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VILMAR ANTONIO GONÇALVES TONDOLO

OFFSHORE OPERATIONS CAPABILITY: A MULTI-CASE STUDY

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Dissertation submitted to the PhD Program in Business Administration of the Universidade do Vale do Rio dos Sinos as partial fulfillment of the requirements for the degree of Doctor in Business Administration.

Advisor: PhD. Cláudia Cristina Bitencourt

Co-Advisor: PhD. Hale Kaynak

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Vilmar Antonio Gonçalves Tondolo

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ABSTRACT

The main objective of this dissertation is to understand how companies develop capability to manage and implement offshore operations. Even though offshore operations is not a new subject – it has been practiced by companies for a long time, and is a growing operations practice employed by companies worldwide – academic efforts are still needed to achieve a full understanding of this phenomenon. One of those efforts is the comprehension of the strategic aspects of offshore. Offshore has implications for the strategic management field because it can instigate a firm to develop new capabilities and resources. In addition, companies have also moved high skill and core business activities overseas, requiring implementation of new organizational measures. For instance, literature has suggested that capabilities development is important to undertake more complex offshore processes and to overcome managerial challenges and implementation barriers. Thus, this study integrates Dynamic Capabilities as a main theory lens and offshore operations as organizational context. More specifically, this study takes Dynamic Capabilities as the "firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece, Pisano, & Shuen, 1997, p. 516). This concept emphasizes Dynamic Capabilities as a set of organizational processes, which result in the development of specific capabilities in order to fit with environmental conditions. This study also takes offshore operations as "the movement or relocation of domestic firm activities and operations abroad" (Bunyaratavej, Hahn, & Doh, 2008, p.227). Thus, the study offers a twofold contribution to the field. First, it explores how companies develop capability to manage offshore operations. Second, it explores the role of three dynamic capabilities elements (paths, positions, and processes) in the development of such capabilities. In order to achieve its objectives, eight case studies with manufacturing companies that have implemented captive offshore

operations were carried out. The qualitative data were collected through semi-structured interviews. The interview protocol was developed to cover elements related to dynamic capabilities and offshore based on a literature review. Using theory building through case studies, it was possible to obtain research outcomes such as types of offshore operations implemented by the companies; strategic roles of offshore operations; barriers to implement offshore operations; coordination mechanisms, resources, and capabilities developed by companies to implement offshore operations; and the role of dynamic capabilities elements (paths, positions, processes, and firm-specific DC processes) on the development of capability to manage and implement offshore operations. We also suggest propositions and an integrated model. Finally, this study contributes to practitioners by suggesting methods used by companies that have been developing capability to manage offshore operations.

KEY WORDS: Dynamic Capabilities, Offshore Operations, Resources, Capability, Management.

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INTRODUCTION

Offshore is a growing operations practice worldwide. Over the last decade, companies have moved manufacturing operations abroad, primarily from developed to developing countries. This movement can be considered a strategy formulated in response to the increasing competitiveness of global markets. In recent years, companies have also moved services, high-skill, and core business activities overseas. This shift in offshore to more complex operations may require the creation and implementation of new organizational practices that have implications for various organizational issues (Duke CIBER/Archstone Consulting, 2005, 2006; Duke CIBER/Booz Allen Hamilton Inc., 2007), among those is the necessity to develop new resources and capabilities (Doh, 2005).

Although offshore has been practiced by companies for a long time (Hagell III & Brown, 2005; Lewin & Peeters, 2006a; Niederman, 2005; Olsen, 2006; Stringfellow, Teagarden, & Nie, 2008; Sturgeon & Florida, 2000), academic efforts are needed to achieve a full understanding of this phenomenon. One of these efforts is to acquire a better understanding of the strategic aspects of offshore. Offshore has implications for the strategic management field because it may require new resources and the development of new or unfamiliar capabilities. Thus, offshore can be considered an internal process as well as a business strategy for effective management of resources and firm-level capabilities (Doh, 2005). It is also a strategy conducted on a learning-by-doing basis. This aspect suggests that implementation of offshore is achieved by a continuum of stages (Lewin & Peeters, 2006a; Maskell, Pedersen, Petersen, & Dick-Nielsen, 2006), during which the development of resources and capabilities makes an important contribution to the implementation and management of this process (Carmel & Agarwal, 2002; Ellran, Tade, & Billington, 2008; Levy, 2005; Lewin & Peeters, 2006b; Venkatraman, 2004; Youngdahl & Ramaswamy, 2008).

The literature has suggested that capabilities development is important when undertaking more complex offshore processes such as product development (Manning, Massini, & Lewin, 2008), and overcoming difficulties created by temporal and spatial distance between locally dispersed work teams (Levina, 2007; Levina & Vaast, 2008). However, there is a lack of studies clarifying how companies develop capability to manage and implement offshore operations.

Focusing on managerial and firm capabilities, the dynamic capabilities (DC) approach can be a useful perspective for examining how companies develop unique capabilities in offshore (Doh, 2005). DC is also suggested as a means to understand the development of capabilities in open economies organizational practices, such as innovation, outsourcing, and offshore (Teece, 2007). However, there is a lack of researching addressing how companies develop capabilities by DC (Pablo, Reay, Dewald, & Casebeer, 2007). Clarifying how DC works on the development of capability is central to advancements of DC theory (Alsos, Borch, Ljunggren, & Madsen, 2007).

Based on these arguments, our research question is: *How do companies develop capability to manage and implement offshore operations?* Or, in other words, this study aims to explore *how companies develop capability to manage and implement offshore operations*. Our specific objectives are: *(1) to identify which kind of offshore operations each company has been implementing; (2) to explore main differences of management among kinds of offshore operations; (3) to explore what is/are the strategic role/s of offshore operations, and what moves companies to implement it; (4) to explore the main barriers to implementing and managing offshore operations; (5) to identify resources and capabilities developed by companies in order to be able to manage and implement offshore operations; (6) to understand how Dynamic Capabilities elements (organizational processes, path, positions, and firm-specific DC processes) contribute to the development of capabilities to manage*

offshore operations; and, (7) to develop an integrated model of capability development to manage and implement offshore operations.

In order to address our proposal, we integrate DC as a main theory lens and offshore operations as organizational context. More specifically, this study defines DC as "a firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece, Pisano, & Shuen, 1997, p. 516). Such a concept emphasizes DC as a set of elements that result in the development of specific resources and capabilities to fit environmental conditions.

We operationalized our study by multi-case study method. Our research is characterized as a qualitative and descriptive study. We collected data by semi-structured interviews and document analysis based on archival records. We conduct data analysis by qualitative content analysis technique, using categories of analysis developed by theory review, and using CAQDAS[1], in order to perform the qualitative data analysis. We analyzed data from eight manufacturing companies. We first analyzed data individually, and then we performed cross-case comparison in order to develop new insights to contribute to the research focus.

This study has a twofold contribution to research. First, it analyses how companies develop capability to manage and implement offshore operations. Second, it explores the role of three DC elements (paths, positions, organizational processes, and firm-specific DC processes), to be discussed later, in the development of such capability. This study also contributes to practice by providing insights into how companies have developed capabilities, identifying which capabilities they have developed for managing offshore operations, as well exploring elements of offshore operations such as barriers, strategic roles, and coordination.

[1] Computer Assisted Qualitative Data Analysis Software.

This study is organized as follows. In the next section we present a theoretical background on offshore operations and DC. In Section 3 we describe the methodological procedure adopted. In Section 4 we present cases, cross-cases analysis, propositions, and an integrated model. We conclude with discussion and conclusion, as well as implications for researchers and managers, limitations, and future research directions.

2. THEORETICAL BACKGROUND

In accordance with the intention of this study, the theoretical review will address the following topics: Dynamic Capabilities and offshore operations. It is interesting to note that Dynamic Capabilities is the main theoretical lens of our study. We are not considering offshore operations as a main theory; we consider offshore operations as the organizational context we are analyzing with Dynamic Capabilities.

2.1 Dynamic Capabilities

In support of Dynamic Capabilities (DC), this study addressed the following aspects: origin and relationship between the approach of resources and DC, central terms related to this project, and points in developing on approach of DC.

2.1.1 Origin and relationship between the approach of Resources and Dynamic Capabilities

The strategy study field began to establish itself in the 1970s; since then, it has been grown and gained attention of researchers of business. Developed studies in this field can be understood through an evolutionary vision (Herrmann, 2005). According to Hoskinsson, Hitt, Wan, and Yiu (1999), studies in strategy have evolved based on searching for a more scientifically specific, established field. From this view, the choice for a study on strategy depends on the object of research and the researcher's own perceptions. For this reason, there is no a priori infallible way, as everything depends on the characteristics of the study.

As a part of this evolutionary development of studies in strategy field, in the 1990s a new approach emerged that rescued internal organization analysis, the Resource Based View (RBV). RBV highlights the top performance or competitive advantage as related to internal differences among firms. This approach still needs further clarification and a more precise

definition of terms. Even so, it should be considered as a consistent approach in determining the competitive advantage between firms (Barney, 2001). This approach has generated a new era in strategy field studies (Herrmann, 2005).

Barney and Arikan (2005) emphasize that from the theoretical work of RBV, at least four theoretical sources have emerged: distinctive competence, Ricardian economy, Penrosian economy, and economy anti-trust implications. RBV recommends that a firm must verify the existence and quality of its resources, seeking to explore resources and capabilities difficult to imitate, allowing the construction of a unique position in the market. From this standpoint, the essence of the strategy is to operate resources and capabilities of the firm as best as possible (Grant, 1991).

The RBV authors see a firm as a collection of tangible and intangible resources. The difference between firms comes from each experience in their paths, as well as consolidated assets and skills of the organizational culture of each firm. These assets and capabilities determine outcome efficiency and effectiveness of the firm (Collis & Montgomery, 1995). In this view, the competitive advantage comes from the value of inimitable and unique company resources (Barney, 1991; 2001). In other words, the resources need to be valuable, rare, inimitable, and non-substitutable (VRIN).

As Foss (1997a) argues, Penrose was the precursor of the idea that firms differ in their resources, and that resources are exploited by firms through their organizational structures. According to Penrose (1962, p.27), "the firm is a collection of productive resources available among its different uses over time is determined by administrative decisions." Penrose (1962) emphasizes the role of administration in the firms. The author identifies a firm as an independent unit that defines its activities through structured plans, which are determined by a board of directors.

Works by Wernerfelt, Rumelt, and Barney jointly outlined the basic principles of RBV, suggesting that it is possible to develop a theory of sustainable superior performance through analysis of a firm's resources (Barney & Arikan, 2005). For the authors, in searching for an understanding of competitive advantage, there are two parallel chains with similarities to RBV, as follows: the accumulation and management of intangible assets and the theories of competencies and corporate diversification, including DC.
The main logical argument of RBV is that the creation, maintenance, and renewal of competitive advantage occur according to the characteristics and dynamics of internal resources of the firm. Therefore, the RBV is not yet an integrated approach; it is divided into two approaches, static and dynamic (Foss, 1997b).

Makadok (2001) highlights two approaches in the literature of the strategy field: resource-picking[2] and capability-building. According to the same author, these two approaches aim at understanding how managers generate economic rents for their businesses. The first approach is linked to the RBV and highlights businesses obtain performance through different resources in relation to competitors. The second approach is linked to DC and emphasizes how firms derive superior performance in relation to competitors through development of resources (Makadok, 2001). The main issue in this second approach is the relationship between the development of new capabilities and the organizational performance (Sapienza, Autio, George, & Zahra, 2006). The DC perspective has emerged from the RBV's unclear response as to how firms achieve competitive advantage in a dynamic or changing environmental context (Lopéz, 2005; Wang & Ahmed, 2007; Menon, 2008; Ambronisi & Bowman, 2009).

[2] In the strategic management literature, two distinct mechanisms—resource-picking and capability-building—have been proposed for understanding how managers create economic rents for their firms. The former mechanism asserts that firms create economic rent by being more effective than their rivals at selecting resources. The latter mechanism asserts that firms create economic rent by being more effective than their rivals at deploying resources (Makadok 2001, p. 387).

In other words, the DC perspective extends the RBV argument by introducing evolutionary arguments (Ferdinand, Antonocopoulou, Easterby-Smith, & Graca, 2005; Wang & Ahmed, 2007; Oliver & Holzinger, 2008), addressing how resources can be created and how the current stock of resources can be refreshed in changing environments (Verity, 2005; Menon, 2008; Ambrosini & Bowman, 2009), and focusing on a company's ability to reconfigure its routines to respond to changed environment (Doving & Gooderham, 2008; Green, Larson & Kao, 2008); it also regards the effect of market dynamism (Eisenhardt & Martin, 2000), and coevolution of learning mechanisms (Zollo & Winter, 2002).

Because it alters sets of resources and capabilities, and then affects performance, DC is more than a just addition to RBV (Zott, 2003). In sum, it considers two main additional aspects, the shifting character of the environment and the key role of strategic management (Teece & Pisano, 2004; Teece, Pisano & Shuen, 1997; Cavusgil, Seggie & Talay, 2007; Lillis & Lane, 2007). DC perspective also confronts the Five Forces perspective; for instance, environment is not seen just industry by industry, but rather it is seen as a whole business ecosystem (Teece, 2007). Indeed, DC as an organizational process may embed the exploration/exploitation logic, in which environmental requirements are realized by a company and sets of resources and capabilities are configured to deal with these requirements.

Dynamic Capability theory emerged, joining theoretical approaches on the exploitation and development of internal and external firm-specific capabilities (e.g. Penrose, 1959; Teece, 1982; and Wenerfelt, 1984) and others which have emphasized how some organizations respond to shifts in the business environment through development of firm-specific capabilities and how they renew competences (e.g. Iansiti & Clark, 1995, Henderson, 1994) (Teece & Pisano, 2004). Studies that pointed out new kinds of organizational capabilities also offered great contributions to the emergence of DC (e.g. Leonard-Barton,

1992; Collis, 1994). Thus, DC theory has started to recognize the role of exploitation of the set of organizational resources and capabilities and the role of exploration of new ones (e.g. combination, integration, renewal).

The DC perspective includes the "Schumpeterian" evolutionary vision of competition among firms. For this reason, the differences among firms are generated by new combinations of resources and capabilities, developed by firms throughout their trajectory (Teece, Pisano & Shuen, 1997). Indeed, DC perspective complements Schumpeter's arguments by stressing the role of internal company's process on creation of new capabilities/resources combinations that are essential to competition. Moreover, a company's process are shaped and limited by its trajectory (Teece & Pisano, 1994). The DC perspective is differentiated from other competitive advantage approaches (e.g. the competitive five forces, the RBV, the strategic conflict approach) due to its potentiality to address the role of management in achieving competitive advantage in high demanding environments (Teece, Pisano, & Shuen, 1997). The main argument to introduce DC follows:

> Winners in the global marketplace have been firms that can demonstrate timely responsiveness and rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competences. Not surprisingly, industry observers have remarked that companies can accumulate a large stock of valuable technology assets and still not have many useful capabilities. (Teece, Pisano, & Shuen, 1997, p. 515).

As can be seen, it is not enough for a company to accumulate resources, but rather DC perspective emphasizes two main elements of development of new ways of competitive advantage: the dynamic and the capability. The term "dynamic" refers to shifting character of the environment that requires strategic responses (e.g. renew competences), and the term "capability" refers to role of strategic management to deal with changing environment requirements through adapting the company internally (e.g. adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional

competences) (Teece, Pisano, & Shuen, 1997; Teece & Pisano, 2004[3]). For this reason, the main argument is the ability of the organization to develop high-level capabilities through its trajectory, leveraging and/or sustaining the superior performance (Helfat & Peteraf, 2003; Marcus & Anderson, 2006; Harreld, O'Reilly III, & Tushman, 2007), rather than only the possession of distinctive resources.

The discussion of DC is based on evolutionary economics of Nelson and Winter, following the legacy of Alchian and Simon and March, who suggest that decisions taken under uncertainty are satisfactory rather than great, due to the influence of limited rationality (Zahra, Sapienza & Davidsson, 2006). Skills are developed over time, but in addition, the capabilities are caused by a sequence of decisions, generating a strategic commitment (Ghemawat, 2000). This strategic commitment can be seen as a path-dependent element. In this sense, heterogeneous resources and capabilities can be developed throughout the history of the firm, through decisions and commitments made previously (Alvarez & Barney, 2006).

Choices that firms make in terms of development and/or combination of resources and capabilities are the core of the firm's strategy. This continuum of decisions and development of resources and capabilities is unique to each firm, making resources and capabilities developed in this process difficult to imitate by competitors. This way, capabilities are dynamic skills, continuous learning, and development and accumulation of skills developed by firms to differ from their competitors (Teece, Pisano & Shuen, 1997). Dynamic capability, in turn, is the ability of the firm to build, integrate, or reconfigure operational capabilities, not directly resulting in increased profitability, but also significantly affecting the performance of the operational capabilities of the firm (Helfat & Peteraf, 2003).

[3] This is a reprinted version Teece, D. J. and G. Pisano (1994). 'The dynamic capabilities of firms: An introduction'. Industrial and Corporate Change, 3(3), pp. 537-556.

In the approach of DC, development of resources and capabilities are inside a firm. In this respect, Eisenhardt and Martin (2000) emphasize that internal processes are the sources of dynamic capabilities. The trajectory of organization leads to the accumulation of knowledge capable of generating new routines[4] and processes over time (Sapienza, Autio, George, & Zahra, 2006). It also highlights other companies' internal processes, such as organizational learning and innovation (Mcguinness & Morgan, 2000).

Pisano (2000) linked DC to a specific type of routine, the dynamic routine. Thus, the standards of procedures, continuous improvement, and learning are examples of internal sources of DC (Ghemawat, 2000). Over two decades of research, the central point of DC is the ability to replicate and improve the organizational capabilities (Gaveti, 2005). The knowledge is transferred among members of organization by routines. This process enables the firm to develop new capacity for higher competitive level (Sapienza, Autio, George, & Zahra, 2006).

An important differentiation can be made among the following terms: resources, abilities, skills, capabilities, and dynamic knowledge. In the strategy literature, each one of these terms is part of a current in its search for understanding of the superior performance. They possess different ways to characterize firms' attributes, but they share similar theoretical bases (Barney & Arıkan, 2005). The current theories related to the terms above highlight are respectively:

> Theories based on the resources of superior performance; theories of superior performance capabilities of the firm; theories of dynamic capacity of superior performance, theories of the competence of superior performance and theories based on knowledge of superior performance. (Barney and Arıkan, 2005, p. 139-140)

[4] Routines are patters of interactions that represent successful solutions to particular problems. These patterns of interaction are resident in group behavior, although certain subroutines may be resident in individual behavior (Teece and Pisano, 2004, p. 201).

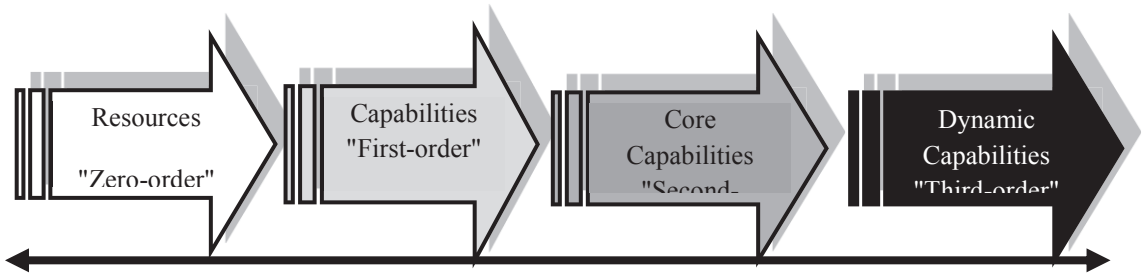
In this sense, Table 1 shows the central terms and their meanings related to resource and capability perspectives for this project.

Table 1: Definitions of central terms to this project

Term	**Meaning**	**Source**
Resource	Tangible and intangible assets used by organizations to design and implement their strategies.	Barney & Aikan (2005, p. 138)
Capabilities	The socially complex routines that determine the efficiency with which firms physically transform inputs into outputs.	Collis (1994, p.145)
Dynamic Capabilities	Capacity of organizations to integrate, build, and reconfigure internal and external capabilities to respond rapidly to environment changes.	Teece, Pisano, & Shuen (1997, p. 115).
Process	Processes are often explicit or codifiable structuring and combination of resources and thus can be transferred more easily within the firm or across firms.	Wang & Ahmed (2007, p. 35).
Complementary Assets	Resources or capabilities needed for the firm gets appropriability of profitability from strategy, innovation, or technology.	Teece (1986, p. 288).
Managerial and organizational processes	By managerial and organizational processes, we refer to the way things are done in the firm, or what might be referred to as its routines or patterns of current practice and learning.	Teece, Pisano & Shuen (1997, p. 115).
Path	By paths we refer to the strategic alternatives available to the firm, and the presence or absence of increasing returns and attendant path dependencies.	Teece, Pisano & Shuen (1997, p. 115).
Positions	By position we refer to its current specific endowments of technology, intellectual property, complementary assets, customer base, and its external relations with suppliers and complementors.	Teece, Pisano & Shuen (1997, p. 115).

Besides the definition of terms, it is also important point out the logic behind the scenes of DC. Thus, the understanding of the "function" of each term, and its interconnection is also central. This work calls it as "value chain" of DC, which is based on "hierarchical order" of resources and capabilities proposed by Wang and Ahmed (2007), as Figure 1 shows.

Figure 1: Value chain of DC based on Wang and Ahmed (2007)



As can be seen, resources are the foundations, or, in other words, the starting-points of the chain. Capabilities represent the company's ability to deploy resources in order to achieve a specific goal. Core capabilities refer to sets of resources and capabilities, which have a central contribution to competitive advantage at specific time. And finally, DCs represent the continuous management of resources, capabilities, and core capabilities (e.g. renewal), fundamentally to deal with environmental changes and sustain competitive advantage (Wang & Ahmed, 2007). Thus, operational capabilities, or only capabilities, allow companies to perform current activities. Moreover, the DC involves change, which may engage resources, capabilities, and even business models (Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece, et al., 2007).

2.1.2 Dynamic Capability, Approaches, Definitions, Processes, and Outcomes

As discussed above, DC can be considered a "dynamic" perspective of strategy resource approach. This perspective has been studied since the work of Teece and Pisano (1994) and the later work of Teece, Pisano, and Shuen (1997) (e.g. Cavusgil, Seggie & Talay, 2007). These authors define DC as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece, Pisano,

& Shuen, 1997, p. 516). Their work can be considered as the most influential study on DC perspective (Schreyögg & Kliesch-Eberl, 2007; Witcher, Chau, & Harding, 2008).

According to Zollo and Winter (2002), a firm is seen as a set of operational and administrative routines, which evolve over time through performance feedback. In addition, the same authors argue that the first definition opened some questions (e.g. How does DC work?). Based on possible different perspectives of the DC concept, this work brings several definitions and points out their emphasis, as can be seen in Table 2.

Table 2: Definitions and emphasis of DC

Authors	**DC definition**	**Emphasis**
Teece, Pisano, & Shuen, (1997)	We define dynamic capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions	Firm's ability
Eisenhardt & Martin (2000)	The firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die (p.1107).	Firm's routines and processes
Luo (2000)	Dynamic capability can be defined as an MNE's ability to create, deploy, and upgrade organizationally embedded and return-generating resources in pursuit of sustained competitive advantages in the global market. Dynamic capabilities requires the capacity to extract economic benefits from current resources and to develop new capabilities (p. 355)	MNE's ability and capacity
Griffith & Harvey (2001)	Global dynamic capabilities is the creations of difficult-to-imitate combinations of resources, including effective coordination of interorganizational relationships, on a global basis that can provide to a firm a competitive advantage (Dyer and Sing, 1998; Teece et al, 1997) (p. 598).	Firm's globally difficult-to-imitate combinations of resources, and interorganizational relationships
Zollo & Winter (2002)	A dynamic capability is a learned and stable patterns of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness (p. 340).	Learning process and patterns

Adner & Helfat (2003)	Dynamic managerial capabilities are the capabilities with which managers build, integrate, and reconfigure organizational resources and competences. The concept of dynamic managerial capabilities is a direct analogy to more general organizational 'dynamic capabilities,' which Teece, Pisano, and Shuen (1997: 516) define as capabilities that enable an organization 'to integrate, build, and reconfigure competences.' (p. 1012).	Managerial capabilities
Bowman & Ambrosini (2003)	The dynamic capability approach focuses attention on the firm's ability to renew its resources in line with changes in its environment. […] The dynamic capabilities view (DCV) focuses on the capacity an organization facing a rapidly changing environment has to create new resources, to renew or alter its resource mix. (p. 292).	Firm's capacity
Zott (2003)	It is suggested that dynamic capabilities are indirectly linked with firm performance by aiming at changing a firm's bundle of resources, operational routines, and competencies, which in turn affect economic performance. More specifically, dynamic capabilities are embedded in routine organizational processes that guide the evolution of a firm's resource configuration and operational routines (Helfat & Raubitschek, 2000: 975; Nelson & Winter, 1982; Zollo & Winter , 2002). (p. 98) […] Dynamic capabilities create and shape a firm's resource positions (Eisenhardt & Martin, 2000; Galunic & Eisenhardt, 2001), capabilities (Kogut & Zander, 1992), operational routines (Nelson and Winter, 1982), and activities (Porter, 1985,1994). (p. 100)	Firm's routines and processes
Blyler & Coff (2003)	The logic is that firms create a string of 'temporary' advantages by adding (picking), subtracting, and reconfiguring resources, which may amount to a sustained advantage once the full pattern is considered. While any given resource configuration may be imitable, the meta-capability to acquire and manipulate resources may be very hard to replicate (p.678).	Firm's meta-capability
Helfat &Peteraf (2003)	Dynamic capabilities build, integrate, or reconfigure operational capabilities. Dynamic capabilities do not directly affect output for the firm in which they reside, but indirectly contribute to the output of the firm through an impact on operational capabilities. (p. 999)	Firm's processes
Verity (2005)	Dynamic capabilities are processes and routines adopted by organizations to bring about change. They are systems used to alter the resources the firm has by deploying, adapting, configuring them in new ways to achieve specific ends.[…] Dynamics capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as market emerge, collide, split, evolve, and die (p. 81).	Firm's processes routines e systems
Lopéz (2005)	Dynamic capabilities are complex high order organizational processes, which provide adequate conditions for the modification and renewal of the firm's stocks of business assets (p.662).	High order organizational processes
Marcus & Anderson (2006)	A general dynamic capability is the ability 'to renew, augment, and adapt' competencies over time (Teece, Pisano, & Shuen, 1992, p. 18; Tripsas, 1997; Winter, 2003) (p. 19)	Firm's ability

Zahra, Sapienza, & Davidson (2006)	We propose that one source of these differences lies in these firms' developing and applying different dynamic capabilities, which we define as the abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker(s) (p. 918). […] We distinguish substantive capability from the dynamic ability to change or reconfigure existing substantive capabilities, which we term as the firm's dynamic capabilities. Thus, the qualifier 'dynamic' distinguishes one type of ability (e.g. the substantive ability to develop new products) from another type of ability (e.g. the ability to reform the way the firm develops new products). A new routine for product development is a new substantive capability but the ability to change such capabilities is a dynamic capability (p. 921).	Firm's ability based on managerial decision
Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece, et al (2007)	A dynamic capability[5] is the capacity of an organization to purposefully create, extend, or modify its resource base (p. 4).	Organizational capacity
Wang & Hamed (2007)	We define dynamic capabilities as a firm's behavioral orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage. By this definition, we first argue that dynamic capabilities are not simply processes, but embedded in processes. (p. 35)	Behavioral orientation

[5] We recognize that a single phrase cannot include everything of importance with regard dynamic capabilities. This definition, however, captures many of the critical features of dynamic capabilities. The words in this definition have specific meanings as follows. The "resource base" of an organization includes tangible, intangible, and human assets (or resources) as well as capabilities which the organization owns, controls, or has access to on preferential basis. […] The word "capacity" refers to the ability to perform a task in at least a minimally acceptable manner. Neither "capability" nor the related term "competence" implies outstanding ability […] These terms imply only the potential for "adequate performance." […] The term "capacity" has a second dimension as well. It implies that the function that a dynamic capability performs is repeatable and can be reliably executed to at least some extent. In other words, a dynamic capability consists of patterned and somewhat practiced activity. […] The word "purposefully" also has a specific meaning in our definition. This word indicates that dynamic capabilities reflect some degree of intent, even if not fully explicit. […] The words "create, extend, or modify" in the definition of dynamic capability, however, do not apply to operational capabilities. Unlike operational capabilities, which pertain to the current operation of an organization, dynamic capabilities alter the resource base of an organization (Helfat et al, 2007, p. 4-6).

