



Ambidexterity and total quality management: towards a research agenda

Ambidexterity
and TQM

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Abstract

Purpose – The purpose of the paper is to expand on the existing theory of ambidexterity by analysing its implications for organisations that employ total quality management.

Design/methodology/approach – The analysis of relevant theoretical and empirical studies on ambidexterity and total quality management enables us to reflect on the common elements, facilitating factors and synergy that exists between both fields.

Findings – Thanks to the synergy between its principles and practices, total quality management can act as a platform in creating an ambidextrous context, in addition to generating ambidextrous management capabilities and ambidextrous organisational skills. However, no relationship has been found between the application of TQM and structural ambidexterity.

Research limitations/implications – An analysis of existing studies has enabled the extraction of some proposals which could be used in future research.

Practical implications – The synergy between TQM principles and practices, their disparate influence on ambidexterity, the range and depth of applying TQM principles and practices – above all those that are included in a human context and the opening of new markets – means that these factors are key elements to bear in mind for those organisations that wish to maximise the potential of TQM in order to foster ambidexterity.

Social implications – Given the extent to which this type of management has been applied over the last 20 years the social impact of this study is relevant.

Originality/value – This study opens up a new line of research into ambidexterity and, despite the subject having been analysed extensively in conceptual and empirical terms, until now its relationship with total quality management has yet remained unexplored.

Keywords Ambidexterity, Exploration and exploitation, Total quality management, Management skills, Learning

Paper type Conceptual paper

1. Introduction

Ambidexterity is a metaphor – the ability to use both hands with equal skill – which is used to highlight organisations that are capable of exploitation (activities and learning through a specific search, a fine-tuning and improvement of what already exists) and exploration (learning through completely new processes, planned experimentation and play) or, in other words, being aligned with current activities and being efficient enough to meet the demands while, simultaneously, adapting to and anticipating future change. In short, it implies achieving opposing objectives: efficiency versus



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flexibility, stability versus adaptation, short term profits as opposed to long-term growth.

This topic has sparked a great deal of interest recently, with many articles being published in journals such as the *Academy of Management Review*, *Academy of Management Journal* and, particularly, in the *Journal of Management*, *Journal of Management Studies* and *Organization Science*. This last journal published a special issue on ambidexterity in 2009 (Vol. 20 No. 4, July-August).

Organisational ambidexterity has been outlined by different authors as an emerging paradigm in organisational theory (Raisch and Birkinshaw, 2008, p. 377; Simsek *et al.*, 2009, p. 3), and as an important and promising line of research (Gibson and Birkinshaw, 2004; O'Reilly and Tushman, 2008; Smith and Tushman, 2005).

It has been conceptualised as a manager's behavioral orientation (Mom *et al.*, 2009), as a top management team ability to engage in paradoxical cognitive processes (Smith and Tushman, 2005), as an organisational capability (O'Reilly and Tushman, 2008), something which is rooted in one's behaviour (Gibson and Birkinshaw, 2004) and as a way of shaping organisational structure (Duncan, 1976; O'Reilly and Tushman, 2004).

The concept and its typology have been refined in relevant studies (Gupta *et al.*, 2006; Simsek *et al.*, 2009; Simsek, 2009). It has been viewed from different perspectives and angles such as the strategic and technological innovation perspective (He and Wong, 2004; Rothaermel and Alexandre, 2009), the organisational theory of dynamic capabilities (O'Reilly and Tushman, 2008), organisational learning (Levinthal and March, 1993), organisational behaviour (Gibson and Birkinshaw, 2004) and strategic management (Smith and Tushman, 2005).

However, up until now, no study has provided a solution to the dilemma of exploration-exploitation through ambidexterity within a total quality management framework. Given the extent to which this type of management has been applied over the last 20 years and its role in the standardisation of management processes at an international level, we believe that it is worthwhile moving in this direction.

However, other research has highlighted how total quality management creates a suitable context in which to treat certain dilemmas. Dean and Evans (1994) point out how total quality management can be used to treat and overcome the dilemma of leadership in costs versus differentiation, as stated for the first time by Porter (1980, 1996). Sitkin *et al.* (1994) also describe how this form of management deals with the issue of control versus learning.

In this article we establish the strong connection between ambidexterity and the principles and practices of total quality management. We suggest which of these principles and practices are aimed more at exploitation and which of those enable exploration, with an analysis of their potential to develop ambidexterity. In this study, we present a complex vision of quality management in which we move away from a reductionist approach that connects it solely to process management.

After focusing on the three axes or dimensions of these practices and principles: process management, customers and the human approach, plus an analysis of these in relation to ambidexterity, we conclude that an emphasis on process management and continual improvement generates, above all, discipline and exploitation activities. As a result, if these activities are not supplemented by activities from other dimensions in TQM, they could act as an obstacle to ambidexterity.

An emphasis on human aspects where there is promotion of management leadership, participation, employee commitment and teamwork, has a positive impact on the ambidexterity of management on an individual level. We can also suppose that this focus on the human aspect has a positive influence on the ambidexterity of top management teams and improves the integration of their behaviour. Likewise, developing a combination of hard values – discipline and stretch – and soft values – trust and support – within a TQM framework, can foster contextual ambidexterity.

It can be expected that exposure to the environment and the stretch in objectives can foster ambidexterity, to the point where the firm not only focuses solely on the satisfaction of its current customers but also casts the spotlight on potential clients and the rest of the external stakeholders.

We have also proposed that the implementation of TQM from an open and human approach is a necessary requirement to ensure that process management, which, generally, is found in all TQM applications, does not create an unbalanced sway towards exploitation. If the focus is exhaustive and advanced, then the synergy between the practices and principles of TQM could prove to be a key aspect in total quality management becoming an accessible platform for the three types of ambidexterity linked to behaviour. However, no clear connection has been found between the application of TQM and structural ambidexterity.

In order to structure our study, first of all we pose the exploitation-exploration dilemma and its implications for organisations. Second, we analyse ambidexterity as a response to this dilemma using a typology, which will be useful for the connection with TQM. Third, we put forward the three dimensions from which we will analyse the application of TQM and its link with ambidexterity. Finally, this study allows us to make certain proposals, which may be expanded on in future research.

2. The exploitation-exploration dilemma

The seminal study for research on the existence of this dilemma in organizations and the subsequent implications is that of March (1991). March suggests that exploitation and exploration are two forms of searching and learning that are fundamentally different, and which bring about very different consequences. Exploitation is a search based on refinement, choice, production, efficiency, selection, implementation and execution. Exploration is a search based on variation, risk assumption, experimentation, play, flexibility, discovery and innovation (March, 1991, pp. 101-2)[1]. According to March, carrying out both activities in a correct and balanced way is a basic and fundamental factor in a system's survival and its prosperity.

