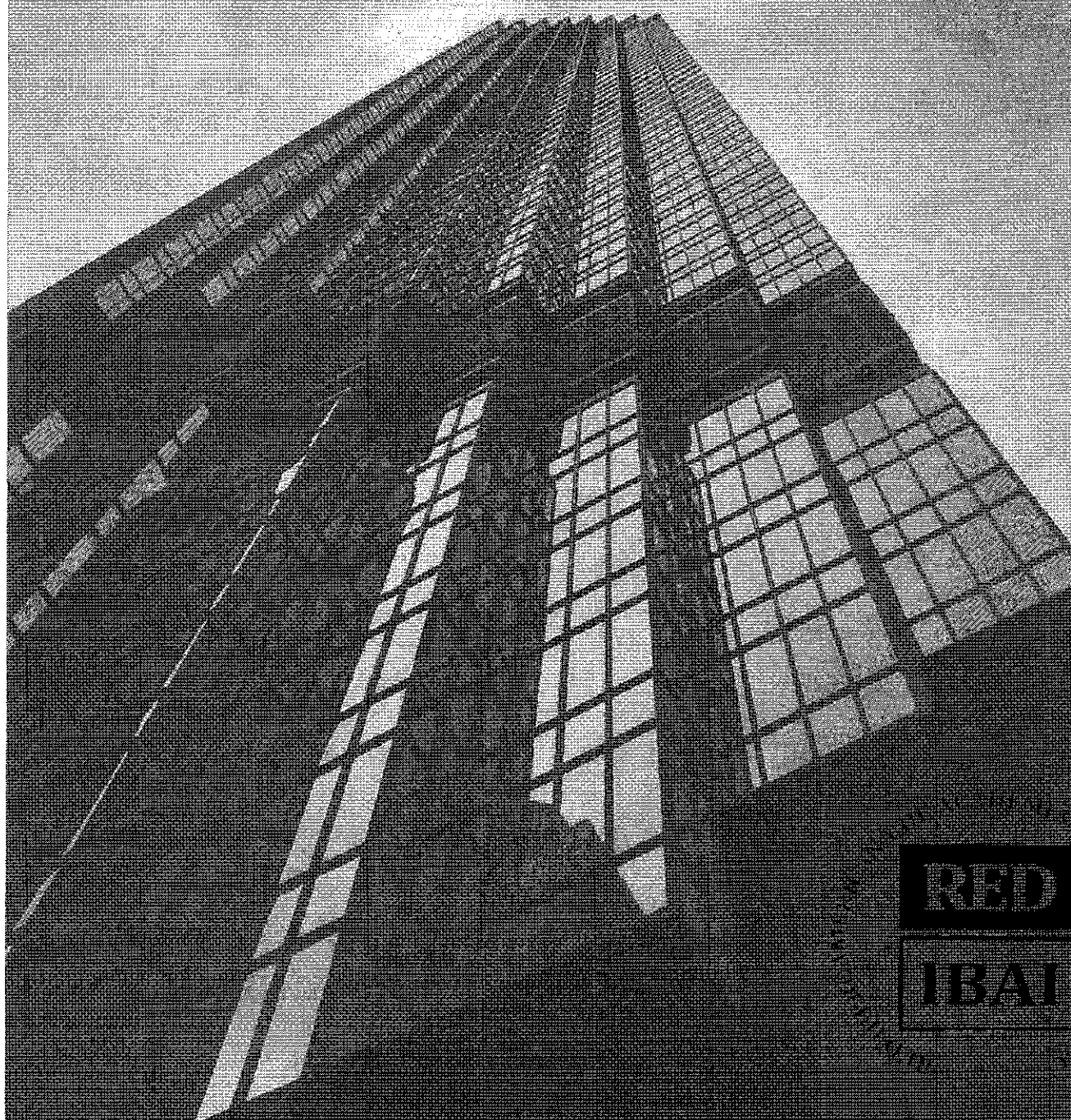


INNOVACIÓN EMPRESARIAL EN DESARROLLO INDUSTRIAL



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ORGANISATIONAL KNOWLEDGE, CORE COMPETENCIES AND COMPETITIVE ADVANTAGE. THEORETICAL REVIEW

CONRADO AGUILAR CRUZ¹, SALVADOR MONTESINOS GONZÁLEZ², LILIA ALEJANDRA FLORES CASTILLO³

ABSTRACT

In order to understand how a company builds key competences and generates competitive advantages, this paper reviews the theoretical foundations of organisational knowledge from the perspective of social processes and organisational learning, shaping socially constructed models. Michael Polanyi's thinking suggests that the main source of knowledge is the experience and know-how of individuals within a social context. Therefore, the approach to the study of knowledge, its relationship with other theoretical constructs such as key competencies, is an expanding field of research in the field of strategic management that helps to understand the sources of sustainable competitive advantage. It is concluded that organisational knowledge is one of the main strategic resources on which the company bases its long-term success and survival. Moreover, this resource is closely related to the set of tangible and intangible assets including management skills and organisational processes that enable the firm to acquire and control capabilities of all nature, including technological and organisational capabilities, which in turn enable the construction of competitive advantages.

Keywords: organisational knowledge, key capabilities, competitive advantage.

RESUMEN

El presente documento examina la fundamentación teórica del conocimiento organizacional en una perspectiva amplia vinculada a procesos sociales y de aprendizaje organizacional configurando un modelo socialmente construido. El punto de partida, lo constituye el pensamiento de Michael Polanyi, que sugiere como la principal fuente de conocimiento a la experiencia y el saber hacer de los

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individuos dentro de un contexto social, por lo tanto, el abordaje del estudio del conocimiento, su relación con otros constructos teórico como las competencias clave, integran un campo de investigación en expansión en el ámbito de la gestión estratégica para entender las fuentes de la ventaja competitiva sostenible. Se concluye que el conocimiento organizacional es uno de los principales recursos estratégico en el que la empresa fundamenta su éxito y supervivencia a largo plazo. Por otra parte, este recurso está estrechamente relacionado con el conjunto de activos tangibles e intangibles incluyendo habilidades de gestión y procesos organizativos que permiten a la empresa adquirir y controlar capacidades de toda naturaleza, incluyendo capacidades tecnológicas y organizacionales, que a su vez permiten la construcción de ventajas competitivas.

