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Organisational learning and organisational design

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Abstract

Purpose – The purpose of this paper is to explore a new idea presenting the possible relationship between organisational learning and organisational design.

Design/methodology/approach – The establishment of this relation is based upon extensive literature review.

Findings – Organisational learning theory has been used to understand several organisational phenomena, like resources and competencies, tacit knowledge or the role of memory in the organisation; however, it is difficult to identify fits and consequent misfits between organisational learning and the organisational design.

Research limitations/implications – This is a theoretical paper, so there is a possible limitation, regarding the lack of empirical support.

Practical implications – At the end of the paper a number of recommendations regarding the organisational design are suggested, in order to promote organisational learning in the firms.

Originality/value – This paper identifies some links between organisational learning and organisational design, providing the grounds for a subsequent development and empirically testing of those relations.

Keywords Learning organizations, Organizational design

Paper type Literature review

Introduction

The knowledge-based view of the firm is a recent extension of the resource-based view of the firm very adequate to the present economic context. Knowledge is a very special resource in the firm and knowledge management should respect its characteristics. The nature of most knowledge-based resources is mainly intangible and dynamic, allowing for idiosyncratic development through path dependency and causal ambiguity. Designing organisations in the present economic context should take into account organisational learning, as knowledge is considered to be one of the most important resources to the creation of sustainable competitive advantage.

Organisational learning seems to develop competencies that are valued by the clients, hardly imitable, and, as a consequence, they contribute to the competitive advantage of the firm. However the organisational learning process remains a "black box" to all researchers (Crossan and Berdrow, 2003). It is difficult to identify fits and consequent misfits between the organisation learning and the organisational design, but we will try to do it using the literature.

In the information processing view, organisational designs are seen as a set of consistent choices determined by contextual factors such as the organisation's strategy and its environment (Burton and Obel, 2004). Considering that the design of the organisational structure is contingent to the strategy the organisation pursues (e.g. Burton and Obel, 2004), we will try to enlighten the impact organisational learning can have on the organisational design.

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According to Eriksen (2005) organisational designs have frequently been classified using systems metaphors, and the classical distinction between the organic and mechanistic designs offer two opposites in a continuum of design choices (cf. Burns and Stalker, 1961). Organic systems are frequently described as loosely coupled systems where there is little formalisation, where complex integrating mechanisms are used, and decision-making is delegated. In contrast, mechanistic organisations are highly formalised and centralised, and tend to use less complex integration mechanisms (Miller and Dröge, 1986; Lawrence and Lorsch, 1967; Mintzberg, 1979).

There are different ways of thinking organisational learning

The domain of strategic management has developed a fertile field of investigation that allow researchers to search for the best perspectives in analysing key aspects that influence organisational success. One of the possible perspectives is organisational learning as some authors have identified (Mintzberg *et al.*, 1998; Crossan and Hulland, 2002). This approach to strategic management should be very important, as organisational learning might turn out to be the unique sustained competitive advantage of the firm (Geus, 1988). Unfortunately, though there is large literature on organisational learning, this subject is rarely associated to strategic topics (Crossan and Berdrow, 2003). The concepts of learning and capability development only recently have been considered in the context of the firm's strategic development, exploring the differences in organisational resources and assets (Lei *et al.*, 1996), as described by Prahalad and Hamel (1990) and Collis (1991).

Knowledge management literature associates superior knowledge bases, resulting from organisational learning, to superior firm performances (Senge, 1990; Garvin, 1998), as well as it presents differences in knowledge inventories as the basis of competitive advantage (Miller, 2002). A superior knowledge base can be associated to higher strategic flexibility and faster reaction to environment changes (Volberda, 1996), so, knowledge is considered to be one of the most important assets to the creation of sustainable competitive advantage (Umemoto, 2002).

The ontological dimension of organisational learning (the subject who learns) is repeatedly presented in the literature in two levels, the individual one and the collective one. There is a wide recognition of the coexistence of organisational learning at both levels. March (1991) presents us in his paper the concept of mutual learning, considering that both, the individual and the organisation, learn: the organisational knowledge is leveraged through the individuals, in different ways, as instruction, doctrine, or exemplification. Simultaneously, according to March, the organisational code adapts itself to the beliefs of the employees. This way the mutual learning produces results on the individual and organisational levels.

There are several different definitions and concepts of organisational learning, and there is no universal agreement on the phenomenon. However, most researchers consider that organisational learning is the product of organisational members' involvement in the interaction and sharing of experiences and knowledge. This shared form of knowledge is bigger than the simple added of the individuals' learning capacities. This implies that individual learning is a necessary, but not sufficient, condition for organisational learning to occur. The information distributed through the organisation's members is shared and interpreted in an organisational way. Even though, individual learning and organisational learning are some how of different

essences; the former is essentially a cognitive process, and the last is mainly a social process (Tetrick and Da Silva, 2003).

There is an argument much used that states that organisational learning is a particular form of learning developed in organisations through key individuals, which can be associated to subsequent organisational changes (Cook and Yanow, 1995). There are some anthropological studies that have verified that these key individuals learn to be able to teach the rest of the population. This phenomenon is frequently associated to renewing processes (Czarniawska, 2003).

Another approach to organisational learning considers that organisations learn because they have capabilities that are identical, or equivalent, to those individuals have and that allow them to learn. This approach looks at organisations as if they were individuals. Although different, both perspectives address the subject of organisational learning from a similar point-of-view: the nature of the organisational learning is, implicitly or explicitly, associated to the meaning of individual learning. This way, a relation between organisational learning and the theories of cognition can be established. As a result, this perspective on organisational learning is referred to as the "cognitive perspective" (Cook and Yanow, 1995).

