creation is a proxy of the effectiveness of KM systems.

2.3.- Culture and organisational effectiveness

Corporate culture has received much attention in the last decades, due to its potential impact on organisational success. Since the pioneering work of Deal and Kennedy (1982), many scholars intended to trace specific values, philosophies, and employees' attitudes that might lead to superior organisational performance. Indeed, it was found that certain types of culture might enhance organisational performance (Denison, 1990; Kanter, 2011; Van der Post & De Coning, 1998) and might be related with the implementation of organisational strategy (Rashid & Anantharaman, 1997). Organisational culture refers to 'shared' assumptions, values, and norms (Schein, 1985). Therefore, there should be a match between organisational values and employee values in order to create an organisational commitment, which results in increased job performance and organisational effectiveness (Ali, Rehman, Ali, Yousaf, & Zia, 2010).

QM, in its core, consists of certain values and practices that are supposed to benefit the organisation (Hellsten & Klefsjö, 2000). Therefore, whether QM will have the expected positive organisational effect, depends on whether the organisational culture is integrated with values and practices of TQM (Prajogo & McDermott, 2005). While many positive examples of such integration exist (Souza-Poza, Nystrom, & Wiebe, 2001; Zu, Robbins, & Fredendall, 2010), there is some evidence that culture mismatch might be one of the main causes of problems related with implementation of TQM (Prajogo & McDermott, 2005). Several studies explore this area, suggesting that organizational culture based on specific values (Gimenez-Espin, Jimenez-Jimenez & Martínez-Costa, 2013; Rezaei, Mardani, Senin, Wong, Sadeghi, Najmi, Shaharoun, 2013) and specific dimensions of organizational culture (Tomic, Brkic, Karapetrovic, Pokrajac, Milanovic, Babic & Djurdjevic, 2017) might have effect on whether the implementation of QM practices will be successful.

Culture not only conditions QM, but also KM. Existing literature implies a positive relationship between organisational culture and KM (Brockman & Morgan, 2003; Davenport & Prusak, 1998; Young, Sapienza, & Baumer, 2003). In this sense, culture does not have a direct influence on organisational performance, but it might condition the effectiveness of KM (Ahmed, Loh & Zairi, 1999; David & Fahey, 2000). The effectiveness of KM and its relationship with organisational performance, depends on how the external and internal information is absorbed, processed, and integrated; it also depends on how sense is constructed from different pieces of information. Furthermore, it is organisational culture that plays a key role in fostering or hindering the process of information sharing and meaning creation.

2.4.- An integrative research model

Integrating insights from the literature streams that were reviewed above, it is logical to suggest that, although, KM, QM, values, and value fit—taken separately—play important roles in the POE, considering these elements of organisational resources and capabilities together might show several paths to attain POE and demonstrate possible synergies between these elements that companies might use to improve their results or find mistakes in their implementation. This line of reasoning leads to a conceptual framework based on the configuration theory. As its fundamental premise, the configuration theory posits that the same set of causal factors can lead to different outcomes, depending on how such factors are arranged. Three principles underlie the configuration theory: (1) outcomes of interest rarely result from a single causal factor; (2) causal factors rarely operate in isolation; and (3) the same causal factor may have different and even opposing effects, depending on the context (Greckhamer, Misangyi, Elms, & Lacey, 2008). Thus, the main proposition of this study is as follows:

To explore how resources and capabilities of the company (QM, KMC, VA, and VF) might be better combined to improve perceived organisational effectiveness (POE).

The research model is presented in Figure 1.

<< Insert Figure 1 >>

3.- Data and methods

A mixed methodology of data gathering was used. First, a quantitative study, consisted of an online survey, was carried out by means of Survey Monkey TM. The principal method of analysis for this study was qualitative comparative analysis (QCA), which will be presented further. QCA is often used as complementary to multiple case study, as a tool to quantify, simplify, and summarise the qualitative findings (Schneider & Wagemann, 2010). Implementing this approach to data obtained in a survey might have a limit to, some extent, understanding cases by researchers, as well as their ability to select

cases and conduct the analysis through different stages. For this reason, in addition to quantitative survey data, qualitative data was collected through 4 in-depth interviews, conducted and recorded in Skype TM. In the next section the quantitative sample is described.

