

# The Impact of Total Quality Management on Organisational Ambidexterity

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## Abstract

This paper discusses the state of the art in research on the impact of total quality management (TQM) on organisational ambidexterity. The wide diffusion of TQM in organisations in every sector and the importance of ambidexterity for achieving long-term competitiveness make it worthwhile to understand the connection between these two concepts. We stress the need to include the wide and complex nature of TQM in our analysis because the interactions between its principles and practices make it a platform for creating an ambidextrous organisational context. We also feel it is important to specify which quality management approach is addressed and to clarify which ambidexterity concept is analysed because substantial variability exists in terms of the type of ambidexterity selected as well as in the measurement and scales. Finally, as a future promising research stream we stress the role of cultural change brought about by TQM for generating organisational ambidexterity.

Keywords: Ambidexterity, Exploration, Exploitation, Total Quality Management, Organisational Context, Cultural Change.

## 1. Introduction

Ambidexterity (the ability to use both hands with equal skill) is a metaphor used to highlight organisations that are capable of exploitation (activities and learning through a specific search, a fine-tuning and an improvement of what already exists) and exploration (learning through completely new processes, planned experimentation, and play). In other words, ambidexterity involves being aligned with current activities and being efficient enough to meet demands while simultaneously adapting to and anticipating future change (Gupta et al., 2006; March, 1991; O'Reilly and Tushman, 2013). In short, it involves achieving opposing objectives: efficiency versus flexibility, stability versus adaptation, short-term profits versus long-term growth (Moreno-Luzon and Valls-Pasola, 2011).

Ambidexterity has been interpreted from many angles and perspectives, including innovation management (He and Wong, 2004; Rothaermel and Alexandre, 2009), organisational theory (O'Reilly and Tushman, 2008), organisational learning (Levinthal and March, 1993), organisational behaviour (Gibson and Birkinshaw, 2004) and strategic management (Smith and Tushman, 2005). The concept itself has been interpreted as a manager's behavioural orientation (Mom et al., 2009), as a top management team capability (Lubatkin et al., 2006; Smith and Tushman, 2005), as an organisational capability (O'Reilly and Tushman, 2008) closely linked to the organisational context (Gibson and Birkinshaw,

2004), and as a way of designing an organisational structure (Duncan, 1976; O'Reilly and Tushman, 2004).

Quality management also adopts many diverse approaches that incorporate a wide range of practices, methodologies and models. Companies also design and implement their own specific QM system according to their framework of principles and approach. Sometimes this approach is made explicit whereas sometimes it is implicit. However, we can infer the QM approaches analysing the system in application and the principles it shows.

QM is a broad and rich framework in which numerous approaches can be developed. These range from highly technical approaches to others that focus almost entirely on the customer or human and organisational aspects. Figure 1 shows the wide range of main approaches described in the specialised literature. Organisations that apply QM may combine several approaches from the many different techniques and practices available. Indeed, it is common to find a variety of approaches or perspectives operating simultaneously within the same organisation (Moreno Luzon and Peris, 1998; Prajogo and Sohal, 2004).

Few studies have analysed how TQM specifically contributes to ambidexterity. As far as we are aware, only three papers have referred explicitly to ambidexterity in the context of TQM: Moreno-Luzon and Valls-Pasola (2011), Moreno-Luzon et al. (2014), and Asif and de Vries (2015). However, previous research provides several clues that suggest that this contribution may be significant. Some studies have emphasised the capacity of TQM to confront paradoxes (Thompson, 1998). Others have proven that TQM principles and practices can be used to construct two different models, one of which is mechanistic and the other organic (Prajogo and Sohal, 2004). Several interesting studies have shown that TQM can adopt diverse forms in accordance with principles that may be seen as alternatives, such as control and learning, which enable the company to adapt itself more or less successfully to different environments (Sitkin et al., 1994). Benner and Tushman (2002, 2003) addressed the influence of process management on exploitation and exploration. These authors paved the way towards the crossing of both concepts and concluded that process management is more effective for exploitation but can hinder exploration.