Organisations that are involved in exploitation and neglect exploration will no doubt see visible improvements in effectiveness over the short-term but this direction will prove to be self-destructive over the long term (March, 1991, p. 102). A firm that sees a growth in demand for its current products does not seek new avenues in products, markets, systems and technology, and runs the risk of dying of success. The firm could enter what is called a “competence trap”, which leads it to excessively refine the existing knowledge and will steer it into a period of decline (Levinthal and March, 1993). What is more, the learning that is achieved through actions based on existing knowledge creates organisational rigidity (Kogut and Kulatilaka, 2001). In other words, by continuing with its current activities, the firm becomes more and more

competent. However, in a way, this learning, which has been accumulated through old techniques, becomes a trap because the firm could be getting better at doing things wrong and this type of learning makes it ever more rigid when faced with radical change. This could be classified as “essential” incompetence (Dougherty, 1995).

On the other hand, organisations that concentrate on exploration at the expense of exploitation, find that they bear the costs of exploration without capitalising on many of the potential benefits that could be available to them. These organisations tend to suffer from a lack of efficiency, which can hinder their competitiveness. A sustained strategy of being the first to move also carries serious risks. Levinthal and March classify this as a “failure trap”. In other words, the organisation has expectations, which are generally not met in the short term, due to the fact that a prolonged period of time is required in order to begin to see the results from new initiatives. When these objectives are not covered within a reasonable time frame, they are abandoned to focus on other avenues (Levinthal and March, 1993).

For this reason, firms, as adaptive systems, feel the need to maintain a balance between the exploitation of previous certainties and the exploration of new possibilities, that is to say, equilibrium between refining existing processes and exploring new avenues by changing to new products, markets and technology. The analysis used in order to find out where to channel efforts and resources is complex and delicate because current efforts may well produce efficiency in the short term, however, this could be to the detriment of long term exploration efforts. Moreover, despite exploitation and exploration being an essential factor for organisations, both of them are competing for scant resources. As a result, organisations choose between the two and this choice defines its present and its future (Brown and Eisenhardt, 1998; Levinthal and March, 1993; March, 1991).

Explicit choices can be observed by analysing the investments carried out and the competitive strategies that are selected. The implicit choices are embedded in the organisational attitude, the customs and culture, the procedures, norms and practices, in how objectives are set and then reached and in the incentives system (March, 1991, p. 102).

3. Ambidexterity as a solution to the exploitation-exploration dilemma

However, is it possible to follow two paths, which are so completely different? Is it possible to create systems, which consolidate such opposed demands? (Brown and Eisenhardt, 1997; Marks *et al.*, 2001). Is it possible to change from a way of thinking in terms of trade-offs (either one or the other) to a way of thinking, which embodies paradoxes (this and the other/s)? (Bouchikhi, 1998; Lewis, 2000).

As we have previously mentioned, the term ambidexterity has been used frequently in reference to the ability to do two different things at the same time; for example, exploitation-exploration, efficiency-flexibility and alignment of current activities-adaptability to change (Gibson and Birkinshaw, 2004; Simsek, 2009). Its etymological root is derived from the Latin word “ambidexter” (right on both sides), a word which comprises the preposition ambi- (both sides) and dexter (right).

Although this same term is often used, its meaning in literature at times refers to very different concepts. We will underline the following ones:

As an individual management ability and behaviour orientation

O'Reilly and Tushman symbolise this type of ambidexterity metaphorically by using the figure of Jano, the Roman god who had four eyes, two looking forwards and two looking back. This symbolises the management ability of being able to look to the future, explore and risk venturing into the unknown while not forgetting the past, but instead exploiting it and improving it. "This act of mental balancing could be one of the hardest of all the management challenges" (O'Reilly and Tushman, 2004, p. 74).

In this sense, the term ambidexterity could be defined as "a manager's behavioural orientation towards combining exploration and exploitation-related activities within a certain period of time" (Gibson and Birkinshaw, 2004, p. 210; O'Reilly and Tushman, 2004, p. 74; Mom *et al.*, 2009, p. 812).

From previous studies, Mom *et al.* (2009, pp. 812-13) put forward and clarify three characteristics associated with ambidextrous managers:

- (1) Ambidextrous managers host contradictions (Smith and Tushman, 2005; Tushman and O'Reilly, 1996).
- (2) They are multi-taskers (Birkinshaw and Gibson, 2004; Floyd and Lane, 2000).
- (3) They both refine and renew their knowledge, skills and expertise (Floyd and Lane, 2000; Hansen *et al.*, 2001)

In this same study, Mom *et al.* (2009, p. 824) prove, by using an empirical analysis of a sample of 715 business unit level and operational level managers, the positive influence on the individual ambidexterity from the connectedness of a manager to other organisational members, i.e. the extent to which a manager is networked or connected to other organisational members across hierarchical levels and organisational units in terms of direct personal contacts.

As a capability of the top management team:

The important integrating role of the top management team (TMT) has been highlighted in consolidating diverging internal and external demands – above all when the organisation has some units which are extremely focused on exploitation and others focused on exploration. (Smith and Tushman, 2005). Tushman and O'Reilly (1997), suggest that the key to this integration is "the internal processes that enable them to handle large amounts of information and decision alternatives and deal with conflict and ambiguity" (p. 23).

In the empirical study by Lubatkin *et al.* (2006), they add clarity to the topic by analysing "TMT behavioural integration", and proving a strong correlation between this construct and the ambidextrous behaviour of the firm.

The meta-construct "TMT behavioural integration" includes three dimensions: the quality of information exchange, collaborative behaviour, and joint decision making. This was previously proposed and proven as consistent by Simsek *et al.* (2005), after using the conceptual analysis of Hambrick (1994) as a starting point.

Lubatkin *et al.* (2006), point out that one of the managerial implications from its research results is that "organisational ambidexterity may not be as difficult or as illusive for firms to achieve as some in literature believe. What may be required is to have a CEO with the leadership ability to foster greater behavioural integration among the members of his or her TMT. Additionally, CEOs are generally uniquely positioned

to do this, given their responsibility for selecting, evaluating, motivating, and coaching the TMT members (Lubatkin *et al.*, 2006, p. 668).

As a capability embedded in the organisational behaviour

This type of ambidexterity, called contextual ambidexterity by Gibson and Birkinshaw (2004), is a capability that is rooted in organisational behaviour. It is obtained through the construction of processes and systems that prepare and motivate people to make their own judgments on how to divide their time between conflictive demands, on the continuation of previous activities and on adaptability to changing requirements (Gibson and Birkinshaw, 2004, pp. 209-10).

Therefore, according to Gibson and Birkinshaw, this type of ambidexterity could be considered as an organisational capability, which connects all of the functions and levels within the same unit. This approach has a certain theoretical foundation in studies on dynamic capabilities (Eisenhardt and Martin, 2000; Kogut and Kulatilaka, 2001; Teece *et al.*, 1997) and the relationship between dynamic capabilities and routines (Nelson and Winter, 1982; Zollo and Winter, 2002). These studies have already proposed that the dynamic capabilities of a firm lie not only in their ability to explore new avenues but also to exploit existing ones. Furthermore, the ability of a firm to compete over the long term lies not only in integrating and building on current competencies but also, simultaneously, in the development of entirely new ones (Teece *et al.*, 1997). This type of ambidexterity, whose roots lie in organisational behaviour, is also related to system thinking and the learning organisation, developed, among others, in the well-known studies by Peter Senge and his colleagues at MIT (Senge, 1990).