3.1.- Sample and procedure

The study was based on a convenience sample of Spanish companies (total 832) that were using University's (Universitat Internacional de Catalunya (UIC)) focused programs. The sample of the study included employees from different management levels. The responses were collected in one wave, between April and May 2017. After the exclusion of incomplete questionnaires, data for the analysis comprised of 73 valid surveys (i.e., a response rate of 8.8%). Companies that responded to the survey represented different industry sectors, were relatively old (median age 52 years, oldest – 80 years and the youngest 28 years) and pertained to small-median size (median number of employees – 19,6, highest number of employees – 85 and smallest – 2). At individual level, the sample showed a big gender bias, as only 17.8% of the respondents are women and the majority (i.e., 72.6%) were dedicated to strategic management (see Table 1).

<< Insert Table 1 >>

3.2.- Measures

To measure each of the five constructs, validated measurement instruments were used. For each construct, a Principal Components Analysis (PCA) was performed, forcing to extract a single factor in each PCA to ensure that each construct represents a homogeneous factor. In addition, the only items that scored higher than 0.7 were retained for further research, confirming convergent validity of each measure. Cronbach's alpha coefficient and composite reliability in every case exceeded the threshold value of 0.7 for

internal consistency (see Table 2). The description of measurement constructs can be found in the Appendix.

<< Insert Table 2 >>

QM was assessed by the EFQM model TM (EFQM, 2012a, 2012b), which consists of nine affirmations assessed on a five-point Likert scale. After an Exploratory Factor Analysis (EFA), six items were selected to operationalise the condition: ‘quality management’.

KM was measured by a Knowledge management creation (KMC) scale, based on Nonaka’s (1994) SECI model, with several items updated according to the current environment (Becerra-Fernandez & Sabherwal, 2001; Li, Huang, & Tsai, 2009). The KMC scale was recently validated by Mas-Machuca, Malbašić, and Marimon (2017), which borrowed items from mainly from SECI model, consists of sixteen items measured on a five-point Likert scale. After EFA, eight out sixteen items were retained to operationalise the condition: ‘knowledge management creation’.

Culture was measured, based on two constructs: (1) values; and (2) values fit. Values were measured based on a categorisation, proposed by Cardona and Rey (2008) and further elaborated by Malbašić, Marimon, and Mas-Machuca (2016), which suggests four main dimensions of organisational values: (1) relational values, (2) development values, (3) contribution values, and (4) business values. Measurement instrument consisted of sixteen items (i.e., four for each category of values) assessed on a five-point Likert scale. After EFA, eight items were retained to operationalise the condition: ‘values’.

There are two possible kinds of measurement for organisational value fit: (1) direct (i.e., subjective) measures, where respondents directly estimate similarities between organisational and personal values; and (2) indirect (i.e., objective) measures, where respondents, from the first step, estimate the values of the organisation (Yaniv & Farkas, 2005). This study uses direct (i.e., subjective) measures, adopted from Cable and

DeRue (2002). Thus, the value fit was measured by three items on a five-point Likert scale. After EFA, all three items were retained as valid measures of the condition: 'value fit'.

Finally, the measure of POE was adapted from Lee and Choi (2003). The original instrument was employed consisting of five items assessed on a five-point Likert scale, which assess the perceived performance comparing to the competence. After EFA all five items were retained to operationalise the outcome: 'perceived organisational effectiveness'.

3.3.- Method

QCA is an analytical approach that offers advantages when there is a need to take a holistic view on a complex phenomenon. QCA uses Boolean algebra and set theory logic to find logical conclusions that a data set can support. The 'interaction logic' is different in QCA, compared to Multiple Regression Analysis (MRA) or Structural Equation Modelling (SEM). QCA is used to systematically compare a small or intermediate number of cases without losing their complexity, bridging qualitative and quantitative analysis. QCA studies the causal complexity by assuming that cases represent some mix of causes and conditions (not independent variables) that correspond to the outcome (not dependent variable).