Palabras clave: conocimiento organizacional, capacidades clave, ventaja competitiva

INTRODUCTION

In the context of the global economy, the foundations of organisational performance are premised on knowledge, the strategic importance of which is growing as the competitive environment, based on key capabilities and competencies, increases, especially in the ability to create knowledge, but also in the ability to integrate it with existing knowledge. In order to understand how a firm builds key competences as a source of competitive advantage, this paper reviews the theoretical foundations of organisational knowledge in a broad perspective linked to social processes and organisational learning shaping socially constructed models. The central idea is that knowledge is intrinsically linked to social and organisational learning processes in a socially constructed model (MacAdam and MacCreedy, 1999). Consequently, the knowledge-based approach finds epistemological underpinning in the thinking of Michael Polanyi (1966), it is accepted that the main source of knowledge is the experience and 'know-how' of individuals within the firm (Grant, 1997; Penrose, 1959). However, the study of knowledge and its relationship with various variables, including key competencies, is an expanding field of research in the field of strategic

management (Nonaka and Teece, 2001). This study considers knowledge as the main strategic resource of the company on which its long-term success and survival is based (Kogut and Zander, 1992; Grant, 1996a). This resource is closely related to other tangible and intangible assets, including management skills and organisational processes (Barney, 1991) that enable the firm to acquire and control capabilities of all kinds, including technological and organisational capabilities (Penrose, 1959, 1997). The formulation of knowledge-based strategies for building core competencies is a line of research that has so far generated limited findings. Some research analyses the influence of knowledge management initiatives on organisational outcomes (Helfat & Raubitschek, 2000; McEvily & Chakravarthy, 2002; Mihi, García, & Rojas, 2011). Although it does not yet constitute a theory of the firm, due to a lack of consensus (Grant, 1996a), the knowledge-based approach is a robust perspective for approaching the study of key competences, if we consider that knowledge resides within the individual, is personal, and therefore is not directly appropriable; its transfer is only possible through its application in productive activity; knowledge represents the primary source of added value for the company, so all human productivity depends on knowledge; machines, for example, can be considered different forms of knowledge realisation; and finally, barriers to transfer and replication place knowledge at the strategic level, so it is considered a consequence of resource theory. The referred approach is embedded in the so-called knowledge economy in a context of globalisation; the outputs of production processes are expected to be mainly intellectual, i.e. the goods and services of the firm are knowledge intensive; the labour force under this approach acquires a new term "knowledge workers", it constitutes the largest component of the growing labour force in the economies of developed countries (Hayes, 2002). For Barney, a firm achieves sustainable competitive advantage through the execution of strategies that leverage its internal strengths in response to the opportunities provided by the environment, while neutralising external threats and avoiding internal weaknesses. These arguments form the basis of the resource-based model of the firm and the attractiveness of the industry (Barney, 1991). Thus, the tacit element

of knowledge, being personal and embodied through individual or group experience, constitutes the distinctive element of a firm, which cannot be bought or imitated (Teece & Pisano, 1994), and therefore, in order to compete on its basis, it is necessary to codify it. However, this process is critical in the case of firms that are still in the process of building key capabilities on a minimal knowledge base. This knowledge is organisational through a complex process, whereby personal knowledge based on individual experience is transformed into collective knowledge that is transmitted through practice (Dixon, 2000), also through exchange and transfer between members in the form of information and know-how (Kogut and Zander, 1992). One of the most influential contributions to the knowledge-based approach is made by Nonaka (1994) and Nonaka and Takeuchi (1995), who develop a dynamic model that places the process of knowledge creation at the centre of their analysis. In constructing a knowledge-based theory of the firm, Grant explores the coordination mechanisms through which firms integrate the expertise of their employees. In a clear allusion to Nonaka, Grant remarks that knowledge, which resides within the individual, has to be applied, because that is the primary function of the organisation, to apply knowledge rather than to create knowledge (Grant, 1996b). He argues that the experience of integration to perform a productive task is the essence of organisational capability, so a feature of the knowledge-based approach is that it provides a sound theoretical basis for understanding a range of organisational innovations, including the renewal of traditional organisational structures through de-hierarchisation and the development of new organisational forms, horizontal structures and inter-firm alliances (Grant, 1996a). Based on the above, this paper addresses knowledge in a broad way, including its explicit but also its tacit form. The rest of the paper is organised in such a way that a section examining organisational knowledge is included, while the third and fourth sections examine organisational capabilities and key competences, respectively. The fifth section analyses how capabilities and competencies contribute to competitive advantage. Finally, section six presents the conclusions.

ORGANISATIONAL KNOWLEDGE

The literature on organisational knowledge analyses the role of the firm in the acquisition, processing, storage and application of knowledge (Argyris and Schön 1978; Levitt and March, 1988; Starbuck 1992; cited by Grant, 1996a:376). However, little work distinguishes between the concepts, knowledge and organisational knowledge. In this study it is considered essential to make such a distinction in order to have a conceptually correct and useful definition of organisational knowledge. Much of the literature omits this distinction and moves directly to knowledge management. However, trying to manage something requires knowing what that something is, identifying it and then managing it. According to the purpose of this research, it makes no sense to talk about managing knowledge when the process that follows the creation of the object of that management - knowledge in the business context - has yet to be identified. In this order of ideas, information is a concept closely related to the term knowledge. There is a consensus that the concept of "information" is understood as the subset of data that acquires meaning for the receiver of the data (Nonaka & Takeuchi, 1995:63). As for the concept of knowledge, although it is a question that has intrigued more than one of the great thinkers from Plato to Popper (Grant, 1996b), there is no generally accepted definition, it is claimed to be a dynamic human process of justification of personal belief in search of truth (Nonaka & Takeuchi, 1995:63). In the first instance, it is information that becomes knowledge once it has been processed in a person's mind, then it becomes information when it is articulated or communicated to others by various means; oral, written text, electronic format, etc., (Alavi & Leidner, 1999).