The cognitive perspective presents the fragility of being to close to individual cognition theories, which are controversial, complex and multiple. As a consequence, a group of criticisms arise:

- the ones directly referring to the ontological aspect of considering the organisation as a cognitive entity;
- the ones about the complexity of the phenomenon;
- the ones referring to the difficulty of verifying if organisational learning is comparable to individual learning; and
- the ones on the association that is being done between organisational learning and organisational change (Cook and Yanow, 1995).

Miller (1996) dedicated himself to collect bibliography on organisational learning, synthesising the literature in a typology guided by two dimensions: voluntarism vs determinism, and method vs emergence. The first one reflects the way organisational actions are limited, distinguishing the free and autonomous organisational learning from the one that is oriented through cognitive, political, ideological or resource-based structures. The second dimension reflects the way organisational thinking and action is practiced, distinguishing organisational learning that is guided by concrete methodological analysis, from the organisational learning that is spontaneous and emergent, guided by rituals or individuals guesses.

Organisational learning and the creation of knowledge are processes that have been conceived in several ways (Antal *et al.*, 2003). The diversity and heterogeneity of the contributions make it necessary to describe the concept of organisational learning in different perspectives. The divergence between different approaches has enlarged and still we have not found a unique and common analytical or conceptual model that serves as a framework for academic research (Pawlowsky, 2003).

What is organisational learning?

The scientific conception of knowledge in organisations is still in an early stage of development, although a large and growing body of literature on organisational knowledge, organisational learning, knowledge creation and knowledge management is emerging. In these domains there is also a diversity of concepts, theoretical frameworks, terminologies, hypothesis and evidence (Nonaka and Nishiguchi, 2001; Griffith *et al.*, 2003). The deficiencies in research in the domains of knowledge management, organisational learning and organisational memory remain because of the lack of a common language, and the inexistence of a unifying paradigm that gathers factors influencing work and knowledge. As a result, there is a necessity for the development of a common vocabulary in this research field (Croasdell *et al.*, 2003).

Organisational learning has been defined following Miller as the knowledge acquisition made by actors (individuals and groups) when these can and are available to apply it in the decision making process, or use it to influence others within the organisation (Miller, 1996). The concept of organisation has evolved, so has the research focus. The research based on the traditional paradigm considered that learning was a process mainly focused on the acquisition, the distribution and the storage of knowledge in the memory. The research that is being conducted within the new paradigm, recently developed, focuses on way the organisation processes information and generates knowledge (Antal *et al.*, 2003).

The new forms of organisation also include some international forms. Referring to the international dimension of organisational learning Martin and Salomon (2003) present us large bibliography to support it. According to these authors, there is literature supporting the relevancy of organisational learning in the propensity of the firm to transfer knowledge to the outside. The "outside" relates to the transfer of knowledge between different locations of multinational organisations. The aspects of organisational learning within multinational firms (Marcharzina *et al.*, 2003), through strategic alliances (Child, 2003), in international joint ventures (Lyles, 2003), or supply nets (Lane, 2003) are some examples of how organisational learning may achieve that international dimension. However, it is still beyond total understanding how organisational learning might affect the foreign investments options (Martin and Salomon, 2003).

Since Cyert and March (1963) (Pawlowsky, 2003) first used this expression, and particularly since the work by Argyris and Schön (1978) (Pawlowsky, 2003), the concept of organisational learning has been used in different ways and in several disciplines. The amount of literature on this subject that has come out in the last two decades is huge (Pawlowsky, 2003). In the last decade, has emerged some literature establishing the relationship between the organisational capabilities and the competitive performance of the firm. Simultaneously to this, the interest on the concept of organisational learning has been renovated. Although this concept triggers organisational theorists since long, the proposition that competitive advantage emerges from firm specific competences and capabilities, turned this subject into a fundamental aspect of the domains of competitive strategy and organisational behaviour (Pisano, 2000), and authors work now on searching for associations between organisational learning and firm performance (e.g. Ambler and Styles, 2002).

Huizing and Bouman's definition of knowledge management is a good example of the work being done to involve organisational learning in the strategic concepts:

according to theses authors, knowledge management is the organisational discipline bridging between information demand and supply, creating a support for organisational learning (Huizing and Bouman, 2002). This relationship has been empirically developed and presented in literature (Crossan *et al.*, 1999; Bontis *et al.*, 2002; Crossan and Hulland, 2002; Crossan and Berdrow, 2003) creating a parallelism between knowledge management strategies and organisational learning flows. As Antal *et al.* (2003) put it:

> There are two perspectives in the organisational learning domain, one considering the pre-existing knowledge that is shared and used, and another analysing how new knowledge is created.

Organisational learning is a social phenomenon. Each individual's learning depends upon the knowledge that other members of the organisation possess (Figueiredo, 2003). The social interaction facilitates not only the communication and coordination, but also learning. The meaning, the understanding and the learning are defined according to a context. Learning through the identification with the organisation is more powerful than trying to "teach" the individuals using incentives. Learning is located at an entity that is why it is so difficult to unlearn (Kogut and Zander, 1996). There are different levels of learning that coexist in the organisation, from individual learning to team learning and organisational learning. Employees require opportunities to share and learn in groups (Saint-Onge and Armstrong, 2004).

How can we find organisational learning in the organisations?