In this paper we analyse the potential risks and challenges involved in crossing these two concepts, summarise the main findings in the current literature on the topic, and discuss a research stream which, in our view, has great potential for explaining the phenomenon. In the next section we focus on analysis and measurement of organisational ambidexterity. In Section 3 we tackle the diversity of TQM, in Section 4 we present the connection between these two concepts, and in Section 5 we present future promising research streams. In the final section we end with our conclusions.

## **2. Analysis and measurement of organisational ambidexterity**

Recent years have seen a proliferation of publications on ambidexterity. Many prestigious management journals, such as *Academy of Management Review*, *Academy of Management Journal*, *Journal of Management*, *Journal of Management Studies* and *Organisation Science*, have published numerous articles on ambidexterity. Indeed, several journals have dedicated special issues to this subject, including *Academy of Management Journal*, 2006; *Organisation Science*, 2009; and *Academy of Management Perspectives*, 2013. Some scholars have called ambidexterity an emerging paradigm in organisational theory (Raisch and Birkinshaw, 2008; Simsek et al., 2009; Raisch et al., 2009) while others have called it a promising research stream (O'Reilly and Tushman, 2008, 2013). Descriptions of the state of the art on this subject can be found in Lavie et al. (2010), O'Reilly and Tushman (2013), Raisch and Birkinshaw (2008), and Turner et al. (2013).

Despite the proliferation of research lines and publications on this issue, however, numerous ambiguities remain that future research should clarify. First, there is still confusion about what the term "organisational ambidexterity" actually means. In the specialised literature, the generic use of organisational ambidexterity is often vague, with authors simply referring to a firm's ability to do two things simultaneously. "As the research base has broadened, ambidexterity has been applied to phenomena such as strategy, networks, new product development, technology, software development, intellectual capital and other topics that, while interesting and important, may have little to do with the practical tensions involved in how managers and organisations deal with exploration and exploitation. The risk in applying the term so broadly is that the research moves away from the original phenomenon and loses its meaning" (O'Reilly and Tushman, 2013: 332).

In their review, Raisch and Birkinshaw (2008) also note that as the research has broadened it has become less focused and more complex. In the same sense Nosella et al. (2012) state that "the organizational ambidexterity literature has departed from the original definition of the construct as a capability for resolving tensions ... Future research may therefore benefit from a return to the construct's definition which emphasizes the nature of ambidexterity as a capability" (Nosella et al. 2012:459). And in this respect, "if the term 'organizational ambidexterity' continues to be used to describe highly disparate phenomena, our insights into how firms actually explore and exploit are likely to become less and less useful" (O'Reilly and Tushman, 2013: 332).

One factor that adds complexity to the analysis is the wide typology that embraces the concept. Ambidexterity typology has been refined in relevant studies on this issue (Gupta et al., 2006; Simsek et al., 2009; Simsek, 2009). One such typology, introduced by Moreno-Luzon and Valls-Pasola (2011), differentiates between structural ambidexterity, managerial capability at an individual level, a top management team capability, and a capability embedded in organisational behaviour.

The first type, structural ambidexterity, involves designing organisational units in terms of exploration and exploitation (Duncan, 1976; Tushman and O'Reilly, 1996; O'Reilly and Tushman, 2004, 2013). This form of ambidexterity involves the separation of units and subsequent coordination costs, and the added

need for ambidextrous top managers or management teams to understand and accommodate the needs of such diverse units in order to coordinate them (O'Reilly and Tushman, 2004).

Ambidexterity can also be understood as the skill of a manager, i.e. an individual ability to see the future and make the most of the past. This implies a mental balancing act which, according to O'Reilly and Tushman, (2004: 74), "could be one of the hardest of all the management challenges". Ambidextrous managers renew and refine their knowledge and are able to deal with contradictions (Smith and Tushman, 2005).