To be able to measure the context, the work of Gibson and Birkinshaw (2004) is based on cultural values which mark behaviour, and they chose to use the same values as used in the pioneering work of Ghoshal and Bartlett (1994) for their own research. Ghoshal and Bartlett's values comprise discipline, stretch, support and trust and when these are present in an organisational context, they create changes in individual behaviour which result in greater initiative, co-operation and learning. These authors also proposed how the quality of management can be substantially improved if management actions and the organisational context are linked together.

Gibson and Birkinshaw (2004), therefore, use the values of discipline, stretch, support and trust as their main dimensions in organisational context; and their research demonstrates that the more this organisational context is characterised by an interaction of these values, the greater the level of ambidexterity. The complementarities of these values, is highlighted, acting therefore as the ying and yang of organisational culture (Ghoshal and Bartlett, 1997), the complementarities of the harder elements – discipline and stretch – with the softer elements – support and trust (Gibson and Birkinshaw, 2004).

Structural ambidexterity

The first three meanings of ambidexterity have referred to behaviour, that of individual managers, top management team and the general behaviour of organisational members. However, the fourth lies in the structure and was first proposed by Duncan, as an organisational capability to enable dualism, more specifically, to create units which are specifically focused on alignment or continuity,

and others which are solely focused on the rapidly changing requirements of the surroundings (Duncan, 1976)[2]. Recently, this organisational dualism approach has been taken up by other researchers, applying directly to the exploration-exploitation dilemma (Tushman and O'Reilly, 1996; O'Reilly and Tushman, 2004).

Structural ambidexterity allows organisations to separate its exploration units from its exploitation units, enabling them to have different processes, structures and cultures (O'Reilly and Tushman, 2004).

Other researchers have proposed similar initiatives in order to manage the trade-off between efficiency and flexibility, seen as inherent in the manufacturing process (Carlsson, 1989; Ghemawat and Costa, 1993). Those that suggest this point of view normally argue that this dilemma is best managed by structural separation, that is to say, to separate new businesses by structuring them into different units (Galbraith, 1982). This way, each business unit can be set up to better adapt to the specific necessities of their environment (Burns and Stalker, 1961; Lawrence and Lorsch, 1967). Also noteworthy is the structural dualism put forward by Nonaka and Takeuchi with their so-called hypertext organisation in which, through the superposition of "structural layers", the creation of knowledge can be fostered while maintaining the traditional structure (Nonaka and Takeuchi, 1995).

However, this structural separation creates coordination costs between units and, furthermore, it is debatable whether the new units will be contaminated by the exploitative culture of the others. If this contamination occurs, it could result in different units exploiting in different ways (Levinthal and March, 1993).

This structural separation also demands strong leadership at a senior management level, an ability for "ambidextrous" managers to manage "ambidextrous" organisations, that is to say, managers that can understand and be sensitive to the needs of different types of units and businesses. Therefore, only by combining structural dualism with the integration allowed by the top management team, will ambidexterity be truly viable (O'Reilly and Tushman, 2004).

4. Ambidexterity in a total quality management framework

What we now ask ourselves is to what point total quality management can generate ambidexterity in all or some of the previously mentioned meanings.

Quality management entails many different perspectives and practices. To fully understand its depth and breadth, we can observe the origins of QM and its evolution, from its beginnings as an entirely technical approach, strictly linked to the manufacturing department, to a global management approach that includes human, organisational and strategic elements. As can be seen from Figure 1 – which outlines the underlying principles of each approach – this evolution has been sweeping and inclusive. The result has been that the organisations that apply QM can combine different approaches and can choose from the many different techniques and practices. Indeed it is common to simultaneously find a variety of approaches or perspectives within the same organisation (Moreno Luzón and Peris, 1998; Prajogo and Sohal, 2004).

In other words, the umbrella under which quality management is applied is extremely wide reaching and can range from highly technical approaches to others that are almost entirely focused on the customer or on human and organisational aspects. It is thus important to differentiate between quality management (QM), quality assurance (QA) and total quality management (TQM). QM is the generic approach

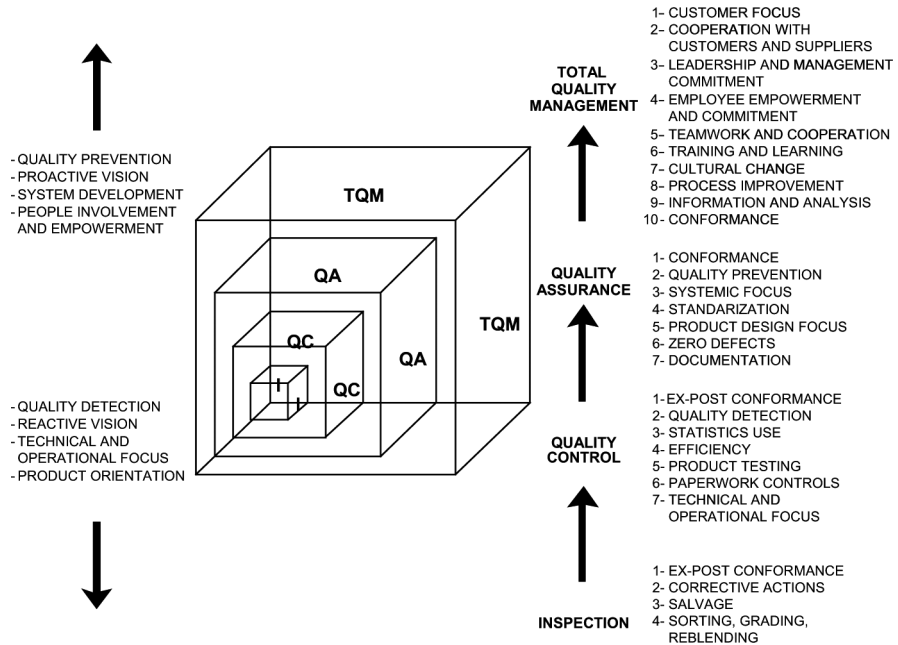


Figure 1.
Quality management
perspective evolution

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

under which different perspectives are applied; the most frequent being the closed approach, with a greater emphasis on technical aspects (QA), and a more advanced, open approach that stresses not only technical aspects, but also human, organisational, marketing and strategic ones (TQM). We therefore refer to quality management as the broad umbrella that covers the two most frequently used approaches in recent times: quality assurance and total quality management. Quality control and supervision are purely technical functions, aimed principally at the area of production, and cannot be regarded as quality management in the strictest sense of the term (see Figure 1).

