

# LINKING STRATEGY AND THE KNOWLEDGE OF THE FIRM

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## RESUMO

Descobrir as formas pelas quais as empresas desenvolvem e mantêm sua vantagem competitiva é um item de pesquisa central na teoria administrativa. O objetivo deste artigo é apresentar uma contribuição para a discussão que trata o conhecimento da empresa como uma fonte de vantagem competitiva. O artigo afirma que o sucesso da empresa é consequência de sua habilidade no desenvolvimento contínuo de competências essenciais que irão sustentar sua competitividade ao longo do tempo. Competências essenciais são entendidas como os conjuntos de conhecimento que diferenciam uma empresa estrategicamente. A empresa deve descobrir, desenvolver, compartilhar e atualizar o conhecimento que sustenta as atuais e futuras competências essenciais. A administração do conhecimento, por meio de processos de criação e integração de conhecimento, é uma forma de executar essa tarefa.

## ABSTRACT

*Discovering the ways through which firms develop and maintain competitive advantage is a central research stream in management theory. The objective of this paper is to present a contribution to the discussion of the knowledge of the firm as a source of competitive advantage. The paper states that a firm's success is a consequence of its ability in the continuous development of core competencies that will sustain its competitiveness over time. Core competencies are understood as the sets of knowledge that differentiate a company strategically. The firm must discover, develop, share and update the knowledge that sustains the present and future core competencies. Knowledge management, through processes of knowledge creation and integration, is one way of doing this.*

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## PALAVRAS-CHAVE

Vantagem competitiva, competência essencial, conhecimento, administração do conhecimento, aprendizagem organizacional.

## KEY WORDS

*Competitive advantage, core competence, knowledge, knowledge management, organizational learning.*

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## INTRODUCTION

The challenge in discovering the ways through which firms develop and maintain competitive advantage in their respective industries is one of the central research streams in strategic management theory. In the last years, with the increase of international trade as a result of the globalization of the economy, companies have been forced to improve their effectiveness. It is not sufficient to have good results locally; it is necessary to develop international standards of performance. Within this context, the theoretical debate on the development of sustainable and dynamic competitive advantage is becoming more and more relevant.

### Among the intangible and tacit assets, knowledge is the most important resource to confer competitive advantage on a firm.

The approach of industry analysis has been the most often used for the definition of the aspects to be considered in the development of a competitive strategy (Porter, 1980). It has considerable utility and constitutes an invaluable contribution to the field of strategic management. The critique about environmental determinism and the proposition that “organization and environment are becoming interpenetrated in such a way as to diffuse the distinction between the two entities and, incidentally, to blur the distinction between ‘firm’ and ‘market’” (Child, 1997, p. 57-58) show that new approaches are necessary to bridge the existing gap in management studies.

In the last thirteen years, a framework for strategy that combines both internal and external analysis of the organization has emerged, and its basic premise is that its resources drive a company’s performance. This framework is the so-called “resource-based view of the firm” (Wernerfelt, 1984; Peteraf, 1993; Prahalad and Hamel, 1990, among others). This approach proposes that resources are the main determinant of the competitiveness of the firm, in opposition to the approach of the industry analysis, in which the main determinant of the firm’s competitiveness is its industry position.

More recently, the deepening of research in the resource-based view of the firm is establishing an important nexus with other research fields in

management theory, particularly with the knowledge management field, organizational learning field, and management of technology. As a result of this deepening, three implications of the resource-based view of the firm become more relevant. The first is the recognition that resources encompass tangible as well as intangible and tacit assets (Wernerfelt, 1984). The second is the assumption that, among the intangible and tacit assets, knowledge is the most important resource to confer competitive advantage on a firm (Spender and Grant, 1996). The third is that “as firm-specific resources receive more emphasis, questions of how they can be acquired and developed become increasingly relevant, which is the domain of learning” (Moingeon and Edmondson, 1996, p. 9).

The objective of this paper is to present a contribution to the discussion of knowledge and learning as a source of competitive advantage. The paper explores how these concepts could be able to ensure that companies will support the development of dynamic capabilities to sustain competitiveness over time. In this sense, the paper starts with a brief review of the literature on the resource-based view of the firm, using it to support the concept of knowledge of the firm as the key inimitable resource. It is followed by an explanation of learning and knowledge creation and application as a dynamic process, and its link with the competitiveness of the firm. Finally, some comments and conclusions are presented with the intention of the deepening of this subject.