Alsos, Borch, Ljunggren, & Madsen, (2007)	Dynamic capabilities are acquired activities which enable the firm to integrate, build/develop and reconfigure internal and external resources of the firm and ordinary capabilities in one manner, assumed and regarded as objective by the decision maker(s) in the firm (Madsen, forthcoming 2007: 45) (s.p.)	Firm's activities
Teece (2007)	Dynamic capabilities, by contrast, relate to high-level activities that link to management's ability to sense and then seize opportunities, navigate threats, and combine and reconfigure specialized and cospecialized assets to meet changing customer needs, and to sustain and amplify evolutionary fitness, thereby building long-run value for investors (p. 1344).	High-level managerial activities
Harreld, O'Reilly III, & Tushman (2007)	Most recently, strategy research has begun to emphasize a fourth approach, dynamic capabilities, which builds on the notion of core competencies but focuses on the role of management in building and adapting these competencies to address rapidly changing environments (p. 24).	Core competencies built and adapted by firm's management to address changing environments
Cavusgil, Seggie, & Talay (2007)	Specific organizational processes by which managers alter their resource base (p. 162).	Firm's processes
Døving & Gooderham (2008)	Our view is that dynamic capabilities are best conceived as enduring routines, systems, and processes that are visible, known, and managerially intended as a means to achieving new resource configurations (p. 845).	Organizational routines, systems and processes
Menon (2008)	Dynamic capability refers to the ability of a firm to utilize its resources effectively so as to achieve congruence with the changing business Environment (p.23).	Firm's ability to exploit resources
Ambrosini & Bowman (2009)	A dynamic capability is not a capability in the RBV sense, a dynamic capability is not a resource. A dynamic capability is a process that impacts upon resources. Dynamic capabilities are about developing the most adequate resource base. They are future oriented, whereas capabilities are about competing today, and they are 'static' if no dynamic capabilities are deployed to alter them. […] Put differently, it means that the dynamism consists in the interaction of the dynamic capability and resource base, allowing the modification of this resource base.[…]'Dynamic' can refer to change in the resource base, to the renewal of resources. We should argue that this is the correct definition. (p. 34-35)	Organizational process

Chen & Lee (2009)	Organizational dynamic capabilities are an intrinsic evolutionary process that can help facilitate problem solving, improve decision making, stimulate creative ideals, and help members effectively implement organizational objectives. (p. 79). […] Thus, we refined the DCC[6] definitions of previous studies, and defined DCC as a set of stable patterns and activities based on an organizational routine and implemented via learning. (p. 81)	Patterns, routines, activities, and learning

As can be seen in Table 2, the literature offers several definitions and concepts of DC. Analyzing these concepts, it is possible to point out the following aspects. First, the main result of DC is to create, renew, or integrate resources, assets, capabilities, competences, and routines allowing firms to keep up with environmental changes. As Wang and Ahmed (2007, p. 40) argue, "capability development as an outcome of dynamic capabilities over time is frequently discussed and evidenced in empirical research."

Second, different aspects of DC are emphasized, as follows: organizational process, behavioral orientation, high-level managerial activities, firm's ability, firm's capacity, firm's routines and processes, learning process, firm's activities, and patterns. Thus, it is impossible to argue that DC is based on just one or a few aspects of a firm. In others words, DC is seen as a set of organizational aspects that, over time, allow companies manage new external and internal requirements.

Recently, different approaches on DC have been highlighted in the strategy literature. Schreyögg and Kliesch-Eberl (2007) point out three approaches to DC as follows: (i) the radical dynamization approach, (ii) the integrative approach, and (iii) the innovation routine approach. According to the authors, the radical dynamization approach aims to adapt the capability's concept to dynamic environment. Based on insights from Enseinhardt and Martin

[6] DCC refers to term Dynamic Competitive Capabilities (Chen & Lee, 2009).

(2000), DC is considered different from regular capabilities. In this sense, DC is able to adapt firms to environmental changes through process such as reconfiguration, integration, and acquisition of resources. In other words, DC develops a new set of capabilities, allowing firms to keep up with environmental changes. Concepts such as "adhocracy" and "organizational learning" are very close to this DC approach (Schreyögg & Kliesch-Eberl, 2007).

Based on insights of Teece, Pisano, and Shuen (1997), the integrative approach is the top approach of DC. The DC is seen as mechanisms able to develop new capabilities required for environmental changes. Three dimensions (positions, paths and processes) allow companies to adapt, integrate, and reconfigure companies' pull of resources and capabilities. Besides these three dimensions, DC has learning and reconfiguration as sub-dimensions. This approach emphasizes the integration of static and dynamic elements (Schreyögg & Kliesch-Eberl, 2007).

Based on insights of Nelson and Winter (1982) and Zollo and Winter (2002), the innovation routine approach emphasizes the role of innovative routines on development and changing of capabilities. DC in the form of innovative routine emerges from learning processes (Schreyögg & Kliesch-Eberl, 2007). Thus, in this view DC have three distinctive approaches, each one based on specific arguments.

Alsos, Borch, Ljunggren, and Madsen (2007) in their turn highlight only two approaches to DC. According to the authors, the first approach considers DC as an evolutionary process that has three stages; searching (variation), selection (evaluation) and routinisation (implementation). It corresponds to the innovation routine approach pointed out by Schreyögg and Kliesch-Eberl (2007). The second approach considers DC as organizational processes and mechanisms, allowing firms to build, reconfigure, integrate, reorganize and release resources and capabilities, and keep up with environmental changing requirements.

The key processes of this view are coordination, integration, and learning (Alsos, Borch, Ljunggren, & Madsen, 2007). It corresponds to the radical dynamization and integrative approach pointed out by Schreyögg and Kliesch-Eberl (2007). Thus, instead of three approaches to DC, Alsos, Borch, Ljunggren, and Madsen, (2007) defend two; they are represented by innovation routine, and integration a leaning aspects.

As noted above, DC is connected to several organization aspects (e.g. processes). According to this view, DC can be seen as high order processes, which are accomplished though a set of sub-processes (e.g. Menon, 2008; Ambrosini & Bowman, 2009) and embedded in those processes (Wang & Ahmed, 2007). This characteristic opens an important debate regarding to which processes are components of DC. Thus, this study points out DC's processes in Table 3.

Table 3: DC elements and processes

Author	DC processes elements	Processes	Definitions
Ambrosini & Bowman (2009)	Specifically, Bowman and Ambrosini (2003) building on Teece, Pisano, and Shuen (1997) explain that dynamic capabilities comprise four main processes: **reconfiguration, leveraging, learning and creative integration**. (p. 35)	Reconfiguration;	Reconfiguration refers to the transfo assets and resources, e.g. the cons functions that often occurs as a result o
		Leveraging;	Leveraging involves replicating a proc in one business unit into another, deploying it into a new domain, for in brand to a new set of products. (p. 35)
		Learning;	Learning allows tasks to be perfo efficiently as an outcome of experim and success. (p. 35)
		Creative integration.	Finally, creative integration relates integrate its assets and resources, configuration. (p. 35)
Chen & Lee (2009)	An organizational Dynamic Learning Mechanism thus dictates how a firm nurtures DCC development and renewal. (p. 81) We found that drivers such as external linkages, previous experience, repeated practice, experience codification, and the integration power of managers have a positive impact on DCC development, while ambiguity has confirmed that the characteristics of firms' dynamic capabilities are embedded in the development process. DCC development includes well-known organizational and strategic processes such as alliances, the strategic values of which lie primarily in allowing organizations to manipulate resources and enter a routine of renewing value; notably, a DLM plays a decisive role in this evolutionary process. (p. 87)	Dynamic Learning Mechanism: Experience accumulation; Knowledge articulation; Knowledge codification.	We followed the approach of Nelson a a DLM as a set of operations and rout can keep on a renewal resource and defined DLM drivers following Zollo the direction of experience accumul and knowledge codification (p. 79).
Menon (2008)	Dynamic capabilities have been viewed as complex processes constituted of underlying sub processes (p.24).	Learning	Learning is the process of generating new thinking to enhance existing reso is the ability to acquire, assimilate, t knowledge to generate new knowledge

		Reconfiguration	The process of reconfiguration change resources into new ones that matc Reconfigurability as a capability appropriateness (Eisenhardt & Brown efficiency (Kogut & Zander, 1992) b reconfigured into new operational com a more specific definition of reconfi consists of any change in the pattern o resources (existing and new) (p.27).
		Coordination and integration	Coordination and integration in dy viewed as processes that help the resources. They have been clubbed complementary within dynamic capab to coordinate has been distinguished from the capability to integrate (Kogu specifies the organizing principles integrated, coordinating, according manage dependencies among resource of performing a set of activities (p.27).
Alsos, Borch, Ljunggren, & Madsen (2007)	On the basis of the above review, it can be argued that Dynamic Capabilities exist as four generic types: (1) External observation and evaluation, (2) External resource acquisition, (3) Internal resource reconfiguration, and (4) Internal resource renewal (s.n).	External observation and evaluation	They comprise DCs which monitor the to new ideas, discover new possibilitie
		External resource acquisition	It comprises DCs which acquire and resources (s.n.).
		Internal resource reconfiguration	It comprises DCs which reconfigure o (s.n.).
		Internal resource renewal	It comprises DCs which integrate n effective resource configurations (s.p.)
Wang & Ahmed (2007)	We identify three main component factors of dynamic capabilities, namely **adaptive capability, absorptive capability and innovative capability** (p. 36). […] Conceptually, we reckon that adaptive capability, absorptive capability and innovative capability are the most important component factors of dynamic capabilities and underpin a **firm's ability to integrate, reconfigure, renew and recreate its resources and capabilities** in line with external changes (p. 39).	Integration; Reconfiguration; Renewal; Recreation;	No definitions.

Teece (2007)	For analytical purposes, dynamic capabilities can be disaggregated into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets (p.1319). In Teece and Pisano (1994) and Teece, Pisano, and Shuen (1997), we proposed three organizational and managerial processes—coordination/integrating, learning, and reconfiguring—as core elements of dynamic capabilities. These processes are a subset of the processes that support sensing, seizing, and managing threats (p.1341)	Sensing/Seizing	Sensing (and shaping) new opportuni creation, learning, and interpretive ac (technological or market) opportunity through new products, processes, or s first two capabilities recognized a seizing—are related to but different 2006) concepts of exploration and ex that both are necessary for adaptatio tensions, if not incompatibilities, be summarize, an enterprise's ability to m to reconfigure itself is dependent on it in turn dependent on its ability to sense dynamic capabilities indicates that financial success depends on events ar Dynamic capabilities, by contrast, rel link to management's ability to sense navigate threats, and combine and cospecialized assets to meet changing and amplify evolutionary fitness, there investors (p. 1344).
Harreld, O'Reilly III & Tushman (2007)	Dynamic capabilities help a firm sense opportunities and then seize them by successfully reallocating resources, often by adjusting existing competencies or developing new ones. Unlike earlier strategic frameworks that were largely static, dynamic capabilities explicitly acknowledges that as markets and technologies evolve, firms need to adjust by reallocating assets and learning new skills (p. 24).	Sense	First, they must be able to accura competitive environment, including p competition, customers, and regulation
		Seize	Second, they must be able to act on the be able to seize them by reconfiguring assets to meet new challenges (p.25).
Cavusgil, Seggie & Talay (2007)	Within the DC view, competitive advantage stems not lust from the possession of a firm's unique resources but also in the resource configurations built from DC's (p. 161). It is important to note that the DC view emphasizes processes—integrating, reconfiguring, learning, and so on. These processes or routines are used to build	Organizational e strategic routines	It is argued that DCs are organization called processes) by which new resour response to market changes (p. 161).
		Learning	Unlike the RBV, which speaks of reso in a static context, the DC framework such as learning. Learning, according a "process by which repetition and exp performed better and quicker" (1997, p

	resource configurations in dynamic markets (p. 162).	Path dependence	The concept of path dependency rec The firm's past investments and routin (Teece, Pisano, & Shuen 1997). coevolutionary paths help explain i advantage (p. 162).
		Asset positions	Like the RBV, the DC framewor importance of firm assets to competitiv Pisano, and Shuen (1997) discuss techn financial, reputational, structural, instit knowledge assets are difficult to trade
		Replication and best practice	Teece, Pisano, and Shuen (1997) also of replication, or transfer of competen to another, to be fundamental to compe
		Integration	This type of dynamic capability co coordinate and integrate its resources akin to Henderson and Clark's (199 Miller and Shamsie's (1996) systemi 'ways in which the components are into a coherent whole' (Henderson & C
Zott (2003)	The various processes involved in the evolution of the firm's resources (i.e., variation, selection, and retention) that represent dynamic capability are next described in more depth. (p. 104). […] The mechanisms that constitute dynamic capability can be conceptualized as routines for variation (including search through imitation and experimentation), selection, and retention, which are ingredients to a system of evolutionary learning (Helfat & Raubitschek, 2000; Zollo & Winter , 2002). (p. 120).	Variation	Variation includes all processes ar searching for and identifying alternati sharing them among the members of ar
		Selection	Selection refers to the organizati identifying a preferred alternative for the evaluation of alternatives (p. 105).
		Retention	Retention refers to the actual impl configurations. Following the selecti must decide whether or not to retain, th
Adner & Helfat (2003)	We propose that dynamic managerial capabilities are rooted in three underlying factors: managerial human capital (Castanias & Helfat, 1991, 2001), managerial social capital (Burt, 1992; Gelatkanycz, Boyd, & Finkelstein, 2001), and managerial cognition	Managerial Human Capital	Human capital refers to learned skills t education, training, or learning mo (p.1020).
		Managerial Social Capital	Social capital results from social influence, control, and power (for a co & Kwon, 2002). The concept of socia

	(Hambrick & Mason, 1984; Huff, 1990; Hoopes & Johnson, 2003). These factors, separately and in combination, influence the strategic and operational decisions of managers (p.1013). In combination, managerial human capital, managerial social capital, and managerial cognition shape the resource and capability base of the corporation through the action of dynamic managerial capabilities (p.1022).		social ties (e.g., friendships, social goodwill that these ties may confer, tr work. Social ties also may help to setting to another (p.1021).
		Managerial Cognition	Managerial cognition refers to manage that serve as a basis for decision mak 1995) (p. 1021).
Helfat & Peteraf (2003)	By definition, dynamic capabilities involve adaptation and change, because they build, integrate, or reconfigure other resources and capabilities. We go even further to include all organizational capabilities, 'dynamic' or otherwise, in a dynamic resource-based view. In this article, we introduce a new concept that underpins a more comprehensive approach to dynamic resource-based theory: the capability lifecycle (CLC) (p. 997). Like the product lifecycle, the capability lifecycle describes recognizable stages, such as growth, maturity, and decline (p. 998). The capability lifecycle includes several stages. The lifecycle of a new capability in a new-to-the world organization begins with the founding stage, which lays the basis for subsequent development of the capability. A development stage follows this initial stage, marked by gradual building of the capability. Eventually, capability building ceases and the capability reaches the maturity stage. Once the capability reaches the maturity stage, or even before then, a variety of events may influence the future evolution of the capability. The capability then may branch into one of at least six additional stages of the capability lifecycle: retirement (death), retrenchment,	The founding stage	The lifecycle of a capability begins w stylized example, the founding stag individuals organizes around an obj involving the creation of a capability general requirements: (1) an organize type of leadership and capable of joint the achievement of which entails the Though new to the organization, the the world (p. 1000).
		The development stage	The development stage begins after around the objective of developing a pa stage, the capability develops through alternatives for capability developmen of experience over time (p. 1001).
		The maturity stage	The maturity stage entails capability exercising the capability, which refresh If exercised regularly, the capability be in the memory structure of the organ more habitual, requiring less and less the ability of the team to recall the de the capability may become more tacit i
		The retirement branch stage	Some extreme situations may force entirely, meaning that the capability di
		The retrenchment brand stage	By analogy, we might expect that red would degrade the level of capability. as a gradual decline in the level of retrenchment might proceed in discrete

	renewal, replication, redeployment, and recombination (p.1000).	The renewal brand stage	Renewal of a capability involves a r firm searches for and develops new a may involve major as well as minor m Figure 2, the renewal of the capabilit (or lower) level of capability than in th
		The replication brand stage	Figure 2 depicts replication as a stra ideal of highly accurate replication v capability.[…] Less complete replicati in the functioning of the capabi development to raise the level of capab level. In addition, firms may replicate (p.1006).
		The redeployment brand stage	As an alternative to replication, a fi capability to a different product mar applies to a different geographic ma service, redeployment involves a mar related product or service (p. 1006).
		The recombination brand stage	When transferring a capability to serve rather than replicate or redeploy the ex recombine the original capability with the recombination of capabilities can p capability renewal in the current produ
Blyler & Coff (2003)	We propose that social capital is an essential component of a dynamic capability in that it enables resource management—a defining aspect of such a capability (p. 679). In sum, without individuals' valuable internal and external social ties, firms would be unable to acquire, recombine, and release resources, making them maladapted to a volatile environment. Social capital provides essential information about opportunities to acquire and integrate resources. Moreover, weak ties facilitate the continuous reconfiguring required in this setting. Other elements such as an organic structure, shared culture, language, and simple routines are also required. Some are antecedents or requirements for developing social capital (Leana & Van Buren, 1999;	Acquiring resources	Social capital facilitates the acquisitio constant flow of information from di ties may be especially critical for acqu
		Integrating and recombining resources	Social capital may also help us u integrated and recombined in firms 679).
		Releasing resources	In mobilizing resources for one purp release other resources. When indivi some relations in favor of others, they and access to new resources (p.680).

	Nahapiet & Ghoshal, 1998). Others may be important independently (p. 680).		
Zollo & Winter (2002)	It addresses the role of (I) experience accumulation. (2) knowledge articulation, and (3) knowledge codification processes in the evolution of dynamic, as well as operational, routines. The argument is made that dynamic capabilities are shaped by the coevolution of these learning mechanisms. (p. 339) Dynamic capabilities arise from learning; they constitute the firm's systematic methods for modifying operating routines. To the extent that the learning mechanisms are themselves systematic, they could (following Collis 1994) be regarded as "second order" dynamic capabilities. Learning mechanisms shape operating routines directly as well as by the intermediate step of dynamic capabilities. (p. 340)	Learning mechanisms processes: Experience accumulation; Knowledge articulation ; Knowledge codification.	We incorporate this view in our dis "experience accumulation" to refer to which operating routines have traditio (p. 341). While potentially requiring significant part of the members of the organizatio produce an improved understanding of performance links, and therefore result existing sets of routines or in enhanc more fundamental change (p. 342). An even higher level of cognitive effo codify their understandings of the internal routines in written tools, spreadsheets, decision support sy software, etc. Knowledge codificatio articulation. The latter is required in while the opposite is obviously not tr articulated knowledge is never codifi costs incurred when stepping up the sharing of individual experience to process-specific tools. […] Codifica important as a supporting mechanis evolution process, not just the transf facilitate the generation of new prop available routines, as well as the ide the weaknesses in the proposed va routines.
(Eisenhardt & Martin 2000).	First, dynamic capabilities consist of specific strategic and organizational processes like product development, alliancing, and strategic decision making that create value for firms within dynamic markets by manipulating resources into new value-creating strategies (p.1106). […] We define dynamic capabilities as: The firm's processes that use resources—specifically the processes to integrate, reconfigure, gain and release resources—to	Integrate resources	For example, product development combine their varied skills and fun revenue producing products and serv 1991; Dougherty, 1992; Helfat & R dynamic capability. Toyota has, fo product development skills to achieve automotive industry (Clark & Fujimo decision making is a dynamic capab their various business, functional, and choices that shape the major strate

	match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die (p. 1107). […] Some dynamic capabilities integrate resources. […] Other dynamic capabilities focus on reconfiguration of resources within firms. Still other dynamic capabilities are related to the gain and release of resources. (p. 1107-1108).		Eisenhardt, 1989; Fredrickson, 198 (p.1107).
		Reconfiguration of resources	Transfer processes including routines (e.g., Hansen, 1999; Hargadon & Sutt used by managers to copy, transfe especially knowledge-based ones, w allocation routines are used to distri capital and manufacturing assets fr hierarchy (e.g., Burgelman, 1994). coevolving involves the routines by w of collaborations among various parts synergistic resource combinations amo & Galunic, 2000). […]Patching is a st routines to realign the match-up of bu Eisenhardt and J. A. Martin combin resources to changing market opport 1999). (p. 1107-1108).
		gain and release of resources.	These include knowledge creation ro others build new thinking within th dynamic capability in industries like and oil where cutting-edge knowle strategy and performance (e.g., H Cockburn, 1994; Rosenkopf & Nerk alliance and acquisition routines that firm from external sources (e.g., Ca 1998; Gulati, 1999; Lane & Lubatk Smith-Doerr, 1996; Ranft & Zeithaml (p.1108).
Luo (2000)	Capability possession (i.e. having distinctive resources), capability deployment (i.e. allocating distinctive resources) and capability upgrading (i.e. dynamic learning and building new capabilities) are three critical components of dynamic capabilities (p. 357)	Capability possession	It is critical to gaining competitive adv level strategies to exploit such advanta possession concerns a firm's establishe including critical assets, knowledge, or specific, difficult o imitate, and can ge competitive advantage. These resource embedded (p. 359).
		Capability deployment	It is crucial to mitigating the disadvant preempting emerging opportunities (p. involves both quantity and quality-base allocation. "Quantity-based" refers to t capabilities deployed in a target foreig

			involves the distinctiveness of return-g to a foreign market (p.363).
		Capability upgrading	It is essential to the evolutionary devel advantages and creating new bundles o MNE's ability to learn from multiple s (internal development and external lea customers, and suppliers), disseminate subunits under a coordinated network, integrating learning, reconfiguring reso new knowledge, revitalizing this know determines capability upgrading during (p.375).
Teece, Pisano, & Shuen (1997)	In this paper we merely identify several classes of factors that will help determine a firm's distinctive competence and dynamic capabilities. We organize these in three categories: processes, positions, and paths (p. 518)	Processes	By managerial and organizational proc things are done in the firm, or what mi routines, or patterns of current practice […]Organizational processes have thre coordination/integration (a static conce concept); and reconfiguration (a transf
		Positions	By position we refer to its curr technology, intellectual property, co base, and its external relations with (p.518)
		Paths	By paths we refer to the strategic alte and the presence or absence of increas dependencies (p. 518).

As it is possible see in Table 3, DC is composed of specific processes (e.g. leveraging), learning, and routines. It is also possible to point out at least two related emphases of DC elements. One emphasis stresses processes and learning (e.g. Ambrosini & Bowman, 2009; Teece, 2007, Wang & Ahmed, 2007; Eisenhardt and Martin, 2000; Teece et al., 1997). This emphasis has a considerable influence from work of Teece et al., (1997). The other emphasis stresses routines and learning mechanisms (e.g. Chen & Lee, 2009; Zott, 2003; Zollo & Winter, 2002). This emphasis is influenced by work of Nelson and Winter (1982). Finally, the capability lifecycle (Helfat & Peteraf, 2003) also emphasizes learning, processes, and routines, though with more stress on path through a developing/maturation perspective.

To ensure a comprehensive approach of DC elements, we use both emphases (processes and learning; learning and routines) in its analytical framework. As shown by the definitions, there are different types of dynamic capabilities. Some are used to integrate resources, some to reconfigure resources; some are about creating new resources, while others are about shedding resources (Ambrosini & Bowman, 2009). In addition, understanding of outcomes of DC is also central to this work. Thus, Table 4 summarizes outcomes of DC.