It is also essential to differentiate between quality management approaches and the models that firms use to guide its application and to certify their systems. The predominant quality management models in Europe at the moment are the ISO 9001 Model and the EFQM Excellence Model. The ISO model has gone from having a closed approach focused on technical aspects in its 1994 version, which could be classified as a QA approach, to one that is much closer to TQM in the revised versions that appeared in 2000 and 2008. However, the most advanced model in terms of depth and breadth of the practical treatment of TQM principles is the EFQM Excellence Model. This model highlights not only those aspects linked to process management, but also human aspects and those that have a social impact, and in its latest version – from 2010 – a certain emphasis on learning and innovation (European Foundation for Quality Management, 2010).

With a view to simplifying the analysis, which is already complex enough in itself, in the search for synergies between TQM and ambidexterity, we will group the principles of TQM around three axes or dimensions. This simple categorisation, which

will become extremely useful in the later analysis, has been used in previous studies (Bou-Lusar *et al.*, 2009; Dean and Bowen, 1994; Moreno Luzón *et al.*, 2001).

In the dimension related to PROCESSES, we include the following principles: 8. Process improvement; 9. Information and analysis; and 10. Conformance. In the dimension PEOPLE the following groups are included: 3. Leadership and management commitment; 4. Employee empowerment and commitment; 5. Teamwork and cooperation; 6. Training and learning; and 7. Cultural change. Lastly, the grouping CUSTOMERS contains: 1. Customer focus; and 2. Cooperation with customers and suppliers.

The application of an enormous number of practices and techniques are based around these core principles. Table I shows their connection with some of the practices associated with each framework.

With this brief introduction to TQM, we can better address the research question in hand, i.e. to what point can total quality management generate ambidexterity in all or some of the meanings laid down in section 3, that is to say, as an individual management skill and behaviour orientation; as a capability of the top management team; as a capability embedded in organisational behaviour; or as structural ambidexterity.

Processes

Continuous improvement is closely linked to process management and have two clearly defined objectives. On the one hand, there is a controlled variability of processes in order to ensure conformity in the execution of a pre-established design, thereby achieving homogeneity and a lack of errors or waste. On the other hand, it enables improvement in the processes because it allows us to understand them better as it employs a large variety of techniques, such as applied statistics techniques and others like PDCA (Plan, Do, Check, Act), the Ishikawa Diagram and the 5 S's.

Principles	Practices
Processes (includes principles 8, 9 and 10)	Analysis and process design Collecting information and application of control techniques Formalization and standardization Dissemination of best practices Continuous effort to improve processes
People (includes principles 3, 4, 5, 6 and 7)	Commitment and involvement of management and all employees Continuous training Communication Teamwork and cooperation Empowerment and participation
Customers (includes principles 1 and 2)	Deep knowledge of customer needs and expectations The entire organization is geared to increase customer satisfaction Development of close partnerships with customers and suppliers

Source: Adapted from Dean and Bowen (1994)

Table I.
Grouping of the principles and practices of TQM around three main axes

Process management, which goes in search of conformity with specifications, carries with it the development of procedures for the processes. In other words, procedures are designed and written down in order to improve efficiency and regularity in the execution of processes. These serve as a guide for their execution. Therefore, the definition of procedures is a necessary requisite in the application of the majority of total quality management systems[3]. In this way, formalisation, the degree to which procedures, instructions and communications are formalised and written down (Khandwalla, 1977) increases considerably. If these formalisation activities are carried out to the extreme, a notable organisational rigidity materialises, something, which has been highlighted in literature as bureaucratisation (Mintzberg, 1979).

Given the importance that is placed on process management by traditional forms of quality management (Moreno Luzón *et al.*, 2001), prominent studies have identified quality management as having excessive exploitation, to the detriment of exploration, and these studies have signalled the dangers caused by this type of management to firms in very dynamic sectors, by obstructing innovation (Benner and Tushman, 2002).

However, other research has been unable to prove an inverse relationship between formalisation and exploration, concluding that rules and procedures cannot be as harmful to exploration efforts as previously thought (Jansen *et al.*, 2006). Formalisation does not necessarily act as a hindrance to exploration activities, given that process management enables the necessary systemisation for the creative process. Some authors have also pointed out the balancing role that routines play. Adler *et al.* (1999) states that in order to balance the efficiency vs. flexibility dilemma, which lies with individuals when making choices, there are two specific mechanisms. On the one hand, meta-routines to systematise the creative process and on the other hand, job enrichment schemes, which enable employees to be more innovative and flexible in their routine duties.

As Craig (1995) also points out, norms and regulations do not only not block innovation and change but, on the contrary, can even promote them. This is due to the fact that creating the necessary knowledge for innovation does not happen spontaneously; it needs to be stimulated in order to surface, and regulations can direct behaviour towards the desired goal (Moreno Luzón and Lloria, 2008). Therefore, a certain degree of formalisation can even act as a facilitating element in exploration. The development of a new product, for example, is not an activity that is born out of luck; innovation and change have to be planned and controlled (Craig, 1995). From this point of view, an organisational structure that is completely free from procedures and regulations could indeed enhance creativity at the stage when ideas are created but it could also lead to disastrous results during the implementation stage (Moreno Luzón and Lloria, 2008; Purser and Pasmore, 1992).

Another aspect which is intrinsically linked to continuous improvement is self-assessment, defined by the EFQM as “a systematic, regular and exhaustive examination of an organisation’s activities and results, contrasted with a model of excellence. The self-assessment process allows an organisation’s strong points and areas for improvement to be determined” (European Foundation for Quality Management, 1999).

Self-assessment, above all when carried out in a decentralised manner, fosters learning on different levels. What is more, in the first stages of its application, during the first few cycles, the learning that it provides is more ground-breaking given the

discovery of new areas and paths for improvement. However, the more experience the organisation gains in applying this technique, the more gradual the improvement will be (Balbastre and Moreno Luzón, 2003).

Process management, formalisation and self-assessment generate discipline in the organisational context given that the members of the organisation create habits of systematic verification. Therefore, in the words of Ghoshal and Bartlett when defining discipline “the members of the organisation are directed towards voluntarily reaching all the expectations created by their explicit and implicit commitments. Establishing clear standards of results and behaviour ... contributes to the creation of discipline” (Ghoshal and Bartlett, 1994, p. 97).

Therefore, using the previous argument, we could conclude that the application of the continuous improvement principle, mainly through process management, formalisation and self-assessment, intensely stimulates exploitation activities. It is not clear if it obstructs exploration but it does generate discipline in an organisational context, which Gibson and Birkinshaw (2004) consider to be one of the key values in enabling ambidexterity.

To conclude, we could make the following proposition:

- P1.* The application of process management in a quality management framework boosts exploitation

The fact that this intense boost in exploitation activities, connected to continuous improvement, may or may not be an unsettling element in ambidexterity, will depend largely on how great the influence is on exploration from the other pivotal areas in the overall application of QM.