In order to leverage knowledge-based resources throughout the organisation, the firm should promote the organisational learning (Tetrick and Da Silva, 2003). Knowledge diffusion and leveraging inside the organisation creates efficiency in addiction to knowledge transfer (Hitt *et al.*, 2001a). The capabilities and the knowledge associated to competencies create through time, historical dependence or path dependence (Collis, 1991; Winter, 1987). This will develop barriers to imitability, as it originates some difficulties for other firms to recreate the unique historical evolution of each organisation that truly produces its competitive advantage (Lei *et al.*, 1996). Through the use of dynamic competencies, the organisation integrates builds and reconfigures its internal and external capabilities to face the fast changing environments (Teece *et al.*, 1997). Organisational competence emerges trough time as a process of organisational learning (Levitt and March, 1988; Szulanski, 2003).

There are continuously appearing enhancement and improvement organisational programmes. These programmes proliferate because firms anger to improve and win the markets. However, the failures outnumber the successes, and the improvement rates continue low. This happens because organisations do not understand something fundamental: before people and organisations are able to improve they must learn (Garvin, 1998). Competitive success depends on learning, and most people do not know how to learn (Argyris, 1998).

The training and development programmes are generally used to promote organisational learning. These programmes aim to enhance the firm's knowledge capital. Many of them ensure that members of the organisation have at their disposal the most up to date explicit knowledge in their different expertise areas (DeNisi *et al.*, 2003). However, little attention has been done to the study of the contributions different

organisation's members give to organisational learning and knowledge creation (Antal *et al.*, 2003). Organisational learning agents are the elements of the organisation (Antal *et al.*, 2003) as the individuals (Friedman, 2003), the organisational practices (e.g. leadership) (Sadler, 2003), the groups (e.g. as the board of direction) (Tainio *et al.*, 2003), syndicates (Drinkuth *et al.*, 2003), or even consultants (Antal and Krebsbach-Gnath, 2003).

Can organisations learn? This is not an epistemological question about the cognitive capabilities of the organisation, but an empirical question about the actions of the organisation, to which the answer is yes (Cook and Yanow, 1995). Social aggregates posses more knowledge than individuals. Groups are superior to individuals regarding to total amount of information they can store. However, within an organisation knowledge can be spread in a very unequal way trough different groups and unities (Maier *et al.*, 2003). Unfortunately, there is a scarcity of analytical frameworks and supporting empirical evidence to explain the role of intra-firm learning processes (Figueiredo, 2003).

Where as a simple punctual organisational learning event can be relatively easy to imitate by other firms, the continuous organisational learning activities have a cumulative effect much harder to imitate. As a result, the continuous organisational learning appears to be a characteristic that serves as a base of sustained competitive advantage (DeNisi *et al.*, 2003). Being a process, organisational learning is sentenced to last more time than a simple event (Maier *et al.*, 2003). Causal ambiguity is strongly associated to path dependency or historic dependency (the accumulation of experiences, learning, errors and successes) as it creates a reality (values, language, communication, products, technology, *inter alia*) with multiple and complementary origins hardly replicable. Organisational learning is a way to build causal ambiguity (a way to make difficult for other firms to imitate the organisation) and establishing a base for competitive advantage (Lei *et al.*, 1996).

Organisational learning literature and firm evolution theories evoke several times the expression "path dependency", which reflects clearly the importance of history in social sciences. The historical path is very important because learning – whether social, organisational or individual – is a difficult process, which requires evaluation of the past and even its reconsideration, the change of the present and the confrontation with the future. By definition, learning implies having some kind of sense, or knowledge from experience accumulated to allow change (Fear, 2003).

How does the firm create knowledge about its past and present circumstances? The memory of past events requires the firm to have a notion of its one history, which can become highly problematic. Individual memory is proven to be very fallible, and organisational or collective memory involves serious questions. Both individuals and organisations build their histories as narratives and create myths. They both operate on memories of their shared pasts, and this memories are not necessary precise nor transparent. By story telling (orally or written) it is created knowledge about the past, which is not necessary relevant or correct (Fear, 2003).

Knowledge-based approach opens up new questions about the interaction of the explicit and tacit (Polanyi, 1962) knowledge assets (Spender, 2002). This new organisational reality challenges the traditional planning, organising, leadership, controlling, accounting and other organisational practices (Sveiby, 1997; Guthrie, 2001; Mouritsen *et al.*, 2001). Firms need to redefine their strategies and functions to compete in the knowledge era. The "knowledge intensive firms" represent the new kind of

organisations that employ large proportion of highly qualified staff (the "knowledge workers" – Drucker, 1993; Blackler, 2002). The knowledge-based competitive advantage (Nonaka, 1991; McEvily and Chakravarthy, 2002) is sustainable because the more a firm already knows, the more it can learn ("absorptive capacity" – Cohen and Levinthal, 1990). Knowledge management gathers its creation and transfer (Sveiby, 1996; Nonaka *et al.*, 2000; Buckley and Carter, 2000; Choo, 2002; Zack, 2002).

Following the words by Nonaka (1991) "... the only true lasting competitive advantage is knowledge...", we are able to find some related concepts like the knowledge-based organisation (Blackler, 2002) and the knowledge-based advantage (McEvily and Chakravarthy, 2002). These authors recognise that non-observable factors have impact on firm performance. Those factors, as management capabilities and competences, technical knowledge or tacit organisational routines, may turn out to be the main determinants of firm performance (Dess *et al.*, 1995).

Organisational learning is the improvement of the organisational knowledge base. We should be able to distinguish knowledge from learning. Knowledge is made of what we know at a certain point in tine. Learning is made of the accumulation and the modification of what we know; it is the dynamics, or change process, of knowledge (Burton and Obel, 2004). Learning is related to knowledge, in the way that it is the act of acquiring knowledge (Cook and Yanow, 1995). Time constitutes one of the factors that influences learning in the organisations (Weber and Antal, 2003). Tough, there is a temporal dimension of organisational learning.