## RESOURCES AND COMPETITIVE ADVANTAGE

### Resource-based view of the firm

Resource endowment has a long tradition in economics with an important early work in this field being that of Penrose (1959), which saw firms as a broader sets of resources. The present discussion is rooted in Wernerfelt’s (1984) work, which presents resources as anything that could be thought of as a strength or weakness of the firm, or as those (tangible and intangible) assets which are tied semi-permanently to the firm. The author gives some examples of resources: brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc.

Wernerfelt’s (1984) approach was quite innovative, presenting a way of using resources as the main source

of competitive advantage, through the development of what the author called “resource position”. By resource position the author meant the possibility of using resources to develop a competitive position more difficult for others to catch up with. In this way, “firms need to find those resources which can sustain a resource position barrier, but in which no one currently has one, and where they have a good chance of being among the few who succeed in building one. They have to look at resources which combine well with what they already have and in which they are likely to face only a few competitive acquirers”(Wernerfelt, 1984, p. 175).

Peteraf (1993) presents another important contribution. According to her point of view about the strategic role of the resources, “a major contribution of the resource-based model is that it explains long lived differences in firm profitability that cannot be attributed to differences in industry conditions. (...) So long as the assets are imperfectly mobile; inimitable, and nonsubstitutable, others firms will not be able to mimic its strategy” (Peteraf, 1993, p. 186). Indeed, the conditions outlined above are reinforced by Barney’s (1991) assertion that “firms cannot expect ‘purchase’ sustained competitive advantages on open markets (...). Rather, such advantages must be found in the rare, imperfectly imitable, and non-substitutable resources already controlled by a firm”. This follows conditions presented by Dierickx and Cool (1989, p. 1510) that state that strategic assets are nontradeable, nonimitable and nonsubstitutable.

The need for a resource difficult to imitate, transfer, buy, sell or substitute (Wernerfelt, 1984; Barney, 1991; Dierickx and Cool, 1989; Peteraf, 1993) and that must have a systemic integration with other resources is therefore the main contribution of the resource-based view of the firm to the development of sustainable competitive strategy. In a more comprehensive way, Schoemaker and Amit (1997) present the distinctive characteristics of strategic assets, including:

- Difficult to trade or imitate.
- Scarce, durable, and not easily substituted.
- Complementary to one another (that is, one asset’s value increases as another asset’s value increases).
- Specialized to the firm (hard to transfer).
- In line with the future strategic industry factors.
- Create value for firm’s shareholders (appropriate).

### Core competencies

Resources may be tangible or intangible, and sometimes it is even difficult to identify the resource we are referring to, but in this discussion “the notion that some resources commanded by a firm, particularly those which are intangible, can be a result of processes by which a firm creates or acquires knowledge about its operations, that is to say, processes of organizational learning” is of particular interest (Drummond, 1997, p. 12-13). The author gives some examples of intangible

## Core competencies are the knowledge sets that provide a competitive advantage to a firm.

resources that are a result of accumulated knowledge and can give competitive advantage to a company: better integration between its many activities so it can respond faster to market demands; higher commitment from the workforce so it provides a better service to clients; and a high rate of innovative and good quality products which attract consumers. Each of these resources is rather intangible and idiosyncratic.

Also with regard to all the six requirements that we saw on the previous session as necessary to feature a strategic asset, “invisible assets such as organizational knowledge or trust between management and labor cannot be traded or easily replicated by competitors since they are deeply rooted in the organization’s history and culture. Such assets accumulate slowly over time. (...) The more firm-specific, the more durable the assets are and the harder they are for competitors to imitate. The more durable the assets are, the smaller the investment required to offset their depreciation” (Schoemaker and Amit, 1997, p. 374).

The resource-based view of the firm and, more specifically, the development of intangible resources establish important connections with the work of Prahalad and Hamel (1990). Wernerfelt (1995, p. 171) regards Prahalad and Hamel’s (1990) work as being “single-handedly responsible for diffusion of the resource-based view into practice”. These authors say that, more important than the development of well defined SBUs with their artificial boundaries that obstruct the spreading of the knowledge in the company, is the “ability to build, at lower cost and more speedily than the competitors, the core competencies that spawn unanticipated products” (Prahalad and Hamel, 1990, p. 81). They understand core

competencies as “the collective learning in the organization, especially how to co-ordinate diverse production skills and integrate multiple streams of technologies” (Prahalad and Hamel, 1990, p. 82). In other words, core competence is “a bundle of skills and technologies that enables a company to provide a particular benefit to customers” (Hamel and Prahalad, 1994, p. 199), and represents a “sum of learning across individual skills sets and individual organizational units” (Hamel and Prahalad, 1994, p. 203), rather than a single discrete skill or technology.