People

Total quality management provides employees from all levels of the hierarchy with greater responsibility and it applies empowerment and decentralisation, which enriches their work. Likewise, it very much encourages participatory leadership and teamwork (Hackman and Wageman, 1995). The importance of the human aspects of quality, especially in the need for the participation and commitment both of the management and of the employees in being able to achieve objectives of substantial improvement in the quality of products, services and processes, a fact highlighted even by engineers that applied and were employed in the diffusion of these techniques, which were originally linked to the statistical control of processes (Deming, 1986).

Delegating, is complemented by extensive, and controlled training (Moreno Luzón, 1993). It is necessary to provide everyone with a level of training that ensures they sufficiently understand the concepts of quality. It is essential that they incorporate their command of tools, techniques and methodology (abilities), as well as an attitude of active listening and co-operation (Randolph, 1995). Training is often used, therefore, not only to prepare for the use of techniques but also to promote better understanding and instil the principles of total quality management (Moreno Luzón *et al.*, 2001), entwining training with indoctrination (Mintzberg, 1979).

Teamwork also hugely enables the participation of an organisation's members in the effective solution of problems and is used abundantly in establishing commitment and co-operation (Bowen and Lawler, 1992).

Likewise, delegating, either individually or collectively, which is supported by the active commitment and participation of the organisation's members, contributes decisively to gaining a competitive edge by virtue of quality and reductions in response times (Galbraith, 1994). This is especially important for those units that have to respond quickly to changes in their specific environments and have to carry out qualified, creative work.

Jansen *et al.* (2006) empirically prove the relationship between centralisation, exploitation and exploration. They demonstrate how centralisation has a negative influence on exploratory innovation and does not support exploitative innovation. Since total quality management substantially promotes decentralisation (Hackman and Wageman, 1995), we can therefore propose that through this organisational intervention, both exploitation and exploration activities can be influenced.

On the other hand, in trying to achieve the commitment of the employees through delegating, training and teamwork, a context of trust and support is created. These attributes are what Ghoshal and Bartlett (1994) define as the soft values of an organisational context and what Gibson and Birkinshaw (2004) considered to be key values in facilitating ambidexterity, together with discipline, and stretch. Also, the "mistake acceptance culture" which, in total quality management is proposed instead of the usual "blame culture", and considers a mistake made to be an opportunity for improvement, could contribute to this environment of acceptance and support and, therefore, facilitate ambidexterity. In this environment of trust and support, and without fear of reprisals, creativity can be developed further.

We therefore found a positive link between the practices used in this second dimension of the application of TQM with the meanings of ambidexterity related to behaviour.

It has been proven, as pointed out in the previous section, that individual ambidexterity of managers is closely linked to the level of connectedness a manager has to other organisation members (Mom *et al.*, 2009), and it is hoped that the practices which are associated to people: participatory leadership, teamwork and co-operation greatly benefit the personal connections of managers on all levels of the hierarchy.

On the other hand, extensive and controlled training of managers, which is a pre-requisite of TQM programmes (Moreno Luzón, 1993), is also a facilitating element in this type of ambidexterity, given that it has already demonstrated – as we pointed out in the previous section – how refinement and regeneration of knowledge, skills and experience have a positive effect on ambidexterity (Floyd and Lane, 2000; Hansen *et al.*, 2001; Mom *et al.*, 2009).

In terms of ambidexterity in top management teams, we can see a close link between practices connected with promoting participation, teamwork, co-operation and the meta-construct "TMT behavioural integration" which, as mentioned in the previous section, includes three dimensions: the quality of information exchange, collaborative behaviour, and joint decision making. This was proven to be a boost to TMT ambidexterity (Lubatkin *et al.*, 2006).

In terms of contextual ambidexterity, as previously mentioned, Gibson and Birkinshaw (2004) highlighted the values of discipline, stretch, support and trust as the main dimensions in organisational context. Their research demonstrated that, given the complementarity of the harder elements –discipline and stretch- with the softer elements – support and trust, the more this organisational context is characterised by

an interaction of these values, the greater the level of ambidexterity (Gibson and Birkinshaw, 2004). The collection of values present in the application of TQM, which include those mentioned previously, could therefore be the most influential element for this connection with ambidexterity.

As a result of the previous analysis, we put forward the following propositions:

- P2. The application of practices included in the personal dimension within a total quality management framework boosts ambidexterity in managers
- P3. The application of practices included in the personal dimension within a total quality management framework boosts ambidexterity in top management teams (TMTs).
- P4. The application of practices included in the personal dimension within a total quality management framework boosts contextual ambidexterity

Customers

The moment that marks the leap from closed quality management approaches – principally aimed at assurance, efficiency, process and production control – to open approaches – aimed at the market and with a strategic perspective –, occurred when managers became convinced of the importance of applying the principle of customer satisfaction (Moreno Luzón *et al.*, 2001). This principle is based on the conviction that the results a product or service obtains in the market depend on its adaptation to the desires and needs of the customer (Black and Porter, 1995; Powell, 1995; Tummala and Tang, 1996). Despite the fact that today it seems inconceivable that any modern management might not adopt this perspective, the general acceptance of this conviction is by no means old, and its arrival is closely linked to the widespread application of total quality management.

The objective of satisfying customers introduces a broad spectrum of viewpoints in the firm along with a finalist perspective, which compensates for the trend towards the more closed, instrumentalist approach of continuous improvement and process management. Moving on from the idea of satisfying customers to satisfying potential customers broadens the perspective even more, as it obliges the firm to look at markets from a dynamic viewpoint, and to study market trends prospectively, introducing other variables into the analysis such as the behaviour of competitors and technological innovation.

Another important conceptual leap occurred when firms went from ensuring current or potential customer satisfaction to working towards the satisfaction of all stakeholders or interested parties. Stakeholders are any individual, group or organization that may affect or be affected by the firm's activities (Freeman, 1984). The diversity of these groups is wide and can include employees, shareholders, customers, suppliers, subcontractors, financial institutions, public administration and local community. This objective has led firms to concern themselves with more than just economic aspects and has placed them within a new paradigm, under the name corporate social responsibility, whose aim is to build sustainable relationships between the firm and society.

This spectrum of objectives, in our view, creates greater stretch in the firm; a value exalted by Gibson and Birkinshaw (2004) as key in order for the organizational context to enable ambidexterity.

Stretch is a contextual attribute that encourages the members of an organization to strive to attain ambitious objectives. Establishing a shared ambition, developing collective identity and the skill of endowing personal meaning to the way in which individuals contribute to the general aim of the organisation contribute to establishing stretch (Ghoshal and Bartlett, 1994, 100).

Orientation towards customer satisfaction and that of other stakeholders can inspire managers and employees to find greater meaning in their work, and make an effort, not only in activities of an exploitative nature aimed at improvement, but also to find new and creative ways of reaching those objectives. One example might be the source of the generation of new ideas and the stimulus of the development of exploratory activities that may arise when adopted by the entire organisation in a responsible, collective way, with the aim of minimising the impact of its activities on the environment and maximising the ecological use of resources. A similar scenario would be the implementation of information systems designed to gather suggestions and ideas from employees on new product development.