The different organisational levels at which organisational learning occurs also introduce some dynamism in the concept. Garvin (1998) proposes three levels in the development of organisational learning. The first phase corresponds to the cognitive level. Organisational members are exposed to new ideas; as a consequence they expand their knowledge and start thinking in a different way. The second phase is behavioural. Employees start to internalise new perspectives and as a consequence they alter their behaviours. The third and last phase is when performance improvement occurs. This happens when the change in behaviour lead to measurable improvements in results (superior quality, better delivery, market share value increase, or other tangible profits).

It is quiet small the number of analyses and empirical evidence gathered in order to explain the role of learning processes within the organisations. Even though, the author synthesised several contributions from literature into a typology considering four processes; two knowledge acquisition mechanisms and two knowledge conversion mechanisms (Figueiredo, 2003).

Regarding the knowledge acquisition mechanisms, the author established two organisational learning processes: external knowledge acquisition and internal knowledge acquisition. The first represents the processes through which individuals acquire tacit or codified knowledge from the exterior of the organisation (like overseas training programs). The second represents the processes through which individuals acquire tacit or codified knowledge by performing different tasks at the organisation (like product development).

Regarding the knowledge conversion mechanisms, the author established two organisational learning processes: knowledge socialisation and knowledge coding. The first represents the processes through which individuals share their tacit knowledge – mental models, technical aptitudes (like in meetings and shared problem solving). The

second represents the processes through which individual tacit knowledge (or part of it) becomes explicit, articulated in concepts, available to all in organised and accessible supports and easy to understand (like in systematic documentation and internal seminars). It is immediate the identification of the influence of the socialisation, externalisation, combination, internalisation (SECI) model by Nonaka and Takeuchi (1995) in this typology by Figueiredo.

Another author, Pawlowsky (2003), presents us an organisational learning simple but very clear model, as in Figure 1.

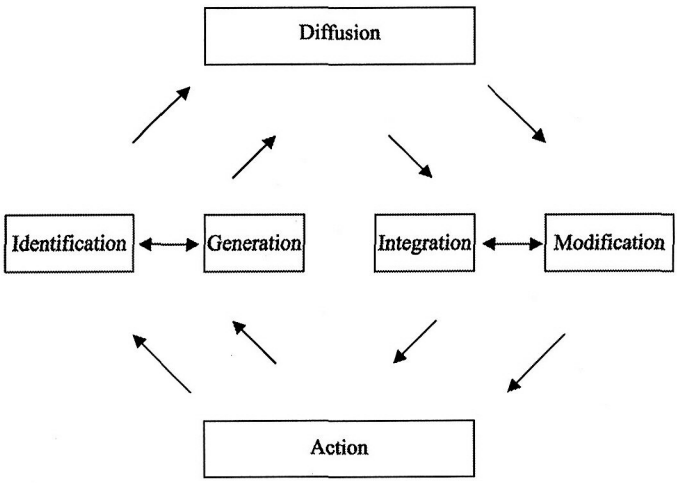
Basically, the process phases of organisational learning are described in terms of four steps, which continuously repeat themselves and are not necessarily sequential (Pawlowsky, 2003):

(1) The identification of information that seems relevant to learning, to the creation (generation) of new knowledge, or both (e.g. Nonaka's "socialisation" (Nonaka, 1994)).

(2) The exchange and diffusion of knowledge, either from the individual to the collective level or at the collective level itself (e.g. similar to Pawlowsky's prior reference, we can establish a parallelism between this phase and the "externalisation" of the Nonaka and Takeuchi (1995) SECI model).

(3) The integration of knowledge into existing knowledge systems at a collective level, an individual level, or both, or into procedural rules of the organisation, whereby either integration or modification of the adopting system can take place (e.g. we can also establish here a parallelism between this phase and the "combination" of the Nonaka and Takeuchi (1995) SECI model).

(4) The transformation of the new knowledge into action and the reapplication of the knowledge into organisational routines, so that it has effect on organisational behaviour (e.g. the development of new leadership styles or new products and services).



Source: Pawlowsky (2003)

Figure 1.
A simplified process model of organisational learning

Organisational learning is a dynamic process that does not happens only through time, but also through different levels or dimensions of the organisation. The dynamics is created through the tension between the organisational assimilation of new knowledge developed at individual level (feed-forward), and the use and individual exploration of organisational pre-existing knowledge (feedback). This tension occurs because organisational learning is not only the innovative process associated to feed-forward, but also the feedback process, which generates ways to explore what has already been learnt (Crossan *et al.*, 1999).

Crossan and Hulland (2002) use an organisational learning framework – developed in 1997 (Crossan *et al.*, 1997; Crossan and Hulland, 2002) and latter used by several other authors (Mintzberg *et al.*, 1998; Crossan and Hulland, 2002; Crossan *et al.*, 1999; Bontis *et al.*, 2002; Crossan and Berdrow, 2003) – to demonstrate the relationship between learning, knowledge and strategy. According to the authors (Crossan and Hulland, 2002) there are two organisational learning flows: feed-forward and feedback, corresponding to the two knowledge management strategies presented by March (1991), exploration and exploitation.

Exploration consists on the development of learning routines that the organisation establishes to ease the development of new products and processes. Flexibility, research, risk taking, experimenting and innovation are significant components of this knowledge management strategy.

Exploitation consists on the development of learning routines to refine products, processes and pre-existing knowledge. Choice, production, efficiency, selection, implementation and execution are significant components of this knowledge management strategy. Increases in the use of this strategy are associated to decreases in firm performance variability.

Feed-forward learning flows correspond to learning processes that go from the individual to the organisation, where as feedback learning flows represent the impact that organisational learning has at individual level (Crossan and Berdrow, 2003), an evident parallelism can be drawn.