QCA requires calibration, which is the transformation of outcome and explanatory conditions into sets, according to the degree of membership in a specific condition (Ragin, 2008). This study uses fuzzy-set QCA, which employs a fuzzy-set value range from full membership (1) to full non-membership (0). The calibration is done by determining membership value and transforming original values into membership values. Because

standardised factors, obtained from EFA, were used, the calibration decision was based on data distribution. The process of calibration is reflected in Table 3.

<< Insert Table 3 >>

Data analysis in QCA starts by defining property space, which is then converted to a ‘truth table’ by a cross-case comparison of memberships between causal sets (i.e., motivation and barriers) and an outcome set (i.e., position) (Ordanini, Parasuraman, & Rubera, 2014). Consistency was used to evaluate configuration of the conditions that can be sufficient to achieve high-position. Because only a few inconsistent cases are allowed, the consistency threshold was set to 0.8, as recommended by Ragin (2008). Once all configurations were identified, a mathematical reduction provided three types of solutions: (1) complex, (2) parsimonious, and (3) intermediate. It should be noted that the high number of logical remainders can be a problem. There was a small number of logical reminders in the truth table, as the analysis was based on a relatively high number of empirical instances (i.e., fourteen out of sixteen possible).

4.- Results

QCA distinguishes between necessary and sufficient conditions. While a sufficient condition is the one that securely leads to the outcome, there might be other conditions that also lead to the outcome but unable to achieve POE. Thus, a necessary, but not sufficient, condition is the one that does not lead to the outcome; however, it is shown in majority of conditions that lead to the outcome (i.e., both sufficient and not).

<< Insert Table 4 >>

Before proceeding with an analysis of sufficient conditions, the analysis of necessary conditions should be undertaken (Schneider & Wagemann, 2010). A causal condition is called ‘necessary’ if the instances of the outcome constitute a subset of the instances of the causal condition (Ragin, 2006, p. 297). Conventionally, a condition or a combination

of conditions is called ‘necessary’ or ‘almost necessary’ if the consistency score exceeds the threshold of 0.9. Additionally, a necessary condition might be trivial or non-trivial (Schneider, Schulze-Bentrop, & Paunescu, 2010). A necessary condition that is trivial occurs in all cases, independently of the presence or absence of the outcome. Thus, a trivial necessary condition would yield a coverage rate near zero (Ragin, 2006, pp. 302–303).

As it can be seen from Table 4, no single condition or its negation exceeds the 0.9 threshold. However, one expression of the three conditions (i.e., values, value fit, and KM), joined by a logical ‘or’, achieved a consistency score of higher than 0.9. Specifically, this means that values or value fit might play a functional substitute for KM. The expression is non-trivial (i.e., high coverage). In practice, this means that neither values, value fit, nor KM cause the outcome, but they do appear as a part of the causal expression. On the other hand, one can learn that QM is not a functional substitute for KM, and vice versa, as the consistency of this expression QM ‘or’ KM is less than 0.9.

<< Insert Table 5 >>

Once the analysis of necessary conditions was performed, we were able to proceed with the main analysis of sufficient conditions. A causal condition can be considered ‘sufficient’ to lead to the outcome if, for each case, the fuzzy membership value of the causal condition (X) does not exceed the fuzzy membership value of the outcome (Y) (Ragin, 2000, p. 235). Following the analysis of necessary conditions, an analysis of sufficient conditions was performed by analysing configurations obtained after mathematical reduction. Ragin (2008) suggests superiority of intermediate solutions that use only easy logical remainders when simplifying the solution; although, in this case, there were very few reminders. The intermediate solution is presented in Table 5. The notation for solution table follows the approach of Ragin and Fiss (2008), where white circles (○) represent the absence of a condition, black circles (●) represent the presence

of a condition, and blank cells represent ambiguous conditions.