Thirdly, ambidexterity may also be considered a capability of the top management team that involves complementing individual members' exploitative and exploratory abilities. Lubatkin et al. (2006) proved that the behavioural integration of top management teams correlates strongly with their ambidexterity.

The fourth type of ambidexterity is a capability embedded in organisational behaviour. It has been called contextual ambidexterity and is considered a capability rooted in organisational behaviour (Gibson and Birkinshaw, 2004; O'Reilly and Tushman, 2013). It is the result of designing and establishing processes and systems that encourage employees to allocate time to different activities, either by continuing previous activities or changing to meet environmental demands (Gibson and Birkinshaw, 2004).

Another source of potential confusion stems from the way ambidexterity is measured. While the psychometric properties of these measures are normally well documented, the underlying meaning is often ambiguous. It is often difficult to know what "exploration" and "exploitation" mean in the context of a specific research study, especially when compared to others on different industries analysed from different perspectives. Since exploration and exploitation are characterised as very different phenomena, findings may reflect the idiosyncratic nature of what exploration and exploitation mean in a particular context. If the underlying phenomenon is different, the antecedents and outcomes will also probably vary. The risk is that using the same terms to describe what are likely to be highly different phenomena may lead to a loss of accuracy, which may partly explain the confusion and conflicting results found in empirical research (O'Reilly and Tushman, 2013).

In relation to the process for measuring ambidexterity, and consistent with Floyd and Lane's (2000) assertion that these two orientations are "inseparable", researchers have combined both measurements (exploration and exploitation) to create the ambidexterity scale. Gibson and Birkinshaw (2004) obtained a measure of ambidexterity by multiplying exploitation and exploration as a way to capture their interaction, since the index grows as far as both exploitation and exploration are higher. He and Wong (2004) opted for another method, i.e. they subtracted exploitation from exploration and used an absolute difference score, thus capturing the balance and unbalance in both measures.

However, Lubatkin et al. (2006) stressed that whenever two or more measures are combined into a single index, sufficient information may be lost to render interpretation of the index inaccurate. In other words, it is good to know whether each component of the final index contributes uniquely to predicting outcomes

or whether only one component does. Lubatkin et al. (2006) combined the measurements of exploration and exploitation before refining their instrument. First they ran an unconstrained regression equation in which firm performance was the dependent variable and the orientations of exploration and exploitation were treated as separate independent variables. Then they ran three constrained regression equations in which exploration and exploitation were combined into a single index, first by subtracting exploitation from exploration, then by multiplying exploration and exploitation, and finally by summing the two. The “additive” model proved to be superior: its regression beta weight indicated no significant loss of information, whereas the beta weights for the “difference” and “multiplicative” models indicated a significant loss of information relative to the unconstrained regression equation (Lubatkin et al. 2006:657).