Feed-forward learning flows correspond to the exploration knowledge management strategy and it comprehends the individual learning effort to develop new applications, products or processes. This kind of learning involves individual acts of creation, experimentation and innovation, having in perspective the use of future knowledge. This learning flow moves to the organisational level and wide-spreads the individual contributions. Feed-forward – the transfer of knowledge from the individual to the organisation – corresponds to the exploration (Crossan, 2004).

Feedback learning flows correspond to the exploitation knowledge management strategy and it comprehends all the organisational learning potential to refine pre-existing knowledge and reuse it, applying current collective knowledge. This learning flow moves from the organisational level to the individual level, wide-spreading the most efficient practices. Feedback consists in getting institutionalised learning back to the individuals that means it corresponds to the exploitation (Crossan, 2004).

Crossan (2004) considers that there are important implications in balancing the tension between exploration and exploitation. According to the author, a firm that manages well organisational learning is able to develop new and innovative ideas, as

well as institutionalise and bring learning to the individuals and apply it in the organisation.

The problem of balancing exploration and exploitation is exhibited in distinctions made between the refinement of an existing technology and the invention of a new one (Winter, 1987; March, 1991; Levinthal and March, 1981). Organisations learn from experience how to divide resources between exploration and exploitation. Compared to returns from exploitation, returns from exploration are systematically less certain, more remote in time and organisationally more distant from the locus of action and adoption. Organisations, through adaptive processes, characteristically improve exploitation more rapidly than exploration. The advantages of exploitation cumulate. Each increase in competence at an activity increases the likelihood of rewards for engaging in that activity, thereby further increasing the competence and the likelihood of rewards (March, 1991).

Comparing both strategies according to dimensions as efficiency and efficacy, it seams reasonable to suggest two propositions: efficacy shall be more close to exploration, as efficacy is driven to the exterior and benefits from innovation; where as efficiency shall be more close to exploitation, as efficiency is driven to the interior and benefits from the refinement of processes. Tallman (2001) presents us the differences between both strategies regarding the return over time: exploitation generates present rents; on the contrary, exploration originates the capability to generate future rents.

Organisations divide their attention and other resources between the two kinds of activities; exploration – the pursuit of new knowledge, of things that might come to be known; and exploitation – the use and development of things already known (Levinthal and March, 1981). Lovas and Ghoshal (2000) propose that the combination of both strategies is possible. According to these authors, firms that apply both strategies in parallel will obtain synergies and best performances in the long run, and for several other authors the combination of both strategies is also an important option (Knott, 2002; Ichijo, 2002; Bierly and Daly, 2002).

Both strategies are not mutually exclusive, the ideal situation for the firm might be the balance between them (Zack, 2002). Exploration allows for knowledge creation that can drive the firm into news markets and present new products, maintaining the old ones. Exploitation generates funding to support innovation costs. Exploration without exploitation is not economically sustainable in the long term, apart from subsidised activities. Exploitation without exploration might result, in the long run, in exploring obsolete knowledge. Zack (2002) calls the organisations that are able to combine and integrate both strategies as innovators. The application of the two strategies is not conflicting, for these are applied in different parts of the organisation, separately in time, and must be coordinated in order to mutually reinforce their effects.

An organisation that engages exclusively in exploration will suffer from the fact that it never gains the returns of its knowledge. An organisation that engages exclusively in exploitation will suffer from obsolescence. The basic problem confronting an organisation is to engage in sufficient exploitation to ensure its current viability and, at the same time, to devote enough energy to exploration to ensure its future viability (Levinthal and March, 1981).

Bierly and Daly (2002) propose the expression bimodal apprentices to call the firms that strongly apply both strategies simultaneously. Such organisations are rare and they do something quite paradoxal; they develop new knowledge, radically different

and innovative and, at the same time, they manage to keep creating value from pre-existing knowledge in the firm in a continuous and incremental way. According to the authors, a big firm should have some advantage over the smaller one in achieving to be a bimodal apprentice, as it is more capable to access the necessary resources and dispose of a complex structure able to manage multiple sub-cultures.

Knott (2002) gathered empirical evidence in support of the proposition that combining both strategies reinforces each one of them. There is a complementary effect between the two opposite strategies: exploitation (static optimisation) and exploration (dynamic optimisation). According to the author, firm success in competitive environments involves exploitation of existing firm competencies, while surviving in dynamic environments involves the exploration of new competencies. Ichijo (2002) presents the dual option as the one involving the use of both strategies in order to be able to manage different knowledge categories. The two strategies are indispensable to enlarge the firm's competitive advantage.

Organisations that choose one of the strategies to rent its knowledge base generally do not use the other one. According to the organisational choice, the firm needs different kinds of structure, culture and organisational capabilities most adequate to the strategy adopted (Bierly and Daly, 2002). However, March (1991) considers that understanding the choices and improving the balance between exploration and exploitation in the organisations are complicated by the fact that returns from the two options vary not only with respect to their expected values, but also with respect to variability, their timing, and their distribution within and beyond the organisation.

What kind of fits (and consequent misfits) can we find?

From the outset, the notion of "strategic integration" is composed of two dimensions: the external fit refers to the integration of organisational learning into the overall business strategy; and the internal fit relates to the internal coherence and mutual reinforcement of the different policies and practices that compose the organisational learning system. From the notion of external integration a contingent perspective might propose the adoption of different organisational learning systems to fit diverse business strategies and organisational contexts. Here, it is the alignment between organisational learning and business strategy that grants knowledge management its strategic status.