Table 4: DC outcomes

Author	Outcomes	Main aspects
Ambrosini & Bowman (2009)	[…] the role of dynamic capabilities is to impact on the firm's extant resource base and transform it in such a way that a new bundle or configuration of resources is created so that the firm can sustain or enhance its competitive advantage. The value of dynamic capabilities derives from their *outputs*, i.e. the creation of a new set of valuable resources. In other words, a dynamic capability that does not result in the creation of resources that allow the firm to maintain or enhance its sustainable competitive advantage would not be valuable (p.35)	The creation of a new set of valuable resources; sustainable competitive advantage
Chen & Lee (2009)	Organizational dynamic capabilities are an intrinsic evolutionary process that can help facilitate problem solving, improve decision making, stimulate creative ideals, and help members effectively implement organizational objectives. In particular, organizational dynamic capabilities such as implicit knowledge articulation and the accumulation of experience must evolve by distinctive routines or specific processes. Thus, organizational dynamic capability development has the potential to be	Help problem solving, improve decision making, stimulate creative ideals, and help members effectively implement organizational

	unique (p.79-80). Therefore, in our assessment of DCC, we integrated important arguments of previous research and defined DCC is a nature of embedding by distinctive routines and specific processes that exert key influences on a firm's success (p.80).	Objectives; company's success
Oliver & Holzinger (2008)	Dynamic capabilities allow a firm to leverage its internal assets, not only to satisfy current environmental demands but also to influence environmental demands so that these demands correspond with the firm's strengths or requirements (p. 504).	Leveraging internal assets; satisfying and influencing environmental demands
Døving & Gooderham (2008)	The value of dynamic capabilities lies in the resource configurations that they create or enhance, which in turn enable the firm to pursue opportunities in new, unpredictable markets (p. 845). Thus the development of the dynamic capability to meet the requirements of a changing environment is a challenge involving the ability to exploit both internal and external competencies (p. 846).	Creation or enhancement of resources and configurations and ability to exploit internal and external competencies; meeting changing environmental requirements
Teece (2007)	For analytical purposes, dynamic capabilities can be disaggregated into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets (p. 1319). The general framework advanced here sees dynamic capabilities as the foundation of enterprise-level competitive advantage in regimes of rapid (technological) change. The framework indicates that the extent to which an enterprise develops and employs superior (non-imitable) dynamic capabilities will determine the nature and amount of intangible assets it will create and/or assemble and the level of economic profits it can earn (p. 1341). Dynamic capabilities, by contrast, relate to high-level activities that link to management's ability to sense and then seize opportunities, navigate threats, and combine and reconfigure specialized and cospecialized assets to meet changing customer needs, and to sustain and amplify evolutionary fitness, thereby building long-run value for investors (p. 1344).	Sustainable competitive advantage; creation of intangible assets
Wang & Ahmed (2007)	The higher the dynamic capabilities a firm demonstrates, the more likely it is to build particular capabilities over time; the focus on developing particular capabilities is dictated by the firm's overall business strategy (p. 41). Dynamic capabilities are conducive to long-term firm performance, but the relationship is an indirect one mediated by capability development which, in turn, is mediated by firm strategy; dynamic capabilities are more likely to lead to better firm performance when particular capabilities are developed in line with the firm's strategic choice (p.42)	Capabilities development; long-term firm performance
Cavusgil, Seggie, & Talay (2007)	Therefore, it is argued that DCs can be used to develop resource configurations that lead to long-term competitive advantage. The strength of this relationship is contingent upon managers' ability to build renewable capabilities such as superior product design or business partnering (p. 163).	Resource development and capability renewal; long-term competitive advantage
Harreld, O'Reilly III, & Tushman (2007)	With dynamic capabilities, sustained competitive advantage comes from the firm's ability to leverage and reconfigure its existing competencies and assets in ways that are valuable to the customer but difficult for competitors to imitate (p.24).	Firm's ability to leverage and reconfigure competencies and assets; sustained

		competitive advantage.
Zahra, Sapienza, & Davidson (2006)	Dynamic capabilities must be well-targeted and deployed in order to achieve strategic goals (p. 924). The bi-directional arrows to and from dynamic capabilities indicate that dynamic capabilities are affected by and transform substantive capabilities and the firm's knowledge base. Together, the substantive capabilities and firm's knowledge base directly and interactively affect the organization's performance (p.926) A second implication is that dynamic capabilities are needed to keep substantive capabilities vibrant. On the one hand, substantive capabilities atrophy without use; on the other, they become so embedded in organizational memory if not altered that flexibility is harmed. It is the function of dynamic capabilities to keep strong, exercised substantive capabilities supple. (p.947)	Keeping substantive capabilities strong
Marsh & Stock (2006).	Such demands require sustained innovation and the development of a dynamic capability that enables a firm to create and reconfigure resources to adapt to changes in the competitive environment. To create competitive advantage, the firm must be able to leverage its existing capabilities and, at the same time, create new ones to form a platform for the development of future products—products that it cannot anticipate in the present (Dougherty & Hardy, 1996; Prahalad & Hamel, 1990; Teece, Pisano, & Shuen, 1997) (p. 423).	Creating, reconfiguring, and leveraging resources and capabilities; competitive advantage
Marcus & Anderson (2006)	A general dynamic capability was significantly correlated with the two business competencies, supplier relations (0.68) and customer relations (0.63), as well as the social competency of environmental management (0.45) (p.35). The general dynamic capability was a significant predictor of the supply chain management competency.[…]These results supported Hypothesis 1, in as much as a general dynamic capability affected the acquisition of competencies in supply chain management The results also suggest that a general dynamic capability affected the acquisition of a competency in environmental management (p. 37).	Acquisition of competency
Verity (2005)	Dynamic capabilities are processes and routines adopted by organizations to bring about change. They are systems used to alter the resources the firm has by deploying, adapting, configuring them in new ways to achieve specific ends.[…] Dynamics capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as market emerge, collide, split, evolve and die. […] Therefore, dynamic capabilities help organizations remain flexible and responsive to changing environments (p. 81).	New resource configurations; flexibility and responsiveness to changing environments
Lopéz (2005)	Dynamic Capabilities are formed as a subgroup of firm's capabilities, allowing the creation of new products and processes, permitting to the company to respond to changing external conditions. In this sense, dynamic capabilities lead the company to achieve a complex fit between activities that exploit their resources to the full and capabilities that assure short term results (p. 662).	Exploit resources and capabilities; environmental fitting; short term performance
Adner & Helfat (2003)	As noted earlier, we introduce the concept of dynamic managerial capabilities to help explain differences in managerial decisions and corporate strategy (p. 1013) We suggested earlier that the concept of dynamic managerial capabilities could help to explain differences in managerial decisions. Dynamic managerial capabilities are the capabilities with which managers build, integrate, and reconfigure organizational resources and competences (p.1020). In combination, managerial human capital, managerial social capital, and managerial cognition shape the resource and capability base of the	Shaping the company's resource and capability base; differences in managerial decisions and corporate strategy

	corporation through the action of dynamic managerial capabilities (p.1022).	
Zott (2003)	This paper addresses this gap by conceptually and analytically linking dynamic capability with firm performance. It is suggested that dynamic capabilities are indirectly linked with firm performance by aiming at changing a firm's bundle of resources, operational routines, and competencies, which in turn affect economic performance (p. 98).	Changing a firm's bundle of resources, operational routines, and competencies; performance
Helfat & Peteraf (2003)	[…] dynamic capabilities build, integrate, or reconfigure operational capabilities. Dynamic capabilities do not directly affect output for the firm in which they reside, but indirectly contribute to the output of the firm through an impact on operational capabilities (p.999).	Building, integrating and reconfiguring operational capabilities; Company's output.
Bowman and Ambrosini (2003)	The dynamic capabilities view (DCV) focuses on the capacity an organization facing a rapidly changing environment has to create new resources, to renew or alter its resource mix. If we assume that resources are situated primarily at SBU level, processes that reshape and augment these resource bundles can conceivably operate both at SBU level, and at corporate level. Clearly, SBUs themselves are likely to have their own dynamic capabilities. Without these capabilities SBUs are unlikely to be able to sustain advantage (p. 292).	Company's capacity to create new resources, renew or alter its resource mix in order to match environmental requirements; sustainable advantage
Zollo & Winter (2002)	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness (p. 340).	Modifying operational routines; improved effectiveness
Makadok (2001)	[…] capability-building can only improve profitability when other resources are actually acquired (p.394). A capability affects profitability by enhancing the productivity of the other resources that the firm possesses, so it affects profitability only after resources are acquired. If a firm does not acquire a resource, then that resource's productivity cannot be enhanced by the firm's capability (p.397).	Enhancing firm's resource productivity; profitability
Griffith & Harvey (2001)	Global dynamic capabilities is predicated on the development of power through the strategic allocation and alignment of path depend internal (i.e. Resource Based View) and external (i.e Market Based View) assets (Leonard-Barton, 1992; Teece et. al., 1997). Internal and external asset provide the power basis for developing strategies enabling the firm to obtain global competitive advantage […] (p. 598).	Alignment of internal and external assets to developing strategies; competitive advantage globally
Luo (2000)	The three essential ingredients of dynamic capability – capability possession (distinctive resources), capability deployment (resource allocation) and capability upgrading (dynamic learning) – have become increasingly to international expansion and global operations (p. 355)	Possession, deployment, and upgrading of firm's capabilities and resources; international expansion and global operations
Eisenhardt & Martin (2000)	Dynamic capabilities are necessary, but not sufficient, conditions for competitive advantage. We also argue that dynamic capabilities can be used to enhance existing resource configurations in the pursuit of long-term competitive advantage (RBV's logic of leverage) (p.1106).	Enhancing firm's resource configuration; long-term competitive advantage
Teece, Pisano, & Shuen (1997)	We refer to this ability to achieve new forms of competitive advantage as 'dynamic capabilities' to emphasize two key aspects that were not the main focus of attention in previous strategy perspectives. The term 'dynamic' refers to the capacity to renew competences so as to achieve congruence with the changing business environment; certain innovative responses are required when time-to-market and timing are critical, the rate of technological change is rapid, and the nature of future competition and	Renewing company's skills, resources and functional competences in order to match environmental requirements

	markets difficult to determine. The term 'capabilities' emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment (p. 515).	New forms of competitive advantage
Helfat (1997)	Dynamic capabilities enable firms to create new products and processes and respond to changing market conditions (p.339).	Creation of new products and processes; response to changing marketing conditions

Some criticism has been placed on DC regarding its outcomes. In particular, the main issue is if a company's performance is directly affected through DC (Wang & Ahmed, 2007; Ambrosini & Bowman, 2009). Based on studies summarized in Table 4, this work agrees with authors who argue that a company's performance is indirectly affected by DC. Thus, in this work it is advocated that the first order outcome of DC is the effect on a company's set of resources and capabilities; in other words, it refers to the development of competencies regarding a specific strategy. Then, the second order outcome of DC is twofold, being composed through adaptability to deal with environmental changing requirements, and a company's performance as well.

2.1.3 Aspects under development in the Dynamic Capabilities approach

Some critiques are found in literature on the Dynamic Capabilities. For example, criticism on DC relies on terminology (e.g. Zahra, Sapienza, & Davidson, 2006), tautology (e.g. Zollo & Winter, 2002), and too many different methods of investigations resulting in too many different DC meanings (Delbridge, Gratton, & Johnson, 2006). These critiques focus on current development of DC theory on aspects such as DC as the source of competitive advantage. Even though theoretical contributions are increasing, it is not followed by empirical support

(Ambrosini & Bowman, 2009). In other words, searching for a wide understanding is needed, including its definition and commonalities across companies (Wang & Ahmed, 2007).

Winter (2003) argues that researchers in the field of strategy believe that DC is a source of competitive advantage. However, there are researchers who remain skeptical about that concept. According to this author, DC approach is instead one tool of strategic analysis, which aims to clarify how the idiosyncratic attributes affect the performance of the firm in a competitive context. In this sense, capabilities are routines that generate changes in activities, creating some kind of advantage. In addition, the author suggests that there is no difference between DC and ad hoc problem solving[7], and this second has an advantage because it does not require commitment investments as DC do.

Gavetti (2005), in his turn, argues that DC approach has excessively directed its focus on routines that lead to the development of capabilities, neglecting the importance of cognition and organizational design. The same author states that managerial cognition is significant in the searching and development of capabilities, and different organizational designs have different influence on the development of capabilities. Accordingly, DC has left in second place the understanding of the role of managers and management or in its research, overemphasizing environmental conditions (e.g. dynamic environments) (Sapienza, Autio, George, & Zahra, 2006; Zahra, Sapienza, & Davidson, 2006).

DC theory has also under-examined the customer role in the analysis of value creation (Lepak, Smith, & Taylor, 2007). DC and the perspectives of Porter and RBV have neglected the role of customer in the value generation (Priem, 2007). The interaction between consumer and

[7] Ad hoc problem solving is not routine; in particular, not highly patterned and not repetitious. As suggested above, it typically appears as a response to novel challenges from the environment or other relatively unpredictable events (Winter 2003, p. 992-993).

organization may be seen as the co-creation of value, resulting from the way the firm understands and uses the interaction with consumers in its system of business. Co-creation of value can create new strategic capabilities for the organization (Prahalad & Ramaswamy, 1994).

But in fact, are the RBV and Dynamic Capabilities approaches complementary or substitutes? Makadok (2001), using the terms resource-picking and capability-building, answers the question, claiming it depends on the nature of the action in question. According to the author, the approaches are substituted if the resource has high value for a single firm. It highlights the DC heritage that comes from the strategy management field as a whole, the excessive fragmentation of this field (Green, Stuart, & Kao, 2008). Even though there are some authors arguing inconsistencies of DC and others arguing its theoretical value, there is a clear consensus that DC extends the RBV approach (Menon, 2008).

DC theory is also criticized because it does not have a full answer to dynamization of capabilities. In this view, there is a conceptual capability-rigidity paradox generated by three aspects of capabilities theory as follows: path dependence, inertia and commitment. The point is that whatever is the approach of DC, this theory does not offer a solution to this paradox. Attempting to offer a solution, a capability monitoring model[8] is proposed (Schreyögg & Kliesch-eberl, 2007).

[8] The guiding idea is to exploit on the one hand the power of patterned problem-solving and on the other hand to compensate for its inherent risk of dysfunctional flip by installing alert environmental surveillance designed to give early indication of any unexpected change necessities. Instead of dynamizing the capability conception, capability evolvement and system dynamization are conceived as two separate countervailing processes, which are performed simultaneously (Schreyögg & kliesch-eberl, 2007, p. 925).

One possible reason for inconsistencies and ambiguities is that researchers have focused on identification of DC through a *post hoc*[9] approach instead of focusing on the effect of DC on organizational resources and capabilities (e.g. leveraging). As a result, DC has been a difficult construct to separate existence from their outcomes (Zahra, Sapienza, & Davidson, 2006), and differentiate DC from core competence (Wilkens, Menzel, & Pawlowsky, 2004). These aspects emphasize the level of difficulty in identifying DC elements within a company (Lawson & Samson, 2001). In addition, the large number of DC definitions does not contribute to the clarification of its concept, and also its correlated terms (e.g. resource, capability, competence), become ambiguous (Wang & Ahmed, 2007; Menon, 2008).

Empirical studies on DC are still underexplored (Menon, 2008); they have focused on specific DC (Ambrosini & Bowman, 2009), and show disconnected results, which urges more research efforts toward an integrated understanding of DC (Wang & Ahmed, 2007). New studies addressing the resources and capabilities should go to beyond the possession of value and use of routines. Further studies should focus on the relationship of superior performance to the role of resource management; the importance of the organizational setting; the role of the consumer; the relationship of DC approaches with other theories (Douglas & Ryman, 2003; Hoopes, Madsen, & Walker, 2003; Winter, 2003; Helfat & Peteraf, 2003; Drawer, 2005; Herrmann, 2005; Sirmon, Hitt, & Ireland, 2007; Priem, 2007); manufacturing strategy (Schroeder, Juntila, & Bates, 2002); internationalization (Sapienza, Autio, George, & Zahra, 2006); managerial decisions (Adner & Helfat, 2003; Zahra, Sapienza, & Davidson, 2006); corporate social responsibility (Marcus and

[9] According to Zahra et al (2006) researches have inferred DC existence from successful organizational outcomes such as profitability and growth.

Anderson, 2006); and antecedents, processes, and outcomes (e.g Zahra, Sapienza, & Davidson, 2006).

More fine-grained study (e.g. participant observation) is suggested to address DC enactment into strategy practice (Green, Stuart, & Kao, 2008), and development and validation of multidimensional constructs addressing DC (Menon, 2008). Thus, there are opportunities for both qualitative and quantitative studies in DC. In the same way, theoretical studies are welcome in order to offer a more integrated understanding of DC (Wang & Hamed, 2007).

Considering DC and development of capabilities, new studies are proposed as follows: understanding how companies arise and maintain or decline during the time (Teece, Pisano, & Shuen, 1997); why some companies catch more from learning process on capabilities than other companies do (Zollo & Winter , 2002); what is the role of managerial skill on development of DC (Adner & Helfat, 2003); comparative studies across industries in order to offer a wide understanding on how capabilities development works (Montealegre, 2002); what are the attributes of DC (Zott, 2002); what are sources and benefits of DC, as well as, how companies renew routines and develop capabilities (Zahra, Sapienza, & Davidson, 2006); how DC are created (Wang & Ahmed, 2007); to explore concepts, process and outcomes of DC in order to reduce the problem of tautology in DC literature (Ambrosini & Bowman, 2009).

Thus, future work on DC has many possibilities, regarding qualitative and quantitative empirical studies as well as theoretical review. These are interconnected ways that may be valuable to develop a wide and well-defined status of DC theory.

2.1.4 Previous DC models and frameworks

We first present previous DC models and frameworks, and then we discuss the main aspects that guided us to identify elements of DC.

2.1.4.1 Teece and Pisano's (1994) and Teece, Pisano, and Shuen's (1997) framework of DC

Teece and Pisano (1994) and Teece, Pisano, and Shuen (1997) proposed a new way to address how companies achieve and sustain competitive advantage, that is called Dynamic Capability. According to their view, three sets of factors help to determine a company's DC and distinctive competence as follows: positions (refer to a company's current endowment of technology and intellectual property, and relationships with customers, suppliers, and strategic alliances), processes (refer to organizational and managerial routines of current practice and learning), and paths (refer to strategic alternatives and opportunities available to the company).

Organizational and managerial processes involve coordination/integration, learning, and reconfiguration and transformation. These three functions of organizational and managerial process have three concepts respectively: static, dynamic and transformational. Coordination/integration highlights the role of management to coordinate and integrate activities inside (e.g. internal routines) and outside (e.g. strategic alliances) the company, as well as the role of the recognition of congruencies and complementarities between and among the company's processes (e.g. introduction of a new technology).

The main argument here is that how things are going inside the company matter to the company's achievement of distinctive competence and competitiveness at a specific point in time. Learning is considered an important process that enables both (intra and inter) the company

and individuals to perform better due to continuous development of new routines. Here, the main argument is that learning can be considered to some degree more important than coordination/integration. Due to its dynamic characteristic, learning allows the company both to renew patterns of activities (routines) and to renew the logic of organizations (how a company is viewed and thought of). Reconfiguration and transformation involve organizational and managerial processes (e.g. surveillance of markets, benchmarking, scan the environment) that allow the company to become continuously flexible to environmental changes. They require the company's ability to sense the need to reconfigure and transform the set of resources and capabilities. The main argument here is the company's ability to adjust internal changes to requirements of rapidly changing environments in a way to do that in advance of competitors (Teece, Pisano, & Shuen, 1997; Teece & Pisano, 2004).

Positions involve the company's location at any time regarding its business assets. These business assets do not refer to plants or generic physical assets, only if they are specialized[10]; they mainly refer to difficult to trade knowledge and complementary assets such as technological assets, financial assets, reputational assets, structural assets, institutional assets, market (structural) assets, organizational boundaries, and locational assets. The central point is that business assets can affect the company's market share and profitability, and they also contribute to determine the company's strategic position. Path involves path dependence and technological opportunities. Path dependence extends the traditional microeconomic perspective that bygones are merely bygones. Hence, it advocates that current position and future available possibilities are shaped and constrained through the company's past trajectory. The main argument is that a

[10] "Generic assets are general purpose assets which do not need to be tailored to the innovation in question. Specialized assets are those where there is unilateral dependence between the innovation and the complementary asset. Cospecialized assets are those for which there is a bilateral dependence". (Teece 1986, p. 289).

company's history matters. In addition, technological opportunities have an effect on how far and how fast a specific industry area can advance, and those technological opportunities are developed into extra industries and by companies' trajectory (e.g. technological choices and investments). The central point is that new opportunities are developed through a company's innovative activities. Taken together, positions and paths constrain current and future company actions (Teece, Pisano, & Shuen, 1997; Teece & Pisano, 2004). Thus, these DC factors are not isolated, but rather they are interconnected as follows:

> The essence of competences and capabilities is embedded in organizational processes of one kind or another. But the content of these processes and the opportunities they afford for developing competitive advantage at any point in time are shaped significantly by the assets the firm possesses (internal and market) and by the evolutionary path it has adopted/inherited. Hence organizational processes, shaped by the firm's asset positions and molded by its evolutionary and co-evolutionary paths, explain the essence of the firm's dynamic capabilities and its competitive advantage. (Teece, Pisano, & Shuen, 1997, p. 518)

In this logic, organizational and managerial processes, positions, and paths determine the potential of a company's strategic capability; however, its contribution to achievement of competitive advantage relies on its traits of non imitation. DC sources company's capabilities or high performance routines (e.g. continuous improvement, exploitation) that are essential to a competitive position in an evolutionary view (Teece, Pisano, & Shuen, 1997; Teece & Pisano, 2004). Thus, competitive advantage comes from inside the company (e.g. capabilities, high performance routines), it is shaped through organizational and managerial processes and positions, and it is constrained through the company's path (Teece, Pisano, & Shuen, 1997). According to the proposal of this work, Table 5 below represents the DC framework based on Teece and Pisano (2004) and Teece, Pisano and Shuen (1997), emphasizing antecedents, elements, and outcomes.

Table 5: DC framework based on Teece and Pisano (2004) and Teece, Pisano and Shuen (1997)

<table>
<tr><th>Antecedents</th><th>Elements</th><th>Sub-Elements</th><th colspan="3">Outcomes</th></tr>
<tr><td rowspan="4">Environmental changing requirements</td><td rowspan="3">Managerial and organizational processes</td><td>Coordination/integration</td><td>Exploitation of company's capabilities</td><td rowspan="4">Development of company's capabilities and high performance routines;

Fit to environmental requirements.</td><td rowspan="4">Competitive advantage</td></tr>
<tr><td>Learning</td><td>Renewal of routines and capabilities.</td></tr>
<tr><td>Reconfiguration /transformation</td><td>Continuous internal fit.</td></tr>
<tr><td>Positions</td><td>Business Assets</td><td>Company's strategic positions</td></tr>
<tr><td></td><td>Path</td><td>Path dependence and technological opportunities</td><td>Current and future strategic opportunities</td><td></td><td></td></tr>
</table>

2.1.4.2 Framework of Eisenhardt and Martin (2000)

Eisenhardt and Martin (2000) addressed how market dynamism influences DC and its evolution over time. The main argument is that DC nature varies with market dynamism, as can be seen as follows:

> In moderately dynamic markets, dynamic capabilities resemble the traditional conception of routines. They are detailed, analytic, stable processes with predictable outcomes. In contrast, in high-velocity markets, they are simple, highly experiential and fragile processes with unpredictable outcomes. (Eisenhardt & Martin, 2000, p. 1105)

The view on DC presented is that its nature and outcomes suffer influence over time from market dynamism, and it is consistent through strategic process (e.g. strategic decision making), which works upon resources,[11] creating new values strategies in dynamic markets. In addition, its

[11] The authors are considering resources as "those specific physical (e.g., specialized equipment, geographic location), human (e.g., expertise in chemistry), and organizational (e.g., superior sales force) assets that can be used to implement value-creating strategies (Barney, 1986; Wernerfelt, 1984, 1995). They include the local abilities or

evolution is carried out through learning mechanisms (e.g. repeated practice), which are shaped over the path dependence. In this logic, DC is required; however, it is not the only condition for a company to achieve sustainable competitive advantage due to its characteristics of equifinality[12], which affects DC inimitability and immobility. Its value relies on the ability to generate leverage and new resource configurations, which allows a company to achieve short term competitive advantage (Eisenhardt & Martin, 2000). The main point is not to achieve a competitive position by leveraging and developing new combinations of resources only one specific time. Instead, a company needs to do that continuously, matching environmental changing requirements, or even changing the market, achieving sustainable competitive advantage during the time.

In deep, market dynamism affects patterns of DC. In moderated dynamic markets, DC is characterized by relying on existent knowledge (learning before doing), where tacit knowledge is often codified in structured routines. Otherwise, in high dynamic markets DC pattern is characterized by more experimental and new knowledge (learning by doing), with less tacit and codified knowledge, and simple routines. The implication is that market dynamism also affects sustainability of DC. As in moderated dynamic markets, DC is based on more structured knowledge, routines are more robust, and the market has a linear pattern of change. The result is that DC has a tendency to be more sustainable (internally and externally). In contrast, as in high dynamic markets DC is based on less structured and more experimental knowledge, routines are less codified and internalized across the company, more based on personal learning, and more often easily discontinued. In addition, knowledge is more perishable due to volatility of market.

'competencies' that are fundamental to the competitive advantage of a firm such as skills in molecular biology for biotech firms or in advertising for consumer products firms" (Eisenhardt and Martin, 2000, p. 1107).

[12] Equifinality is a commonality characteristic of DC that refers to development of DC through different and unique paths (Eisenhardt and Martin, 2000). Hence, DC is not exclusive from a company, but can be developed differently by companies.

Thus, in high dynamic markets DC is less sustainable (internally and externally) (Eisenhardt & Martin, 2000).

Another major argument is that DC is not vague, but rather identifiable processes. DC is seen as organizational and strategic routines in form of processes that integrate (e.g. product development routines, strategic making process), reconfigure (e.g. transfer process, resource allocation routines), gain, and release resources (e.g. knowledge creation routines, alliance and acquisition routines) in order to match and/or create market changes (Eisenhardt & Martin, 2000). In sum, the core point of this DC perspective is market dynamism's effect on DC and the role of learning mechanisms over company's resources on matching environmental requirements. According to the proposal of this work, Table 6 below represents the DC framework based on Eisenhardt and Martin (2000), emphasizing antecedents, elements and outcomes.

Table 6: DC framework based on Eisenhardt and Martin (2000)

<table>
<tr><th>Antecedents</th><th>Elements</th><th>Sub-Elements</th><th colspan="3">Outcomes</th></tr>
<tr><td rowspan="2">Market dynamism</td><td rowspan="2">Learning mechanisms shaped over path</td><td rowspan="2">Organizational and strategic routines: integrate, reconfigure, gain and release resources</td><td rowspan="2">New resources configurations;</td><td>New value strategies</td><td rowspan="2">Competitive Advantage</td></tr>
<tr><td>Mach or create market changes</td></tr>
</table>

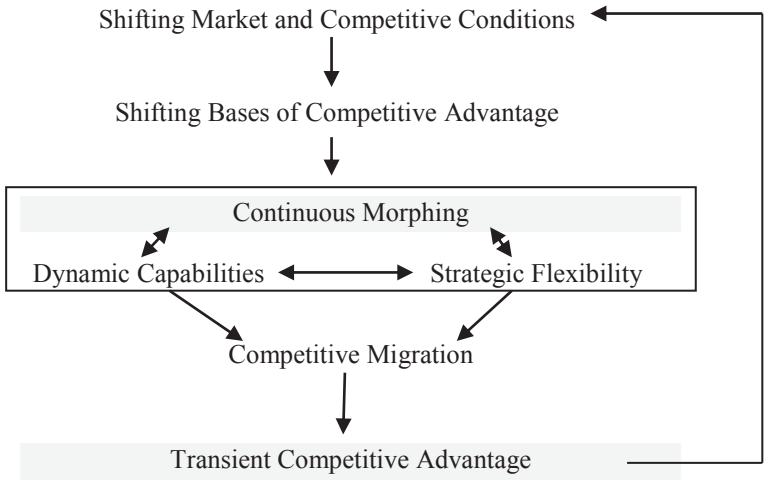
2.1.4.3 Framework of continuous morphing and competitive advantage of Rindova and Kotha (2001)

Rindova and Kotha (2001) addressed the co-evolution of form, function, and competitive advantage in the dynamic, hypercompetitive context of the Internet. Through an inductive case

study of evolution of Yahoo and Excite, the authors developed a framework of continuous morphing and competitive advantage. The concept of continuous morphing is introduced as "continuous changes in products, services, resources, capabilities, and modes of organizing through which firms seek to regenerate competitive advantage under conditions of hyper-competition" (Rindova & Kotha, 2001, p. 1276). The authors' framework advocates that a company's regeneration of competitive advantage in environments of rapid change depends on continuous morphing. This process is stimulated by environmental change and constrained by lack of a company's ability to develop new capabilities in time and unavailability of resources. Moreover, it is facilitated through dynamics capabilities and strategic flexibility (Rindova & Kotha, 2001, p. 1276). The framework is present on Figure 2 as follows.

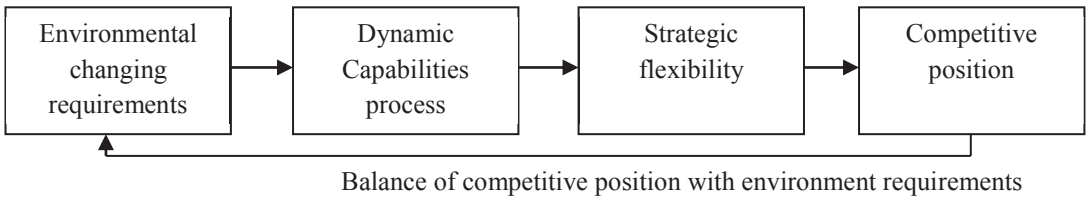
According to the framework, continuous morphing stimulates the development of DCs, and the DCs enable a company to engage in continuous morphing. In addition, the results of case study highlighted the role of management in both in developing DCs and deploying continuous morphing. Another relationship emphasized through the framework regards strategic flexibility, which is considered a company's ability to respond to requirements of dynamic competitive environment. The data showed that DCs has the potential to generate strategic flexibility.

Figure 2: A Model of the Relationship between Continuous Morphing and Competitive Advantage (Rindova & Kotha, 2001, p.1276)



The outcome of the continuous morphing framework is the generation of competitive advantage in changing environments, fitting this competitiveness in consonance with new environment requirements (Rindova & Kotha, 2001). Taken together, the proposal of DC and continuous morphing have a similar point: how companies maintain competitive advantage under conditions of environment changing, and process logic as well. Thus, according to the focus of this work, it is possible to merge continuous morphing arguments in a DC perspective, as shown in Figure 3.

Figure 3: DC perspective and continuous morphing concept

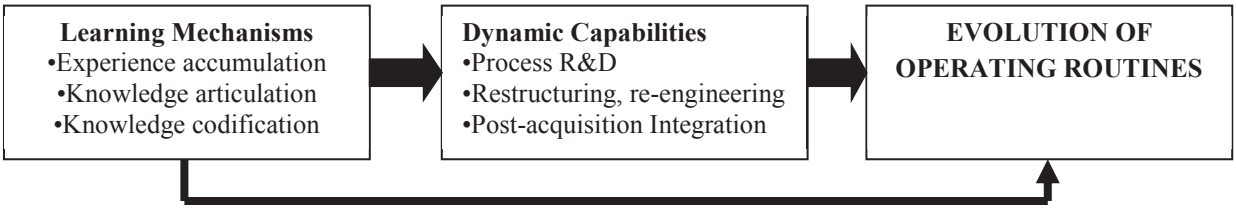


2.1.4.4 Dynamic Capability Framework of Zollo and Winter (2002)

Eisenhardt and Martin (2000), Zollo and Winter (2002) also highlight the role of learning mechanisms in development of DC. The main concern here is where DC comes from. In their view, DC is shaped through co-evolution learning mechanisms such as experience accumulation, knowledge articulation, and knowledge codification. As an effect, DC includes routines that develop and adapt a company's operational routines. The authors addressed the evolution of DC, proposing a framework, which relates that issue to learning mechanisms and its effect upon evolution of operational routines.