The model had a good fit. Solution coverage was 0.65, which is higher than the recommended value of 0.45 (Ragin, 2008). This means that, collectively, the two pathways explain 65% of increased POE. Consistency shows whether the outcome can be produced, regularly, by the solution (Schneider & Wagemann, 2012). Consistency was 0.77, which is higher than the recommended value of 0.74 (Ragin, 2008).

The first pathway suggests that the implementation of QM and KM set positive conditions for the increased POE. This solution explains 61% of cases, suggesting the high empirical relevance of this solution. Fifteen percent of cases are explained by this solution as it is. The second solution appears in 50% of cases, and taken as is, it only explains 4% of cases, making it less empirically relevant than the first one.

5.- Discussion

Because more than one solution appears to be sufficient for the outcome, results suggest that no unifying causal path is able to predict the outcome. The resulting model did not have any condition that should be absent, meaning that all conditions are necessary for the outcome (i.e., increased POE). Because QM was present in both pathways, it can be viewed as an indispensable condition of POE. Values, values fit, and KM are present in one of pathways, suggesting that either values and their value fit or KM is important for increased POE.

5.1.- Quality management and knowledge management as predictors of perceived organisational effectiveness

The first solution highlights the importance of developing dynamic capabilities based on QM and KM. This solution emphasises the complementarity between

continuous improvement (i.e., QM) and innovativeness (i.e., KM). Through the constant conversion of tacit knowledge, gained into explicit knowledge, and having to compromise with the quality, better strategies are generated, providing competitive advantage of the company.

QM and KM are inherently related (Lim, Ahmed & Zairi, 1999; Zhao & Bryar, 2001) and complement each other in a way that QM leads to increased effectiveness (Hsu & Shen, 2005, p. 359), while KM leads to innovation. As it was stated in the literature review, QM implemented without KM strategies could hinder creativity, due to standardisation, or limit innovative capacity due to cost efficiency (Harari, 1993; Prajogo & Sohal, 2001). Implemented together, these strategies may complement each other, leveraging organisational performance, increased effectiveness, and innovativeness.

Further, the KBV of the firm provides another theoretical perspective in understanding how QM leads to POE through KM. According to this view, knowledge is the resource of competitive advantage of the firm that improves with performance (Grant, 1996). If QM practices lead to knowledge creation, then there is a link between QM and KMC, on the one hand, and POE, on the other. Linderman et al. (2004) provides an extensive conceptual study on how KM and the SECI model of Nonaka (1994) is related to two QM models: first, by Sitkin, Sutcliffe, and Schroeder (1994); and, second, by Dean and Bowen (1994). According to their conceptualisations, each conversion of tacit knowledge into explicit knowledge (i.e. KMC through SECI) should be done in every area of QM. Thus, QM practices should allow knowledge to be constantly created to improve firm performance (Linderman et al., 2004). The following manager interview quote highlights the relevance of quality and KM: “In our mission, quality is equal to excellence and to be a benchmark against the competition. That leads to all employees wanting to do things better. This happens when the person has a sense of contribution,

makes their abilities are put into play and collaborate with others. In this way, knowledge within the company is exchanged and makes us improve permanently.”

The first pathway showcases the conceptual work by Linderman et al. (2004), suggesting that, taken together, QM and KM set positive conditions for the company’s increased effectiveness. In this study, positive synergy between QM and KM explain 61% of cases of increased POE. On the one hand, efficient QM and KM practices are robust predictors of effectiveness and efficiency of the company. On the other hand, the efficiency of those practices is complex, and not every company masters to create those positive circles.

5.2.- Quality management, values and value fit as predictors of perceived organisational effectiveness

An alternative way of creating competitive advantage, suggested by the second solution, is through adopting values related with QM and nesting those in organisational culture. An important role in this process plays employees’ compliance with those values.