Organisational learning has been conceptualised in a limitative way, being frequently described has an emerging process of try and error, or even random. Other reducing perspectives on organisational learning, like presenting it as a rational process from the domain of choosing and decision making, do not capture the richness of the phenomena that is embedded in interpretative systems, communities of practice, dialogue and memory.

But, by considering that organisational learning establishes a relationship between environmental change and business strategy, or even attributing organisational learning the capacity to change that relation over time is a way of recognising that organisational learning is strategically relevant (Crossan and Berdrow, 2003). Therefore, from the notion of external integration we must recognise the importance and necessity for an external fit referring to the integration of organisational learning into the overall business strategy.

The concept of internal fit, on the other hand, calls for the implementation of a specific ideal set of organisational learning practices thought to work best in all

organisations that emerges from the special characteristics organisational learning presents, as literature tells us. Maintaining a balance between exploitation and exploration is complicated because it is difficult to determine what the appropriate balance should be, but also by several ways in which learning itself contributes to imbalances. Learning leads organisations into dynamics of accelerating Exploitation or Exploration, and learning can make positive, or negative, contributions to the competitive position (Levinthal and March, 1981).

Organisations become trapped in one or more of several dynamics of learning that self-destructively lead to excessive exploitation or excessive exploration. These dynamic distortions of the exploitation/exploration balance occur and they are not perverse, they are a consequence of adaptation processes that lead to effective matching of organisational behaviour with environmental conditions (Levinthal and March, 1981). The trade-off between exploitation and exploration emerges as a result of diverging demands for organisational designs in different contexts (Burton and Obel, 2004).

Sometimes exploration drives out exploitation; organisations make an option into experimentation, changed and innovation. Failure leads to search and change that leads to failure that leads to more search, and so on. New ideas and technologies fail and are replaced by other new ideas and technologies. Sometimes exploitation drives out exploration, because returns to exploitation are closer in time and space than are the returns in exploration (Levinthal and March, 1981).

The learning organisation should be the one where organisational learning truly occurs. The learning organisation (Garvin, 1998) is the one that is able to create, to acquire and to transfer knowledge, and, at the same time, it manages to modify its behaviour reflecting new knowledge and new perspectives. This organisation is characterised by presenting special ability in performing five main tasks:

(1) *Systematic problem solving*. This activity makes use of philosophy along side with improving quality methods. In this task there is a permanent search for overcoming difficulties and finding solutions.

(2) *Experimentation*. This activity involves the systematic search and validation of new knowledge. In this task, as in the previous, the use of a scientific methodology is essential, and there are obvious parallels with the problem solving activity. However, experimentation is generally motivated by catching opportunities and not by current difficulties.

(3) *Learn from past experiences*. This activity happens when organisations reanalyse carefully their failures and successes, evaluating them systematically, and recording the correspondent lessons, so that it allows for organisational members to access them in a free and simple way.

(4) *Learning from the others*. This activity reflects the learning that does not come out of self-reflection and analysis. Sometimes the most interesting ideas can be generated from looking around, outside the immediate working environment and acquiring new perspectives.

(5) *Transferring knowledge*. This activity makes learning something more than a local phenomenon. This task allows for knowledge to be leveraged rapidly and efficiently throughout the organisation. Ideas that are widely shared produce maximum impact.

Therefore, from the notion of internal integration we must recognise the importance and necessity for an internal fit referring to the integration these tasks into the organisational learning systems. Organisations learn through individuals that act as agents. Individual learning activities may be promoted or inhibited by a system of factors, which we can denominate as organisational learning system. Organisations may learn if their potential behaviours are changed through information processing systems (Croasdell *et al.*, 2003).

Regarding the misfits, we can gather a number of limitations that organisational learning has to face. There are recurrent errors that organisations do when they try to become a learning organisation (Argyris, 1998):

- Associate learning purely to problem solving activities, which strongly limits it. When this situation occurs, the organisation centres its attention only in identifying and correcting problems. Learning demands critical self-reflection, beyond simple problem solving, to try to identify how, by chance most of the cases, one contributes to organisational problems. This self-analysis should even question if the way problems are being defined and solved is not itself originating problems.
- Considering that organisational learning is a unique and exclusive question of organisational members' motivation, which is wrong. Organisational learning is not automatic, nor fluid, this means, it does not restrict to the immediate consequences of employees correct attitudes or personal dedication. Never the less, some organisations consider this is what organisational learning is about, and develop new organisational structures designed to motivate employees. Do not forget that learning is influenced by the way individuals feel in the organisation, and it also reflects the way they think – the set of cognitive rules and reasoning they make use to design and implement their actions.

The same author (Argyris, 2001) presents us the limits to organisational learning typified in two large groups of physiological mechanisms: individual and organisational. The first one regards the individual barriers to organisational learning, consisting of defensive strategies to avoid vulnerability, risk taking, embarrass, and incompetence demonstrations. The second group relates to the universal phenomena that Argyris (2001) calls defensive organisational routines – the organisational barriers, and these ones can produce misfits. Defensive organisational routines consist of policies, practices and actions that avoid people to experience embarrass or threat and, simultaneously, avoid that they examine the causes of such situations. The communication systems that managers try so hard to perfect also reinforce these kinds of barriers. The organisational routines work as internal barriers to self-understanding and self-examination, so in some cases is a miracle for organisational learning to take place.

Why cannot organisations learn? There must be some kind of misfits that account for that. Organisational learning failures may come from communication failures between three "cultures". The three different cultures compose the organisation and are as follows: operational, engineering and executive cultures. The first one, operational culture, relates to local culture developed in each organisation or unity and it is based upon human interaction. The second one, engineering culture, relates to the elements that design the organisational technology support, and the way it will be used. The last

one, executive culture, consists in maintaining the finance wealth of the organisation, regarding the administration, the investors and the capital markets. When organisations redesign, or reinvent themselves, these cultures might collide and some failures might happen. The author prescribes inter-cultural dialogue in order to promote mutual understanding and develop solutions for the three of them to apply.