Despite all the previously mentioned, we are unable to find in the literature any clearly defined relationship between an orientation towards customer satisfaction (and other external stakeholders) and ambidexterity, although we would be bold enough to suggest that, as long as the view of managers and other members of the firm focus exclusively on satisfying current customers, this emphasis will bring about a further imbalance towards exploitation activities, as present customers are a demanding force in terms of complying with the requisites established for products and services. Only if firms broaden their outlook substantially towards potential customers and other stakeholders will there be a balance between both types of activities, which can then influence ambidexterity.

We thus put forward the following propositions:

- P5. The application of practices associated with present customer satisfaction within the framework of total quality management fosters exploitation activities.
- P6. The application of practices associated with potential customer satisfaction within the framework of total quality management has a positive influence on ambidexterity.

The approaches to QM and the different types of ambidexterity

The previous analysis demonstrates how practices derived from the three groups of principles that characterise TQM have an unequal influence on the activities of exploration and exploitation and on different forms of ambidexterity. As indicated in the section containing an introduction to TQM, the two main approaches to QM (QA and TQM) endow an unbalanced degree of importance to the three main dimensions described. QA fundamentally focuses on the design and improvement of processes, although it introduces some elements of the PEOPLE dimension, while, due to its closed nature, it does not contain any of the aspects of the third dimension. TQM has a more intense and balanced treatment of the three dimensions and we could thus put forward some additional proposals as, according to the previous discussion, a bias can be expected towards 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 analysed herein.

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.

- P7.* The application of an advanced, complete TQM approach generates capabilities of ambidexterity in managers.
- P8.* The application of an advanced, complete TQM approach generates capabilities of ambidexterity in the top management team.
- P9.* The application of an advanced, complete TQM approach generates capabilities of ambidexterity in organisational behaviour.
- P10.* The application of a quality assurance (QA) approach does not generate capabilities of ambidexterity, in managers, in teams, or in the organisational context.

In addition, and with regard to structural ambidexterity, no evidence has been found to suggest the existence of a connection between the application of TQM and the creation of organisational units for exploration. Normally, the application of total quality management demands the creation, if it does not already exist, of the quality department and, occasionally, of the customer care department, while the rest of the organisational structure continues practically unaltered. Hence, we do not believe that total quality management specifically stimulates duality in the sense proposed by the studies cited in the analysis of structural ambidexterity. This leads us to put forward a final proposition:

- P11.* Neither QA nor TQM act as drivers of structural ambidexterity.

5. Discussion and conclusions

Theoretical implications

In response to the initial question posed in this study: Can the total quality management encourage ambidexterity? And following the discussion raised, we can draw what we regard as some useful conclusions for subsequent empirical development.

We have found significant, relevant relationships in the three types of ambidexterity linked to behaviour: in the individual ambidexterity of managers, in the top management team and in the behaviour of organisational members.

Quality management introduces, on the one hand, a quality assurance system and diverse process management techniques that allow them to be kept under control and improved. The emphasis on continuous improvement generates, above all, discipline and exploitation activities. Such activities intensely reinforce exploitation and if they are not complemented by development in other dimensions, they may represent a substantial obstacle to ambidexterity.

The emphasis on human aspects, promoted by management leadership, and participation and on ensuring the commitment of employees and teamwork results in an impact on the personal connections of managers the length and breadth of the organization. The approaches of total quality management and EFQM models link up well with these concerns. Broad, regular training of managers renews their knowledge, skills and expertise. Both effects can be expected to be positive for generating ambidexterity in managers on an individual level.

We can expect the emphasis on human aspects to also 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. Likewise, the development of TQM of a combination in the cultural context of hard values – discipline and stretch – and soft ones – trust and support – can favour contextual ambidexterity.

Opening up to the outside environment and widening objectives can be expected to favour ambidexterity to the point where the firm no longer finds itself merely limited to the search for present customer satisfaction and broadens its horizons to potential customers and other external stakeholders.

Moreover we highlight the fact that the implementation of TQM with a human, open approach appears to be a necessary requisite for process management – that is generally present in all its applications – does not create a bias towards exploitation. In addition, 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.

The main contributions of this study to the theory on ambidexterity are: first, the categorisation obtained and the meaning of the different types of ambidexterity analysed. We were aware of the complexity inherent in crossing the two fields of study, and thus we focused our efforts on obtaining a simple typology, as this was the only way it could be useful to our research. Second, our research opens a door that, in our opinion, should be explored by other researchers in the future: to discover the possibilities that TQM provides for developing the theory of ambidexterity.

We have also attempted to simplify the complexity and multidimensionality of TQM (Dale *et al.*, 1999; Moreno Luzón and Peris, 1998). Even respecting and taking into account the variety of principles and practices, we opted for simplicity, only differentiating three categories to enhance clarity as far as possible in the analysis.

Although other studies have previously highlighted the capacity of TQM for confronting paradoxes (Thompson, 1998) and that the use of TQM principles and practices brings up two different models; one mechanistic and the other organic (Prajojo and Sohal, 2004), while, at the same time, allowing for the integration of principles that are, at times, considered as alternatives, such as control and learning (Sitkin *et al.*, 1994), our analysis is pioneering in interpreting TQM from the perspective of ambidexterity, both in relation to managerial behaviour and organisational behaviour, as well as structural ambidexterity.

The conclusions and proposals obtained as a result of this analysis may serve as a starting point for other future studies. Given the extent to which this type of management has been applied over the last 20 years, it can be expected that the social impact of these studies will be relevant.

Managerial implications

It is highly important to underline, as practical implications of our analysis, that intensive application within the framework of the TQM of process management can substantially unbalance ambidexterity towards the exclusive focus on exploitation activities, in which case its full potential becomes reduced or hindered. The same could be suggested in relation to an intensive approach to quality management in terms of current customer satisfaction, as what current customers often demand is a zero defect fit to the commitments acquired by the firm and the search for conformity to these commitments. Only the intense application of more organic, human principles and practices, of decentralisation, cooperation, commitment and participative leadership, as well as the more organic and flexible elements of the commercial factor, in the search for new markets and customers, can have a balancing influence and be complementary to fully developing ambidextrous potential.

The synergy between TQM principles and practices, their disparate influence on ambidexterity, the range and depth of applying TQM principles and practices – above all those that are included in a human context and the opening of new markets – means that these factors are key elements to bear in mind for those organisations that wish to maximise the potential of TQM in order to foster ambidexterity.

It has also been clearly shown, via the analysis of the different QM approaches and their relationship with ambidexterity, that it cannot be established that a closed, relatively undeveloped approach such as quality assurance (QA) could serve as a platform for galvanising these capabilities either on an individual or on an organisational level.