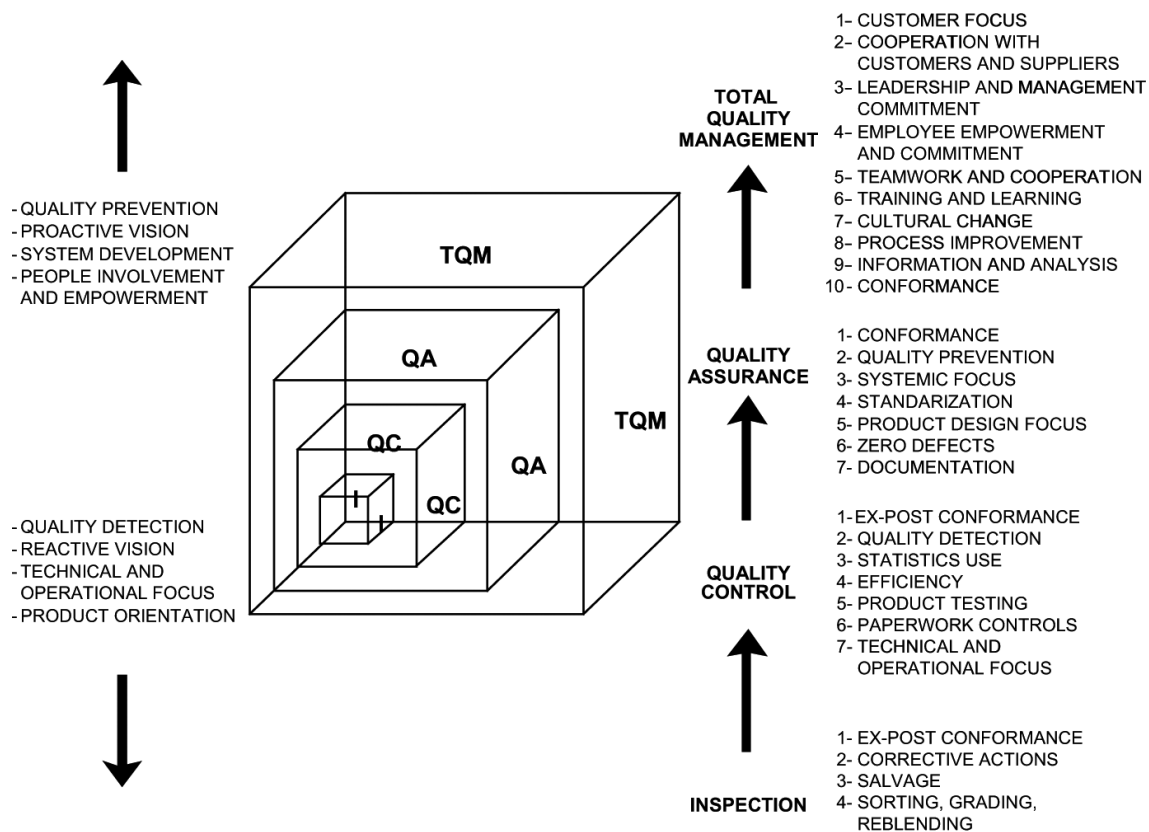
### **3. Quality management, a wide umbrella under which many approaches can be implemented**

Quality management embraces many different practices. Indeed, it constitutes a way of management that is driven by a set of values and principles (e.g. continuous improvement, customer satisfaction, learning, cooperation, stakeholder satisfaction) that has at its disposal a wide range of tools, techniques (e.g. Control Graphs, Process Maps, the Ishikawa Diagram, the Pareto Diagram) and methodologies (e.g. Plan-Do-Check-Act, 6 Sigma, 5 Ss, Benchmarking, Quality Function Deployment, Process Standardisation and Procedures).

Standardised models (e.g. ISO 9001, EFQM, Baldrige, Deming) are available to help companies develop quality management. These models can serve as references to learn how to apply QM, as a means of comparing its implementation with that of other companies using the same model, and as a method for self-evaluation and auditing.

Differences between the various QM approaches and their values, tools, techniques, practices, models and systems are sometimes absent in the specialised literature. However, we believe it is important to preserve clarity and rigour with regard to those differences.

Because of the diversity of principles and practices, it is useful to classify the dimensions around which the practices may be linked. Most of the principles, practices and techniques can be divided into the following three dimensions: process management, people management, and customer focus (Dean and Bowen, 1994; Moreno-Luzon et al. 2001).