Knowledge is organisational when it becomes a strategic asset for the company. That is, when this knowledge develops contextually over time and through effort. The extent to which it achieves this development is how it becomes the basis of competitive advantages for the company that knows how to use it (Andreu & Sieber, 1999). Going back a little, knowledge can be described in general terms as a collection and enumeration of all types of knowledge (explicit-facit, internal-external, subjective-objective, individual and corporate) found within the company

(Grant, 1996b). A more commonly used way of classifying knowledge is proposed by Polanyi (1966) and developed by Nelson and Winter (1982) in their theory of the evolution of the firm. Polanyi recognises two dimensions of knowledge, on the object or phenomenon that is observed, which he calls focal knowledge; and on the instrument or tool to manage or improve the interpretation of what is observed, which he calls tacit knowledge. Both dimensions complement each other; tacit knowledge functions as the framework that allows the operations of observation of what is in the focus of attention to be carried out. Nonaka (1994) calls these dimensions of knowledge "tacit" and "explicit", respectively. Another way of classifying knowledge is into individual and collective. Individual knowledge refers to the use of basic capabilities, mental models, value scales or evaluation schemes, depending on the context and action plans to cope with certain situations. Collective knowledge is the result of the ability of a group of individuals to solve problems with a given degree of effectiveness (Spender, 1996; Andreu & Sieber, 1999). In the business context, Penrose (1959) explains that knowledge can be acquired in two ways. The first is when it can be taught, learned from other people or from written works. It can then be expressed, transmitted and classified as objective knowledge. The second way is to access it through "learning in the form of personal experience". Regarding experience, he points out that it is intrinsic to the activity itself, therefore, the knowledge gained in this way is most of the time not transmissible. Thus, "by having experience, a person gains wisdom, security of movement and confidence, and all these qualities become part of the very nature of the person, and influence the quantity and quality of services he can render to his company" (Penrose, 1959:59), so that the importance of experience lies in the impact beyond the individual, by providing increasing knowledge that gives ways and possibilities to act in the company. "This increase in knowledge makes the productive opportunity of a firm vary independently of changes in the environment and contributes to individualising the opportunity of each firm" (Penrose, 1959:60). A feature in Penrose regarding the role he gives to experience as an outstanding mechanism for acquiring and increasing so-called "tacit" knowledge, which distinguishes one firm from another.

To explain the term "tacit", Penrose (1997) draws on the reasoning of Polanyi (1966) who recognises that people "may know more than they can say". This idea, in the realm of the firm, means that much of the knowledge in the firm is tacit and can only be acquired at one point in time through "learning by doing"; therefore, knowledge is distributed (and equally dispersed) and fragmented among all the people in the firm. The dynamic model of knowledge places the process of knowledge creation at the centre of its analysis: Nonaka, 1991, 1994; Nonaka & Takeuchi, 1995, postulate that the firm creates new knowledge from tacit, codified knowledge through a dynamic process of conversion. According to these authors, the creation and growth of the firm's knowledge base depends on the interaction between tacit and codified knowledge, and not only on its accumulation. However, it faces a challenge because it is very likely that much of the tacit knowledge will never become explicit and some of the explicit knowledge may never be disseminated either (Scarbrought, 1998). For this reason, this paradigm presents the necessary phases to complete the process of knowledge creation: first, knowledge creation at the individual level is the result of the interaction between tacit knowledge and explicit knowledge; second, there are four processes of knowledge conversion (socialisation, externalisation, combination and internalisation); third, knowledge creation at the firm level is based on the expressed processes and a spiral driving force and the fourth representation envisages a common platform for knowledge creation. The novelty of this proposal and the relationship between it and the success of Japanese companies in the global market make Nonaka a prominent thinker in the field of knowledge management, and his model of knowledge creation becomes a paradigm of organisational knowledge. Nonaka and Takeuchi propose two dimensions to organisational knowledge creation. The epistemological dimension distinguishes between tacit knowledge and explicit knowledge; their conversion can happen in four ways: socialisation, externalisation, combination and internalisation (SECI); the result is what they call the spiral of organisational knowledge creation. The ontological dimension is concerned with the transformation of knowledge at the individual, group, organisational and inter-organisational levels. To this effect they

consider knowledge as a dynamic human process of justification of personal belief in search of truth (Nonaka & Takeuchi, 1995:63). Graphically, the process of knowledge creation on which the SECI model gravitates starts with the transformation of tacit to explicit knowledge and from explicit to tacit, generating a virtuous circle.

a) Socialisation, or the transformation of tacit knowledge into tacit knowledge, results from the process of sharing personal experiences based on shared mental models and the development of technical skills without using language, but through observation, imitation and practice. b) Externalisation: is the conversion of tacit knowledge into explicit knowledge. In this, the creation of knowledge is possible through the successive use of metaphors, analogies and models; first by linking contradictory things and then resolving them through analogies, and finally by crystallising the concepts created and representing them in a model accessible to all members of the company. c) Combination: the transformation of explicit knowledge into explicit knowledge resulting from social interaction for the creation of explicit knowledge. d) Internalisation: the transformation of explicit knowledge into tacit knowledge, called internalisation, is a process of learning by doing to create knowledge. The authors point out that the process of organisational knowledge creation contains five phases, following the sequence: (1) Sharing tacit knowledge involves socialising emotions, feelings and people's mental models in an appropriate environment, an autonomous and self-organising team in order to interact with the external environment and accumulate tacit and explicit knowledge. (2) The second phase, creating concepts (externalisation), means collective reflection, verbalising the mental model in words and phrases, and then crystallising explicit concepts. It corresponds to the stage of converting tacit knowledge into explicit knowledge through various methods of reasoning: deduction, induction and abduction (figurative, metaphorical language, using analogies). The central idea in this phase is to achieve a shared mental model. (3) Justifying concepts, the third phase, involves determining whether the concepts created are indeed valid for the organisation and for society. For example, in business, the normal criteria for justification are cost, profit margin