How can we establish an organisational design for organisational learning?

Considering the key organisational design variables establishing the classical distinction between the organic and mechanistic designs (corresponding to the two opposites in a continuum of design choices), we can summarise the differences in Table I.

Using this dichotomy we are tempted to say that in designing the organisation for organisational learning it might be better to follow the organic design approach, characterised by low formalisation and centralisation and high integration, instead of considering to follow the mechanistic design approach, characterised by low integration and high formalisation and centralisation.

Management literature often addresses the necessity to have a concept of organisational change adequate to the turbulent and complex business environment. Management faces new patterns and combinations of old variables, as well as fundamental changes in the business logic and the assets used. Innovation, growth and productivity gains do not result from separating tasks and breaking the workflows of the knowledge-intensive operations, but rather from integrating and combining knowledge in order to jointly develop new ideas and solutions through problem solving processes. Being so, one of the main challenges management faces is to understand the roles of knowledge and learning to allow for organisational change and business success (Pawlowsky, 2003). The integration and combination of knowledge is a good way to design the organisation for organisational learning, instead of separating tasks and breaking the workflows of the knowledge-intensive operations.

In order to leverage knowledge-based resources in its interior the organisation should promote organisational learning (Tetrick and Da Silva, 2003). Culture, firm reputation and learning are intangible components of the organisation's resources patrimony (Levitas and Chi, 2002). Learning allows organisations to acquire, change

Mechanistic design	High formalisation	Extensive use of written procedures High degree of task specialisation Strict performance control
	Low integration	Little use of liaison processes Little use of liaison structures
	High centralisation	Little delegation of decision making authority
Organic design	Low formalisation	Little use of written procedures Low degree of task specialisation Relaxed performance control
	High integration	Extensive use of liaison processes Extensive use of liaison structures
	Low centralisation	Extensive delegation of decision making authority

Table I.
Summary of key organisational design variables

Source: Adapted from Miller and Dröge (1986)

and preserve organisational capabilities (Cook and Yanow, 1995). Diffusing and leveraging knowledge within the firm creates efficiency, in addiction to knowledge transfer (Hitt *et al.*, 2001a). There is a knowledge management literature that associates superior knowledge bases, resulting from organisational learning, to superior firm performances (Senge, 1990; Garvin, 1998), as well as it presents differences in knowledge inventories as the basis of competitive advantage (Miller, 2002).

Resources like knowledge, learning capabilities, culture, teamwork and human capital, *inter alia*, are presented as being the ones that most contribute to the firm sustained competitive advantage (Hitt *et al.*, 2001a; Barney, 2001a). Organisational capabilities emerge over time through organisational learning processes (Levitt and March, 1988; Szulanski, 2003). As a consequence, the maintenance of the competitive advantage of the firm might depend upon past decisions and the way employees learn from past experiences (Alvarez and Busenitz, 2001). Leveraging knowledge throughout the organisation enlarges the knowledge base and develops a sharing culture that is a stimulus to organisational learning. These routines are a good way to design the organisation for organisational learning, instead of promoting internal power distances associated to differences in knowledge stocks.

Knowledge intensive firms abandon formal structures and reach coordination through social reward and internal normative systems, instead of hierarchical control. Firm dimension is a relevant factor for these organisations. When knowledge intensive firms grow bigger, they become more bureaucratic (Starbuck, 1992). The structure and the process are among the most mentioned topics on the works of researchers studding the "productive process" of transforming knowledge into knowledge-based products and services. The dilemma between autonomy and control is also frequently mentioned in literature. We find arguments in defence of the resolution of such dilemmas based on cultural and normative processes, rather than using hierarchy and structure (Rylander and Peppard, 2004). Social reward and internal normative systems are a good way to design the organisation for organisational learning, instead of formal hierarchy and structured incentives.

Several organisational learning models associate external change to the necessity to learn. Socio-economic values are changing drastically in many countries, making it essential for organisations to acquire and maintain the ability to perceive the necessities of its multiple internal and external stakeholders. Social dynamic pressures the organisation to learn about different subjects. It would be a mistake to consider that environment changes only produce passive reactions from the organisation. On the contrary, such reaction might even involve technology development or market diversification, if organisations have efficient learning systems management (Antal *et al.*, 2003). A dynamic approach to social change is a good way to design the organisation for organisational learning, allowing for new developments and diversification, instead of a passive view of business.

One principal goal of economics is to help understand innovation and change. It is therefore surprising for many observers that mainstream economics has largely failed to develop a coherent approach to one of the primary means by which individuals innovate and change: learning. The neglect of learning in economics steams in part from the fact that economics is built upon a set of highly stylised assumptions about the behaviour and decision-making processes of economic agents. In the environment based on these assumptions, agents are perfectly rational and able to respond

optimally and instantaneously to changing conditions (Boerner *et al.*, 2003). Recognising that individuals are able to learn from past experiences and that they are not totally rational in their decision-making processes is a good way to design the organisation for organisational learning, instead of considering employees are perfectly rational and able to respond optimally and instantaneously to changing conditions.