**Source:** Adapted from Moreno-Luzon *et al.* (2001) and Dale *et al.* (1999)

**Figure 1. Approaches on quality management**

We would like to stress that, owing to the diversity of approaches to QM, the object of investigation must be explicit so as not to misinterpret the results. Whether companies in the sample apply a QA approach or a TQM approach can lead to very different results. The dimensions and practices taken in the analysis should also be explicit, while coherence and complementarity between the practices can also make a difference. Research reveals that the value of one QM practice is linked to other QM practices. Therefore, highlighting just one or just a few QM practices or techniques can substantially condition the research results (Kim *et al.*, 2012)

#### **4. The contribution of TQM to organisational ambidexterity**

As we mentioned in the introduction, previous studies have shown the capacity of TQM to confront paradoxes (Thompson, 1998). Some authors also point out its capacity to construct two different models, one of which is mechanistic and the other is organic (Prajogo and Sohal, 2004) depending on the environment and whether the purpose is for control or for learning (Sitkin *et al.*, 1994). Some research also addresses the influence of quality management practices on exploitation and exploration (Benner and Tushman, 2002, 2003; Zhang *et al.*, 2012).

However, very few papers have explicitly tackled how TQM contributes to ambidexterity. As far as we know, only three papers have done so: Moreno-Luzon and Valls-Pasola (2011), Moreno-Luzon et al. (2014), and Asif and de Vries (2015). The first of these is a theoretical contribution that pioneers discussion of the main issues in the relationship and proposes a research agenda. The second presents the results of a research project focused on the links between TQM and ambidexterity while paying special attention to the impact of process management on ambidexterity. The third is a theoretical analysis of the contribution to ambidexterity made by some of the practices TQM embraces.

For their analysis, Moreno-Luzon and Valls-Pasola (2011) considered three dimensions, i.e. process management, people management, and customer focus, since most principles, practices and techniques can be divided into these three dimensions. These authors found that the two main approaches to QM (QA and TQM) (see Figure 1) attach an unbalanced degree of importance to these three main dimensions.

QA focuses more on the design and improvement of processes but also introduces several elements of the people dimension. However, due to its closed focus, it does not include any aspect of the third dimension (customer focus). The emphasis on continuous improvement creates, above all, discipline and supports exploitation activities. Such practices strongly reinforce exploitation and, if they are not complemented by development in other dimensions, may represent a serious obstacle to ambidexterity.

TQM, on the other hand, has a more intense and balanced treatment of the three dimensions. This can help avoid the risk of excess control expected from the intense application of control techniques and process improvements to the detriment of human and commercial aspects, which can inhibit exploration and the modalities of ambidexterity based on behavioural characteristics. Moreno-Luzon and Valls-Pasola (2011) also asserted that the emphasis on human aspects in the TQM framework can have a positive effect on the ambidexterity of the top management team by improving the integration of their behaviour thanks to the application of teamwork, cooperation and participation.

Similarly, TQM development of hard cultural values (e.g. discipline and stretch) and soft cultural values (e.g. trust and support) can help to generate contextual ambidexterity. Moreover, opening up to the outside environment and widening objectives towards the satisfaction of stakeholders is expected to build ambidexterity because the company no longer finds itself limited to searching for present customer satisfaction and broadens its horizons to attracting potential customers and other external stakeholders.

“The synergy between the principles and practices of TQM, if the focus is complete and advanced, might also turn out to be a key element for TQM to become an enabling platform for the three types of ambidexterity linked to behaviour. It could thus be expected that a total quality management approach may fit better with the generation of the capacity for ambidexterity – individual, team and organisational – than a quality assurance approach in which the relative importance of process management is sizeable” Moreno-Luzon and Valls-Pasola (2011: 942).

With respect to structural ambidexterity, the above study suggests that there is no connection between the application of TQM and the creation of organisational units for exploration. Normally, the implementation of total quality management implies the creation, if one does not already exist, of a Quality Department and, sometimes, the creation of a Customer Care Department, while the rest of the organisational structure remains unaltered. We can conclude, therefore, that total quality management does not promote structural duality in the sense of structural ambidexterity.