The core competence concept is not new. Leonard-Barton (1992, p. 111-112) explains that “various authors have called them distinctive competencies (Snow and Hrebiniak, 1980; Hitt and Ireland, 1985), core or organizational competencies (Prahalad and Hamel, 1990; Hayes, Wheelright and Clark, 1988), firm-specific competence (Pavitt, 1991), resource deployments (Hofer and Schendel, 1978), and invisible assets (Itami, with Roehl, 1987)”. Despite the terminology, what is clear is that the concept is a useful tool to help us to understand how resources are associated with firms’ performance.

To recognize the core competence of the firm, it is necessary to understand why a firm has superior returns, and what are the distinctive capabilities that sustain it. According to this point of view, competencies or capabilities have a dynamic character, as they have to be improved or even transformed in order to attend environmental changes, in a continuous process. In order to better understand Prahalad and Hamel’s proposition, Rumelt (1994, p. xvi) cites the following main features of their proposal:

1. *Corporate span.* Core competencies span business and products within a corporation. Put differently, powerful core competencies support several products or businesses.
2. *Temporal dominance.* Products are but the momentary expression of a corporation’s core competencies. Competencies are more stable and evolve more slowly than do products.
3. *Learning by doing.* Competencies are gained and enhanced by work.
4. *Competitive locus.* Product-market competition is merely the superficial expression of a deeper competition over competencies.

The flip side of core competencies, or core capabilities, are the core-rigidities. Core rigidities

inhibit innovation and “are activated when companies fall prey to insularity or overshoot an optimal level of best practices” (Leonard-Barton, 1995, p. 55). The management task is to search and develop a new core resource when the actual core is still doing well.

The resource-based view of the firm presents an important contribution to the understanding of how intangible assets can constitute the basis of a competitive strategy and how to identify what are the strategic assets or core competencies that will secure superior returns to the company in the future. Therefore, this theoretical approach doesn’t explain how to develop and establish a dynamic process of generating and transforming these core competencies in order to attend the market demands. The next session of the paper addresses the question of how the organizational learning theory and the knowledge of the firm theory can be helpful to overcome this difficulty.

## THE KNOWLEDGE OF THE FIRM

In opposition to the researchers of “structure” of competition and relative position, researchers who defend inimitability of firms’ strategic resources as the main source of competitive advantage are understanding that “both the process by which the knowledge is created and utilized in organizations may be the key inimitable resource” (Schendel, 1996, p. 3). Learning, understood as the process that changes the state of knowledge of an individual or organization (Sanchez and Heene, 1997), is the path, therefore, to developing the necessary core competencies, treated as “the knowledge set that distinguishes and provides a competitive advantage” (Leonard-Barton, 1991, p. 113). This session advances in the analysis of the knowledge and organizational learning in a perspective that defines both concepts as critical to the development of strategic assets as a collective property in the organization.

### Knowledge creation

As a way of developing a better comprehension of how knowledge is created and how the knowledge creation can be managed, Nonaka (1994), referring to Polanyi’s (1966) work, explains that the knowledge creation process can be drawn from a distinction between two types of knowledge – “tacit knowledge” and “explicit knowledge”. “The ‘explicit’ or codified knowledge refers to codified knowledge that is transmittable in formal, systematic language and the

“tacit” knowledge has a personal quality, which makes it hard to formalize and communicate. Tacit knowledge is deeply rooted in action, commitment, and involvement in a specific context” (Nonaka, 1994, p. 16). In addition, Nonaka and Takeuchi (1995, p. 62-70) propose four modes of knowledge conversion, as we can see below:

with the work of Adler and Cole (1993, p. 89) that says that “it is easy to identify problems, define improvement opportunities and implement improved processes” from standardized and prescribed work systems that make the feedback far more effective. This is the argument of the “lean” company of the NUMMI (a joint venture between General Motors and Toyota,

Exhibit 1 – Four modes of knowledge conversion			
		Tacit knowledge	Explicit knowledge
		To	
Tacit knowledge	From explicit knowledge	Socialization	Externalization
		Internalization	Combination

Source: Nonaka and Takeuchi (1995).