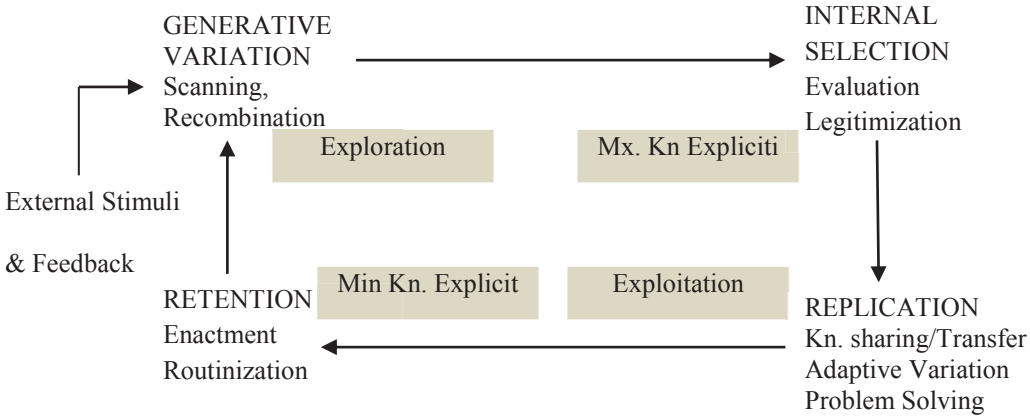
The framework presented in Figure 4 below underlines the role of learning mechanisms on the development of both operational routines (internal company's function) and DC (routines related to modify operational routines). Different from Teece and Pisano (1994), Teece, Pisano, and Shuen (1997), and Eisenhardt and Martin (2000), DC is placed as a company's learned and stable pattern of collectivity activity, which modifies operational routines systematically, emerging from learning mechanisms. As a whole, the process aims to achieve improvements on performance across a firm (Zollo & Winter , 2002). The main argument is that instead of market dynamism or path, learning mechanism has the effect to shape DC and its outcomes.

Figure 4: Framework of learning, dynamic capabilities and operational routines (Zollo & Winter, 2002, p. 340)



The three learning mechanisms responsible for shaping DC are organizational routines and experience accumulation, knowledge articulation, and knowledge codification. Organizational routines are central to how a company performs current procedures in order to generate revenue. However, experience accumulation is urged to improve and develop current operational routines to deal with requirements of change in the environment. Aspects such as tacit knowledge and experimental learning are considered crucial in this point. Knowledge articulation refers to activities (e.g. collective discussions, sharing experiences) that allow development of collective competence inside a company. This is central to achieving collective understanding of casual mechanisms (e.g. casual ambiguity), which are needed for a company to achieve high performance. It is also important for stimulating commitment needed to develop adaptive fitting routines, which are essential to company changing process. Knowledge codification is seen as a continuum step after knowledge articulation. It refers to the hard process of codification of collective understanding of performance and company routines into an explicit way (e.g. manuals, systems), which is crucial to replicate an existing routine and develop a new one as well. Taken together, these three learning mechanisms of development of DC are interconnected through a process called evolution cycle, as Figure 5 represents (Zollo & Winter, 2002).

Figure 5: Activities in the Knowledge Evolution Cycle (Zollo & Winter, 2002, p. 343)



Thus, this cycle of learning mechanism is the source of DC, as it can be seen as follows: "Dynamic capabilities emerge from the coevolution of tacit experience accumulation processes with explicit knowledge articulation and codification activities" (Zollo & Winter , 2002, p. 344). The main argument is the continuous interaction and mutual adjustment of these mechanisms. According to the proposal of this work, Table 7 below represents the DC framework based on Zollo and Winter (2002) emphasizing antecedents, elements, and outcomes.

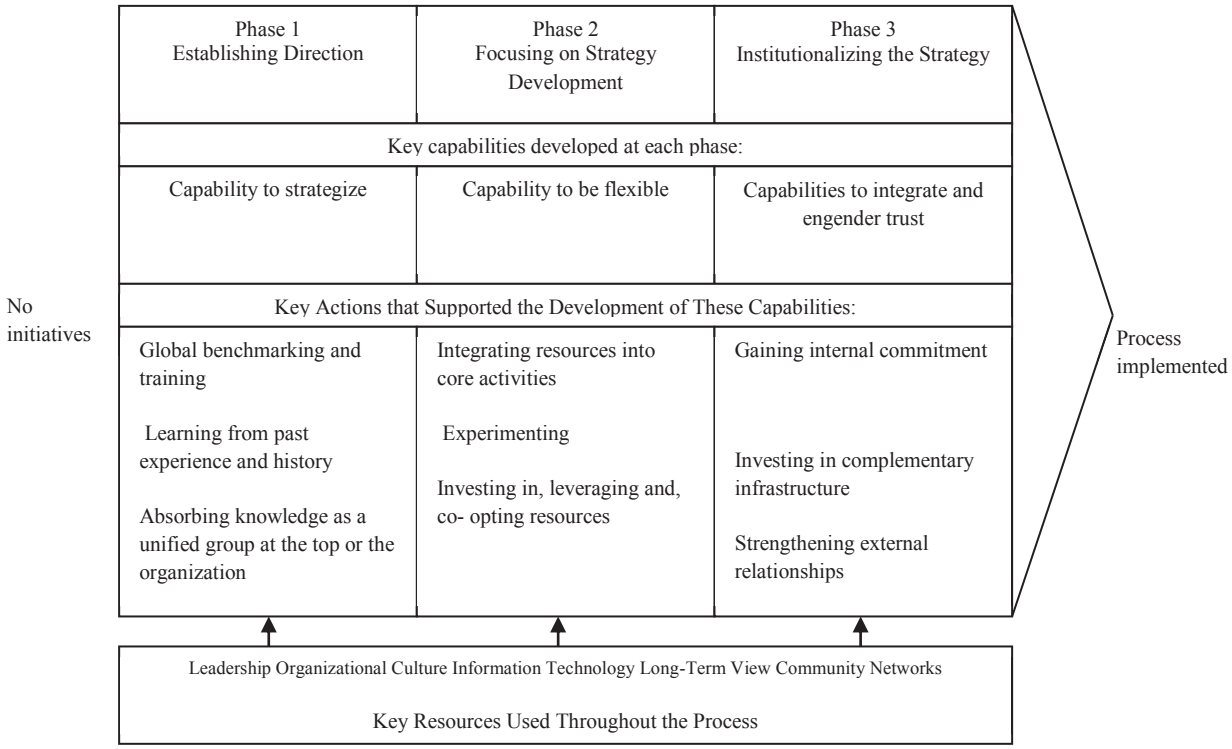
Table 7: DC framework based on Zollo and Winter (2002)

Antecedents	**Elements**	**Sub-Elements**	**Outcomes**		
External stimulus and feedback	Learning mechanisms	Experience accumulation; Knowledge articulation; Knowledge codification.	DC	Adaptation and development of organizational routines	Improve effectiveness

2.1.4.5 Model of capability development of Montealegre (2002)

Based on an in-depth qualitative longitudinal case study of the electronic commerce strategy formation and implementation at Guayaquil Stock Exchange, Montealegre (2002) developed a process model of capability development. The model proposed emphasizes that even though path dependence matters, capability development can be a planned process, which is carried on gradually as an emergent process. The model of capability development is a process composed by three phases with distinctive functions as follows: capability to strategize, capability to be flexible, and capabilities to integrate and engender trust (Montealegre, 2002). Figure 6 represents the process model.

Figure 6: Model of Capability Development Montealegre (2002, p. 523)



The process of development of capabilities involves organizational resources (e.g. knowledge) in each phase. These resources have a key role on supporting the entire process. As previously pointed out, the process of development of capability is characterized as emergent and gradual process, which requires different capabilities over time. However, it can become planed over time. Thus, the first phase has a central action of establishing the direction, developing capabilities to strategize. The start point is when a company recognizes a need or opportunity to be exploited. The second phase is placed in order to focus on strategy development (e.g. integrating resources in core activities), which is central to development of capabilities to be flexible such as attending to customers' needs. Finally, the third phase is focused on institutionalizing the strategy through shaping the organization internally and externally, which is central to develop capabilities to integrate and engender trust (Montealegre, 2002). According to

the proposal of this work, Table 8 below represents the DC framework based on Montealegre (2002), emphasizing antecedents, elements, and outcomes.

Table 8: DC framework based on Montealegre (2002)

Antecedents	Elements	Sub-Elements	Outcomes	
Recognition of a need or opportunity to be exploited	establishing the direction	Resources: organizational culture, information technology, and long-term view Actions: global benchmarking and training, learning from past experiences and history, and absorbing knowledge as a unified group and the top of the organization.	Development of capabilities to strategize	Exploitation of a need or opportunity
	focusing on strategy development	Resource: Information technology. Actions: integrating resources into core activities, experimenting; and investing in, leveraging, and co-opting resources inside and outside the firm.	Development of capabilities to be flexible	
	institutionalizing the strategy	Resources: long-term view, information technology, and organizational culture Actions: gaining internal commitment; investing in complementary infra-structure, and strengthening external relationships.	Development of capabilities to integrate and engender trust	

2.1.4.6 Dynamic Managerial Capability Framework of Adner and Helfat (2003)

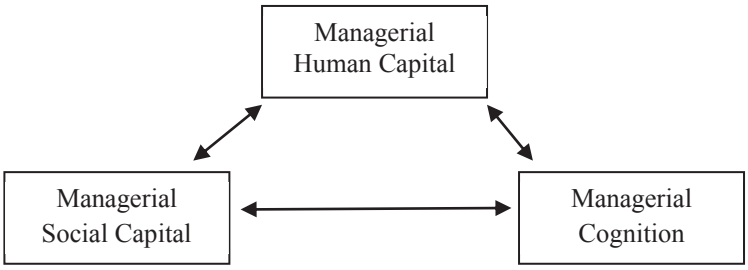
Adner and Helfat (2003) introduce the concept of Dynamic Managerial Capability (DMC) to emphasize the role of managerial decision facing external environmental changes as a source of heterogeneity in a single industry. The authors found that in a single industry, managers in different companies made different decisions in order to respond to environmental changes. Thus, the main finding underlying (DMC) is corporate decisions, together with time-

varying corporate effects, are very significant to explain performance heterogeneity among firms in a single industry.

This concept of DMC focused more on the role of managers than the DC concept developed by Teece, Pisano and Shuen (1997), which is more directed towards a company as whole, as follows: “Dynamic managerial capabilities are the capabilities with which managers build, integrate, and reconfigure organizational resources and competences” (Adner & Helfat, 2003, p. 1012). The purpose behind this concept is to explain differences in managerial decisions and corporate strategy, which results in heterogeneity of performance among companies. For instance, building, integrating, and reconfiguring resources and competences requires high level managerial decisions (Adner & Helfat, 2003).

In this view, DMC are composed of three attributes (managerial human capital, managerial social capital, and managerial cognition), which drive its development. First, managerial human capital refers to leaning skills, which involves aspects such as formal education, training, expertise accumulated, and learning-by-doing. The main argument is that managerial human capital causes skill heterogeneity. Second, managerial social capital is related to managers’ social relationships as social ties both external an internal to company. The main argument is that managerial social capital generates heterogeneity through access to core resources (e.g. information). And third, managerial cognition is related to basis of decision making (e.g. mental model, beliefs, and systems of values); the main argument is that managerial cognition results on heterogeneity of decision making. These three are not isolated, but rather they have interactions as represented in Figure 7 as follows (Adner & Helfat, 2003).

Figure 7: Dynamic managerial capabilities: underlying attributes (Adner & Helfat, 2003, p. 1022)



According to DMC framework, it is suggested several factors made interconnections between each attribute. First, managerial human capital and managerial cognition shape each other through factors such as work experience and information processing. Second, managerial cognition and managerial human capital affect each other through factors such as social ties and cognitive processes. And third, acquisition of information is an example of a factor that interplays between managerial human capital and managerial social capital. Finally, the interaction among these attributes shapes the company's base of resources and capabilities (Adner & Helfat, 2003). According to the proposal of this work, Table 9 below represents the DC framework based on Adner and Helfat (2003), emphasizing antecedents, elements, and outcomes.

Table 9: DC framework based on Adner and Helfat (2003)

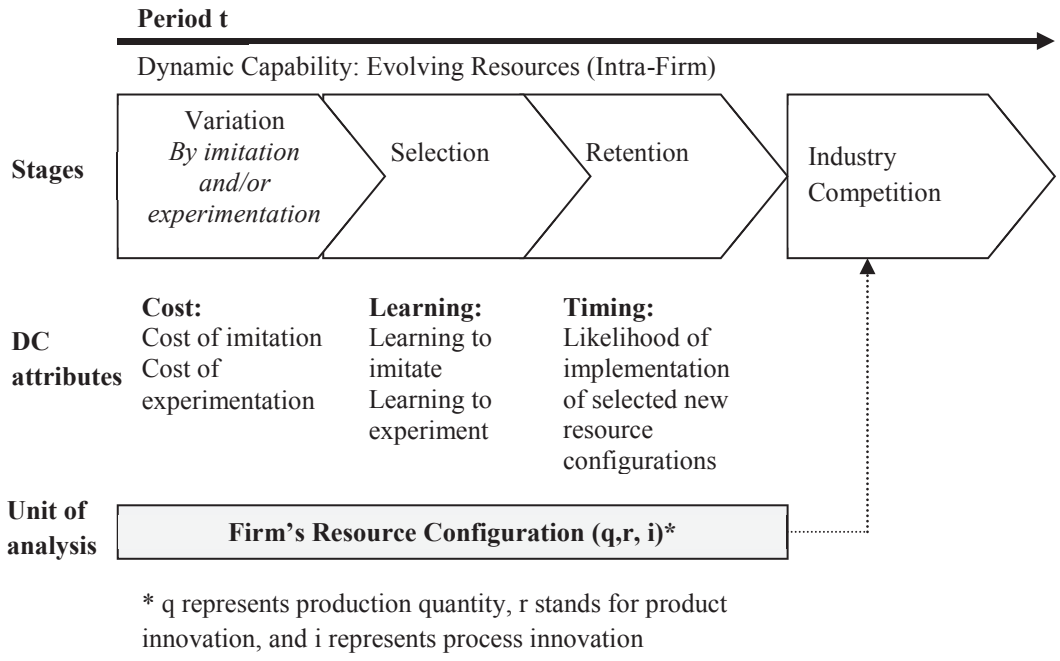
Antecedents	**Elements**	**Sub-Elements**	**Outcomes**	
Environmental changes	DMC attributes: Managerial human capital; Managerial social capital; and Managerial cognition.	Build, integrate, and reconfigure organizational resources and competences	Shaping company's base of resources and capabilities	Heterogeneity of performance

2.1.4.7 Dynamic Capability Model of Zott (2003)

Zott (2003) addressed how a company's DC is related to heterogeneity performance among companies in an industry. The main argument is that DC can answer the question as to why companies in a single industry have different performance, by having a direct relationship to performance. Timing, cost, and learning of resource deployment are proposed as DC's performance attributes. In this view, DC is perceived "as set of routines guiding the evolution of a firm's resource configuration" (Zott, 2003, p. 97). Data from a simulation study suggested that DC's performance attributes feed performance differentiation among companies, even though DC is similar across companies (Zott, 2003). One important argument points out is that:

> Consider two firms that possess identical dynamic capabilities (thus leaving the condition of heterogeneity unfulfilled). Even in these circumstances, firms may use their capabilities to build different resource positions, which may then lead to differing firm performance (Zott, 2003, p. 101).

Figure 8: Multiple stage model (Zott, 2003, p. 98)



DC's action on generating alternative resource configuration is proposed as a process with four stages:variation, selection, retention, and competition. Figure 8 represents the DC model proposed by Zott (2003).This process is characterized by its evolutionary learning nature and by a balance between imitation and experimentation as well. Variation, selection and retention phases refer to resource configuration. After that, competition phase takes place to exploit the resource configuration previously developed. Variation phase refers to searching across the company for ways to deal with a problem. It includes imitation and experimentation routines, which are taken as bases of development of adaptive capability. Selection phases are actions taken in order to decide an alternative to change (e.g. evaluation of alternatives). And the retention phase refers to actives taken to implement a resource reconfiguration. Each three first phases has one DC interrelated attribute that helps to explain different performance among companies, as follows respectively: cost, learning, and timing. The main argument behind this is the effect of timing, cost, and learning of company's resource reconfiguration on performance (Zott, 2003). According to the proposal of this work, Table 10 below represents the DC framework based on Zott (2003), emphasizing antecedents, elements, and outcomes.

Table 10: DC framework based on Zott (2003)

<table>
<tr><th>Antecedents</th><th>Elements</th><th>Sub-Elements</th><th colspan="2">Outcomes</th></tr>
<tr><td rowspan="3">Not commented</td><td>Variation</td><td>Cost</td><td rowspan="3">Changing a firm's bundle of resources, operational routines, and competencies, which in turn affect economic performance.</td><td rowspan="3">Heterogeneity Performance</td></tr>
<tr><td>Selection</td><td>Learning</td></tr>
<tr><td>Retention</td><td>Timing</td></tr>
</table>

2.1.4.8 The role of Social Capital on Dynamic Capability of Blyler and Coff (2003)

Blyler and Coff (2003) address the issue of rent appropriation on DC perspective, emphasizing the role of Social Capital. In addition, the role of Social Capital on DC's processes (acquiring, integrating and recombining, and releasing) resources is discussed. The main argument is that Social Capital of individuals has a strong condition to enable DC's processes. DC is seen as a set of a company's processes that allows it to manage flows of resources, which is central to fit a company to environmental changing, and then contributing to rent generation (Blyler & Coff, 2003).

The role of individual's Social Capital on DC's processes is discussed by logic of strong and weak ties. The main argument is that weak ties reduce the structural rigidities related to strong ties. Acquisition of resources is facilitated through individual's Social Capital elements (e.g. flow of information, and social network). Integration and recombination of resources may be better understood through individual's Social Capital elements (e.g. knowledge integration, and resources exchange). And individual's Social Capital contributes to releasing resources due to external company ties developed, which allows additional flexibility (Blyler & Coff, 2003). According to the proposal of this work, Table 11 below represents the DC perspective based on Blyler and Coff (2003), emphasizing antecedents, elements, and outcomes.

Table 11: DC elements based on Blyler and Coff (2003)

<table>
<tr><th>Antecedents</th><th>Elements</th><th>Sub-Elements</th><th colspan="3">Outcomes</th></tr>
<tr><td rowspan="3">Environmental changing</td><td rowspan="3">Individual's Social Capital</td><td>Acquiring resources</td><td rowspan="3">Changing a firm's bundle of resources, and capabilities</td><td rowspan="3">Company's fitting</td><td rowspan="3">Rent generation</td></tr>
<tr><td>Integrating and recombining resources</td></tr>
<tr><td>Releasing resources</td></tr>
</table>

2.1.4.9 The Capability Lifecycle framework of Helfat and Peteraf (2003)

Helfat and Peteraf (2003) addressed the evolution and then the heterogeneity in organizational capabilities, introducing a concept of Capability Lifecycle (CLC). The authors attempted to advance the DC perspective by developing of a framework, which explains the development of organizational capabilities over time. The main argument is that all capabilities have potential to change without intermediation of DC. However, DC can follow the same evolutionary path. The point is that as in products, capabilities also may have a lifecycle path. Thus, CLC framework tries to describe that evolutionary path, which is proposed using the context of a new-to-the-world company (Helfat & Peteraf, 2003).

The CLC framework is composed of three main stages as follow founding, developing and maturity. When a capability achieves maturate stage, six additional branching stages may take place: retirement, retrenchment, renewal, replication, redeployment, and recombination. The founding stage initiates the CLC, which starts when a group realizes the necessity to develop a capability to achieve a goal. Social capital and external ties are seen as important to this stage. In the development stage, a search for alternatives to develop a capability takes place. Learning processes (e.g. experience accumulation and learning-by-doing) have a central role in this stage. Maturate stage refers to maintenance of a capability; however, branching processes can occur when external (internal or external to a company) forces interfere upon a capability. These external forces may represent a threat or an opportunity regarding a capability. A DC can both suffer effect and affect branching stages on operational capabilities (Helfat & Peteraf, 2003). According to the proposal of this work, table 12 below represents the DC perspective based on Helfat and Peteraf (2003), emphasizing antecedents, elements, and outcomes.

Table 12: DC elements based on Helfat and Peteraf (2003)

Antecedents	Elements	Sub-Elements	Outcomes		
Team or group with leadership and a central objective, which urges development of a capability	Founding	Sense	Recognition of a need to develop a capability	Development of an organizational capability	Heterogeneity of organizational capabilities
	Development	Learning	Development of a capability		
	Mature	Retirement, retrenchment, renewal, replication, redeployment, and recombination	Death, gradual decline, renew, replicate, redeploy, or recombine a capability		

2.1.4.10 DC's resource-creating processes of Bowman and Ambrosini (2003)

Bowman and Ambrosini (2003) focused on DC contribution to corporate strategy and resource-creation processes, relating to organization design configuration. The authors argued that previous DC works (e.g. Teece, Pisano, & Shuen, 1997; and Eisenhardt and Martin, 2000) did not clarify the level of capability (at corporate level or SBU level). Four DC's resource-creation processes (reconfiguration, leverage, learning and integration) are proposed regarding the corporate and SBU levels (Bowman & Ambrosini, 2003).

Reconfiguration process is related to transforming and recombining resources (e.g. consolidation, and reconfiguration), where companies' headquarters can create resources or reconfigure SBUs aiming exploitation of scale economies. Leveraging process refers to extending the use of existing resources to others SBUs or markets (e.g. replication). Recognizing resource nature and identifying new opportunities are important roles of companies' headquarters in this process.

Learning process refers to performance improvement or routines (e.g. repetition and experimentation). A company's headquarters has a role in stimulating learning activities in SBUs. And the integration process is responsible for integration and coordination of resources. Companies' headquarters has the role contribution, identifying complementarities and interactions among SBUs and clients. In addition, six resource configurations, or corporate strategies are proposed as follows: reconfiguration of support activities; reconfiguration of core processes; leverage of existing resources; encouraged learning; provoked learning; creative integration (Bowman & Ambrosini, 2003). According to the proposal of this work, Table 13 below represents the DC perspective based on Bowman and Ambrosini (2003), emphasizing antecedents, elements and outcomes.

Table 13: DC elements based on Bowman and Ambrosini (2003)

Antecedents	**Elements**	**Sub-Elements**	**Outcomes**	
Not commented	Reconfiguration	Reconfiguration of support activities Reconfiguration of core processes	Transformation and recombination of resources	Resource creation
	Leverage	Replication Leverage of existing resources	Extending the use of existing resources	
	Learning	Repetition and Experimentation Encouraged learning Provoked learning	Improving performance	
	Integration	Combining Creative integration	Integrating and coordinating resources	

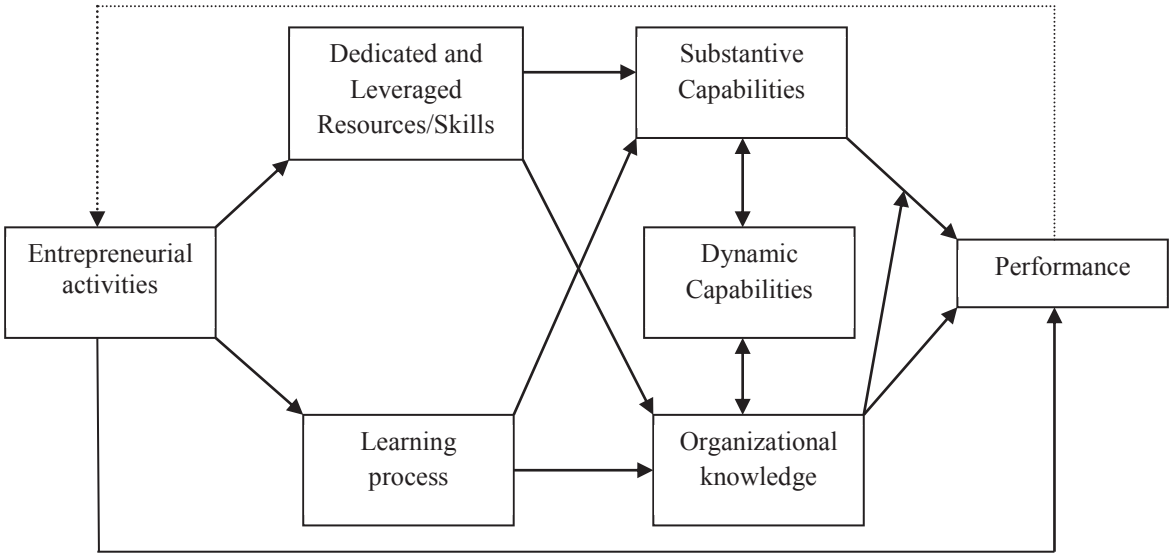
2.1.4.11 Capability formation model of Zahra, Sapienza and Davisson (2006)

Zhara, Sapienza, and Davidson (2006) addressed some criticism of DC (e.g. overlapping definitions), proposing definition of dynamic and substantive capabilities. They also broach DC's antecedents and consequences, proposing a model that encompasses these aspects in regard to DC. The main argument is that heterogeneity among companies comes from their differences in exploration and exploitation of opportunities. This aspect is related to differences among companies in terms of development and application of DC. DC is proposed as "the abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker(s)" (Zhara, Sapienza, & Davidson, 2006, p. 918).

The key aspects of development and then utilization of DC rely on individual's recognition of opportunity, motivation, and ability to implement a change. The definition proposed also emphasizes the nature of capabilities. One is substantive "ordinary," which is needed to achieve an output, and other is dynamic capability "high-order, meta-capability," which is needed to manage substantives ones (Zhara, Sapienza, & Davidson, 2006). The model of DC proposed by Zhara, Sapienza, & Davidson (2006) is shown in Figure 9.

The model proposed moves the centrality of DC from the external environment to managerial choice. The environmental dynamism is considered important; however, aspects such as to perceive an external change, leaning from external condition, and internal pressure to changing are essential as well (Zhara, Sapienza, & Davidson, 2006). The main argument seems to advocate that a company is not just passive to environmental dynamism, but rather the management is a central player on development and utilization of DC.

Figure 9: DC model (Zhara, Sapienza, & Davidson, 2006, p. 926)



Thus, entrepreneurial activities as a way of exploration and exploitation becomes the main antecedent, which affects leveraging of resources and learning processes in order to generate substantive capabilities and knowledge base as well. The interaction between substantive capabilities and knowledge base determines which DCs are needed to adapt a company to new context, and which have the central role to change current substantive capabilities and knowledge. As a result, performance is an outcome of the entire process (Zhara, Sapienza, & Davidson, 2006).

In depth, substantive capabilities precede and suffer effects of DC, where path dependence and learning process have a vital function. Processes such as coordination, selection, and combination of resources and capabilities are important in the development of DC and the reconfiguration of substantive capabilities. Another aspect highlighted in the model is that DC is not directly aimed to achieve high performance; however, its effect on substantive capabilities is imperative to that (Zhara, Sapienza, & Davidson, 2006). This argument emphasizes an indirect

relationship of DC performance. According to the proposal of this work, Table 14 below represents the DC perspective based on Zhara, Sapienza, and Davidson (2006), emphasizing antecedents, elements, and outcomes.