## **5. Future promising research streams: cultural change in a TQM framework and ambidexterity**

There is a stream of research that in our view can yield interesting results to help explain the role of cultural change in the contribution of TQM to contextual organisational ambidexterity. On one hand, the hardest challenge for a company when implementing TQM is how to achieve the level of cultural change this demanding form of management requires to achieve excellence. On the other hand, risk avoidance and continuous improvement have been identified as obstructions to exploration. It would therefore be interesting to determine what, in the context of TQM, is the appropriate culture for contributing to ambidexterity.

Many studies acknowledge that achieving deep cultural change is a key factor in successfully implementing TQM since a strong commitment from managers and employees to the principles and values of TQM is essential for improving quality performance (Green, 2012; Tata and Prasad, 1998). The reasons why cultural change is so important in the success of TQM are its values and principles. Indeed, some authors have asserted that the essence of TQM is cultural change and that TQM practices are merely tools for cultural transformation (Flood, 1993).

We assume that culture consists of the beliefs, values and underlying assumptions that support behavioural patterns and artifacts (Schein, 1986: 6). Also, the specialised literature identifies cooperation, stakeholder satisfaction, the commitment of managers and employees, continuous improvement, learning, and employee participation as the driving TQM values, assumptions and behavioural pattern.

A debate in the literature concerns whether TQM practices contribute to cultural change or whether corporate culture influences TQM development and results (Irani et al., 2004; Prajogo and McDermott, 2005; Santos-Vijande and Alvarez-Gonzalez, 2007).

On one hand, evidence shows that the cultural context facilitates the implementation of TQM and therefore helps it to succeed (Dellana and Hauser, 1999; Prajogo and McDermott, 2005). On the other hand, the effects of TQM on organisational culture have less empirical support and further research is needed (Ghobadian and Gallear, 1996; Naveh and Erez, 2004; Irani et al., 2004; Santos-Vijande and Alvarez-Gonzalez, 2007). Ghobadian and Gallear (1996) concluded that TQM practices such as education and training, employee participation, enhanced communication, revision of procedures and policies, and



the behaviour of top managers promote cultural change. They also asserted that “the level of commitment and support generated by a quality improvement team can directly and indirectly influence the change in corporate culture, a key factor in the successful implementation of TQM” (Ghobadian and Gallear, 1996: 89). Naveh and Erez (2004) also analysed the impact of TQM practices on cultural change by considering its impact on two groups of values: (1) control and attention to detail; and (2) creativity, flexibility and experimentation. Their results showed that when the implementation of TQM is diverse and wide-reaching in terms of practices, a positive impact is observed on both these groups of values.

In the search for key variables to explain the contribution of TQM to ambidexterity, the path of analysis that incorporates cultural values is promising. Some studies have shown the mediating role an innovative culture plays in the TQM-innovation relationship (Santos-Vijande and Alvarez-Gonzalez, 2007). According to the above authors, TQM is capable of creating an organisational culture that is open to innovation. Other authors have reiterated the importance of the principles and values involved in applying TQM (Moreno-Luzon and Valls-Pasola, 2011). Obtaining true cultural change is recognised as a key factor for the success of TQM implementation, though a TQM-driven cultural change is neither quick nor simple because cultural values are complex and resist direct manipulation (Denison, 1990). Other researchers have made similar theoretical developments. For example, Dellana and Hauser (1999) on competing values were pioneers in empirically showing that TQM is simultaneously related to different cultures by applying a model of competing values that was initially created by Quinn and Rohrbaugh (1981) and that has been used in studies in the context of TQM (Prajogo and McDermott, 2005). The empirical study by Naveh and Erez (2004) also suggested that if different TQM practices are applied jointly they have a positive impact not only on values such as control and attention to detail but also on creativity and experimentation.