QM, in its core, consists of certain values that are supposed to benefit the organisation (Hellsten & Klefsjö, 2000). Thus, the successful implementation of QM practices depends on the implementation of certain values by the organisation. This means that QM values should be aligned with company values, company culture, and the values of its employees at all levels. The following quote of one of the managers interviewed in our research reveals the relevance of quality of the products and services but also, values management: “To achieve organizational effectiveness, the quality of the product and its production system is important. However, how employees feel integrated and involved within the organization is also very important. The company promotes these values and expects that they will be bigger and more aligned with their own personal

values”. Thus, the second configuration empirically demonstrates that the alignment between QM values, company values, and employees’ values sets conditions for the increased POE.

In practice, this means that within an organisation, dedicated to quality, company culture is aligned with QM. These companies strive to obtain 100% quality from its suppliers, improve their own production cycle, and provide benefits for its suppliers. At the company level, each employee that conform to the values of the company, creates effective work relations with suppliers, clients, and other employees; thus, increasing their own effectiveness and the effectiveness of the organisation. According to a manager interviewed states that: “Some new employees were needed when the company was at growth period. They asked employees to send CVs of friends and family members. These new candidates were hired and consequently the atmosphere improved, and additionally productivity also increased. The feeling of belonging and unity inside the company increased. Again, the company values were a good asset and even proved to be profitable in terms of economic results”. In this sense, values can increase the organizational effectiveness in organizations.

As follows from literature review, some authors suggest that organizational culture based on specific values, such as customer orientation, continuous innovation, continuous improvement, employee engagement, support of senior management has positive relation with implementation of QM practices (Gimenez-Espin, Jimenez-Jimenez & Martínez-Costa, 2013; Page & Curry, 2000; Lakhe & Mohanty, 2004; Douglas & Judge, 2001; Jabnoun & Sedrani, 2005). Our findings are in line with previous research. It can be further inferred from analysis of values with highest factor loadings that specifically, continuous improvement, learning, creativity, working environment, team work and diligence – factors internal and external to firm – facilitate implementation of

QM. Surprisingly, customer satisfaction, was not among those items.

6.- Conclusions, limitations and future research

QM, KM, and organisational culture have been studied separately, and have been known to provide positive impact on POE. The goal of this article was to find synergies by studying combined effects of these resources and capabilities of the company on the POE. For this reason, mixed methodology based on quantitative and qualitative data collection was used. QCA was implemented. Results indicate two causal paths for creating competitive advantage, suggesting positive interaction between QM and KM, on the one hand; and QM, value, and employees' value fit, on the other hand. In both causal paths, QM plays a significant role, hence the importance of QM in order to vouch a high POE. On the other hand, either KM neither cultural issues (i.e., values and values fit) can be neglected.

This study provides robust results, although not without limitations. Future research might extend this analysis to other countries or replicate analysis for a specific industry that is more innovative, more conservative, or more or less dependent on research and development. In the same direction, future research might investigate the role of internalisation and how pathways for POE might differ for those companies that operate or sell their products on other markets. Finally, the composition of the sample might have imposed certain limitations on the generalizability of results. At firm level, the sample was characterized by a bias toward older and smaller companies. At personal level, respondents were primarily males from strategic management department. While acknowledging this limitation, the authors are not able to speculate on how these limitations have affected the results of the study as there does not exist sufficient literature that discuss the relation between these characteristics and the topic of the study.

It might be a direction for future research to explore other organisational values and their link to QM and POE. In this study, organisational values were divided into four categories: (1) relational, (2) development, (3) contribution, and (4) business; because these classifications are focused on organisational priorities in search of organisational excellence, which are, by thought of other authors, related to QM and KM. Also, future research might explore specific conditions that may either foster or inhibit knowledge creation from QM.