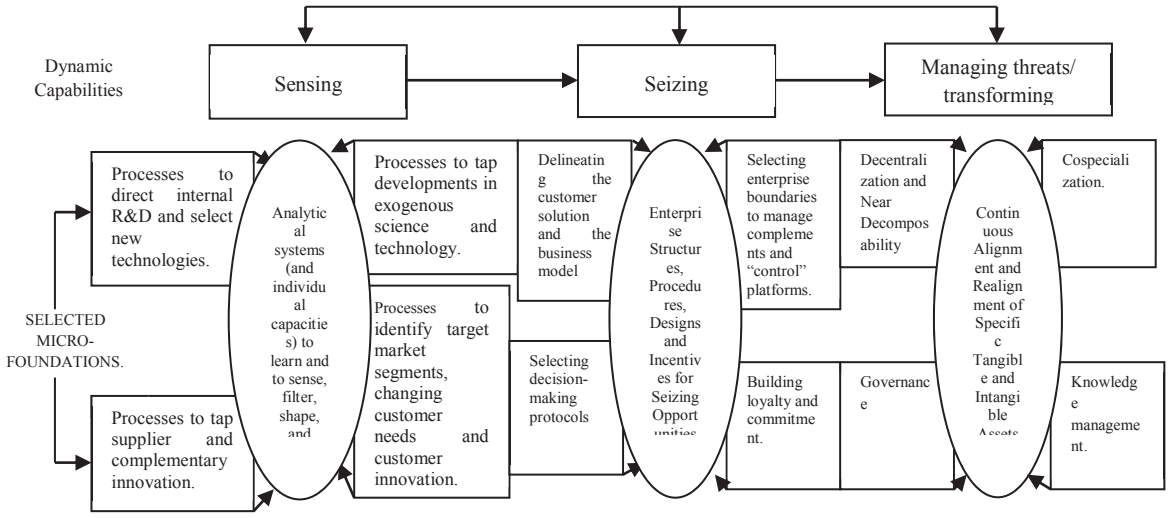
Table 14: DC elements based on Zhara, Sapienza and Davidson (2006)

<table>
<tr><th>Antecedents</th><th>Elements</th><th>Sub-Elements/outcomes</th><th colspan="3">Outcomes</th></tr>
<tr><td rowspan="2">Exploration and exploitation of opportunities</td><td>Leveraging of resources</td><td>Substantive capabilities</td><td rowspan="2">Dynamic capabilities needed; Transformation of substantive capabilities and knowledge base.</td><td rowspan="2">Adaptation to emergent condition</td><td rowspan="2">Performance</td></tr>
<tr><td>Learning process</td><td>Knowledge base</td></tr>
</table>

2.1.4.12 General Framework of CD and Business Performance of Teece (2007)

Teece (2007) addressed the microfoundations of DC in order to explain the sources of competitive advantage over time. These microfoundations (e.g. distinct skills, processes, procedures, organizational structures, decision rules, and disciplines) sustain DC process of sensing, seizing, and reconfiguration, which result in distinctive capabilities and long-run business performance. As a whole, DC is required to adapt the company to customers and environmental requirements, and shape the market through development of new products, processes, and business models. The idea is that regular activities (e.g. incentive alignment, controlling cost) are necessary, but not enough to maintain competitive advantage. The logic is that even more company success depends on additional actions such as discovery and development of opportunities (exploration and exploitation) and many others related to high processes, in which DC is included (Teece, 2007). Figure 10 represents the framework proposed by Teece (2007).

Figure 10: DC framework (Teece, 2007, p. 926)



According to the framework, sensing refers to activities (e.g. scanning, creation, learning, and interpretive activity) that are related to realize new opportunities. It involves aspects such as entrepreneurship, information access, individuals' abilities, and company internal processes and characteristics (e.g. decentralization). Seizing refers to undertaking an opportunity through new products, processes, and services. It involves path investments, strategic choice, technological competence, complementary assets, development of appropriated business model, and risk taking. And management of threats and reconfiguration refers to the balance of identification and undertaking of new opportunities in a profitable and growing way. It involves recombination, redeployment, and reconfiguration of assets and resources in order to exploit opportunities. Sensing and seizing are related to logic of exploration and exploitation of March. It is important highlight that path shapes DC development (Teece, 2007). According to the proposal of this work, Table 15 below represents the DC perspective based on Teece (2007), emphasizing antecedents, elements, and outcomes.

Table 15: DC elements based on Teece (2007)

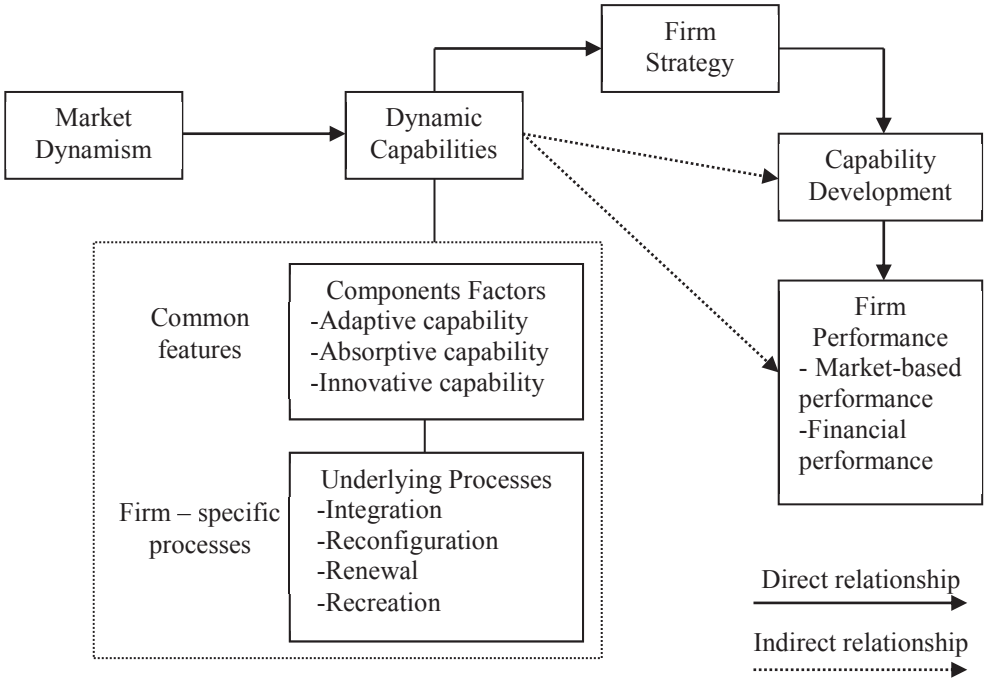
<table>
<tr><th>Antecedents</th><th>Elements</th><th>Sub-Elements/outcomes</th><th colspan="3">Outcomes</th></tr>
<tr><td rowspan="2">Environmental changing</td><td>Sensing and shaping opportunities and threats</td><td>Sensing</td><td rowspan="2">Distinctive and hard to imitate capabilities.

New products, processes, and business models.</td><td rowspan="2">Company Adaptation to customers and environmental requirements</td><td rowspan="2">Performance</td></tr>
<tr><td>Seizing opportunities</td><td>Seizing</td></tr>
<tr><td>Entrepreneurial management</td><td>Maintaining opportunities</td><td>Enhancing, combining, protecting, and, when necessary, reconfiguring the company’s intangible and tangible assets</td><td>Market shaping</td><td></td></tr>
</table>

2.1.4.13 Antecedents and Consequences Framework of CD of Wang and Ahmed (2007)

Wang and Ahmed (2007), through a theoretical review, proposed a framework to address antecedents and consequences of DC. The main argument is that DC is embedded in organizational processes, in order to deal with environmental changes and sustain competitive advantage through actions over resources (e.g. renewal). In that logic, adaptive capability, absorptive capability and innovative capability are seen as main component factors of DC. Adaptive capability refers to identification and exploitation of opportunities, which is central to alignment of company’s internal resources and capabilities to environmental requirements. Absorptive capability refers to recognition and application of external information and knowledge, which is central to combination and using of external and internal knowledge. And innovation capability refers to development of new products, services and markets, which is central to alignment of internal resources and capabilities with products/services in the market (Wang & Ahmed, 2007). Figure 11 represents the model of DC of Wang and Ahmed (2007).

Figure 11: DC framework (Wang & Ahmed, 2007, p. 39)



As it can be seen in Figure 11, environmental dynamism is the antecedent of DC, where the more dynamic a market is, the more is needed to develop DC. Capability development is the outcome of DC; however, the development of capabilities is focused through company's strategy. In regard to performance, it is argued that its relationship with DC is not simple as a narrow line. Instead, that relationship is indirect, mediated by company's strategy and capability development (Wang & Ahmed, 2007). According to the proposal of this work, Table 16 below represents the DC perspective based on Wang and Ahmed (2007), emphasizing antecedents, elements, and outcomes.

Table 16: DC elements based on Wang and Ahmed (2007)

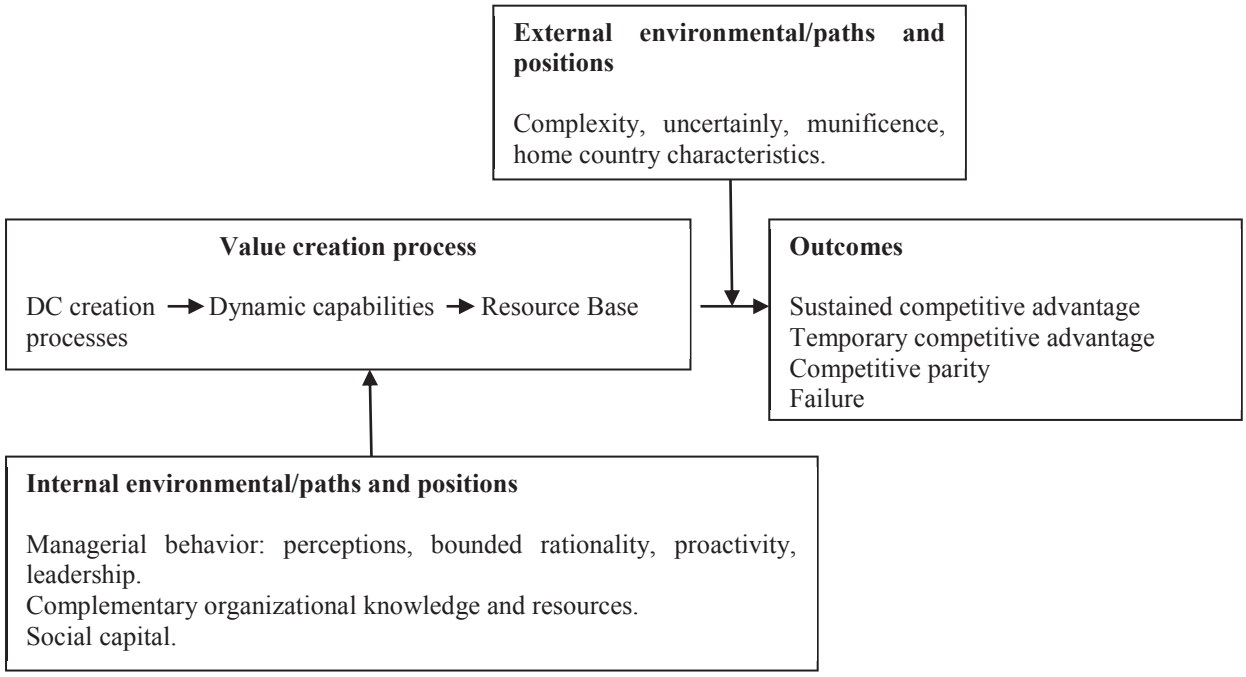
Antecedents	Elements	Sub-Elements/outcomes	Outcomes		
Market dynamism	adaptive capability	Integration	Firm Strategy	Capability Development	Performance
	absorptive capability	Reconfiguration			
	Innovative capability	Renewal			
		Recreation			

2.1.4.14 DC Framework of Ambrosini and Bowman (2009)

Ambrosini and Bowman (2009) proposed a framework of antecedents and outcomes of DC (see Figure 12). Through a literature review approach, two main theoretical aspects of DC are pointed out. First, DC is shaped through internal (e.g. managerial behavior) and external (e.g. environmental complexity) aspects. And second, DC and performance are indirectly related.

Value creation process is the central axis of the framework. In this logic, DC processes (learning and experience) are the main engine of DC, which in sequence, impacts on resource base. The effect of DC on resource base is the link between DC and strategic outcomes. Even though external environment shapes DC development, its effect is more heavily stressed over the relationship between DC and strategic outcomes. For instance, environmental dynamism forces companies to rejuvenate continuously their set of resources, resulting in short-term advantages. The internal environment also affects that relationship; however, it has a stronger effect over deployment of DC (Ambrosini & Bowman, 2009).

Figure 12: DC framework of Ambrosini & Bowman (2009)



Thus, DC direct outcome is its effect on resource base, which in turn affects strategic outcomes. As a whole, that chain of cause/effect is shaped by external and internal environment. According to the proposal of this work, Table 17 below represents the DC perspective based on Ambrosini and Bowman (2009), emphasizing antecedents, elements, and outcomes.

Table 17: DC elements based on Ambrosini and Bowman (2009)

Antecedents	Elements	Sub-Elements	Outcomes	
External environment/paths and positions Internal environment/paths and positions	DC creation processes: -learning; - experience.	Deployment of DC	Resource Base	Strategy performance outcomes

2.1.5 Considerations on Previous DC Frameworks

According to the previous frameworks, we have identified 2 types of antecedents (external and internal) to companies. Environmental changing requirements (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997; Rindova & Kotha, 2001; Adner & Heltaf, 2003; Blyler & Coff, 2003) and market dynamism (Eisenhardt & Martin, 2000; Wang & Ahmed, 2007) suggest companies that face dynamic environments and markets are more likely to develop DC. In addition, external stimulus and feedback (Zollo & Winter, 2002) complements the role of external environment on companies DC.

Otherwise, we have also identified that companies' internal side also matters. For example, recognition of a need or opportunity to be exploited (Montealegre, 2002), internal groups objecting to the development of a capability (Helfat & Peteraf, 2003), and entrepreneurial management (Teece, 2007) highlight that companies should be aware of what is happening, recognizing stimulus and opportunities to be exploited. In other words, opportunities should be explored and exploited (Zhara, Sapienza, & Davidson, 2006) in order for a company to develop DC. Thus, one can assume that DC development is driven by both external and internal antecedents (e.g. Wang & Ahmed, 2007).

Regarding elements of DC, the literature offers so many of them. Somehow, this aspect represents the characteristic of tautology previous mentioned in this work. In order to be more understandable, this work categorizes these elements as follows. First, there are elements pointing out managerial and organizational processes including learning mechanisms (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000; Zollo & Winter, 2002, Adner & Helfat, 2003; Bowman & Ambrosini, 2003; Zott , 2003; Zhara, Sapienza, & Davidson, 2006; Teece, 2007; Ambrosini & Bowman, 2009) such as coordination/integration, learning, and

reconfiguration/transformation, variation, selection, retention, sensing, and seizing. These elements focus on change routines, resources, and capabilities of companies. Second, there are elements highlighting companies' positions (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997; Helfat & Peteraf 2003; Zott, 2003). These elements represent commitment on development of assets, tangible or intangible, which are useful to DC (e.g. supplier development). Third, there are elements focusing on companies' paths (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997), detaching the role of path dependence. Forth, strategy focus (Montealegre, 2002) can be also considered a DC element. Fifth, managerial and individual aspects (Adner & Helfat, 2003; Blyler & Coff, 2003) are also DC elements such as human capital, social capital, and managerial cognition, which point out individual and managerial role on development of DC. Sixth, specific but common capabilities among companies, allow companies to explore and exploit environmental opportunities (Wang & Ahmed, 2007). These capabilities are adaptive, absorptive, and innovative. Thus, these six categories regard managerial and organizational processes, strategic processes, and individual aspects as elements of DC development.

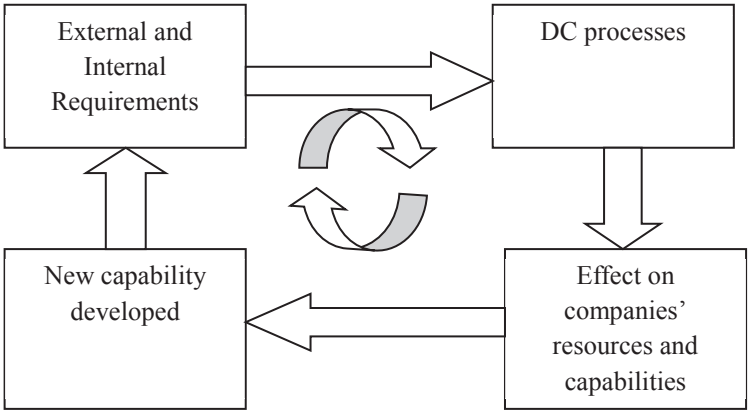
In the same way, there are so many indications of DC outcomes. Thus, it is valuable aggregate them in specific categories. DC has effect on companies' routines, resources, assets, and capabilities (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997; Eisenhardt and Martin, 2000; Zollo & Winter , 2002; Montealegre, 2002; Adner & Helfat, 2003; Zott, 2003; Blyler and Coff, 2003; Helfat & Peteraf, 2003; Bowman & Ambrosini, 2003; Zhara, Sapienza, & Davidson, 2006; Teece, 2007; Wang & Ahmed, 2007; Ambrosini & Bowman, 2009), such as renewal of routines and capabilities, development of high performance capabilities and routines, new resource configurations, adaptation and development of organizational routines, and shaping company's base of resources and capabilities.

In addition, dealing with environmental changes and market dynamism are also outcomes of DC (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000; Rindova & Kotha, 2001, Zollo & Winter, 2002; Montealegre, 2002; Blyler & Coff, 2003; Bowman & Ambrosini, 2003; Zhara, Sapienza, & Davidson, 2006; Teece, 2007; Wang & Ahmed, 2007; Ambrosini & Bowman, 2009), such as continuous internal fit, fit to environmental requirements, exploration of companies capabilities, matching or creating market changes, new strategies, strategic flexibility, effectiveness, and exploitation of a need or opportunity. Third, competitive position and competitive advantage is the final outcome of DC (Teece & Pisano, 2004; Teece, Pisano, & Shuen, 1997; Eisenhardt & Martin, 2000; Rindova & Kotha, 2001; Adner & Helfat, 2003; Zott, 2003; Blyler & Coff, 2003; Helfat & Peteraf, 2003; Bowman & Ambrosini, 2003; Zhara, Sapienza, & Davidson, 2006; Teece, 2007; Wang & Ahmed, 2007; Ambrosini & Bowman, 2009). Thus, one can figure out DC primarily works on companies' sets of resources and capabilities. Afterward, companies become more able to deal with environmental/market requirements. In the end, companies increase their competitive position and competitiveness. Based on those previous studies, we propose the following definition: *DC is a set of processes, which are stimulated by internal and external requirements, affecting companies' collection of resources and capabilities, in order to deal with organization needs (e.g. environmental requirement, strategy implementation, exploit an opportunity).*

Finally, Figure 13 presents a synthesis of DC main aspects on capability development. Figure 13 explores the effect of external and internal requirements on DC processes, the effect of DC processes on companies' resources and capabilities, and then, the development of new capability in order to deal with environmental (external/internal) requirements. This logic is

aligned to the essence of DC concept, dynamic (continuous capability renew) and capability (ability to deal with environmental requirements).

Figure 13: DC effect on capability development



2.2 Offshore Operations – Main Aspects

Different from the common sense expectation, offshore has been practiced by companies for a long time ago (Hagell III & Brow, 2005; Lewin & Peeters, 2006a; Niederman, 2005; Olsen, 2006; Stringfellow, 2007; Sturgeon & Florida, 2000). For instance, Ford Motor Company started to produce abroad in 1904, and in Europe, German Daimler started to produce abroad in 1891 (Sturgeon & Florida, 2000). Thus, offshore actually is not a new phenomenon (e.g. offshore plants, Moxon, 1975). However, in the literature, sometimes the term "outsourcing" is inappropriately used for "offshore" and the types of offshore have not been clearly articulated. Definitions of offshore in several studies are summarized in Table 18.

Table 18: Definitions of offshore

Studies	Definitions of Offshore
Hagel III & Brown (2005, p. 32)	The movement of business activities to the other countries to exploit cost or skill differentials
Levy (2005, p. 692)	Subcontracting of particular activities to foreign locations or suppliers, though not necessarily to independent firms
Niederman (2005 p. 192)	Offshore occurs when organizations in one country outsource work to another country either by creating operations in the foreign country or by contracting with an outsourcing provider who transfers work overseas.
Gereffi (2006, p. 4)	The decision to move the supply of goods and services from domestic to overseas locations
Harrisson & McMillan (2006, p. 9)	A broad range of tasks executed by a firm in another country that could include setting up a foreign subsidiary or outsourcing offshore through an arm's length agreement with another firm
Lewin & Peeters (2006a, p. 221)	Locating activity to a wholly owned company or independent service provider in another country (usually low cost)
Bunyaratavej, Hahn, & Doh (2007, p. 8)	The process of moving service activities to other country.
Ang & Inkpen (2008, p. 338)	The purchase of services from another firm located in another country.
Bunyaratavej, Hahn, & Doh (2008, p. 227)	The movement or relocation of domestic firm activities and operations abroad.
Lewin, Massini, & Peeters (2008, p. 3)	The process of sourcing and coordinating tasks and business functions across national borders. Offshore may include both in-house (captive, or international in-sourcing) and outsourced activities, which are delivered by an external provider – that is from outside the boundaries of the firm. Outsourcing, in turn, may occur both domestically (onshore) and abroad (offshore). Further, offshore refers to sourcing rather than sales activities, and it supports global or domestic rather than local operations.
Manning, Massini, & Lewin (2008, p. 35)	The process of sourcing any business task, process, or function supporting domestic and global operations from abroad, in particular from lower cost emerging economies
Youngdhal, Ramaswamy, Verma (2008, p. 135)	Service and knowledge offshore can be described as the process of moving service and knowledge work from a home country to an offshore location. The common approaches to offshore include captive (company-owned) processing centers, third party providers (outsourcing), and joint ventures (build, operate, and transfer).
Hätönen (2009, p. 1)	An offshore operation may be wholly owned by the parent company or it may be outsourced to a specialized provider.

According to the previous studies, outsourcing is a contractual agreement between a company and an external provider to obtain goods and/or services (De Vita &Wang, 2006). Offshore, conversely, can be defined as "to the movement or relocation of domestic firm

activities and operations abroad" (Bunyaratavej, Hahn, & Doh, 2008, p.227). Thus, the main difference is that, in outsourcing, external provider can be located in the same country, whereas offshore or offshore sourcing implies that the service/product provider is located overseas from the company client (Chakrabarty, 2006; Niederman, 2005; Terjessen, 2006).

An important differentiation can be made regarding possess/control of offshore operations. In this study, offshore is defined as outsourcing based on a company's movement to source tasks or business functions (e.g. assemble) to a third party provider located in a foreign country. Offshore captive is also defined as a company's movement to source tasks or business functions by own facilities in a foreign country. Finally, offshore partnership is defined as a movement to source tasks or business functions by interorganizational relationships (e.g. joint ventures) in a foreign country. Thus, there are three types of offshore: offshore outsourcing, offshore partnership, and offshore captive (Jahns, Hartmann, & Bals, 2006; Robinson & Kalakota, 2006; Youngdhal, Ramaswamy, & Verma, 2008).

Some studies also distinguish nearshoring/nearshore sourcing from offshore/offshore (e.g., Chakrabarty, 2006). Nearshoring or nearshore sourcing refers to the sourcing services/products from a provider that is located in a country geographically close to the company client. In a different way, offshore or offshore refers to the sourcing services/products from a provider that is located in a country geographically far away from the company client. Despite geographic considerations, we will refer to both situations as offshore. Types of offshore referred to in various studies are summarized in Table 19.

Table 19: Definitions of types of offshore

Studies	Types of offshore	Definitions
Carmel & Agarwal (2002, p. 65)	Offshore captive Offshore outsourcing	Offshore sourcing includes both offshore insourcing to an internal group within a global corporation as well as offshore outsourcing a third-party provider.
Hagel III & Brown (2005, p. 32)	Offshore insourcing or captive Offshore outsourcing	An offshore operation is wholly owned by the parent company. An offshore operation is outsourced to a specialized service provider.
Gereffi (2006, p. 4)	Offshore captive Offshore outsourcing	These activities may be carried out in facilities owned in whole or in part by the parent firm, and by transnational suppliers.
Harrisson & McMillan (2006, p. 8)	Offshore captive Offshore outsource	Offshore refers to a broad range of tasks executed by a firm in another country that could include setting up a foreign subsidiary or outsourcing offshore through an arm's length agreement with another firm.
Gereffi (2006, p. 4)	Offshore captive Offshore outsourcing	These activities may be carried out in facilities owned in whole or in part by the parent firm and by transnational suppliers.
Harrisson & McMillan (2006, p. 8)	Offshore captive Offshore outsource	Offshore refers to a broad range of tasks executed by a firm in another country that could include setting up a foreign subsidiary or outsourcing offshore through an arm's length agreement with another firm.
Bunyaratavej, Hahn, & Doh (2007, p.8; 2008, p. 228)	Offshore captive Offshore outsourcing	Offshore can be done internally within companies through the establishment of foreign affiliates or foreign subsidiaries. Offshore can be done externally via outsourcing services to a third-party provider.
Grote & Täube (2007, p. 52)	Offshore captive Offshore outsourcing	Offshore can occur within the same firm or the same corporate group. Offshore can occur in combination with outsourcing.
Kedia & Lahiri (2007, p. 23)	Offshore captive Offshore outsourcing	The spectrum of international outsourcing of services also includes the practice of firms setting up their own centers in foreign countries and maintaining full control, a practice commonly referred to as captive offshore. The former notion of international outsourcing of services which is also referred to as independent third-party offshore outsourcing.
Beugré & Acar (2008, p. 448)	Offshore insourcing or captive Offshore outsourcing	The parent company establishes a fully owned subsidiary in a foreign location. The parent company enters into a contractual arrangement with an independent partner.
Manning, Massini, & Lewin (2008, p. 41)	Offshore captive Offshore outsourcing	Offshore may include both in-house (captive, or international insourcing) and outsourced activities.
Stratman (2008, p.	Offshore captive	The work is conducted by wholly or partially owned offshore subsidiaries of the onshore parent company

275)	Offshore outsourcing	A firm outsourcers the work to offshore third party service providers
Youngdhal, Ramaswamy, & Verma (2008, p. 136)	Offshore captive	When organizations desire to maintain complete control over their offshore operations, they pursue a captive offshore strategy.
	Offshore outsourcing	When an organization's management team decides to outsource service and knowledge work to a third-party provider.
	Offshore partnership	When an organization's management team decides to outsource service and knowledge work to a third party provider through a joint venture.
Javalgi, Dixit, & Scherer (2009, pp. 157-158)	Offshore captive	When a company decides to produce goods or services by setting up its own subsidiary abroad in order to gain control of its business activities and take advantage of locational factors (e.g. access to cheap labor and human talent).
	Offshore outsourcing	Offshore outsourcing is the delegation of some of an organization's recurring internal business functions and decision rights to a third party (or vendor) in a foreign country, who specializes in those functions.
	Offshore partnership	The third type of business model that reflects joint ventures, which are common in the software industry.