Innovation literature normally emphasises values such as risk-taking or creativity to define an innovation culture (Santos-Vijande and Alvarez-Gonzalez, 2007). However, some authors suggest that an innovation culture must, by definition, be paradoxical (Khazanchi et al., 2007) since it requires flexibility and empowerment as well as control and efficiency. Similarly, Tatikonda and Rosenthal (2000) assert that not only flexibility is necessary but also firmness if greater execution effectiveness is to be achieved in incremental and radical innovation projects. Although the creation of a contradictory culture with the application of TQM has been studied by some authors, and others have highlighted the need for a paradoxical innovation culture, there is an absence of studies that empirically connect a TQM culture defined in this way with ambidexterity.

In this respect, the paper by Moreno-Luzon et al. (2014) presents a research line that deals directly with cultural change as a moderating factor between the implementation of process management and ambidexterity. These authors conclude that process management practices, traditionally viewed as the mechanical component of TQM, can help to generate a cultural change that helps to enable organisational ambidexterity as long as they can promote a specific organisational culture made up of diverging values: security, discipline, control, improvement and precision on the one hand; and creativity, experimentation,

risk-taking and flexibility on the other. These findings contribute to the empirical evidence on the antecedents of organisational ambidexterity, suggest that the implementation of process management can influence an organisation's basic beliefs and values, and therefore support the development of OA capabilities. The importance of cultural change as a mediator reveals that a balanced culture that includes cultural values can be a key to success in conflicts (Prajogo and McDermott, 2005).

## **6. Conclusion**

Our analysis of the research on the contribution of TQM to ambidexterity enables us to point out several challenges.

First of all, in relation to quality management, we call attention to the fact that quality management is a broad framework comprising highly different approaches, each of which embraces its own values, practices, models and systems. We affirm the clarification of the approaches adopted in the research as they can substantially condition the results.

Secondly, although there has been a proliferation of research lines and publications on the concept of ambidexterity, numerous ambiguities remain that need to be clarified by future research. As the research base has broadened, many disciplines are analysing this concept from very different perspectives. There is also the risk of applying the term so broadly that the research diverges from the original phenomenon and loses its meaning (O'Reilly and Tushman, 2013).

Another factor that adds complexity to the analysis is the confusion between different types of ambidexterity, which can be understood as a capability of managers at an individual level, a capability of top management teams, or a capability embedded in the behaviour of an organisation (Moreno-Luzon and Valls-Pasola, 2011). To avoid misinterpretations when analysing this topic, it is important to clarify which type of ambidexterity is addressed by the study and identify the specific meaning and interpretation of each concept as well as the perspective used to approach them.

According to Moreno-Luzon and Valls-Pasola (2011), the synergy between the principles and practices of TQM, if the focus is complete and advanced, can make TQM an enabling platform for the three types of behaviour-linked ambidexterity (individual, team and organisational), whereas a quality assurance approach can steer the company towards exploitation. With regard to structural ambidexterity, this study suggests that neither total quality management nor quality assurance promotes structural duality in the sense of structural ambidexterity.

In this paper we have also shown the potential interest of taking into account the cultural change promoted by TQM. If the culture is divergent, in the sense of embracing opposing values (improvement, safety, control, precision and discipline on the one hand, and flexibility, creativity, tolerance to uncertainty, risk-taking and interest in experiencing new environments on the other), it can be crucial for

generating organisational ambidexterity. The simultaneous presence of competing cultural tensions can thus become an important driver of ambidexterity.

One managerial implication of this analysis is the need for senior managers to be aware of the effects that applying the quality programme may have on corporate culture. To achieve a cultural change that can nurture contextual ambidexterity, leaders should empower employees and expand internal communication to instil confidence by explaining policies and interacting frequently with employees. Managers can inspire employees to be creative and flexible while also being disciplined, while reconciling the need to standardise practices and continue to search for new approaches to solving problems. To achieve an ambidextrous culture, people must not be afraid of complexity or conflict and must be ready to explore and to take risks. However, they must do so with a measure of caution while developing constructive attitudes towards change and a disposition to take calculated risks. A supportive response to failures is also critical for stimulating a paradoxical culture-oriented change.

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