and the degree to which a product contributes to the growth of the company. But justification criteria can be qualitative and quantitative and should be in accordance with the value system or needs of society, which should be reflected in the overall intention of the enterprise. (4) The fourth phase, building an archetype, i.e. building the model, mould, mock-up, or prototype on which the organisational knowledge creation process is developed and (5) The last phase corresponds to knowledge expansion, i.e. once the new concept is created, justified and modelled. This is followed by a new cycle of knowledge creation at a different ontological level. This interactive and spiral process, the authors call it cross-distribution of knowledge, takes place inside and outside the organisation. Inside, vertically and horizontally, i.e. throughout the company itself. Externally, the knowledge created by the company can mobilise the knowledge of affiliated companies, customers, suppliers, competitors, and other elements outside the company, through dynamic interaction (Nonaka and Takeuchi, 1995). Achieving a kind of interaction between inside and outside with the idea of being spread throughout the company by accumulating organisational knowledge (**Figure 1**). Organisational knowledge is understood as a dynamic process of internalisation-externalisation of information that is constructed from beliefs, experiences, judgements, intuitions and values; it is personal and intangible; it is accumulated, used and reused; its increase can extend to the level of knowledge. Its strategic character is closely related to how to promote its acquisition, storage, distribution and use in its two expressions; tacit and explicit in order to achieve business objectives in a competitive way. Therefore, the process of organisational knowledge creation starts with the transformation from tacit to explicit and from explicit to tacit knowledge through the phases of: socialisation, externalisation, combination and internalisation (Alavi & Leidner, 1999; Andreu & Sieber, 1999; Nonaka & Takeuchi, 1995; Polanyi, 1966).

Figura 1. Proceso de creación del conocimiento

	Conocimiento tácito	Conocimiento explícito
Conocimiento tácito	<p>Socialización Conocimiento compartido</p>	<p>Externalización Conocimiento conceptual</p>
Conocimiento explícito	<p>Internalización Conocimiento operacional</p>	<p>Combinación Conocimiento sistemático</p>

Fuente: Nonaka y Takeuchi, 1995 p.72.

In summary, recent contributions highlight that, in a competitive environment, organizational knowledge has become one of the most important intangible assets for the firm, since it is accumulated through organizational learning and is difficult to imitate (Prahalad and Hamel, 1990; Leonard-Barton, 1992, 1995; Nonaka, 1994, Nonaka and Takeuchi, 1995). Hence, most empirical studies focus their analysis on competitive advantages and superior firm performance as a result of the acquisition of technological capabilities and organizational capabilities. For example, Mihi, Garcia, & Rojas (2011) propose an empirical model to analyze how the modes of knowledge conversion (Nonaka and Takeuchi, 1995) affect organizational learning and examine the joint influence of these variables on firm performance. They found that the four modes of knowledge conversion directly and indirectly affect organizational learning, which in turn facilitates efforts to improve organizational performance. Therefore, the processes of knowledge creation are related to organizational learning and organizational performance improvement. In other words, the four modes of knowledge conversion have indirect effects on firm performance. The model emphasizes knowledge creation and organizational learning with the main objective of contrasting the factors that influence and explain the relationships

between these constructs. McEvily and Chakravarthy (2002), in a case study, found that the firm's internal capabilities (entrepreneurial orientation, technological capabilities and financial resources) are more important in its performance than external networks (strategic alliances, high-risk capital, collaboration with universities or research institutes).

ORGANIZATIONAL CAPABILITIES

In historical perspective, the evolution of the strategic management paradigm places strategic management as the model that took up, from the eighties of the twentieth century, the theories of industrial organization. However, it soon oriented its analysis towards the internal part of the company, on the acquisition and control of technological and organizational capabilities as fundamental elements of the strategy in the superior performance and competitive advantage of the company (Alvarez, 2003:6). There are two dominant approaches in this model: the first emphasizes the contextual determinants of competitiveness and the second focuses on the firm's internal resources and capabilities.

The first, represented by Edward Mason and Joe-Bain at the Harvard School, sought to identify barriers to entry in order to detect monopolistic practices, in support of the belief that control and deterrence of competition from firms with market power were the central economic forces in the economy of the first half of the twentieth century. Porter's (1985) model was based on Joe-Bain's hypothesis, "industry structure determines firm behavior, in turn determining economic performance". Both models (Porter; Joe-Bain) focus their attention on the environment, not on the firm's internal capabilities such as assets, routines or practices (Conell, 2008:175). The second approach, the theory of the firm's resources and capabilities focuses its attention on the firm's internal resources from which key competencies are derived that are difficult to imitate, therefore, they constitute the fundamental determinants of the firm's performance, its competitive advantage and its growth (Conell, 2008). Consequently, one way to understand the competitive performance of companies is to look at the roots and contribution of the concept of core competencies to the traditional basis of

strategy, from the theoretical perspective of a company's resources and capabilities. This new perspective, in contrast to the approach to strategy based on the industrial organization paradigm, assumes that a company's competitive advantage rests on the possession, in the first instance, of unique resources that are difficult to imitate. One of these resources that meets these characteristics is organizational knowledge.