Besides those definitions, the evolution of offshore through time can be seen from distinctive and related aspects such as activities moved abroad, strategical importance, and managerial process. In terms of activities moved abroad, companies have been relocating out of the country activities from labor-intensive manufacturing assembly positions to service and knowledge-worker positions (Levy, 2005a; Lewin & Peeters, 2006a; Li, Liu, Li, & Wu, 2008; Preston 2004; Youngdhal, Ramaswamy, & Verma, 2008). Further, the amount of companies using offshore activities is growing (e.g. Gião, Oliveira Jr., & Vasconcellos, 2008); the scope of activities moved abroad is also increasing. Activities such as engineering, manufacturing, quality assurance, R&D, software development, marketing and consulting have been performed by companies abroad (Efendiouglu, 2006). Thus, the main characteristic of this aspect of offshore evolution is more complex, as value chain activities of companies are being moved to be

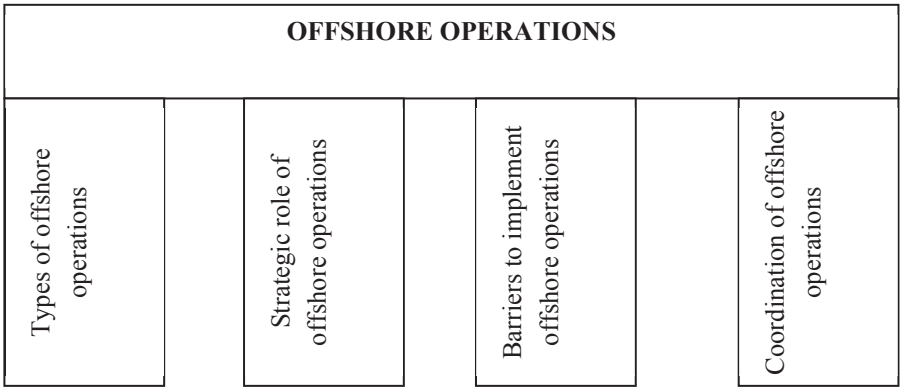
performed in developing countries (Beugelsdijk, Pedersen, & Petersen, 2009; Li, Liu, Li, & Wu, 2008; Manning, Massini, & Lewin, 2008).

This movement mentioned above seems to be guided for a change in strategic importance of offshore for the companies. The evolution of offshore suggests that companies are searching for more than saving costs based on low wages since companies are choosing offshore locations which are able to support core business needs (Farrell, 2006), build capabilities, and obtain results of specialization (Hagel III & Brown, 2005). In addition, offshore is being used by companies dealing with globalization effects and international competition (Coucke & Sleuwaegen, 2008), as a source of internationalization for small and medium companies as entrepreneurial opportunities (Gregorio et al., 2008), and as a source of survival for companies in developed countries (Gereffi, 2006; Javalgi, Dixit, & Scherer, 2009; Kedia & Lahiri, 2007). Therefore, change in managerial viewpoint on the strategic hole of offshore is argued as one of the most important aspects that have fed the offshore growth and evolution (Metters & Verma, 2008).

Finally, as a managerial process, offshore has also spread due to development of the organizational and managerial capabilities to coordinate this process (Levy, 2005). Offshore may be characterized as a learning-by-doing process evolving from experimental practice based on peripheral activities to core business activities. This aspect suggests that implementation of offshore is done by a continuum of stages. This continuum is based on learning and capability building (Lewin & Peeters, 2006b; Maskell, Pedersen, Petersen, & Dick-Nielsen, 2006). Experience accumulated also contributes toward high skill offshore activities (Hagel III, 2004). Based on those previous studies we propose the following definition: *Offshore operations is a strategy-oriented operational and organizational process, which allows companies to achieve*

strategical goals by moving domestic operations abroad. Finally, Figure 14 presents a synthesis of offshore operations main aspects of our study.

Figure 14: Main aspects of offshore operations



2.2.1 Rapprochement between the approach of Dynamic Capabilities and Offshore

DC capability has been a present perspective on strategic field since the work of Teece, Pisano and Shuen (1997). However, on operations management field, this perspective is only recently used. In this sense, three works can be highlighted. Witcher, Chau, and Harding (2008) use DC perspective to analyze operations management at Nissan in South Africa. Through a study case approach, the authors identified how Nissan used *hoshin kanri*[13] and TEAs (Top Executive Audits) as dynamic capabilities to manage the implementation of strategy. This study emphasizes the whole of management team, management tools implementation, and management philosophy as types of DC on operations management perspective. In another

[13] Hoshin kanri, which translates as policy deployment or policy management, is an organization-wide business process for the management of top management goals, managed as an annual plan-do-check-act (PDCA) cycle, sometimes called the Shewhart or Deming (1986) cycle. Hoshin kanri is used by most large Japanese firms operating in international markets. […] Hoshin kanri is used to involve the whole firm in breakthrough, or rapid, change. The principle is that if everyone makes some contribution to a hoshin, then the firm as a whole will have moved further forward to an extent that otherwise would not be possible through normal working (Witcher, Chau, & Harding, 2008, p. 545).

study, Smart, Bessant, and Gupta (2007) addressed operationalizing inter-organizational innovation networks, in both the strategic and operations management levels in biopharmaceuticals industry. The authors utilized DC perspective to explore the hole of accessing complementary resources to implement innovation through inter-organizational networks.

Wang, Klien, and Jiang (2007) in their turn used knowledge-based DC construct[14] as a mediator between Information Technology support to Knowledge Management and organizational performance in manufacturing companies. The authors identified DC as showing a significant association with performance, and it is a full mediator between information technology support of knowledge management and organizational performance. The authors suggested that manufacturing management should be aware of evaluations of IT investments in terms of strategic contribution.

RBV as well as DC have started to be seen as valuable approaches to operations management literature, in order to emphasize the role of management and resources and capabilities embedded in operations (Pandza, Horsburg, Gorton, & Polajnar, 2003; Witcher, Chau, & Harding, 2008). Otherwise, operations management and operations strategy have not fully addressed capabilities development issues. This mainly occurs because capability development is an ambiguous and social complex phenomenon (Pandza, Horsburg, Gorton, & Polajnar, 2003). In addition, operations management literature is predominantly guided by outside-in strategy approach (e.g. Porter's Five Forces). Thus, there is a lack of studies regarding

[14] Wang, Klien, & Jiang (2007, p. 2425) define knowledge-based dynamic capability as a firm's ability to gain competitive advantage through more dynamic applications and adjustments of the firm's knowledge base.

inside-out approaches such as assets/capabilities and strategy development, how capabilities are useful to operations management, and how companies can use capabilities (Lillis & Lane, 2007).

Offshore has implications to strategic management field because it can be considered a firm-level capability and a resource. Additionally, it can also be considered as an internal process and a business strategy, resulting from successful resource management and firm-level capabilities. Focusing on managerial and firm capabilities, a dynamic capabilities approach may be a useful perspective to address how companies develop unique capabilities in offshore (Doh, 2005).

Accordingly, offshore are considered as a strategy conducted by a learning-by-doing process. This aspect suggests that implementation of offshore is done in a continuum of stages (Lewin & Peeters, 2006a; Maskell, Pedersen, Petersen, & Dick-Nielsen, 2006). Literature suggests that there are three phases of offshore execution: offshore entry phase, when the main goal is to acquire experience and to establish presence; offshore development phase, when the main objective is to expand toward more business core activities; and offshore integration phase, when the main objective is to integrate operations globally toward expanding activity scope and capabilities (Robinson & Kalakota, 2006).

As an evolutionary process, knowledge and capabilities created and shared across locations have an important contribution to offshore success (Youngdahl & Ramaswamy, 2008).Companies have to develop capabilities to manage offshore relationships and global networks in more advanced stages of offshore operations (Carmel & Agarwal, 2002; Levy, 2005; Levin & Peeters, 2006b; Venkatraman, 2004). Thus, skills and learning related to the managerial process of offshore are important issues (Ellran, Tate, & Billington, 2008).

Capabilities development has allowed companies to employ more complex offshore processes. However, this development is a continuous and dynamic process due to the growing complexity of offshore operations, particularly for high-skill organizational activities (Manning, Massini, & Lewin, 2008). For instance, third party companies are not merely transactional vendors; they have to integrate shared knowledge and effective management processes (Li, Liu, Li, & Wu, 2008). To do so, companies have to develop capabilities to undertake temporal and spatial distance and to achieve collaboration between work teams (Levina, 2007). Capabilities have more effect on achievement of collaboration in offshore operations than on locations and type of offshore (captive and third part) aspects (Levina, 2006). The effectiveness of shared process as offshore depends on the complementary needs and specific capabilities developed. Large companies seem to be more attracted to offshore operations than medium and small companies. This probably happens due the complexity and the need of resources and capabilities to conduct that process (Askin & Massini, 2008).

Internal capabilities are also required to manage offshore service processes, mitigate risks, and achieve effectiveness in this process. Capability-based theories can contribute to the understanding of offshore management challenges. A capability to conduct offshore operations may be considered as a competitive capability (Stratman, 2008). Expertise (Doh, 2005) and managerial skills are needed to conduct offshore operations (Scheibe, Menneke, & Zobel, 2006). Results of a case study highlight the importance of managers` capabilities to reduce boundaries and to stimulate collaboration between companies in offshore operations (Levina, 2007; Levina & Vaast, 2008).

The potential for achieving positive results of offshore also depends on how companies carry out this process. Consequently, at more advanced stages of offshore operations, companies

must develop specific capabilities to manage offshore relationships and global networks (Askin & Massini, 2008; Carmel & Agarwal, 2002; Lewin & Peeters, 2006b; Levina, 2007; Levy, 2005; Venkatraman, 2004). Capabilities development (e.g. coordination of globally dispersed activities) has allowed companies to employ more complex offshore processes. It involves learning processes, identification, and adaptation to changing requirements in order to explore opportunities for offshore (Manning, Massini, & Lewin, 2008).

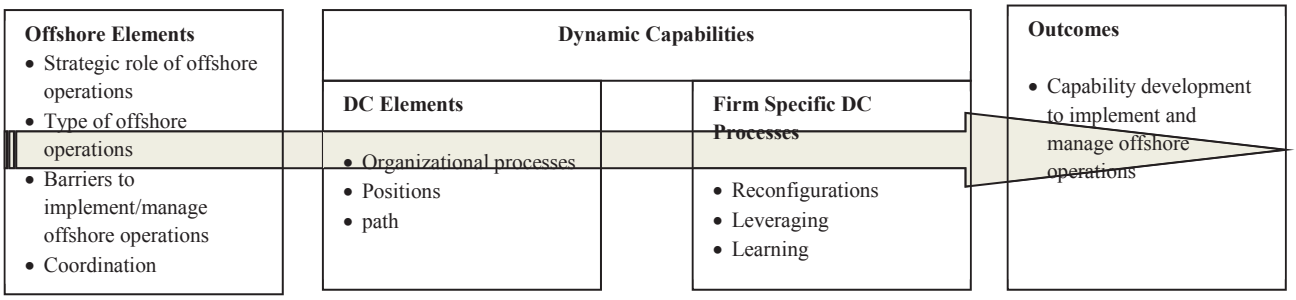
We utilize mainly a DC approach based on studies by Teece, Pisano, and Shuen (1997) and Teece and Pisano (2004) (see Figure 15). The three specific aspects of DC are elements, firm-specific processes, and outcomes. DC elements are common features; in other words, any company should present these aspects embedded in DC (e.g. Wang & Ahmed, 2007). The three DC elements help to determine a company's DC and distinctive competence as follows: (1) organizational processes, which entail the organizational and managerial routines of current practice and learning; (2) positions, which refers to a company's current endowment of technology and intellectual property and its relationships with customers, suppliers, and strategic alliances; and (3) paths, which refers to the strategic alternatives and opportunities available to the company.

We consider firm-specific processes of DC that entail reconfiguration, leveraging, and learning. These processes may vary among companies because they are developed over time (Wang & Ahmed, 2007). In other words, they are path dependent. Reconfiguration is the recombination of resources and capabilities to fit with changing requirements (Ambrosini & Bowman, 2009; Bowman & Ambrosini, 2003; Eisenhardt & Martin, 2000; Menon, 2008). Leveraging is the replication of a process or systems to another business unit (Ambrosini & Bowman, 2009; Bowman & Ambrosini, 2003). Learning is the creation and regeneration of new

knowledge that allows a task to be performed (Ambrosini & Bowman, 2009; Bowman & Ambrosini, 2003; Menon, 2008). We also consider that the outcome of DC is the development of capabilities for managing offshore operations. In other words, we refer to capability development as an outcome of a firm's dynamic capabilities over time. DC can be considered a higher-order capability (e.g. Collis & Montgomery, 1994) or a dynamic ability (e.g. Zahra, Sapienza, & Davidson, 2006) that develops, reconfigures, renews, and integrates a company's capabilities. Therefore, this work focuses on DC as a set of processes for developing organizational capabilities (e.g. the capability for managing offshore operations). In addition, offshore elements represent internal and external elements discussed previously as antecedents of DC.

In doing so, we do not discuss DC as a specific distinctive capability (e.g. R&D). For instance, Wilkens, Menzel, and Pawlowsky (2004) identified that knowledge management activities (e.g. knowledge creation) have a positive impact on DC, which was studied as a firm's ability to deal with future challenges (e.g. funding/financial situation, new technologies, quality competition, cost competition, and innovation competition). Though that study showed interesting evidence, it only addressed possible outcomes of DC. How these results are achieved, which DC processes have contributed to those outcomes, and how knowledge management practices interact with DC processes remain unclear. Based on those previous studies, we propose the following definition: *Companies develop capability to manage and implement offshore operations by DC elements and firm specific DC processes.*

Figure 15: Analytical framework for developing capability to manage and implement offshore operations



3. METHODOLOGY

In this section we present the research study strategy, the methodological description of the sequence of its operation, as well as the analytical framework and the central assumptions of the research. This research is characterized as a descriptive study using multiple cases, with a qualitative approach. The techniques of data collection we used are: (i) semi-structured interviews, (ii) document analysis based on archival records, and (iii) archival quantitative data. For data analysis we used the qualitative content analysis technique (Flick, 2002; Cooper & Schindler, 2003), based on Bardin (1979), Mayring (2000), and Kelle (2000).

3.1 General propose and research approach

This research is characterized as descriptive and qualitative. Descriptive studies are characterized by studies which aim at deepening the knowledge of reality by describing a phenomenon (GIL, 1991ab). This type of study is based on the theory in order to answer questions like "how" and "why" (Cooper & Schindler, 2003; Yin, 2001).

The word “qualitative” implies an emphasis on processes and meanings that are not rigorously examined or measured in quantitative terms. Researchers of this approach focus on socially constructed natural reality. Each researcher emphasizes the value brought by the research, seeking to answer how the social experience is created in a given meaning. Quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes (Denzin & Lincoln, 1998).

Qualitative research focuses on specific questions, such as meanings, motives, aspirations, beliefs, values, and attitudes. It does not mean that quantitative research does not have the capacity to deal with this type of question, but the nature of the qualitative approach allows a more thorough study of the phenomenon (Minayo, 1994). It is valuable to point out that the qualitative approach is the main stream of this study. The quantitative approach will complement it.

One of the methodological steps that must be considered is the validity of the research. Lüdke and André (1986) reported that, in the qualitative approach, the validity of research is related to subjectivity, which is widely questioned by researchers who advocate a quantitative approach. The authors also mention that subjectivity is associated with the influence of personal values of the researcher, the duration of stay on the pitch, and the duration of observations.

At this point, it is interesting to note that saturation of data may be a reference point. There is a methodological imaginary space between two extremes: the lack of data, which can result in a mediocre theoretical contribution search, and excess data, which can derail the search through the complexity of the analysis. The ability to analyze data, time, and financial resources, can be references to decide to add more data to the research (Eisenhardt, 1989).

This study is also characterized as qualitative descriptive in that it intends to understand in depth how firms develop capability to manage and implement offshore operations. Furthermore, another aim is to understand in depth the process of Dynamic Capabilities, identifying how the processes contribute to development of capabilities.

Having been exposed to the main methodological features of this research, we describe the general process and methods used in this study. Overall, we conducted this study through

multiple-case studies, using semi-structured interviews and archival data as sources of data collection. Qualitative data analysis was inspired qualitative content analysis technique.

In general, we carried out this study by three steps as presented in Table 20 below. In the first step, we did three explorative case studies, in order to get preliminary findings. The explorative phase was valuable to us to test categories of analysis and improve the protocol as well. Through exploratory case studies, we identified an emergent category of analysis, coordination of offshore operations, which we have included in additional studies. In the second step, we did five additional cases and returned to the first three cases as well, in order to expand the analysis with more data. Finally, in the third step, we did a cross-case analysis, comparing evidence from cases in order to suggest propositions and an integrate model of development of capability to manage and implement offshore operations.

Table 20: Summary of steps and procedures of the study

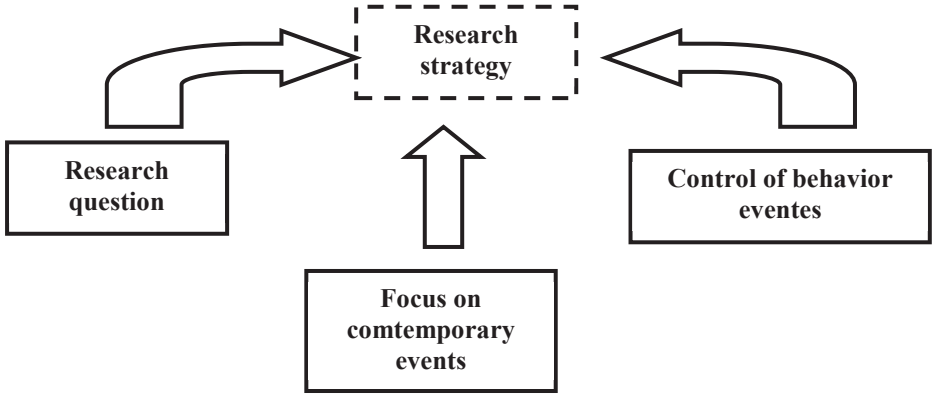
Steps	**Procedures**
Fist three case studies	Selection of companies
	Interviews
	Transcriptions of data
	Individual case analysis
	Cross-case analysis
Additional five case studies	Selection of companies
	Interviews
	Transcriptions of data
	Individual case analysis
	Cross-case analysis and analysis of archival data
Theorizing	Development of propositions
	Development of a model

We have also used Quali-quantitative archival data from ORN[15] (2009) in order to get more information from case analysis. We have compared some evidence with the report, especially on general aspects of offshore operations such as drivers and barriers. Figure 20 above presents a summary of those steps.

3.2 Multiple-Case Studies

There are several ways to conduct research; the case study is one of the possible alternatives. Each research strategy has strengths and weaknesses, that can be measured for three conditions offered by Yin (2001), as shown in Figure 16.

Figure 16: Research strategy decision based on Yin (2001)



One should consider the characteristics of the study context, based on the three conditions above mentioned, to decide the most appropriate research strategy. In general, the research questions are summarized in five ways: who, what, where, how, why (Yin, 2001). As observed

[15] Taking Offshoring to the Next Level. The 2009 Offshoring Research Network Corporate Client Survey Report. RESEARCH REPORT R-1473-11-RR. by Arie Y. Lewin, Nidthida Perm-Ajchariyawong, and Jeff Russell.

in Table 21, the focus of questions are characteristics of experimental strategies, case study, and historical research.

Table 21: General traits of research strategy based on Yin (2001, p. 24)

Method	Research question?	Requires control of behavior events?	Focus on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	no	Yes
Archival Analysis	Who, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case Study	**How, why**	**No**	**yes**

Based on the research question proposed by this study and its operational context, we have considered the multiple-case study as more appropriate research strategy. The case study as research strategy allows the researcher to carry out direct observation and systematic series of interviews (Yin, 2001). This strategy can also be employed in research questions based on the conceptual nature of established theories, or intended to generate theory, for example, "how" and "why" (Godoy, 2006).

The case study also emphasizes a contextual analysis with reduced amplitude, seeking depth and interplay of events, providing valuable information for solution of problems, evaluation, and strategy (Cooper & Schindler, 2003) when there is a lack of understanding about a particular phenomenon, and in the early stages of a theory, or even to renew prospects in an established theory (Eisenhardt, 1989). In general, this strategy is suitable for emerging theories,

as well as for the understanding of relationships between constructs (Eisenhardt & Graebner, 2007).

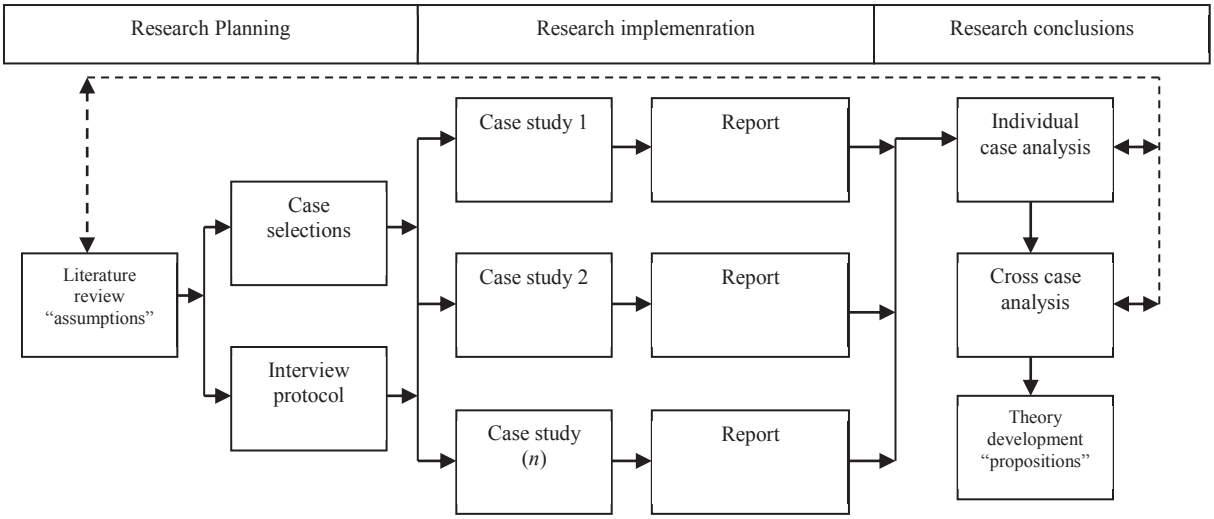
The strategy of the case study for investigating the behavior is an efficient source of production of theoretical "models," as well as, provides unique results in harmony with the theoretical structure, enabling the accumulation of knowledge (Nieto and Perez, 2000). We have considered essential for this research to develop an in-depth study, made possible by a case study, seeking to understand how firms develop capabilities to manage offshore operations through Dynamic Capabilities.

In this research we follow the logic of Yin (2001), which does not emphasize the distinction between single case study and multiple-case studies. However, the author highlights some aspects of this latter type of case study. For example, the evidence resulting from multiple-cases represent is more robust (Eisenhardt & Graebner, 2007; Yin, 2001). Figure 17 below shows the logic of multiple-case studies with a qualitative approach, which was inspiring and representative for this research.

The first phase of the process of conducting multiple-case studies refers to the general definition and research planning. According to Yin (2001), in this initial phase the theoretical review and the cases selection should be developed, which are essential steps to collect data. In the initial stage, the definition of research question, the theoretical constructs, and the protocol are central to the conduct of the case study, as well as for developing theory from it. In qualitative research, the theory can be used as a guide to conducting the research (Creswell, 2003). Nonetheless, it is a flexible process; the research question can be adjusted throughout the search process in view of the nature and intensity of "grounded theory" of this strategy (Eisenhardt, 1989; Godoy, 2006). This is a decision that depends on the approach of the

researcher. There is no consensus on the location (beginning or end of research field) or emphasis of the theory already established in case studies in qualitative research in general (Creswell, 2003; Eisenhardt, 1989; Godoy, 2006).

Figure 17: Logic of qualitative multi-case study research based on Eisenhardt (1989), Dyer Jr. and Wilkins (1991), Flick (2004), Yin (2001), and Remeneyi, Williams, Money, and Swartz (2000)



It is worth noting that, from the literature review, it was possible to define the scope of this research, context, research problem, objectives, and protocol for data collection. Consequently, the posture of this research was to adopt previously established theory, and after that, conducting the other research processes. However, we tried to keep the dialogue between analysis and theoretical framework. In this type of approach "theory-driven," the potential of qualitative research is to explain the complexities that the quantitative approach cannot achieve (Eisenhardt & Graebner, 2007).

The selection of cases in multiple-case studies does not follow a sampling logic, being even inappropriate for this type of research strategy (Eisenhardt, 1989; Yin, 2001). The focus of qualitative research is to generate, rather than test the theory (Eisenhardt & Graebner, 2007). However, there is doubt about the quantity and selection of cases needed. In this sense the

decision depends on the researcher's certainty about what he/she expects to achieve through the research. Therefore, it should be used the logic of replication. One should employ a literal replication, when it is been working with similar results, and theoretical replication, when it is been dealing with contradictory results (Yin, 2001).

The researcher, based on literature review, should predict what kind of result is expected from the study. In this sense. two to three cases may be used for literal replication, and four to six cases in theoretical replication (Yin, 2001). When the researcher has no idea of the number of cases, the interval between 4 and 8 cases can be used (Eisenhardt, 1989). Thus, this works as a parameter for the researcher to deal with this methodological issue.

However, literature has no consensus on the number of cases in qualitative research. For example, Dyer and Wilkins Jr. (1991) argue that a contribution cannot be excluded from the theory of single case studies in depth. The logic of replication in multiple-case study considers each case study as a single complete study, and not just a sum of observations - as it happens in the sampling logic (Eisenhardt & Graebner, 2007; Yin, 2001). As can be seen in Figure 17, each case comprises the multiple-case study design; thus, the individual analysis of each case precedes the cross-analysis of them (Yin, 2001).

Accordingly, we comprise in this study eight cases, using the literal replications. We are not using competing theories; nonetheless, we seek to understand a phenomenon through a Dynamic Capabilities lens. We have selected those cases based on convenience and accessibility (Yin, 2001), in order to access cases that allow to reply or expand theory research focus (Eisenhardt & Graebner, 2007; Eisenhardt, 1989). We also have chosen the cases based on the relevance criteria to represent the situation we intended to investigate.

Beyond accessibility, we looked for cases that have been implementing offshore operations in manufacturing sector. We have chosen this kind of company because offshore literature has been somehow confusing terms between offshore and outsourcing. Thus, we have chosen companies that implement mainly offshore captive to avoid this kind of confusion. In addition, we have chosen manufacturing companies because there is a lack of studies of this kind of companies on offshore operations. For instance, we have analyzed ten research reports of offshore operations from institutes such as Word Bank, ORN from Duke University, and Mkinsey Global Institute. As a result, only one report was possible to be used because in all other there is no information on captive offshore and manufacturing activities. These reports have focused offshore outsource in services activities.

Another main step in the planning stage of conducting multiple-case studies is the development of the research protocol. The protocol intends to ensure the reliability of the study, advising that in conducting the study, the researcher follows the same focus. The elements of the protocol are: (i) overview of the project's case study, (ii) field procedures, (iii) questions of the case study, and (iv) guide to the report of the case study (Yin. 2001). Appendix 1 presents the protocol developed for this research.

3.2.1 Quality Criteria in Qualitative Research and Case Study

Criteria such as reliability of generalization can be analyzed in qualitative research, yet it has a smaller role than in quantitative research (Creswell, 2003). Quality of a case study project can be verified and monitored by four tests as follows: construct validity, internal validity, external validity, reliability (Yin, 2001). Table 23 presents a summary of these criteria and their tactics.

Table 22: Case Study Tactics for Four Design Tests based on Yin (2001, p. 55)

Tests	**Case study Tactic**	**Phase of research in which tactic occurs**
Construct validity	Use multiple sources of evidence Establish chain of evidence	Data collection
	Have key informants who review the case study report draft	Composition
Internal validity	Do pattern matching Do explanation building Address rival explanations Use logic models	Data analysis
External validity	Use theory in single-case studies Use replication logic in multiple-case Studies	Research design
Reliability	Use case study protocol Develop case study database	Data collection

In general, the criterion of validity is a measure of robustness of the qualitative research (Creswell, 2003). The *construct validity* of the case studies concerns the correct operation in view of the analytical framework or conceptual model of research. In other words, the researcher should develop a coherent research strategy and make some adjustments in the implementation phase (Yin, 2001). Some tactics can be applied to enhance this criterion, such as the use of multiple sources of evidence and chain of evidence in the step of data collecting (data triangulation), and the review by key informants during the writing and composition of the report (Creswell, 2003; Yin, 2001). We have sought to use different sources of evidences (eight cases), and quali-quantitative data from research reports (e.g. Offshoring Research Network). In addition, key informants were asked to analyze transcriptions in order to ensure the quality of the transcription process.