By socialization, Nonaka and Takeuchi (1995) mean the conversion of tacit knowledge interaction between individuals, mainly through observation, imitation, and practice. The key to acquiring knowledge in this way is shared experience. Combination is a mode of knowledge conversion that involves different bodies of explicit knowledge held by individuals, and the exchange mechanisms may be meetings, telephone conversations and computer systems, that make possible the reconfiguration of the existing information, leading to new knowledge. Internalization is the conversion of explicit knowledge into tacit knowledge, in which the authors identify some similarities with the notion of “learning”, and externalization is the conversion of tacit knowledge into explicit knowledge, a relatively undeveloped concept, as the authors understand. Nonaka and Takeuchi (1995) explain that knowledge creation centres on the interchange between tacit and explicit knowledge through internalization and externalization.

Therefore, Nonaka’s (1991, 1994) proposals have common ground with some approaches in organizational learning theory, in which there is a possibility of assessing and sharing the knowledge in the firm. For example, externalization aligns with Schon’s (1986) explanation about the importance of developing maps and programs for the transfer from individual learning to organizational learning, and also

located on California, USA), which is more oriented to organizational learning than Uddevalla’s Volvo Plant, which is organized according to the social-technical approach, with much more autonomy and almost no prescriptions, which is more oriented to individual learning. In the same way, Bell (1985) established some kinds of learning and the system performance feedback kind seems to be related to the same goal of generating records to be evaluated and to serve as a source of learning through past experience. Garvin (1993) explains that the ability of learning from past experience is one of the five major abilities of the learning organization and Day (1994) speaks about an accessible memory where the acquired knowledge must be allocated to permit collective access and expansion and exemplify policies, procedures, rules and databases in information technology as the traditional collective memory. The common aspect, present in all the approaches, is the existence and utilization of some kind of “tangible” or “physical” organizational memory developed by the organization’s members, as a basis to improve the learning process in the firm and among its members, trying to transform tacit knowledge in explicit knowledge, accessible for the whole company.

**Knowledge integration**

Discussion of tacit knowledge implies a complex issue. Spender (1996a) identifies essentially

epistemological questions about whether knowledge is objective, personal or social, and sets Polanyi/Nonaka's approach against Vygotsky's (1962) approach to knowledge, explaining that "while Polanyi presumed activity yielded tacit knowledge that remained private, Vygotsky argued that activity shaped consciousness in ways that were social and were eventually reflected in language and social structure. Thus practical knowledge

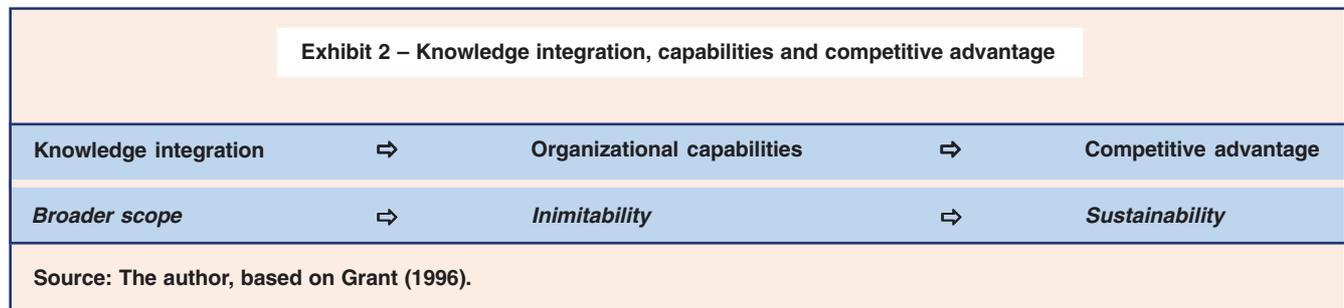
verbal communication, e.g. surgical operating teams, auto racing pit crews, etc; and 4. Group problem solving and decision making that, on the contrary to the other mechanisms that seek efficiency of integration through avoiding the costs of communication and learning, presupposes more personal and communication-intensive forms of integration, more adequate to unusual, complex and important tasks.

## Learning is the process that changes the state of knowledge of an individual or organization.

is not only integrated with practice, as Polanyi suggests, it is also integrated with the consciousness of the community of practitioners" (Spender, 1996a, p. 59).