Perspective of the company's resources and capabilities

The evolution of the resources and capabilities theory of the firm follows an intellectual path in the writings of Berger Wernerfelt (1984), Richard Rumelt (1984) and Jay Barney (1986, 1991), as a response to the theoretical development developed by Michael Porter-Bain who bet on the environment as a determinant of firm performance (Conell, 2008:173). The resource theory of the firm does not seek to explain the structure and behavior of the firm; it attempts to predict why some firms are able to achieve positions of sustainable competitive advantage and obtain superior returns (Grant, 1996a, Penrose, 1959); in other words, the competitive position of some firms is the result of the optimal deployment and management of their intrinsic resources and capabilities. For this reason, it is common for the increasing pace of change in the external business environment to place the firm's resources and capabilities at the center of the analysis as the main source of sustained competitive advantage, becoming the basis for strategy formulation (Barney, 1991; Grant, 1996a). The importance of certain resources lies in their strategic character for the company, since they constitute the set of tangible and intangible assets including management skills, organizational processes and routines, information and knowledge (Barney, 1991). They enable companies to acquire and control capabilities of all kinds, including technological and organizational capabilities (Penrose, 1959, 1997). A resource is strategic for the company if it provides value, if it is rare, imperfectly imitable, and not substitutable (Barney, 1991). The more specialized the resource or derived from experience, the more difficult it will be to imitate; the more costly, the more difficult it will be to transfer between organizations (Grant, 1991; Teece, Pisano & Shuen, 1997). Among the various resources, organizational knowledge is the most

strategically important for the company (Grant, 1996a:375), also due to the way it is contained within the company, for example, in tangible form, such as technology, or in intangible form, such as legal, organizational or relational aspects, especially when the knowledge is within the individual (Grant, 1996a), because its tacit character gives it specific capabilities. Figure 2, summarizes the attributes of knowledge collected in the literature. As a matter of methodological order, a resource is conceived as the set of assets of a company to acquire and control its technological and organizational capabilities, customize consumption experiences, create value for the customer in search of a competitive advantage and superior performance over time, including organizational processes, company attributes and organizational knowledge. In terms of knowledge attributes, tangible or physical, intangible or organizational and human capital stand out, which in turn influences the two previous sets.

Figure 2. Organizational knowledge as a strategic asset	
Definition	Classification
An organization's set of strategic assets for acquiring and controlling its technological and organizational capabilities, customizing consumer experiences, creating customer value in pursuit of competitive advantage and superior performance over time. For example, organizational processes, company attributes, organizational knowledge that enable it to conceive and implement a strategy that improves its efficiency and gives it identity.	<p>Tangible or physical Technology^{1/}, specialized equipment, natural resources, access to raw materials, geographic location, points of sale.</p> <p>Intangible or organizational</p> <ul style="list-style-type: none"> - Legal (Intellectual property that generates rights derived from the Industrial Property Law) - Organizational, superior sales force (corporate culture, image and prestige). - Information systems structure, formal and informal planning, control and coordination systems. - Relational: Formal and informal relationships with suppliers, between groups within the company and with other organizations. <p>Human capital Skills and knowledge of skilled and unskilled personnel, in production, administration, financial, legal, technical and management aspects, based on training, judgment, intelligence, interpersonal relations and vision.</p>

Source: Penrose: 1959; Barney, 1986, 1991; Grant, 1991; Wernerfelt, 1984.

Notes: 1/ Technology equals knowledge, experience, equipment (machines and tools) and facilities, software and hardware, as well as services and systems, products and processes (Fundación COTEC, 1999; Solleiro & Herrera, 2008). 2/ The Industrial Property Law in Mexico contemplates the following figures: (1) Patents, (2) Utility Models, (3) Industrial Design, (4) Trademarks, (5) Industrial Secret and (6) Designation of Origin.

To avoid the competition trap, in addition to pure operational capabilities, firms also need dynamic capabilities (Teece, 2007). Dynamic capabilities" encapsulate the evolutionary nature of resources and capabilities, which complements the static view of the resource theory of the firm (Eisenhardt and Martin, 2000; Teece et al., 1997). Among the criticisms of the resources and capabilities approach (basic capabilities), the one that stands out is its static and short-term vision, in which companies stick to what they have (Teece, Pisano & Shuen, 1997); in other words, organizations tend to be static to the extent that they learn to live with what they have, which causes them to lose their response capacity. The argument is that following a strategy based on resources and capabilities in a static sense runs the risk of being insufficient to maintain a competitive advantage in a dynamic environment. This concern led to the introduction of the dynamic capabilities approach.

Dynamic capabilities

The dynamic interpretation of the company's capabilities departs from the orthodoxy and its static and equilibrium view⁴. Nelson and Winter (1982) employ the basic ideas of biology⁵ and the metaphor of "natural selection" in the development of their evolutionary theory of firm capabilities and behavior. They propose that the behavior of the firm in the selection of routine operations⁶ and the innovation process occurs in an environment of market and uncertainty, it is a matter of establishing the dynamic relationship between innovation and the evolution of the organization. Such routine operations, when mechanized, manage to become knowledge and skill-bearing procedures, which accumulate in a kind of "organizational memory" that gives the firm a relatively stable functional character and defines its operational capacity (Nelson and Winter, 1982). The term "dynamics" is used to indicate the firm's ability to update competencies to

⁴ The theory of complex systems does not admit "living systems" in equilibrium, because in a living system, equilibrium is death.

⁵ Penrose (1959) points out that one of the most serious difficulties in attempts to "develop theories of firm growth by employing biological analogies and considering firms as organisms whose growth processes are essentially similar to those that take place in living organisms (...) conscious human motivation and decision does not take place in the natural process of growth".