Internal validity is a requirement for descriptive studies. This criterion refers the establishment of causal relationships. However, it is challenging to achieve in qualitative approached based on inference logic. In order to mitigate or somehow ensure that criterion, the tactics of the pattern matching, explanation building, and analysis of time series can be employed

(Yin, 2001), as well as following the analytical procedures and use of evidence to support the emerging theory (Eisenhrdt, 1989). In this sense, there should be a supporting evidence for the description of cases and conclusion (Creswell, 2003; Godoy, 2006). In other words, reports of the case study should represent the phenomenon under study (Godoy, 2006). In this study, we have followed a process of analysis through a structured procedure guided by pre-defined analytical categories, through a theoretical review, and an analytical framework, following thus a inductive logic.

External validity refers to the potential generalizability of findings. It can be stated that case studies allow the emergence of new thoughts, assumptions, and theories (Eisenhardt, 1989). In this sense, analytical generalization is the fundamental logic, by which the researcher generalizes the findings through more comprehensive theories. It can be used for replication (theoretical or literal) instead of the logic of sampling. The literal replication occurs when there is similarity of results among the cases studies and the theoretical replication occurs when there is contrasting results among cases studies (Yin, 2001). In this sense, the researcher should report both similarities and contradictory evidence (Creswell, 2003). Other alternatives to amplify the generalization can be to analyze more than one case, more than one researcher involved in data analysis, and the search for a case that has specific desirable characteristics (Bryman, 1988). Thus, we have used more than one case, which fit into the context of the study object.

Finally, reliability refers to the potential for replicating this study in other similar situations. In this sense, the carefulness of operation is essential, involving the use of protocols of research and organizing the evidence through databases. The research should ensure that standard procedures were followed and that there is an operational logic that can be applied

again following the same steps (Yin, 2001). In this study protocols were used and databases were generated.

3.3 Data Collection

In case studies, a variety of sources of data collection can be used (Eisenhardt & Graebner, 2007); the six sources of data collection presented by Yin (2001) include: (i) documentation, (ii) records files, (iii) interviews, (iv) direct observations, (v) participant observation, and (vi) physical artifacts. Each one has strengths and weaknesses that must be considered by the researcher. These six sources can be grouped into three categories as follows: observations, interviews, and documents (Godoy, 2006).

In general, case studies combine these methods in a same study, even combining qualitative and quantitative data (Eisenhardt, 1989). This is a characteristic of qualitative research, having these three types of data sources and use of the protocol as the guide of operation (Creswell, 2003).

Three principles can be followed in the process of data collection in case studies. The first is the use of multiple sources of evidence. In that sense, this is one of the strengths of case studies: the opportunity to use many sources, in other words, data triangulation. With triangulation it is possible to reduce the problem of construct validity, since it is possible to collect evidence of a phenomenon from different sources (Yin. 2001). Triangulation increases the creative potential of study reliability (Eisenhardt, 1989).

The second principle is the organization and documentation of collected data. It is recommended to separate database from the case report. This procedure contributes to increasing the reliability of the study (Yin. 2001). Actions such as encoding and organizing help to identify

evidence from different sources that have similar meanings in the light theory (Eisenhardt, 1989).

Finally, the third principle is to maintain the chain of evidence. This allows the reader to identify clarity in the report and links between elements of the report. For example, the researcher must show evidence in the report that lead to study conclusions, as well as the conditions under which evidence was collected. Thus, the reliability of the study can be increased (Yin. 2001). The researcher must constantly ask himself/herself in order to figure out what he/she is learning, and how and if the evidence is becoming different from each other, and be aware of external validity (Eisenhardt, 1989).

According to the research question, objectives, strategy and research context, we considered it appropriate to use two different techniques of data collection: (i) archival records, and (ii) interviews. The archival records were used to complement the evidence gathered in the interviews as well as for characteristics of case companies. Thus, the main technique for data collection used by this study was the semi structured interview, which is discussed more completely as follows. As pointed out by Eisenhardt and Graebner (2007), the addition of more than one case in the research project and the focus on non-routine matter hamper the use of multiple sources due to the difficulty of implementation; thus, the interview technique is a major source in this type of research.

3.3.1 Semi-structured Interview

Interview is the most employed technique in qualitative data collection. The researcher seeks to extract information from the speech of social subjects. Language and meaning of speech play a central role. Researcher can use this technique to obtain objective and subjective data.

Objective data can also be obtained through secondary sources and records or files. Subjective data are germane to the subject, representing their values, attitudes, and opinions (Minayo, 1994).

Lüdke and André (1986) address the role of the interview for the social sciences and also address the importance of interaction between researcher and subject in the interview. The researcher should develop the ability to listen carefully to the reports of the subject, respecting their culture and values. As a data collection technique, the interview has advantages and disadvantages. The researcher must consider the compatibility of this technique with the overall context of the research. He/she should also explore the advantages that technology offers and avoid its limitations, and use other techniques to improve the process of data collection. The use of interview technique involves issues ranging from planning to data analysis.

The technique of the interview can be conducted by three ways: structured, unstructured, and semi-structured. We use in this study semi-structured interview. The semi-structured interview starts from basic questions, based on assumptions and hypotheses related to the theory. As the interview develops, questions emerge from the responses of the subject. Thus, the subject participates more effectively in theory construction. The interview method is sustained both in theory and in reports provided by the subjects (Triviños, 1987). We have chosen semi-structured interview as a method of conducting the data collection because it allows us to articulate questions previously defined through theory review and emerging questions developed during the processes of each interview. Therefore, we have chosen a more flexible method with greater contribution from the subjects.

During the interview, recording methods should be used. Lee (1998) presents four ways to register: audio recording, video recording, handwritten note, and memory usage. It is

interesting to use a combination of methods, since each has advantages and disadvantages. The recording methods are more advantageous compared to the annotation and memory, because of their capacity to store data. One possible drawback is the inhibition of the subject, which can be ameliorated by the researcher (Triviños, 1987).

According to Lee (1998), recording an interview is rarely analyzed directly, which can create problems of internal validity. Two aspects should be considered: reliability and validity. The first involves the assessment of understanding the variations in the transcript of the interview. The second deals with the modification of the contents of the interview to make up a transcript. The same author argues that the researcher, to adopt a "model" for data analysis, should measure their preferences and their style of operation. We have recorded all interviews recorded in audio mode, transcribed them, and then we have sent to the interviewees to a check process. We have also taken field notes during interviews. The average length of interviews was between 50 minutes to 90 minutes, generating approximately 300 pages of transcription. Table 23 below presents a summary of the interviewees. In order to ensure the identity of interviews, we present the interviewees' statements by companies.

Table 23: Summary of interviewees

Company	**Position of the interviewee**	**Years working for the company**
A	International Business Manager	11
	HR Coordinator	23
	Sales and Operations Manager	19
B	Logistics Coordinator	10
	Abroad facility Director	7
	Operations manager	12
C	Logistics Coordinator	8
	Controller Manager	6
	HR Coordinator	14
D	Logistics Manager	8

	International Business Coordinator	5
	Operations Manager	17
E	Operations Manager	11
	Logistics Coordinator	9
	Exports Manager	10
F	Abroad Facility Director	4
	Sales manager	6
	Logistic Coordinator	7
G	Operations Manager	6
	Abroad Facility Director	8
	Operations Coordinator	4
H	Operations and Logistics Manager	17
	International Business Coordinator	5
	HR and Quality Manager	15

3.4 Data Analysis

In qualitative research, the stage of data analysis seeks to process the data collected in order to extract the most relevant information for the development of theory. According to Eisenhardt (1989), data analysis is central to the development of theory, being the most difficult and least schematic stage of the research. In other words, the goal is to make sense of emerging body of evidence collected (Creswell, 2003). Yin (2001) highlights that the data analysis in case studies is hampered due to the lack of better definition of the techniques. This author argues that an analytical strategy should be established, prioritizing what must be analyzed and why. Lee (1998) argues that the researcher adopt a data analysis "model" and should measure his/her preference and his/her style of operation.

Two strategies can be used for data analysis in case studies: theoretical propositions and developing a case description. In the first strategy, the researcher conducts the analysis of the data as a guide with the propositions of the study, which originated from the literature review

and were an inspiration for the interview questions (Yin, 2001). This is a strong point of the strategy of case study, in that it allows for example to test the theory, making a bridge between inductive and deductive logic (Eisenhardt & Graebner, 2007). Thus, propositions are guides to the data analysis. In the absence of theoretical propositions,[16] the strategy of the case description can be used. Thus, the development of the case description, through an organized structure of sections, can be an alternative strategy to conducting the analysis (Yin, 2001).

In this research, both the data collection instruments and the data analysis were guided by categories of analysis bases on theoretical review. Accordingly, there are in the interview guide questions about the implementation and management of offshore operations, as well as about dynamic capabilities. In the data analysis, evidence was sought to link categories of analysis.

Besides the strategy of theoretical propositions, we follow the pattern matching based on the explanation. This strategy seeks to explain a phenomenon through a set of causal links. In this sense, a case study gained as long as explanations reflect the theoretical propositions or a theoretical model. This process can be built up gradually when using multiple cases, as long as it compares the results obtained in each case with the theoretical propositions, resulting in cross-analysis of data and the search for plausible explanations or contestants (Yin, 2001).

Descriptive study aims beyond the description of the case to identify patterns of data and developing concepts to confirm or confront theoretical assumptions (Godoy, 2006). In this process, one must continually compare theory and evidence, refining the definition of theoretical constructs and evidence, identifying emerging relationships among constructs, and discovering theoretical explanations for whether or not these relationships occur (Eisenhardt, 1989). In

[16] We use the term assumptions to refer theoretical propositions as it can be seen in chapter 2.

general, one should analyze the data following an inductive logic, in which evidence is collected by the logic of the respondents, seeking to identify emerging patterns of data (Eisenhardt & Graebner, 2007; Godoy, 2006).

In that sense, we have prioritized the recursive process of return to individual analysis and cross analysis of cases, in order to understand the phenomenon under study and develop new testable propositions. To this point, we have sought to follow advice from Whetten (1989) and Bacharach (1989). Beyond the strategies described before, the process of data analysis followed the following guidelines: (i) within each case, familiarity with each case in order to identify individual patterns (Eisenhardt, 1989); (ii) in cross case analysis, identify similarities and differences by categories or dimensions (Eisenhardt, 1989).

This process described above is central to the theory development, as long as it is possible to compare concepts, theories, or hypotheses emerging with the established theory. Therefore, both conflicting and similar aspects have value. Conflicting aspects contribute to the development of emergent theory, and similar aspects represent opportunities to strengthen the theory and its generalization (Eisenhardt, 1989; Eisenhardt & Graebner, 2007).

Finally, the last aspect to consider in the data analysis strategy in case studies is to identify when to close the cases and the addition of interaction between theory and evidence. These aspects can be employed the logic of theoretical saturation, which combines the theoretical contribution and other aspects such as time and resources (Eisenhardt, 1989).

3.4.1Qualitative Data Analysis Process

Taking into account the issues set out, we have used in this study qualitative content analysis technique (Flick, 2002; Cooper & Schindler, 2003; Kohlbacher, 2006) based on Bardin (1979), Mayring (2000), and Kelle (2000). We have used Nvivo®, which is a CAQDAS, in order to perform the qualitative dada analysis. It is important to note that a CAQDAS does not work as statistical software, which automatically performs statistical operations. A CAQDAS is like a word processor, which does not write a text, but helps to write it. Thus, a CAQDAS does not analyze the data content by itself, but it helps to (Flick, 2002). Examples of operations and management studies that recently have use this type of approach include Nair et al (2010), Strong and Volkoff (2010), Dacin et al (2010), and Balzarova and Castka (2008).

Our intention was therefore to analyze the reports of managers and other subjects in order to be able to extract meaning from their perceptions regarding investigated key aspects. Cooper and Schindler (2003) argue that the qualitative content analysis measures the semantic content (the *what* in a message), and it highlights its scope, which can be used in quantitative and qualitative approaches. In other words, the main objective is to capture substantive statements from the data (Kohlbacher, 2006). For this study, content analysis was conducted using a qualitative approach. In terms of concepts, content analysis is defined as:

> A set of techniques for analysis of communications in order to obtain, through systematic procedures and objective a description of message content, indicators (quantitative or not) that allow the inference of knowledge concerning the conditions of production / reception (inferred variables) of these messages. (Bardin, 1977, p.42)

Qualitative content analysis technique is a classical procedure to analyze textual data, including interview transcriptions to media products. It is essential to this technique to use main categories of analysis, usually originated from theory and theoretical models (Bryman, 1998;

Flick, 2002; Kohlbacher, 2006). The main categories of analysis developed in this study were the following: (1) strategic role of offshore operations, (2) barriers to the implementation of offshore operations, (3) coordination of offshore operations, (4) capabilities developed by companies to manage and implement offshore operations, (5) the role of dynamic capabilities elements (paths, positions, and processes) on the development of capabilities for managing offshore operations, and (6) firm-specific DC processes used to develop capabilities to manage and implement offshore operations. Thus, this study applies a inductive logic of qualitative data analysis. This logic is present when categories of analysis are defined based on theoretical review, prior to data analysis process (Mayring, 2000; Kohlbacher, 2006).

As in quantitative approach research, qualitative approach research may also follow a procedural order. As Kohlbacher (2006, p.14) argues, "the strength of qualitative content analysis is that it is strictly controlled methodologically and that the material is analyzed step-by-step." In this sense, the operation of data analysis can be conducted by following six steps in which the operating procedures of analysis can be pooled, each one with a contribution to the research project as a whole. Our qualitative data analysis was inspired by the following steps outlined by Creswell (2003):

(i) Preparation of data organization, involving activities such as transcripts of interviews, taking field notes and organization of materials by source of information;

(ii) Intensive reading of data in order to identify the meaning of data and evidence;

(iii) Detailing of the material, involving the coding and classification according to the categories of analysis;

(iv) Description based on coding, aiming at the description of the object by following the categories and the collected material;

(v) Using of evidence; it involves using the evidence collected to express the findings of the study, which can be used in a chronological logic or combination of evidence; and

(vi) The interpretation of the data meaning, which can be used to a researcher's sense based in the reports, findings were compared with the established literature (confirmation or divergence), emerging new study questions and new perspectives on the theory on study.

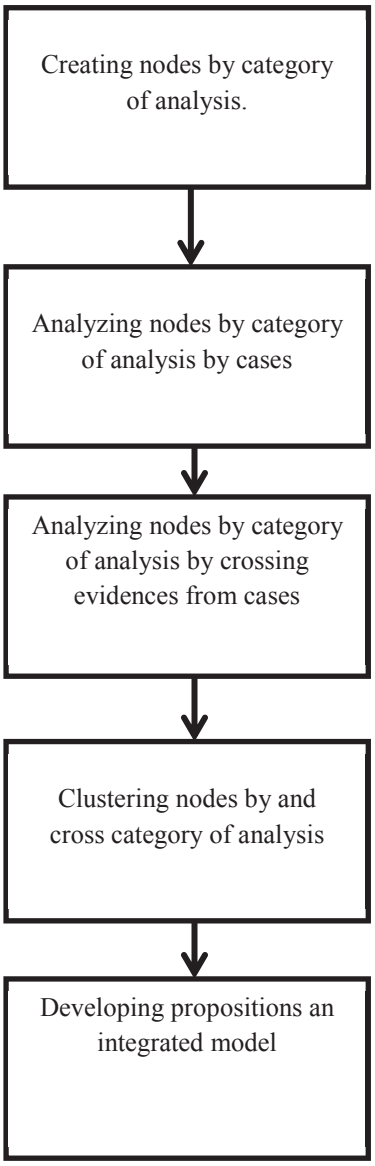
Inspired by Kelle (2000), we have sought a data analysis integrated processes. For the first step we created nodes in order to analyze data accordingly to ours categories of analysis. For the second step, we analyzed each node by categories of analysis in order to analyze the content of each node by each case. For the third step, we analyzed each node by crossing evidence from cases, in order to identity patterns, differences among cases, and suggestion of propositions. For the fourth step, we clustered nodes by and cross categories of analysis in order to identify association among them, which was valuable to improve some propositions and add others as well. We have clustered nodes based on Miles and Huberman (2000), and other previous studies, following Nair et al (2010), Strong and Volkoff (2010), Dalcin et al. (2010), Balzarova and Castka (2008), Druskat and Wheeler (2003), and Huxham and Vangen (2000).

Even though cluster analysis is an exploratory technique, it helps to find patterns, especially relationships among nodes (QSR, 2010; Nair et al, 2010). Dendrogram provides a graphical representation of nodes, showing similarities and differences among them (QSR, 2010; Balzarova & Castka, 2008). Nodes in the diagram that appear close together are more similar than those that are far apart, by using the calculated similarity index between each pair of items

by Person correlation (-1 = least similar, 1 = most similar) (QSR, 2010). Finally, in the fifth step we developed an integrated model to represent the associations identified in the data analysis. Figure 18 below presents a summary of the data analysis process used in this work.

In addition, we have also followed a *summary* procedure of qualitative content analysis based on Mayring (2000). It means that the goal is to reduce the data preserving the essential meaning, resulting in a manageable corpus of data. Basically, the text is paraphrased, generalized or abstracted and reduced (Mayring, 2000; Kohlbacher, 2006).

Figure 18: Summary of the data analysis process



4. RESULTS

This section is divided in two parts. In the first part we analyze data from cases individually in order to present each company and the main aspects related to offshore operations and dynamic capabilities. In the second part we discus differences and similarity among companies in order to explore the evidence of each category of analyses. As a result, we suggest propositions and a model of capability development to manage and implement offshore operations

4.1 Within-Case Description

We have collected data from eight companies. According to the purpose of this study, we have chosen companies from the manufacturing sector. In addition, we have chosen companies that have been employing captive offshore operations. Table 24 presents a summary of companies' main information. This section is a result of our within-case analysis. We present the details of the eight cases used in this study. Each case is written based on the key data coding we have done through data analysis. We start each case with some background information, and then we proceed to present offshore and DC characteristics.

4.1.1 Company A

Company A is a Brazilian firm established in 1949 that produces a diverse line of coaches used for public transportation. Company A has more than 12,000 employees and operates in multiple countries in addition to Brazil: Argentina, Colombia, Mexico, India, Russia,

Egypt, South Africa, and Portugal. It started offshore operations in 1990 with the establishment of a captive factory in Europe.

Since then, company A has been moving its operations abroad through captive facilities, acquisitions, joint ventures, and contracts with third party companies. Thus, company A has three types of offshore operations (captive, partnership, and outsource). However, offshore outsourced is only employed to supply components in order to support the company's operations. As managers argued, company A usually tries to find a local partner in order to get knowledge and information on the international market, culture, and operational conditions.

The managers of Company A perceive differences in the management of these three types of offshore. According interviewees, offshore captive provides the most control over operations and decisions. With the use of other offshore types, operations management becomes more complex. For instance, in its offshore partnership, company A has to share decisions with its partner. With offshore outsourcing, company A has no control over decisions and operations. Coordination works when using specific contractual agreements in that type of offshore operation. Thus, in terms of management and coordination of offshore operations, partnerships and the other types of outsourcing complicate the management of operations for company A.

In the early 1990s, company A decided to implement its growth strategy. The company decided to carry out the internationalization process as its main growth strategy. In that way, offshore operations contributed to the implementation of this strategy. Thus, company A highlights the main strategic role of offshore operations: it contributes to the implementation of an internationalization process, and consequently, the effectiveness of the company's growth strategy. For instance, in 2008 the company's net income grew from US$ 200 million to more than US$ 1,000 million.

Company A sees implementation of its management systems in facilities abroad as the main barrier to implementing offshore operations. Cultural differences, language, and the adaptation of expatriates are other barriers identified by company A. In order to implement offshore operations and overcome such barriers, company A has been providing special training to executives who will be expatriated. In general they are Brazilians with some knowledge of the country in which they will be posted. The company has also been identifying local employees with high qualifications and less cultural difference. Thus, those employees were prepared to take management positions in facilities abroad, reducing the influence of cultural dissimilarities.

Company A has also developed its own management and production system, which is transferred to facilities abroad to ensure standardization of production processes and products. According to interviewees, company A uses the same operational logic of McDonald's. Regarding the company's path, the respondent emphasized that company A has been learning how to deal with cultural differences. This learning was central to the adaptation of expatriates and the implementation of management and production systems. In other words, understanding cultural differences was central to implementation of offshore operations. Company A has been also developed local suppliers in order to support its offshore operations. It is central to company strategy to keep control of its supply chain. In addition, integrated information system has been used to support communication and management of abroad facilities.

Finally, the company's position with regard its production of a majority of its own components has contributed to the implementation of its offshore operation. For instance, when company A moved to Mexico, 80% of components were supplied from Brazil, after two years, 80% of that abroad facility was supplied from local sources. Through this position, company A has been able to sustain its international expansion for 20 years.

4.1.1.2 Company B

Company B is a Danish firm established in 1955 that produces hydraulic, electric, and electronic systems such as valves. Company B has more than 5,000 employees and over 20 manufacturing facilities with operations in more than 24 countries. Company B's offshore experience started in 1987 through the establishment of a joint venture. These days, company B usually prefers captive type offshore operations so that it can ensure it controls operations.

Except for a facility in China, it does not establish joint ventures. Company B manages its offshore operations with a hierarchical structure organized by product lines, thus different locations can share the same director. However, each facility has local function managers.

The main strategic role of offshore operations highlighted by company B is global production, flexibility, and cost. Offshore operations enable company B to move production of any product or component to where it is most advantageous. According to interviewees, moving production from one location to another is very dynamic. At any time one location can become more advantageous than another.

Thus, production lines are moved among global locations frequently. Despite the flexibility advantage, this movement can also represent the company's main barrier. When production is moved from one location to another, unused components are left at the previous location. This situation causes disagreement between locations because neither facility wants to assume that inventory.

To implement offshore operations and support flexibility among locations, company B has acquired knowledge about the customs operations and laws of the countries in which it has facilities. It has one office responsible for learning how customs works in these countries.

Frequently an employee visits each country to obtain more specific information. In addition, company B promotes continuous training and human resources development focused on languages and the laws of international commerce.

During its path, company B has been learning how to transfer businesses to countries that offer more benefits than Denmark. This accumulated knowledge has been essential to company B's implementation of offshore operations, and it achieves benefits from its global production flexibility. Finally, the company's position on maintaining captive operations has contributed to implementation of its offshore operations, for it ensures that the company's objectives and goals are being met by the facilities abroad. Plus it avoids conflicts usually created by other options such as partnership and outsourcing.

4.1.1.3 Company C

Company C is a German company established in 1996 and dedicated to the production of chemicals. It has about 1,000 employees and more than six manufacturing facilities in six countries: Argentina, Brazil, China, France, India, and Italy. Company C has three types of offshore operations, and its executives perceive differences in the management of each type. Managing offshore captive is less complex than the others because it makes quality, standardization, and control of operations as a whole easier; partnership and outsourcing present additional management complexities and risks because these types do not allow direct control by company C.

Costs and proximity to clients are two main strategic roles highlighted by company C as justification for offshore operations. They allow company C to produce in a location that offers

the best margins and lowest costs. Offshore operations also allow company C to emphasize geographical proximity to its clients. These two advantages are central to achieving a better competitive position in the global market.

Legislative changes in the country where offshore facilitates are located represent the main barrier highlighted by company C. For instance, an interviewee from company C commented about the changes in legislation that recently occurred in China. These changes have elevated costs to companies previously established in that country, sometimes making offshore operations there not economically viable. To deal with these additional costs, Company C has moved some operations from China to France. The main point is that when Company C started a facility in China, the government offered several incentives, but after three years, more rigorous legislation has made operations in that country more costly.

To implement its offshore operations, company C developed a management system that ensures integrated communication and information among locations abroad. Its management system also supports exchange of employees among locations to promote this integration. In addition, company C developed routines that ensure the exchange of information and experience. Offshore operations are also supported by an organization culture that has been developed during the company path. Even though company C is only 14 years old, it has accumulated 300 years of experience thanks to the founders of its predecessor's business. Finally, company C's position reallocating its production abroad has contributed to the implementation of its offshore operations. In addition, the company has been moving production among locations; its transfer of parts of its production from China to France is one example. It is also promoting a more integrated global production through offshore operations.

4.1.1.4 Company D

Company D is a Brazilian established in 1954 that produces friction materials such as aircraft brake pads. Company D has more than 2,500 employees and operations in multiple countries as follows: Brazil, Argentina, USA, Chile, México, Germany, Middle East, South Africa, and China. Its first offshore operation was its own distribution center in Argentina in 1989. Since then, company D has been moving its operations abroad through captive facilities, by acquisitions, and by settling new facilities. Thus, company D has captive type as its main offshore operations.

Company D outsources some Curve C items; however, it is not representative as a whole. Sometimes company D also offshore outsources some production items in case of unexpected demand rise, 60 or 70 percent more than was planned. However, this kind of offshore is only used in those situations. As managers have commented, offshore outsource is such a support to abroad operations and it cannot be considered a strategic option. Company D usually starts its offshore operations settling commercial offices. The strategy of company D is to grow its market share in regions that it settles its own warehouse, and then, the next step is to settle its own facility.

One of the strategic roles of offshore operations is to be close to main markets and clients. Thus, company D could reduce lead time to attend its clients through offshore operations (warehouse and factory). Managers argue that with offshore operations, company D is developing competences to attend its main abroad markets. The other main strategic role is to become a global company; thus, company D has moved its operations abroad especially through captive offshore.

Company D is trying to develop a way to manage its offshore operations. Basically, Company D deals with two kinds of captive offshore operations. The first one is an abroad facility that was launched by company itself. The second is an abroad facility that was bought by the company. Managers highlight that the second situation is harder in terms of management. This occurs because an acquired facility has already its own culture and management system, which can be unmatched to the company system. Beside issues regarding offshore operation, company D faces a necessary period to adapt the new facility. This situation does not occur with new facilities. Managers consider cultural differences, especially in acquired abroad facilities, the main barrier to implement offshore operations.

In relation to other types of offshore, partnership and outsource, company D does not plan to employ a partnership model. Company prefers to have full control of its operations. In relation to offshore outsource, company D only applies that to supply items in case of excessive demand, or complementary items. The main reason is that this kind of offshore company D has no control of third parts. Thus, this situation goes against company D's proposition. This is the main difference that managers have highlighted among types of offshore.

In fact, company D tries to centralize all main decisions in its own headquarters in Brazil. Decisions such as strategic planning, expansions, business plans are defined and consolidated in headquarters. Abroad facilities' managers are allowed to elaborate and propose a business plan. However, all facilities' business plans are aligned to a matrix strategic plan. It occurs yearly through a work integrative workshop with managers of all facilities, abroad or not. Each facility has autonomy to manage business itself in a tactical an operational levels. Though, management directions on operations, marketing, quality, and supply management are also given by matrix.

Company D has started to create management committees in order to align decisions and practices among abroad facilities. For example, a logistic committee is going to be responsible to discuss decision such as purchases and materials planning. These committees are also going to discuss macro indicators, market signals, and how they can align management actions among facilities. Members of committees are going to join together once per month through a real time virtual meeting. The main difficulty to get it in place is difference in time zones among abroad facilities (e.g. the U.S. and China).

In order to implement offshore operations, company D has been taking advices from its holding corporation, which has joint ventures with international corporations. In other words, company D is trying to use this experience on management of distance facilities. Managers highlight that they are trying to replicate that experience. Company D also developed its own management system in the early 2000s, based on lean manufacturing, quality management, Balanced Scorecard, and Toyota Production System, as well as expertise on project and processes management. These systems, routines, and operational procedures, such as purchase management, were transferred to abroad facilities. In other words, company D has been replicating them in its abroad facilities. In addition, company D has implemented in all facilities an integrates information system, which supports information, communication, and controlling processes.

However, it was not as simple as implementing and replicating them. Managers highlight that they had to adapt those systems, processes, and procedures regarding local culture and facilities structure. The development of capabilities to manage offshore operations has been based on balance between controls from headquarters and development of management and

operational structures abroad facilities. The main idea is that abroad facilities become able to better attend their markets. For example, company D is investing in quality certifications.