Lastly, highlighting the models for the application of TQM, which have become almost essential for firms wanting to introduce these programmes and obtain the benefits of certification, may play an important role in the connection between the introduction of QM and ambidexterity. So much so, that the EFQM Excellence Model has a more advanced approach to TQM than the ISO 9001 model, which, as we have seen, has a less wide-reaching application of the more galvanising organic elements of exploration, we can thus state that the EFQM Excellence Model could be a more suitable platform for the generation of ambidexterity. In our view, an interesting next step to our study would be to analyse these two models in depth and discover their implications for the generation of these three types of capabilities.

Notes

1. Exploitation and exploration also exist as alternatives that have been put forward in learning (Levinthal and March, 1993) and innovation, in which a distinction is made between exploitative innovation and exploratory innovation (Jansen *et al.*, 2006).
2. In fact, Duncan was the first to coin the term “organizational ambidexterity” in, 1976.
3. Application of ISO Model 9001, the system of quality management more commonly applied, requires the creation of a procedure manual.

References

- Adler, P., Goldoftas, B. and Levine, D. (1999), "Flexibility versus efficiency? A case study of model changeovers in the Toyota production system", *Organization Science*, Vol. 10, pp. 43-68.
- Balbastre, F. and Moreno Luzón, M.D. (2003), "Self-assessment application and learning in organizations: a special reference to the ontological dimension", *Total Quality Management*, Vol. 14 No. 3, pp. 367-88.
- Benner, M.J. and Tushman, M. (2002), "Process management and technological innovation: a longitudinal study of the photography and paint industries", *Administrative Science Quarterly*, Vol. 47, pp. 676-706.
- Birkinshaw, J. and Gibson, C.B. (2004), "Building ambidexterity into an organization", *MIT Sloan Management Review*, Vol. 45, pp. 47-55.
- Black, S. and Porter, L.J. (1995), "An empirical model for total quality management", *Total Quality Management*, Vol. 6 No. 2, pp. 149-64.
- Bou-Lusar, J.C., Escrig-Tena, A.B., Roca-Puig, V. and Beltrán-Martín, I. (2009), "An empirical assessment of the EFQM excellence model evaluation as a TQM framework relative to the MBNQA model", *Journal of Operations Management*, Vol. 27, pp. 1-22.
- Bouchikhi, H. (1998), "Living with and building on complexity: a constructivist perspective on organizations", *Organization*, Vol. 2, pp. 217-32.
- Bowen, D.E. and Lawler, E.E. III (1992), "The empowerment of service workers: what, why, how and when", *Sloan Management Review*, Vol. 33 No. 3, pp. 31-9.
- Brown, S.L. and Eisenhardt, K.M. (1997), "The art of continuous change: linking complexity theory and time paced evolution in relentlessly shifting organizations", *Administrative Science Quarterly*, Vol. 42, pp. 1-34.
- Brown, S.L. and Eisenhardt, K.M. (1998), *Competing on the Edge: Strategies as Structured Chaos*, Harvard Business School Press, Boston, MA.
- Burns, T. and Stalker, G.M. (1961), *The Management of Innovation*, Tavistock Publications, London.
- Carlsson, B. (1989), "Flexibility and the theory of the firm", *International Journal of Industrial Organization*, Vol. 7, pp. 179-203.
- Craig, T. (1995), "Achieving innovation through bureaucracy: Lessons from the Japanese brewing industry", *California Management Review*, Vol. 38 No. 1, pp. 8-36.
- Dale, B.G., Boaden, R.J. and Lascelles, D.M. (1999), "Total quality management: an overview", in Dale, B.G. (Ed.), *Managing Quality, Vol. 1*, Blackwell, Oxford.
- Dean, J.W. and Bowen, D.E. (1994), "Management theory and total quality: improving research and practice through theory development", *The Academy of Management Review*, Vol. 19 No. 3, pp. 392-418.
- Dean, J.W. and Evans, J.R. (1994), *Total Quality Management, Organization and Strategy*, West, St Paul, MN.
- Deming, W.E. (1986), *Out of the Crisis*, MIT Press, Cambridge, MA.
- Dougherty, D. (1995), "Managing your core incompetences for innovation", *Entrepreneurship Theory and Practice*, Vol. 19, pp. 113-35.
- Duncan, R.B. (1976), "The ambidextrous organization: designing dual structures for innovation", in Kilmann, R.H., Pondy, L.R. and Slevin, D. (Eds), *The Management of Organization, Vol. 1*, North-Holland, New York, NY, pp. 167-88.

- Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21, pp. 1105-21.
- European Foundation for Quality Management (1999), *Introducing Excellence*, EFQM, Brussels.
- European Foundation for Quality Management (2010), *EFQM Excellence Model*, EFQM, Brussels.
- Floyd, S.W. and Lane, P.J. (2000), "Strategizing throughout the organization: managing role conflict in strategic renewal", *Academic Management Review*, Vol. 25, pp. 154-77.
- Freeman, R.E. (1984), *Strategic Management: A Stakeholder Approach*, Pitman, Boston, MA.
- Galbraith, J.R. (1982), "The stages of growth", *Journal of Business Strategy*, Summer, pp. 70-9.
- Galbraith, J.R. (1994), *Competing with Flexible Lateral Organizations*, Addison Wesley, New York, NY.
- Ghemawat, P. and Costa, J. (1993), "The organizational tension between static and dynamic efficiency", *Strategic Management Journal*, Vol. 14, pp. 59-73.
- Ghoshal, S. and Bartlett, C.A. (1994), "Linking organizational context and managerial action: the dimensions of quality of management", *Strategic Management Journal*, Vol. 15, pp. 91-112.
- Ghoshal, S. and Bartlett, C.A. (1997), *The Individualized Corporation*, Harper Collins, New York, NY.
- Gibson, C.B. and Birkinshaw, J. (2004), "The antecedents, consequences, and mediating role of organizational ambidexterity", *The Academy of Management Journal*, Vol. 47 No. 2, pp. 209-26.
- Gupta, A.K., Smith, K.G. and Shalley, C.E. (2006), "The interplay between exploration and exploitation", *Academic Management Journal*, Vol. 49, pp. 693-706.
- Hackman, J.R. and Wageman, R. (1995), "Total quality management: empirical, conceptual, and practical issues", *Administrative Science Quarterly*, Vol. 40, pp. 309-42.
- Hambrick, D.C. (1994), "Top management groups: a conceptual integration and reconsideration of the team label", in Staw, B.M. and Cummings, L.L. (Eds), *Research in Organizational Behavior*, Vol. 16, JAI, Greenwich, CT, pp. 171-214.
- Hansen, M.T., Podolny, J.M. and Pfeffer, J. (2001), "So many ties, so little time: a task contingency perspective on the value of social capital in organizations", *Soc. Capital Organ.*, Vol. 18, pp. 21-57.
- He, Z. and Wong, P. (2004), "Exploration vs exploitation: an empirical test of the ambidexterity hypothesis", *Organizational Science*, Vol. 15 No. 4, p. 481.
- Jansen, J.J.P., Van Den Bosch, F.A.J. and Volberda, H.W. (2006), "Exploratory innovation, exploitative innovation and performance: effects of organizational antecedents and environmental moderators", *Management Science*, Vol. 52 No. 11, pp. 1661-74.
- Khandwalla, P.N. (1977), *Design of Organizations*, Harcourt Brace Jovanovich, New York, NY.
- Kogut, B. and Kulatilaka, N. (2001), "Capabilities as real options", *Organization Science*, Vol. 12 No. 6, pp. 744-58.
- Lawrence, P.R. and Lorsch, J.W. (1967), *Organization and Environment. Managing Differentiation and Integration*, Harvard Graduate School, Boston, MA.
- Levinthal, D.A. and March, J.G. (1993), "The myopia of learning", *Strategic Management Journal*, Vol. 14, Winter, pp. 95-112.
- Lewis, M.W. (2000), "Exploring paradox: toward a more comprehensive guide", *Academy of Management Review*, Vol. 25, pp. 760-77.