⁶ For Nelson and Winter (1982), a routine is the set of activities or strategies that define the behavior of the company. In other words, people learn to solve problems until they convert this learning into a stable pattern of behavior, which enables them to reduce the complexity of individual decisions.

achieve consistency with the pace of technological change and the general level of uncertainty in the organizational environment itself. The term "capabilities" emphasizes the fundamental role of strategic management in adapting, integrating and reconfiguring between competencies, resources and the constantly changing organizational environment (Eisenhardt & Martin, 2000; Pisano, 1994; Teece, Pisano, & Shuen, 1997). There is consensus that "dynamic capabilities" are: (a) processes to integrate, reconfigure, gain and release the firm's resources to adjust to and even create market changes; (b) organizational and strategic routines that firms use to achieve new resource configurations and respond to the cycle of emerging, crashing, dividing, evolving and dying markets; (c) capabilities of an organization to purposefully create, extend or modify tangible, intangible and human assets/resources, as well as (d) capabilities, which the firm owns, controls or has access to on a preferential basis (Helfat et al. , 2007, cited by Fischer, et al., 2010:593). With the same idea, synonyms such as "combinatorial capabilities" are also used to describe the organizational processes by which a firm synthesizes and acquires knowledge resources, and generates new applications from those resources (Kogut and Zander, 1992), "competence architecture" Henderson and Cockburn (1994), or simply "capabilities" (Amit and Schoemaker, 1993). In other words, the term dynamic capabilities can be understood as a managerial ability to generate new forms of competitive advantage by reconfiguring competencies based on one's own or others' strategic resources. Much of the current literature on resources focuses on the role of dynamic capabilities as a source of competitive advantage; they are described in different industries and, in some of them, codified in the form of best practices (Eisenhardt and Martin, 2000). The continuous reconfiguration of competitive advantage is subject to the ability of firms to change systematically; therefore, in some rapidly changing market environments, sustained competitive advantage may not be possible (Fiol, 2001, cited in Barney, et al., 2001:630). Consequently, competitive advantages cannot be sustained in rapidly changing dynamic markets unless firms are capable of permanent change. Dynamic capabilities, per se, cannot be a source of competitive advantage, unless they are

applied "sooner, more shrewdly, or more fortuitously" (Eisenhardt & Martin (2000:1117). In response to Eisenhardt & Martin (2000), Barney, et al. (2001) explain that the ability to apply dynamic capabilities "sooner or more astutely" is itself a capability, although it does not imply that the ability to deploy dynamic capabilities is a source of sustained competitive advantage in all market environments. For example, if a firm has the ability to gain and sustain competitive advantage in a rapidly changing market and suddenly the market becomes stable and unchanging, the ability to be flexible is probably not valuable, and therefore will not be a source of competitive advantage. More generally, the value of a given set of capabilities must be assessed in the context of the market in which a firm is operating. If that market context changes radically, what were valuable functions may no longer be valuable. Again, this is perfectly consistent with the traditional logic of the resource approach, because the ability to learn and the ability to change may be among the most important capabilities a firm can possess (Barney, et al. 2001:631-632). On the term "dynamic capabilities", Barney, et al. (2001) argues that changing the words with which the theory is developed does not change the underlying theory. In other words, "dynamic capabilities" are simply "capabilities that are dynamic" (Barney, et al., 2001). (Barney, et al., 2001:630), also as Winter (2003) points out, dynamic capabilities are distinguished from ordinary capabilities because they are concerned with change. In line with the arguments of authors such as Amit and Schoemaker (1993); Barney (1984, 1991); as well as Barney, Wrightb & Ketchen (2001), the term "capabilities" is used in this study without the term "dynamics" because it does not, in effect, change the meaning of the underlying theory of resources and capabilities. It is accepted that as long as our understanding of capabilities or competencies remains limited as to how competitive advantage is generated, more empirical research is needed. For some authors (Hoskisson, et al., 1999; Miller and Shamsie, 1996; Priem and Butler, 2001) the challenge in the field of strategic management is methodological, for example, large-scale robust quantitative studies of resources may only be feasible under homogeneous environments, such as regulated industries; additionally, researchers have had

difficulty measuring resources because many of them are intangible (Godfrey & Hill, 1995), cited by Barney, et al., (2001:630-632). Organisational knowledge is a good prototype of an intangible resource. A second methodological area concerns the time period of analysis: the notion of sustained competitive advantage involves the need for longitudinal analysis, involving both quantitative and qualitative approaches (Barney, et al., 2001).

CORE COMPETENCIES

The term core competencies⁷ is used by Prahalad and Hamel (1990) to refer to the intrinsic qualities that drive the economic success of the set of firms that make up an industry or business group. These are special qualities that are expressed through collective learning in the organisation and that enable production skills to be coordinated and technologies to be integrated into final products. However, in much the same sense as today, the concept of "distinctive competence"⁸ was proposed by Selznick (1957).

In this respect Andrews (1971) wrote: (...) The distinctive competence of an organisation (...) is what it can do particularly well (Learned et al., 1969: 179, 180, 182 cited in Rumelt, 1994:xvi). In the same vein, Mooney (2007) credits Andrews with introducing the concept to refer to "core competence". However, he argues that it is Ansoff (1965) who gives meaning to this concept by describing its elements and discussing the creation of a "common thread" in the firm's competencies that represent "a relationship between present and future markets and products" (Andrews, 1971:46; Ansoff, 1965:105, cited in Mooney, 2007:110). Figure 3, some authors refer to core competencies as what "a firm can do particularly well", becoming the fundamental core of the business to compete; it is the core of the core competence; they use the analogy of the tree to point out that a core competence is like the "root system that provides nourishment, sustenance and stability" to the firm; "intrinsic quality of the firm that drives it to

⁷ Core competencies equals key competencies.

⁸ Distinctive competencies are the attributes of a firm that enable it to pursue a more efficient and effective strategy than other firms (Learned, et al., 1969; Hrebiniak and Snow, 1982; cited by Barney & Clark, 2007:4-12).

economic success". Its construction can come from a whole range of possibilities: competitors, products and services (Prahalad & Hamel, 1990; Teece, Pisano & Shuen, 1997: 516).