There are also some critical positions regarding organisational learning, as the following arguments. Organisations are not able to create knowledge, only individuals can (Lahti and Moilanen, 2004). In rigour, only individuals have the capability to create knowledge, but organisations are the context where learning occurs (Boerner *et al.*, 2003). But there are also some authors in support of the collective dimension of organisational learning. Organisational learning happens, by definition, in an organisational context, where the factors and conditions that model learning can be found (Antal *et al.*, 2003). Learning involves organisational and individual capabilities (Teece *et al.*, 1997). Learning and knowledge creation are activated, shaped and limited by the social constitution of the organisations where it occurs (Child and Heavens, 2003).

The structure of the roles, interests and powers of the different organisational elements generates paradoxes and tensions that origin dynamics impacting on the learning processes. These dynamics associated to the social identification of each organisational element uncover strong emotions. As a consequence, some times organisations do not learn from past relevant experiences, either successes or failures (Antal *et al.*, 2003). Successes and failures may, however, constitute factors that condition organisational learning (Starbuck and Hedberg, 2003) or the employees' emotions (Scherer and Tran, 2003). Considering the social dimension of learning is a good way to design the organisation for organisational learning, instead of considering that learning is only individual and is not influenced by social elements. Organisational structure can be used to strengthen exploration by undermining the effectiveness of exploitation, like failures to recall past lessons, to implement past solutions, to communicate about current problems, all contribute to inefficiency in refining current practice.

In the structure there is an element dedicated to develop the organisational learning routines: the Chief Knowledge Officer (CKO) (Graham and Pizzo, 1996; Lank, 1997; Demarest, 1997; Ruggles, 1998; Parker, 1998; Earl and Scott, 1999; Greco, 1999; Bonner, 2000; Mitchell and Bontis, 2000; Bontis, 2001b; Bontis, 2002a; Reinhardt *et al.*, 2003). It is up to this responsible (Warner and Witzel, 1999) to leader the "brain management" (Roberts, 2000) and the organisational learning systems (Bontis *et al.*, 2002). The CKO focuses on the design of the organisation and application of knowledge (Burton and Obel, 2004). These professionals have very rich and different past organisational positions. Many come from information technology departments, human resources departments, or intellectual property areas, but they all have a strategic and multifunctional vision of the organisation, that is superior to the specific area of specialisation they were in. Generally speaking, we can find these positions of CKO's in centralised, top-down and big dimension structures, but they should also exist in any organisation that proposes to develop knowledge management initiatives (Greco, 1999).

As a consequence of this, we are able to understand that the existence of a knowledge leadership and the human charisma of the CKO may have a role to play in the organisational design for knowledge management, but still there are some organisational factors the CKO has to face with. Albers and Jerke (2004) present, in a much systematised way, the organisational factors that have significant impact in knowledge management:

- the organisational culture (the values reflected in shared behaviour and shared attitudes);
- the organisational leadership (the actions, the words, the ethics and the examples that leaders set);
- the organisational interest in organisational learning (the priority given to and the efforts made in support of the management of organisational learning);
- the organisational knowledge processes (information and knowledge sharing mechanisms, tacit and explicit knowledge exchange, and organisational communication);
- the organisational structure (the hierarchy, the groups, the geographic location and the work space distribution); and
- the organisational technological infrastructure (the hardware and software components used in the communication and in the collaboration between organisational members, and used in the storage, in the transfer, in the location, in the creation and in the integration of knowledge).

The existence of a CKO element in the firm's structure is a good way to design the organisation for organisational learning, instead of considering that learning is an individual aspect of each employee which can not be managed by the firm.

Conclusions

The variety of typologies, taxonomies and theories on organisational knowledge and organisational learning that are presented in the literature, reveals that there is a substantial scientific production on these themes, because of the relevancy researchers identify in them. There is a diversity of concepts, terminologies and definitions reflecting the embryonic state of the theme's theoretical edification; as a consequence, the development of academic studies that bring rigor to a clear relevant subject is needed. It is very interesting the relationship between these topics and organisational design. However, it can be still noticed some lack of cumulative theoretical and empirical development in a very particular field of research associating these topics.

The solidity of a desired and uniform theoretical body accepted by academia will be achieved through the persistence of researchers, combining theoretical deduction to the applied research. But there is still no common language or unifying paradigm that gathers all those researching in organisational knowledge and organisational learning, so there is the necessity to develop a largely accepted vocabulary able to unite researchers. As a consequence, the strategic theory of the knowledge-based view of the firm is confronted with the limitations and criticisms organisational knowledge and organisational learning still arouse.

Although there is much to be done, the impact of organisational learning on organisational design presents some very important characteristics:

- It seams reasonable to assume that in designing the organisation for organisational learning it might be better to follow the organic design approach, characterised by low formalisation and centralisation and high integration, instead of considering following the mechanistic design approach, characterised by low integration and high formalisation and centralisation.
- The integration and combination of knowledge is a good way to design the organisation for organisational learning, instead of separating tasks and breaking the workflows of the knowledge-intensive operations.
- Organisational capabilities emerge over time through organisational learning processes. Knowledge intensive firms abandon formal structures and reach coordination through social reward and internal normative systems, instead of hierarchical control.
- Social reward and internal normative systems are a good way to design the organisation for organisational learning, instead of formal hierarchy and structured incentives.
- A dynamic approach to social change is a good way to design the organisation for organisational learning, allowing for new developments and diversification, instead of a passive view of business.
- Recognising that individuals are able to learn from past experiences and that they are not totally rational in their decision-making processes is a good way to design the organisation for organisational learning, instead of considering employees are perfectly rational and able to respond optimally and instantaneously to changing conditions.
- Considering the social dimension of learning is a good way to design the organisation for organisational learning, instead of considering that learning is only individual and is not influenced by social elements.
- The existence of a CKO element in the firm's structure is a good way to design the organisation for organisational learning, instead of considering that learning is an individual aspect of each employee which can not be managed by the firm.

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