- Lubatkin, M.H., Simsek, Z., Ling, Y. and Veiga, J.F. (2006), "Ambidexterity and performance in small- to medium-sized firms: the pivotal role of top management team behavioral integration", *Journal of Management*, Vol. 32, pp. 646-72.
- March, J.G. (1991), "Exploration and exploitation in organizational learning", *Organization Science*, Vol. 2 No. 1, pp. 71-87.
- Marks, M.A., Mathieu, J.E. and Zaccaro, S.J. (2001), "A temporally based framework and taxonomy of team processes", *The Academy of Management Review*, Vol. 26, pp. 356-76.
- Mintzberg, H. (1979), *The Structuring of Organization*, Prentice-Hall, Englewood Cliffs, NJ.
- Mom, T.J., Van den Bosch, F.A.J. and Volberda, H.W. (2009), "Understanding variation in managers' ambidexterity: investigating direct and interaction effects of formal structural and personal coordination mechanisms", *Organization Science*, Vol. 20 No. 4, pp. 812-28.
- Moreno Luzón, M.D. (1993), "Training and the implementation of quality programmes by a sample of small and medium sized firms in Spain", *International Journal of Quality & Reliability Management*, Vol. 10 No. 3, pp. 6-19.
- Moreno Luzón, M.D. and Lloria, B. (2008), "The role of non-structural and informal mechanisms of integration and coordination as forces in knowledge creation", *The British Journal of Management*, Vol. 19 No. 3, pp. 250-75.
- Moreno Luzón, M.D. and Peris, F. (1998), "Strategic approaches, organizational design and quality management: integration in a fit and contingency model", *The International Journal of Quality Science*, Vol. 3 No. 4, pp. 328-47.
- Moreno Luzón, M.D., Peris, F. and Gonzalez, T. (2001), *Gestión de la calidad y diseño de organizaciones*, Prentice-Hall, Englewood Cliffs, NJ.
- Nelson, R. and Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Harvard University Press, Cambridge, MA.
- Nonaka, I. and Takeuchi, H. (1995), *The Knowledge-creating Company*, Oxford University Press, Oxford and New York, NY.
- O'Reilly, C.A. and Tushman, M.L. (2004), "The ambidextrous organization", *Harvard Business Review*, Vol. 82 No. 4, pp. 74-81.
- O'Reilly, C.A. and Tushman, M.L. (2008), "Ambidexterity as a dynamic capability: resolving the innovator's dilemma", *Research in Organizational Behavior*, Vol. 28, pp. 185-206.
- Porter, M.E. (1980), *Competitive Strategy*, Free Press, New York, NY.
- Porter, M.E. (1996), "What is strategy?", *Harvard Business Review*, Vol. 74 No. 6, pp. 61-81.
- Powell, T.C. (1995), "Total quality management as a competitive advantage. A review and empirical study", *Strategic Management Journal*, Vol. 16, pp. 15-37.
- Prajogo, D.I. and Sohal, A.S. (2004), "The multidimensionality of TQM practices in determining quality and innovation performance – an empirical examination", *Technovation*, Vol. 24, pp. 443-53.
- Purser, R.E. and Pasmore, W.A. (1992), "Organizing for learning", in Woodman, R. and Pasmore, W. (Eds), *Research in Organizational Change and Development*, Vol. 6, JAI Press, Greenwich, CT, pp. 37-114.
- Raisch, S. and Birkinshaw, J. (2008), "Organizational ambidexterity: antecedents, outcomes and moderators", *Journal of Management*, Vol. 34 No. 3, pp. 375-409.
- Randolph, W.A. (1995), "Navigating the journey to empowerment", *Organizational Dynamics*, Vol. 23 No. 4, pp. 19-32.
- Rothaermel, F.T. and Alexandre, M.T. (2009), "Ambidexterity in technology sourcing: the moderating role of absorptive capacity", *Organization Science*, Vol. 20 No. 4, pp. 759-80.

-
- Senge, P.M. (1990), *The Fifth Discipline*, Doubleday/Currency, New York, NY.
- Simsek, Z. (2009), "Organizational ambidexterity: towards a multilevel understanding", *Journal of Management Studies*, Vol. 46 4 June, pp. 597-624.
- Simsek, Z., Veiga, J.F., Lubatkin, M. and Dino, R. (2005), "Modeling the multilevel determinants of top management team behavioral integration", *Academy of Management Journal*, Vol. 48, pp. 69-84.
- Simsek, Z., Heavey, C., Veiga, J.F. and Souder, D. (2009), "A typology for aligning organizational ambidexterity's conceptualizations, antecedents and outcomes", *Journal of Management Studies*, Vol. 46 5, July, pp. 864-94.
- Sitkin, S.B., Sutcliffe, K.M. and Schroeder, R.G. (1994), "Distinguishing control from learning in total quality management: a contingency perspective", *The Academy of Management Review*, Vol. 19 No. 3, pp. 537-64.
- Smith, W.K. and Tushman, M.L. (2005), "Managing strategic contradictions: a top management model for managing innovation streams", *Organization Science*, Vol. 16 No. 5, p. 522.
- Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-33.
- Thompson, K.R. (1998), "Confronting paradoxes in a total quality environment", *Organization Dynamics*, Winter, pp. 62-74.
- Tummala, V.M. and Tang, C.L. (1996), "Strategic quality management. Core concepts and comparative analysis", *International Journal of Quality & Reliability Management*, Vol. 13 No. 4, pp. 8-38.
- Tushman, M.L. and O'Reilly, C.A. III (1996), "Ambidextrous organizations: managing evolutionary and revolutionary change", *California Management Review*, Vol. 38 No. 4, pp. 8-30.
- Tushman, M.L. and O'Reilly, C.A. III (1997), *Winning through Innovation*, Harvard Business School Press, Boston, MA.
- Zollo, M. and Winter, S. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13 No. 3, pp. 339-51.

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