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Appendix: A description of measures utilised

Construct	Code	Item
QM (EFQM, 2012a, 2012b)	QM1	In my company, leaders shape the future and make it happen through their values and ethics
	QM2	In my company, policies, plans, objectives and processes are developed and deployed to deliver the strategy
	QM3	My company values their people and creates a culture that allows the mutually beneficial achievement
	QM4	My company plans and manages external partnerships, suppliers and internal resources
	QM5	My company designs, manages and improves processes, products and services to generate increasing value for customers and other stakeholders
	QM6	My company achieves and sustains outstanding results that meet or exceed the need and expectations of their customers
	QM7	My company achieves and sustains outstanding results that meet or exceed the need and expectations of their people
	QM8	My company achieves and sustains outstanding results that meet or exceed the need and expectations of relevant stakeholders within society
	QM9	My company achieves and sustains outstanding results that meet or exceed the need and expectations of their business stakeholders
KM (Mas- Machuca et al., 2017)	KM01	Through my own means I am able to obtain internal and external information of the company
	KM02	Through interaction with my colleagues I find new business opportunities
	KM03	The employees' rotation among departments enables me sharing knowledge
	KM04	I share ideas with customers, suppliers and competitors
	KM05	The work atmosphere allows me transmitting "Know-how" to other employees
	KM06	I share my ideas or new concepts using comparisons or metaphors
	KM07	I express my opinions through dialogue with my colleagues
	KM08	I participate in teamworks to analyze and generate new ideas
	KM09	I use social networks to share information
	KM10	I use data provided by the information systems of the company (ERP, CRM, SCM, etc.)
	KM11	The use of the external and internal information of the company helps me to take decisions
	KM12	I create reports based on company information such as manuals, institutional documents, etc.
	KM13	I transfer ideas to other colleagues through presentations and documents
	KM14	My work/experience helps me to learn and improve in my job (learning by doing)
	KM15	My experience in the company allows me to know the best practices performed
	KM16	Managers encourage experimentation / simulation of new scenarios
Values (Malbašić et al., 2016)	VA1_bus1	Cost consciousness – Responsible and careful use of the company's assets
	VA1_bus2	Diligence – A positive attitude towards work and engagement in business activities
	VA1_bus3	Results achievement – Focus on outcomes or final positive effect of effort
	VA1_bus4	Professionalism – Performing activities in accordance with the rules and standards of the profession
	VA2_rel1	Teamwork – Promoting and encouraging the spirit of oneness, togetherness, and co-operation
	VA2_rel2	Respect for people – Respect for the values and uniqueness of each individual
	VA2_rel3	Good interpersonal relationships – Harmonious and pleasant relations between employees and management
	VA2_rel4	Working environment – Promoting positive and optimistic work environment
	VA3_dev1	Innovation – Promoting and encouraging new, better, and changing solutions and ways of doing things
	VA3_dev2	Creativity – Developing new ideas and applying innovative approaches
	VA3_dev3	Learning – Passion for learning and sharing ideas
	VA3_dev4	Continuous improvement – Striving for continuous improvements in everything we

		do
	VA4_con1	Environmental protection – Care for clean and healthy environment
	VA4_con2	Social responsibility – Supporting a variety of efforts to improve development of society
	VA4_con3	Integrity – Uncompromising adherence to moral values
	VA4_con4	Customer satisfaction – Customer delight and satisfaction drive our action
Value fit (Cable & DeRue, 2002)	VF1	The things that I value in life are very similar to the things that my organisation values
	VF2	My personal values match my organisation’s values and culture
	VF3	My organisation’s values and culture provide a good fit with the things that I value in life
POE (Lee & Choi, 2003)	POE1	Compared with key competitors, our company is more successful.
	POE2	Compared with key competitors, our company has a greater market share.
	POE3	Compared with key competitors, our company is growing faster.
	POE4	Compared with key competitors, our company is more profitable.
	POE5	Compared with key competitors, our company is more innovative

Note. Items selected after EFA are marked in grey

Table 1. Descriptive statistics of the sample.