In a more pragmatic way, but also disagreeing with Nonaka's approach, Grant (1996) analyses the firm as an integrator of knowledge, which is viewed as residing within the individual, and the primary role of the organisation is knowledge application rather than

The relationship between the "integration of knowledge" approach and the generation of competitive advantage is that the development of capabilities is the outcome of knowledge integration. Thus, it depends on firms' ability to harness and integrate the knowledge of many individual specialists and, "the broader the scope of the knowledge integrated within a capability, then the more difficult imitation becomes. The complexity of 'broad-scale' integration creates greater causal ambiguity and greater barriers to replication" (Grant, 1996, p. 117). The figure below is a scheme of this proposal.



knowledge creation. In this sense, Grant (1996) presents four mechanisms for integrating specialized knowledge. The mechanisms are: 1. Rules and directives, that may be viewed as standards which regulate the interactions between individuals and provide a means by which tacit knowledge can be converted into readily comprehensible explicit knowledge; 2. Sequencing, the "simplest means by which individuals can integrate their specialist knowledge while minimizing communication and continuous co-ordination is to organize production activities in a time-patterned sequence such that each specialist's input occurs independently through being assigned a separate time slot" (Grant, 1996, p. 115); 3. Routines, that may be simple sequences and have the ability to support complex patterns of interactions between individuals in the absence of rules, directives, or even significant

Grant (1996) states that the dilemma for managers is that organizational competencies that require greater breadth of knowledge will show lower levels of common knowledge between team members, which emphasizes the importance of developing ways to integrate the knowledge of diverse specialists.

### Levels of learning

It is important to understand how the organization learning process can contribute also to the development of skills and capabilities, as they are the basis of the company's core competencies. Perhaps, the most cited in organizational learning process is the Argyris and Schon (1978) approach. The authors suggest that learning occurs when errors are detected and corrected, and that organizational learning occurs only when new knowledge is translated into different behavior. The

authors explain that organizational learning occurs at two different levels. The first is single loop learning that occurs after detecting mismatches, without questioning underlying policies. The second is double loop learning, which involves the questioning of values, beliefs and subsequent policies. Kim (1993) presents a comprehensive review of the literature in models and/or cycles of learning establishing links between the levels of learning approach of Argyris and Schon (1978) and the concept of mental models by Senge (1990) – presented as deeply held internal images of how the world works which have a powerful influence on what we do because they also affect what we see – as a path to the process from individual learning to organizational learning. Kim (1993, p. 28) explains that the emphasis is because “mental models in individual’s heads are where a vast majority of an organization’s knowledge (both know-how and know-why) lies”.

The limitation of double loop learning as viewed by Nonaka (1994, p. 19) is that, as it has a strong orientation toward organization development, it “assumes implicitly that someone inside or outside an organization knows ‘objectively’ the right time and method for putting double loop learning in practice. A mechanistic view of the organization lies behind this assumption. Seen from the vantage point of organizational knowledge creation, on the contrary, double loop learning is not a special, difficult task but a daily activity for the Organization”.

Change, learning, and adaptation have all been used to refer to the process by which organizations adjust to their environment. Fiol and Lyles (1985) use two general levels to identify a hierarchy based on the level of insight and association building. “Lower-level learning occurs within a given organizational structure, a given set of rules ... (and) tends to take place in organizational contexts that are well understood and in which management thinks it can control situations (...) Higher-level learning on the other hand, aims at adjusting overall rules and norms rather than specific activities or behaviors... (and) this type of learning occurs through the use of heuristics, skill development, and insights” (Fiol and Lyles, 1985, p. 807-808).

In the discussion on levels of learning, not all authors understand levels of learning as intrinsically superior or inferior, at least in the competitive advantage approach. For example, Edmondson and Moingeon (1996) propose that organizational learning

processes can be characterized as **learning how** and **learning why**. The first is defined as organizational members engaging in processes designed to transfer and/or improve existing skills and routines. The second, as organizational members inquiring into causality using diagnostic skills. The authors conclude that both processes are equally important, and that each one is appropriate in qualitatively different situations. “For situations in which technical success (including such

## If firms intend to disseminate or transfer knowledge, codification of tacit knowledge can lead to the corrosion of the competitiveness of the firm.

features as speed, consistency, productivity, quality and product excellence) is the central determinant of marketing competitiveness, an organizational capability of **learning how** is likely to be an important source of competitive advantage. For situations in which relationship success is the critical determinant of marketing competitiveness or internal organizational effectiveness, **learning why** will be a source of competitive advantage” (Edmondson and Moingeon, 1996, p. 27-28).