Figure 3. Key competencies

Source	Definition
Selznick (1957); Ansoff (1965); Andrews (1971); Learned, et al.,(1969); citados en Rumelt,1994: xv-xix)	A distinctive competence is what a company can do particularly well, making it the core of its core competence. It indicates a [dynamic] relationship between actual and potential markets and products.
Prahalad & Hamel (1990)	These are qualities intrinsic to the company that propel it to economic success, like a root system that provides nourishment, sustenance and stability. "A company can lose the strength to compete by focusing only on its end products in the same way that a tree loses importance if we look only at its leaves. They must meet three requirements: 1) They must provide potential access to a wide variety of markets, 2) They must contribute to the benefits of the end product as perceived by the customer, and 3) They must be difficult for competitors to imitate.
Drucker (1994)	It is what a company needs to achieve its mission.
Prahalad & Krishnan (2009)	It is about co-creating value, personalising consumer experiences based on access to global resources and innovations. It is also about creating a revenue model based on an ongoing relationship with the consumer. It is the core value proposition based on service and solutions, better costs, superior experiences, security, skills development, improved performance, availability. All of the above underpinned by platforms that enable business-customer-business interaction.
Teece, Pisano & Shuen, (1997)	They are those that define a company, as the fundamental core of the business. They must be derived from the full range of a company's capabilities; competitors, products and services.

Fuente: Elaborada a partir de Selznick (1957); Ansoff (1965); Andrews (1971); Learned, et al.,(1969); Prahalad & Hamel (1990); Drucker (1994); Prahalad & Krishnan (2009); Teece, Pisano & Shuen, (1997).

Prahalad & Hamel (1990) warn that the world's leading companies have at the core of their corporate-level strategy (never at the level of business units because they are diluted) no more than five or six core competencies that meet specific requirements: provide potential access to a wide variety of markets, contribute significantly to the benefits perceived by the end customer although they do not necessarily have to be visible or understandable to him and be difficult for competitors to imitate.

Hamel (1994) suggests four fundamental managerial tasks for managing core competencies: (a) Clarity of definition to identify, inventory and build consensus. It is common for most managers to have an idea of "what we do well around here", although they do not necessarily have an idea of how to draw the links between particular skills and the competitiveness of the final products; (b) build core competencies by accumulating and integrating knowledge, found inside and outside the company and on the basis of interdisciplinary communication and learning, borrowing skills and technologies from other companies, through selective acquisitions, licensing agreements, joint ventures, alliances or competitive sourcing; (c) disseminate their implementation and spread powerfully among group companies, and (d) protect core competencies from erosion through continuous monitoring, because they can be lost in a variety of ways: through lack of funds, commitment and executive responsibility for their management. The terms "competencies" and "capabilities" are often used interchangeably in the literature. However, due to their origin, purpose and scope, they have different meanings; a discussion of this nature is beyond the scope of this paper. On the other hand, for this research, what is transcendent, as Hamel points out, lies in the analysis to distinguish which of them are "central" from those that are not. By core, he means knowing which of these competences (or capabilities) are at the heart of competitive success and contribute to the prosperity of the set of companies that make up an industry or business group. It is recommended that in order to identify a core competence it will be indispensable to analyse the company's resources that meet the above-mentioned characteristics. Because the use of the concept of "core competencies" is relatively recent, empirical studies are still scarce, generally focusing on competitive advantages and superior firm performance as a result of the acquisition of technological capabilities and organisational capabilities. For example, McEvily and Chakravarthy (2002) found that internal capabilities such as entrepreneurial orientation, technological capabilities and financial resources are more important than external networks (strategic alliances, venture capital, collaboration with universities or research institutes, financial support from commercial banks and

government) in firm performance. Helfat & Raubitschek (2000) explain how the co-evolution over long periods of organisational knowledge, capabilities and products results in a competitive advantage that is located in innovation and strategic product relationships. They took into consideration, on the one hand, founders' values and previous experience (production, research, development and distribution) and, on the other hand, the likelihood of entering new markets by acquiring new capabilities (studies cited by Alvarez, 2003: 15-16). Leonard-Barton (1992), based on an empirical study, theoretically proposes that key competencies are an interdependent knowledge system that provides a competitive advantage with four dimensions: a) employee knowledge and skills; b) technical systems, which consist of accumulating, codifying and structuring tacit knowledge; c) managerial systems, which include formal and informal ways of creating and controlling knowledge; and d) norms and values associated with various types of knowledge and with the process of knowledge creation and control (Leonard-Barton, 1992:113). From a case study, Alvarez (2003) found that technical skills, managerial systems, personnel skills and values, in that order, are increasingly less tangible, less visible and less codifiable. Because the former are relatively easy to alter, skills and knowledge are more difficult to change. Values are the dimension least susceptible to change, as values are more closely linked to the culture of the organisation. For Álvarez (2003) the concept of "core competencies" is an attempt to explain how and why a company performs better than the competition. He points out that most of the literature has a theoretical approach that tries to describe core competencies, there are few empirical studies, which fail to prove the relationship between core competencies, competitive advantage and superior performance. Core competencies can also be apprehended from a set of attributes and their contribution to value or cost for the company, entry into new markets and difficulty to be followed or imitated, such attributes relate to closeness to customers, integration and harmonisation of the use of technologies with work organisation and adding value through the benefits provided in the final products (Figure 4).

Figure 4. Requirements and attributes of key competences

Requirements	Attributes		
	Customer proximity	Integration	Benefits
Contribution to value/cost for the organisation	Brand management, sales and marketing, distribution and logistics, and technical support.	Speed, flexibility and confidence in relation to quality, life cycle and just-in-time inventory.	Products with distinctive functionality and benefits and high cost-effectiveness
Difficult for competitors to imitate	Exclusive distribution	Highly specialised knowledge that is derived from experience and therefore difficult to transfer between organisations due to costs and the tacit nature of the knowledge	Core value proposition shifts from product to service
Allows entry to new markets	Confianza, prestige and integrity	Personalising consumer experiences based on customer perceived value through a core benefit	Creates customer value through solutions, better costs, superior experiences, security, performance, and availability.