	NUMBER	%
AGE:		
Between 21 and 30	1	1.4
Between 31 and 40	8	10.9
Between 41 and 50	24	32.9
Between 51 and 60	28	38.4
More than 61	12	16.4
Total	73	100.0
SEX:		
Female	13	17.8
Male	60	82.2
Total	73	100.0
LEVEL OF EDUCATION:		
Basic studies	2	2.7
Professional formation	4	5.5
University degree	67	91.8
Total	73	100.0
CURRENT POSITION IN THE COMPANY:		
Operational Management	1	1.4
Tactical Management	19	26
Strategic Management	53	72.6
Total	73	100.0
TOTAL LENGTH OF SERVICE CURRENT COMPANY:		
Between 01 and 05	7	9.6
Between 06 and 10	10	13.7
Between 11 and 15	12	16.4
Between 16 and 25	27	36.9
More than 26	15	20.5
NA	2	2.7
Total	73	100.0

Table 2. Reliability of constructs.

	QM		KM		VALUES		VALUE FIT		POE	
Loadings	QM2	0.796	KM13	0.862	VA3_dev2	0.802	VF2	0.912	POE1	0.838
	QM7	0.770	KM14	0.828	VA2_rel1	0.784	VF3	0.884	POE3	0.797
	QM8	0.765	KM05	0.798	VA3_dev3	0.779	VF1	0.880	POE2	0.757
	QM6	0.760	KM15	0.794	VA3_dev1	0.771			POE4	0.696
	QM4	0.755	KM07	0.788	VA2_rel4	0.770			POE5	0.690
	QM1	0.723	KM08	0.756	VA3_dev4	0.730				
			KM01	0.733	VA2_rel2	0.708				
			KM12	0.688	VA1_bus2	0.705				
Cronbach's alpha	0.917		0.838		0.917		0.848		0.755	
Range of Cronbach's alpha, if one item is removed	0.884 - 0.910		0.782 - 0.834		0.338 - 0.607		0.787 - 0.826		0.578 - 0.763	
Range of correlations between items and total scale	0.736 - 0.855		0.614 - 0.742		0.364 - 0.552		0.458 - 0.763		0.510 - 0.662	
Composite Reliability	0.892		0.926		0.915		0.921		0.870	
Average Variance Extracted	0.580		0.612		0.573		0.796		0.574	

Table 3. Calibration decisions for outcome and antecedent conditions.

		Descriptive statistics		Membership threshold values		
		Mean	St. Dev.	Full non-membership (0.05)	Cross-over point (0.5)	Full-membership (0.95)
Outcome	Perceived organisational effectiveness (POE)	0.08	1.01	1.00	0.00	-1.00
Antecedent condition	Quality management (QM)	0.00	0.99	1.00	0.00	-1.00
	Knowledge management (KM)	0.13	0.89	1.00	0.00	-1.00
	Values	0.03	1.01	1.00	0.00	-1.00
	Values fit	0.11	0.97	1.00	0.00	-1.00

Table 4. Analysis of necessary conditions.

Conditions tested	Consistency	Coverage
QM (qm)	0.69 (0.43)	0.73 (0.50)
KM (km)	0.75 (0.41)	0.68 (0.56)
VA (va)	0.67 (0.45)	0.66 (0.55)
VF (vf)	0.72 (0.44)	0.70 (0.56)
KM + QM	0.83	0.65
VA + VF + QM	0.87	0.64
VA + VF + KM	0.92*	0.63

Notes. VA = Values; VF = Values Fit; '+' is a logical expression for 'or'. An expression of necessary condition is marked by *. Lowercase in parentheses means negation of condition.

Table 5. Analysis of sufficient conditions: intermediate solution.

Pathway	Antecedents conditions				Coverage		Consistency
	QM	KM	VA	VF	Raw	Unique	
1	●	●			0.61	0.15	0.78
2	●		●	●	0.50	0.04	0.80

Notes. Solution Coverage = 0.65; Solution Consistency = 0.77; VA = Values; VF = Values Fit. A black circle (●) represents a presence of condition, and a blank cell represents an ambiguous condition.

Figure 1. Integrative research model.