There is sufficient discussion on organizational knowledge and organizational learning processes to serve as a basis to understand core competencies as outcomes of these processes. What is really important at the end of this session is the understanding that the knowledge generation and application and the process of organizational learning can make a real difference in the competitive environment and constitute the basis of the firm’s competitive advantage. Both can be seen as crucial to the dynamic process of building and transforming the firm’s core competencies in order to adapt, anticipate or react to market demands.

### DISCUSSION

The theoretical debate on the development of sustainable and dynamic competitive advantage presents a challenge to researchers in strategic management theory. This paper is intended to contribute to the answering of two main questions:

- How do firms develop and maintain competitive advantage?
- How can organizational learning and the knowledge of the firm serve as a source of competitive advantage?

This paper starts by stating that the ‘outside in’ perspective has been the dominant approach in strategic management. By ‘outside in’ approach the paper addresses the theoretical propositions in strategic management that understand industry position as the main determinant of the competitiveness of the firm. The Porter’s (1980) five forces framework is the most disseminated theoretical proposition among the ‘outside in’ perspective and the main critique on this perspective is related to environmental determinism.

The resource-based view of the firm offers an alternative approach whose premise is that resources drive a company’s performance. The paper proposes the resource-based view of the firm as an ‘inside out’ perspective, which suggests that managers in firms can have a more active role in the development of their competitive advantage. The main theoretical contributions of the resource-based view of the firm are the understanding that resources can be tangible and intangible and that the main characteristic of these strategic assets is their inimitability.

Discussion on the nature of knowledge is central to the definition of the role of the firm and to understanding of how firms can use their knowledge to develop the core competencies that sustain their competitiveness. Explicit or codified knowledge provides a kind of knowledge more easily transferable and may constitute a source of competitive advantage more easily accessible by competitors. Tacit knowledge is more likely to constitute a source of sustainable competitive advantage because its difficulty to copy or even understand. The paradox is that if firms intend to disseminate or transfer this knowledge within or through firms in a corporation, codification of tacit knowledge can lead to the corrosion of the competitiveness of the firm (Kogut and Zander, 1993).

Understanding how firms can integrate the knowledge of specialists is a powerful tool in constructing idiosyncratic bundles of knowledge sets that are difficult to imitate and can also sustain the competitiveness of the firm. The same can be said about the ways that firms can transform tacit and individual knowledge into explicit and collective knowledge

useful for the firm as a whole. Knowledge creation and knowledge integration are theoretical propositions that point some means of managing knowledge in order to improve the firm’s performance and competitiveness. In different competitive contexts, different kinds of knowledge and distinct ways of managing the knowledge of the firm may be less or more critical as a source of distinctive competence and strategic advantage for the firm (Sanchez, 1997). This paper states that the firm must discover, develop, share and update the knowledge that sustains the present and future core competencies in a dynamic process, according to the competitive context, in order to develop a sustainable competitive advantage.

## FINAL COMMENTS

There is some confusion about the concepts in the resource-based view of the firm, but this is a characteristic of a theory that is still being developed. The same can be said about other developments in this theory, the so-called “knowledge-based view of the firm” (Grant, 1996; Spender, 1996b; Foss, 1996; Conner and Prahalad, 1996) and the so-called “competence theory of the firm” (Foss and Knudsen, 1996; Hamel and Heene, 1994). In fact, we have a powerful and fertile field of research in development, as the growing number of books and articles in this area indicates.

Despite the variations in terminology, we can affirm that the core competence concept is the main contribution of this research stream, or at least the most disseminated. The understanding of it as “collective learning” stimulates the development of a more comprehensive management theory. In the point of view of the resource-based theory of the firm, we are proceeding to an integrative approach, with the ‘inside out’ and ‘outside in’ perspectives contributing together to the definition of the strategic assets or core competencies that must be developed by the company. In the perspective of the organizational knowledge and learning, we are going toward an integrated approach, understanding organizational learning as the process that change the state of knowledge of an organization.

At this point, this discussion is more a set of assertions based on literature research than a set of facts that has been supported by extensive studies and rigorous empirical research. Therefore, the objective of this paper is to present some contribution to the collective effort of overcoming the identified challenges. ○

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