Source: Grant, 1996b; Hamel, 1994; Prahalad & Hamel, 1990; Prahalad & Krishnan, 2009

CAPABILITIES, COMPETENCIES AND COMPETITIVE ADVANTAGE

Contributions to the concept of "competitive advantage" date back to the work of Ansoff (1965), who defines the term as the "properties of each product/market that will give the firm a strong competitive position"; Uytterhoeven, Ackerman & Rosenblum (1973); Hofer & Schendel (1978) point out that a competitive advantage is the result of the way a firm uses its competencies and resources to develop products and markets (Cited by Mooney, 2007). In a different sense, Porter argues that a competitive advantage relates to organisational factors to create and maintain relative superiority over competitors based on cost and differentiation; it has to be part of the fundamental objective of business strategy, through delivering value. Value, he says, is what buyers pay for; superior value arises from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than compensate for the higher price (Porter, 1985:3). Porter's contribution constitutes the analytical framework for assessing

competitive advantage, through the customer value chain and a firm's ability to leverage its internal strengths and respond to external environmental opportunities and avoid external threats and internal weaknesses. However, to avoid misuse of terms, Hamel (1994) proposes four essential attributes that assess key competencies as well as competitive advantage in order to distinguish these concepts from each other. He argues that a core competence is, decisively, a source of competitive advantage, insofar as it makes a contribution to value and/or cost. But not the other way around, while every core competence is a source of competitive advantage, not every competitive advantage is a core competence (Figure 5).

Figure 5. Core competence and competitive advantage		
Attributes	Concept	
	Core competence	Competitive advantage
Organisational capacity	Yes	Yes
Contributes to value and/or cost	Yes	Yes
Difficult to imitate	Yes	Yes
Valuable to the organisation	Yes	Yes

Source: adapted from Mooney, 2007:112

To illustrate the above, Hamel (1994) distinguishes competitive advantages from core competencies by taking into account their duration in time and the source that originates them (Figure 6). The former are short-lived and may even come from sources external to the firm, such as suppliers, wage policy and consumer preferences. In contrast, a core competence is "just what its name suggests, an aptitude, a capability, a skill. [Therefore], a company may have many advantages, vis a vis its competitors, that do not rest on skills or aptitudes. This does not mean that they are less valuable to the success of the company, what it means is that key competencies should be treated differently" (Hamel, 1994:18). Generally, core competencies are the result of the "collective learning" process and are manifested in business processes and activities; they are unique capabilities; they span multiple products and markets (Hamel, 1994; Prahalad & Hamel, 1990).

Figure 6. Examples of sources of competitive advantage	
Company/factory/consumer	Source of competitive advantage
A	A company may have a licensing agreement that allows it unique access to a particular technology
B	Another company is granted an exclusive import licence for a particular product
C	A factory may preferably be located close to material suppliers
D	A factory may be located in a low-wage area
E	Consumers may prefer to buy because it is made locally (in the country or region where they live) or because it has a designation of origin

Fuente: From Hamel, 1994

CONCLUSIONS

Throughout the paper it is argued that in order to understand how a company builds key competences and generates competitive advantage it is necessary to understand the theoretical foundations of organisational knowledge in the perspective of social processes and organisational learning. Theoretically, the close relationship between organisational knowledge, key competences and competitive advantage was shown, through the process of knowledge conversion: socialisation-externalisation-combination-internalisation and its integration at the individual, group, company and inter-company levels. There are several theoretical positions that explore the knowledge-based approach, considered by many as emerging. One of the most strategically important resources for the company is undoubtedly knowledge because it resides within the individual, therefore, it is not directly appropriable, its transfer is only possible through its application in productive activity, it is difficult to transfer and replicate. Knowledge represents the primary source of added value for the company, therefore, all human productivity depends on knowledge, and machines are different forms of knowledge realisation. Organisational knowledge becomes strategically important when through the conversion process it enables the building of competencies that allow the company to participate in new markets, deliver value for its customers and contribute to value and/or cost for the company. However, the creation of new

knowledge faces a challenge for the construction and control of key competences, becoming a major constraint because it is very likely that much of the tacit (personal) knowledge will never become explicit and how much of the explicit knowledge can be disseminated. In this context, experience becomes important because of its impact beyond the individual, as it facilitates the growing knowledge to provide ways and possibilities to act in the company. This increase in knowledge generates productive opportunities for the company regardless of changes in the environment. To assess organisational knowledge there are empirical studies that, on the one hand, analyse how the modes of knowledge conversion proposed by Nonaka and Takeuchi affect organisational learning and examine the joint influence of these variables on firm performance. On the other hand, it is recognised that unlike core competencies, a competitive advantage results from the way a firm makes use of its capabilities and resources to develop products and markets; it is short-lived and its origin can be internal or external to the firm. In contrast, a core competence is a set of aspects around the skills of the people within the firm, the technologies embedded, the various value-generating activities and the knowledge embedded among the members of the organisation. If we consider that specialised knowledge generally comes from experience and for the same reason is often difficult to transfer between organisations due to transfer costs and its tacit character, therefore, the possession of knowledge, together with the ability to transfer it between the members of the company can be, in itself, a key competence for the company. Finally, it is established that key capabilities are a concept under construction in the field of strategic management, it constitutes an additional way of studying certain aspects of the complex world of organisations, a manager needs to make an effort of abstraction to identify such core competencies in the configuration of specific products or services. So far, there is no general agreement on what dimensions are needed to measure and explain the phenomenon described. The situation referred to around "key competences" evidences a conceptual limitation derived from the recent development of theory and also from the lack of instruments that gather empirical evidence. Given the need to evaluate the meaning of key competences, the

possibility arises of developing measurement instruments that bring together theoretical concepts proposed by Grant (1996b), Hamel (1994), Prahalad & Hamel (1990), Prahalad & Krishnan (2009) and collect empirical evidence based on variables such as: access to markets, value for the client and contribution to the value and/or cost for the company. Since, core competencies are understood as the set of managerial skills to use strategic assets, own and others, in the development of activities that contribute: to create value and/or cost for the company; to the benefits of the product/service perceived by the customer, and to provide access to a variety of markets; through integrating and consolidating multiple streams of technology with production capabilities (Hamel, 1994; Prahalad & Hamel 1990; Prahalad & Krishnan, 2009).

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