Company D, during its path, always deals with imported supplies and raw materials and exported its products. Thus, as managers have expressed, company D has learned how to look abroad. This was considered by managers as a main aspect for the company employing offshore operations. Some commitments have also been done by company D during its history, which has been contributed to development of offshore operations. Managers have detached the development of their own management and production system, which has been transferred to facilities abroad. This system has been helping the company to achieve effectiveness in its production and management. As well, it has allowed companies to centralize its main decisions and align routines and procedures among facilities.

Managers also commented that company D always tries to keep a strong reputation in the market, based on development of trust, but mainly on level of client attendance. Thus, an offshore operation was a way to achieve this kind of goal. In addition, company D also keeps a close relationship with its main suppliers, which is central to its offshore operations. By doing so, company D has been able to implement its offshore operations.

4.1.1.5 Company E

Company E is a Brazilian firm established in 1948 that produces a wide line of road implements, such as semi-trailers designed to transport dry and wet cargo. In fact, company E produces more than 85 types of semi-trailers. Company E has more than 15 hundreds employees and exports to more than 16 countries located in Latin America, Europe, Africa and Middle East.

Its first step in offshore operations was in 1983 when the company established a network of distributors in the countries of Mercosul,[17] which now are located in other non-Latin American Countries, such as Portugal and the United Arab Emirates. These distributors, or dealers, are not captive units of company E. They are third party firms that are allowed by the company to represent it, and sell its products in those markets. As a result of Latin American rising sales, company E settled an own facility in Argentina in 2005. That abroad facility was also settled in order to take advantage of low operational costs and supplies low costs. Thus, company E has employ two types of offshore operations, captive and outsource.

Besides cutting costs, company E has also decided to move abroad its operations based on location, close to one of its main international markets, and one of its main supplier. However, that abroad facility was put on standby in 2010, after the company was acquired by a financial investment group. That facility operates as an assembly line, in order to attend markets in countries such as Uruguay, Argentina, and Chile. Rising costs of some main supplies is one of the main reasons. In addition, managers argue that the actual owners of that company prefer investments with short time return. Thus, they are not disposed to invest in that facility as a whole factory. On the other hand, as Argentina is one of the main international markets of company E, that facility is going to be kept as a captive unit. As managers discussed, there is lots of learning accumulated on that market, thus company E does not want to drop it.

Management of the abroad facility is centralized in headquarters in Brazil. One management of a Brazilian unit was expatriated there in order to coordinate the operations. Company E implemented in the abroad facility the same systems as routines of management.

[17] Southern Common Market

However, they were adapted to the local conditions. As it was a new facility, company E tried to employ its experience on launching new facilities.

One of the main barriers faced by company E to implementing offshore operations was product approval in both countries, Brazil and Argentina. There are some protectionism barriers in both countries that require that a product approved in one country, must be approved in the other country as well. Thus, additional costs rise because all examination processes have to be done again. This happened because company E used to produce components in one country and assemble them in the other country, and vice versa.

However, managers do not consider operationalizing this material flow as a significant barrier. Another main barrier was to deal with cultural differences between sites. That difference has caused problems regarding implementation of processes quality and performance of production. As managers pointed out, a facility in country produces three units of one regular product per day, in an abroad facility three days are needed to do the same product. The main concern relies on different people's production rate.

In order to implement offshore operations and overcome such barriers, company B had to learn how to deal with custom and tax legislation between sites. Thus, some employees were sent to Argentina before manufacturing operations had been launched there. In terms of operations, company E had replicated the same operational structure, and then trained local employees. Company E had to learn about abroad market and transit legislation, and adapt projects of products to local conditions. Finally, company E had to learn how to deal with cultural traces of abroad human resources.

Company E has also given intensive training in order to develop its abroad human resources. That training was wide, evolving from management, quality, to job safety. This was

one of the main processes developed to reduce cultural dissimilarities. As a result, managers have identified local employees with high qualifications and less cultural difference. Thus, those employees were prepared to work with Brazilian managers, in order reduce the cultural impact on others. Managers consider that human resources were the main capability developed to implement offshore operation. As managers highlighted, their offshore operation has been developed based on people from "here developing people there."

Regarding company E's path, managers also consider internal culture as the main aspect to company has decided to move abroad. In addition, investments on resources and dedicated facilities, development of suppliers, a nd market reputation, were also mentioned by managers as main commitments that company E has pursued through its path. Those were essential to develop capabilities to manage offshore operations.

4.1.1.6 Company F

Company F is a Brazilian family firm established in 1980 that operates in three business segments as follows: energy products, flow control and metallurgy, and manufacturing products such as solenoid valves. Company F also has units that offer services to the oil industry such as oil field administration and maintenance. It has more than 2900 employees in 21 facilities located in Brazil, Argentina, and Colombia. It started offshore operations in 1992 by acquiring a captive factory in Argentina. Company F only keeps captive offshore operations by acquiring facilities abroad.

Offshore operations are an important part of company F's growing strategy. As managers assumed, company F intends to be one of the major players in its business segment. Thus, the company has to grow its market share beyond the national market. For this reason, offshore

operations have been employed. Another main aspect is to get access to new technology. By offshore operations, company F is moving technology to abroad markets, as well as moving technology to domestic markets, and increasing its range of operation business internationally and locally.

Management of offshore operations is centralized in Brazil. There is one manager specifically to deal with this kind of operations. Managers of each abroad unit report directly to him/her daily. Strategic issues are discussed between that manager and CEOs. In sum, local operations are managed by local manager, usually a native of the location. Abroad operations are monitored by controlling procedures. Aims, goals, and performance of abroad facilities are discussed monthly between unit managers and a board of executives.

The main barriers to implement offshore operations considered by managers are costs and competitor's alertness. Management of offshore operations requires continuous investments and travel to abroad units. As managers argue, this cost cannot impair the company's competitiveness. In addition, as company F is a new entrant in some abroad markets, main competitors are employing actions in order to avoid company F's success in abroad operations. Thus, the main manager's concern is about competitiveness.

In order to implement offshore operations and overcome such barriers, company F has been trying to keep its domestic and abroad operations as lean as possible. At the same time, the company not has developed a management structure for each individual offshore operation, but one structure, shared between all units abroad, which is managed and controlled by the matrix. All units and overseas business segments share the same structure. By doing so, company F gets both to manage the offshore operations and reduce costs. That also helps the company to achieve competitive costs, reducing its competitive vulnerability on new abroad markets.

In order to implement its offshore operations, company F has assembled a management team to carry out offshore operations and deal with those barriers. All managers of this team have had experience on international business and offshore operations. As managers highlight, this team was assembled in order to implement and manage its offshore operations. It is a way for the company to acquire knowledge on this kind of management, as well as to disseminate that knowledge through the company.

Company F does not consider cultural difference as a major barrier. Company F usually organizes workshops with local and abroad managers. Managers of abroad facilities also take up to four weeks in Brazil, in order to learn the company's organizational cultures, and managers and CEOs of each area. It also helps abroad managers to feel free to connect with other managers. As managers said, they come here, learn the structure and who they should reach on each business issue. Thus, they can go back abroad and find opportunities. They are there to cooperate to exploit those opportunities. Thus, development of human resources is the main resource that company F is employing to manage its offshore operations.

In terms of processes, company F has developed controlling procedures and routines in order to get access to data and management information from all offshore operations. The company has installed an integrated information system in order to operationalize this flow of communication and information. Company F also transfers its management systems and operational routines to its abroad facilities, implementing them to local conditions, in order to keep all routines and processes aligned to the company's procedures.

Company F has moved abroad before. As managers said, some actions were successful, others less so. Thus, those past actions are an important accumulated learning, providing useful knowledge for up-to-date offshore operations. Managers also highlighted the company's main

commitments during its path. One of the main commitments was the company's business proposal and model. Company F has changed from a limited firm to a private company[18] to a public company,[19] that helped the company to get capital to invest abroad and actualize its management routines to international procedures and norms. Company F has also changed its main focus market, from a local market toward an international major player. Those were main steps to move company F from a local family company to a company with professional management.

Investment in shore and offshore plants and development of human capital also were made by the company. Those were fundamental to develop company F's own technology and organizational culture. As a result, technology and organizational culture are main aspects to company implementation of offshore operations. Company F has also redefined its concept of the supply chain. The company has been keeping close relationship with core suppliers, electing main supplies, and centralizing its purchases.

As managers said, the company has learned how to observe the international market, and how to identify opportunities and exploit them through offshore operations. And finally, company has been trying to keep its reputation in the markets, maintaining win-win relationships with its suppliers and clients.

[18] In Brazil: S.A. de capital fechado.

[19] In Brazil: S.A. de capital aberto.

4.1.1.7 Company G

Company G is an American firm established in 1911 that operates in business segments linked to power management, manufacturing products such as truck transmissions. It has more than 70000 employees in facilities located in the six world regions. It started offshore operations in 1937 by acquisition a captive factory in Canada. For example, company G has had a facility in Brazil since 1960. Company G has been moving its operations abroad through acquisition of overseas facilities, keeping them as captive units.

One of the main aspects that motivate company G to implement offshore operations is to get close to main clients. As managers argued, company G tries to follow the movement of its main clients. For instance, if a main client moves to a specific country, company G starts to plan its movement to that country as well. Thus, as long as its main clients have moved abroad, company G has been following those movements. As managers highlight, the main reason is to achieve an agile supply to main clients internationally.

Before company G moves abroad, it is carry out market research in order to identity the aspects of the country, of the specific country region, and traits of local people and labor force culture. That research is also taken in order to find potential business units that already supply locally one of its main clients. By doing so, a business unit is acquired in order for company G to start its offshore operation in a specific region. This way, company G gets valuable information to make an implementation planning of offshore operations.

Company G uses integrated information systems to support management of offshore operations, including management and operational information. Abroad facilities have to send a daily management report to headquarters. All decisions are centralized in company G's

headquarters. Virtual weekly meetings are also done with local managers of offshore facilities. Those meetings are arranged by business segment, when managers discuss goals, management difficulties, and achievements as well. In addition, company G also promotes knowledge transfer among abroad locations. As managers said, many managerial and operational improvements are achieved through knowledge and expertise transfers among facilities, even if they are from different segments, such as from aerospace to truck parts, or vice versa.

Company G sees cultural difference as the main barrier to implementation of offshore operations, especially because company G employs offshore operations by acquisition of abroad facilities. Thus, managers have to deal with this aspect in order to implement offshore operations, as well as to implement its own management system and procedures in an acquired abroad facility. This requires that company G takes a time to implement and adapt its own management and production system in abroad facilities.

In terms of processes and routines, the company has developed standardized management procedures. For instance, this allows company's managers to do exactly the same lean audit procedure for any facility, no matter what country it is. This facilitates management and coordination of these operations. In addition, the company developsits own management and production system, that is implemented and adapted in the abroad facilities. That implementation ensures that all overseas units will be aligned with the purposes of company. In addition, company G employs a turnover of executives among locations. Each main executive manages an abroad unit for up to 5 years. After that, he/she is settled to another unit. This routine allows knowledge transfer among locations, and development of management ability.

Thus company G has been replicating its own management and production system. Some inclusions of additional procedures can be done by abroad facilities to the systems, in order to

adapt it to local conditions, as well as make improvements. This way, company G uses both replication and adaption in management of its offshore operations. The development of its own management and production system, and its proposal to follow main clients through acquisition of abroad facilities, were considered by managers as the main aspect of the company's path to implementation of offshore operations.

In addition, company G has also been investing in development of dedicated facilities abroad, in order to develop specific skills in each abroad facility. For instance, there are facilities dedicated to achieve large scale productions, while there are others dedicated to producing on a small production scale. While some large facilities do one setup per month per manufacturing cell, flexible facilities do one setup per day. Thus, company G complements its production capabilities, integrating the production of all abroad facilities. As managers highlighted, regionalization of production through offshore operations has been part of the company's history. Company G has also been developing a close relationship with its main suppliers, as well as developing local supplies to its abroad facilities. Both of these commitments have been contributing to the development of capabilities to manage offshore operations.

4.1.1.8 Company H

Company H is a family Brazilian firm established in 1954 that operates in eight business segments from furniture accessories and electrical material to hydraulic systems, manufacturing products such as circuit breakers. It has more than 2500 employees in 6 facilities located in Brazil and Mexico. Its first international experience was a joint venture with an American company, in order to get access to technology on electrical material business. It started offshore operations in 2000 by settling a captive factory in Mexico.

Besides its captive offshore operation, the company also has an own office in China in order to control its offshore outsource operations there. Those offshore outsource operations are based on supplier development. Those offshore operations, captive and outsource are taken in order to company increase its competitiveness, based mainly on cost savings. The offshore operations in Mexico are focused on assembly and distribution. The offshore operations in China are focused on supply development. The company chooses to outsource operation in China in order to avoid high risks, which falls within the company's management proposal to invest carefully. Company H is also accumulating knowledge of the Asian market before increasing its operations there. Thus, managers consider that offshore captive offers more risks than offshore outsource given company H's business context.

Both offshore operations are considered as business units for the company. The captive operation is monitored and controlled by company's headquarters. Thus, management support as accountancy and other processes is shared with other business units. As well, all decisions are centralized in headquarters. The outsource operation is managed in the same way. The different thing is the office located in China, which makes a bridge between headquarters and offshore suppliers. Company H used an integrated technology system in order to support the flow of communication and management.

Keeping as own office in China is also a way used by company H to control and manage its offshore outsource. Company offshore outsources main components and whole products as well. Thus, having an abroad office is considered a main instrument of control, management, and coordination of these operations. As managers argue, company H's level of supplier and product development is so deep that is impossible manage that off site. Thus a small structure is necessary to ensure control of operations, process quality, product quality, and costs. In addition,

it helps to get a close relationship to suppliers, which is central to the company's supplier development strategy.

Lack of market knowledge, lack of local management structure, and cultural differences were considered as main barriers to implementing offshore operations. Thus these require that company H starts from zero to implement those new operations. As managers argued, everything is new, which requires lots of time and effort to keep the implementations going, along with needing to find people able and disposed to do this job.

In order to deal with those barriers and implement offshore operations, company H has developed management abilities. Thus, the company has been developing managers internally to support offshore operations, as well as developing expatriates to manage its operations abroad. Development of human capital to manage offshore operations is considered by managers aprimary commitment, in order for company H to develop capability on international business. As company H is a family company, it has been developing a strong internal culture of centralization of decisions. Thus, all business decisions should be aligned to the company's internal culture. Thus, there is a focus on internal development of managers. The option for keeping an abroad office in China is also considered by managers as a management resource developed by the company in order to reduce offshore barriers and implement offshore operations as well.

In addition, company H has developed standardized routines and management procedures that are replicated on abroad operations and adapted to local conditions. For instance, company H has developed an internal procedure to verify product and process quality, which is used in country and abroad in order to test quality of suppliers and development. Another main commitment considered by managers is the close relationship with main suppliers and its

development. Company H has also made commitments on product development in innovation. Therefore the development of abroad suppliers is important.

The company is also replicating its past experience of implementation of new units in remote areas in Brazil. Past experience of starting from zero has helped company H to implement and manage offshore operations. The company also has past experience in international business, importing components and exporting goods, and joint ventures done in the past as well. Thus, company H has been developing in this path a culture of entrepreneurship. As managers argue, company H has a culture of doing business abroad.

4.2 Cross-case Comparisons and propositions

After analyzing each company separately, we have compared each case, aiming to identify similarities and differences. In order to get more information from case analysis, some evidence will be compared with ORN (2009) report, especially general aspects of offshore operations aspects. The comparisons among cases are summarized and presented in Tables 24 and 25, and they are explained in the rest of this section.

4.2.1 Offshore operations: types and management issues

When examining offshore operation experiences of the companies, it seems there is some significant difference among them. However, it is possible to perceive that company G has the greater experience in offshore operations. While companies A and C utilize three types of offshore operations (captive, partnership, and outsourcing), companies B, F, and G prefer to utilize offshore captive exclusively. Its only exception for those companies is in China, and that

is because of the restrictive legislation in that country. Companies D, E, and H employ offshore captive and outsource. However, offshore outsource is only used for supplying components and some raw materials, as follows:

> Look, nowadays we mainly consider the possibility of outsourcing offshore as an option just in case of increased demand as we have now, where we had a demand 60, 70% higher than we had forecasted, and so, the reaction time for this growth is one year. So, it is more development of a support for the situations. (COMPANY D)[20]

It is interesting to note that ORN (2009) has observed a decline in percentage of new offshore captive projects in the manufacturing sector. The percentage has dropped from 66% in pre-2001 to 47% in 2009. This indicates that there is a trend of reduction of offshore capabilities operations. According to ORN (2009), this is probably due to costs associated to captive operations. Thus, some companies are more disposed to start new offshore ventures by outsource operations. However, companies that start new offshore ventures by captive operations are more likely to improve their international strategy. In our study, we observed that 3 companies implement only offshore captive, 3 offshore captive and outsource, and 2 companies implement three types of offshore.

Companies A, C, D, E, and H perceive differences in the management of these distinctive types of offshore operation. They agree that offshore captive is less complex to manage and coordinate than offshore partnership and offshore outsourcing. In addition, companies A, C, and D observed that their influence over and control of decisions and operations decrease in offshore partnership and outsourcing, respectively. This characteristic can become a threat or risk to offshore operations, for instance:

[20] As we are going to give a copy of this study to companies, quotes were informed by companies in order to preserve the interviewed identity. As interviews were conduct in Portuguese we translated quotes to English.

> Yes, it has differences. The facility that is 100% mine it is my home and I order it the way I want to, despite the fact that it is in a completely different country, right? In cases where I have 50% / 50%, which means that I have to listen to a partner, then I have to adapt to this partner; the partner orders as much as I order. (COMPANY A).
>
> Yes, management has the following, for example, offshore captive you can operate much more defined. A captive factory is very easy to see a change, for example not from product A to product B, but management as a whole. (COMPANY C)
>
> I would say that we see offshore outsourcing as an alternative source. At the moment we have no inference about it. Offshore captive is ours, period. Offshore partnership is an association, and offshore outsourcing we have no management over that business. We just bought in order to supply a demand. That is it. (COMPANY D)

Additionally, to ensure stability of operations, all three companies prefer to employ their own hierarchical structure to control offshore operations. As managers of company D argue, there is almost no control of operations in this kind of offshore; the main reason is because it is only used in case of need for demand. In addition, companies A, C, D, and E do not consider offshore outsource as strategically as offshore captive. According to ORN (2009), companies choose captive operations in order to reduce their fear of losing control of operations. Thus, it is possible to suppose that control of operations may decrease regarding each type of offshore operation.

Table 24: Offshore aspects

Aspects	**Company A**	**Company B**	**Company C**	**Company D**	**Company E**	**Company F**	**C**
Industry/Sector	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Manufacturing	Ma
Nationality	Brazilian	Danish	German	Brazilian	Brazilian	Brazilian	
Experience on offshore operations	Since 1990	Since 1987	Since 1996	Since 1989	Since 1983	Since 1992	S
Types of offshore operations	Captive Partnership Outsource	Captive	Captive Partnership Outsource	Captive Outsource	Captive Outsource	Captive	
Perceive difference on managing types of offshore operations	Yes	Not applicable	Yes	Yes	Yes	Not applicable	No
Strategic role of offshore operations	Growth strategy through internationaliz ation process	Production allocation flexibility and costs	Costs and proximity of main clients and suppliers	Growth strategy through internationalizati on process and proximity of main clients and markets	Costs and proximity of main clients and suppliers	Growth strategy through internationalizati on process, and knowledge acquisition.	P m
Barriers to implement offshore operations	Adaptation of acquired facilities; Lack of knowledge and structure;	Level of inventories;	Hidden costs; Local legislation	Adaptation of acquired facilities; Cultural aspects.	Products approval; Cultural aspects.	Hidden Costs; competitor's alertness	A Cul

	Cultural aspects.		changes.				
Coordination of offshore operations	Decision centralization; Back office support structure.	Decision centralization; Communication among locations; Management committee.	Decision centralization	Decision centralization; Management committee	Decision centralization	Decision centralization; Management committee.	ce M c Co amo i

Table 25: DC aspects

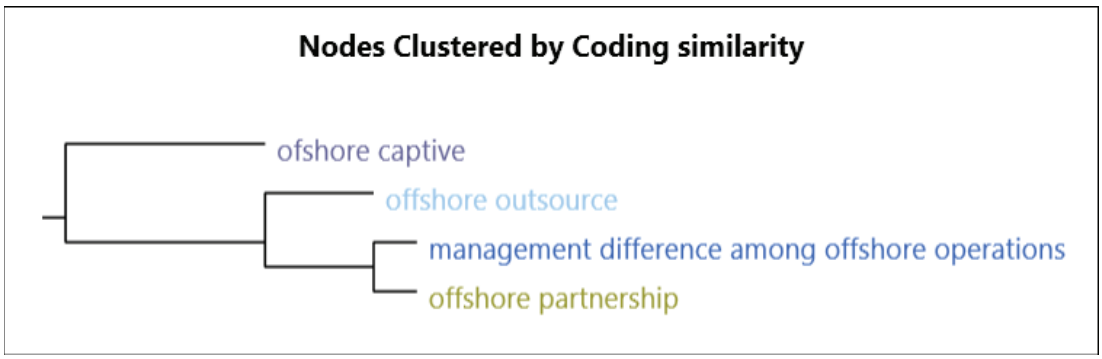
Aspects	Company A	Company B	Company C	Company D	Company E	Company F	Co
Resources and Capabilities developed to implement offshore operations	Development of HR	Knowledge on operation and law of countries' customs	Management system; Development of HR	Knowledge on IB	Knowledge on operation and law of countries' customs Development of HR	Development of HR; Knowledge on IB	Ma
Organizational processes/routines developed	Standardized production system; Integrated information system	Training and human resource development.	Integrated information system.	Management and production system; Integrated information system; Process and project management	Training and human resource development.	Controlling procedures; Training and human resource development; Integrated information system.	Sta ma pr o p Man p
Company's trajectory (path)	Learning and past experience; Business model.	Learning and past experience.	Organizational culture.	Learning and past experience.	Organizational culture.	Learning and past experience; Business model.	Bus
Positions	Internal positions: specific resources; technology development;	Internal positions: specific resources	Internal positions: technology development	Internal positions: technology development, External	Internal positions: specific resources; organizational	Internal positions: specific resources; technology development;	p r te

	organizational culture. External positions: Relationship with suppliers.			positions: Relationship with suppliers; Relationship with clients.	culture; External positions: Relationship with suppliers; Relationship with clients.	organizational culture; External positions: Relationship with suppliers; Relationship with clients.	de p Rela s
Firm-specific processes utilized	Leveraging, learning, and reconfiguration .	Learning.	Learning.	Leveraging, learning, and reconfiguration.	Leveraging, learning, and reconfiguration.	Leveraging, learning, reconfiguration, seizing, and sensing.	Lev reco

Regarding offshore partnerships, company A realizes that managing this type of offshore varies according to the shareholding of the company, as well as the role of stakeholders in the business. For instance, when the shareholding is fifty/fifty, each partner is in charge of the facility management for two years. As managers argue, this affects the company's performance because each partner has its own management style. In another example, company A also has other offshore partnership with 70% of the shareholding. However, as its partner knows the market better, it seems to have control over all business. As company C sees it, the hard part of offshore partnerships is to define the role of each partner in order to avoid future problems and maintain the relationship, for instance:

> Yes, because it depends on the percentage of each partner. We have, for example, in Colombia, we are 50/50%. Then the facility's management is two years ours and two years our partner's. Every two years we change the management of the plant. There is difference because when it goes a Brazilian manager the factory has a dynamic. When a Colombian manager takes over, there are other dynamics, because each one is culturally different. But let's say the result of the factory is going well so far. (COMPANY A).
>
> Offshore partnership, in my view is a more complicated issue because one has to make very clear with your partner the role of each one, because we have nowadays partners who know my product range. We've had interesting situations, in which we had a partner, that partnership has suddenly become unsuccessful; what happened? The partner ended the partnership and continued to produce for it. And so, it is very, very complicated to do. (COMPANY C)

Figure 19: Cluster analysis horizontal dendrogram among types of offshore operations and management difference



Based on Figure 19, it is possible to suggest that the definition of a partner's role may be a central management issue in offshore partnership, and this may affect the implementation and performance of offshore partnership operation. As it can be seen on Figure 19 above, there is more similarity between offshore partnership operations and management difference than the other types of offshore operations. In others words, it suggests that companies that employ offshore partnerships perceive more difference of management of offshore operations than other types. In addition, Table 26 below shows that offshore partnerships are more correlated to management difference, followed by offshore outsource and offshore captive, respectively. This finding leads us to present the following proposition:

P1: *Companies implementing outsource and or partnership type of offshore operations face more difficulties than companies implementing captive offshore operations.*

Table 26: Pearson correlation among nodes coding similarity among type of offshore operations and management difference

Type of offshore	Aspect	Pearson correlation coefficient
offshore partnership	management difference among offshore operations	0.828079
offshore outsource	management difference among offshore operations	0.266667
offshore captive	management difference among offshore operations	-0.516398

4.2.2 Strategic role of offshore operations

Concerning the strategic role of offshore operations, it was possible to identify distinctions and similarities among companies**.** We observed six strategic roles of offshore operations as follows: growing strategy, knowledge acquisition, proximity of main clients, production allocation flexibility, costs and competitiveness, and proximity of main suppliers.

Growing strategy is a main reason to offshore for companies A, D, and F. These companies have been utilizing offshore operations to implement their internationalization process, which is aimed at achieving the objectives of their growth strategy. Thus, offshore operations have been contributing to those companies' presence in several countries. ORN (2009) shows that 69% of manufacturing companies consider growing strategy as a major strategic role. For instance,

> We have a great market share of the domestic market. Our business is transportation systems. So wherever we have options and viability for business development related to the movement of people, we have affinity to attend it. Then with our expansion plan, exporting only from Brazil to abroad is impractical. So we made the decision to set up offshore operations in those markets in order to supply this demand that exists in these markets and the expansion of the growing company. (COMPANY A)

> Our vision is to become a global company. I think that is when you have a certain inclination towards global company and accept this as a kind of challenge. If we arrive at a given point where you have a very important market share in your country, becoming the market leader, it is easier to lose market share than gain it. Everybody wants to overtake you. So, where will I grow? I'll grow abroad. This always led to our company to become the domestic market leader and now to expand, moving abroad. (COMPANY D)

> I tell you that the company's strategic plan is to grow rapidly and be a company with a certain size, let's call it large, within our concept of large enterprises. The domestic market has its limitations, and then we cannot become large only within the domestic market. We can become the largest player here in the domestic market, but we must always understand that the national market is limitless, boundless growth, the reason why we are moving abroad. (COMPANY F)

Proximity to main clients is a fundamental strategic role of offshore operations for companies C, D, E, and G. Through their offshore captive facilities, those companies have achieved delivery speed to their abroad clients. In addition, company D has achieved legitimacy to its clients, being recognized as a local producer. Additionally ORN (2009) presents that 50% of manufacturing companies consider increasing speed to market as a major strategic role. For instance,

> Another important aspect of offshore operations is the proximity of big producers of [...] that use our products. (COMPANY C)

> It was approaching the customer to ensure, first by abroad warehouses and then, now, placing facilities abroad, creating skills to attend those markets, being

> recognized in that market as a manufacturer, which is present there, creating a greater confidence with our client companies. (COMPANY D)
>
> And it was also a decision that had a reason: here, our physical spaces were already a bit complicated. So what did we do? We could produce there (Argentina), and could get a quick delivery. The problem here was always in the delay in making, delivering, and storing carriers .In terms of agility, we are there in the middle of the market because it is close to Uruguay and Chile. (COMPANY E)
>
> This is so interesting. Our main clients are all global companies. All these large companies, if some of these companies go to a region which requires supplies, we also move, we follow them. (COMPANY G)

Knowledge acquisition is a main strategic role of offshore operations for company F. Besides growing strategy, company F also seeks access to essential knowledge and technology for its business expansion, and seeks to develop the company's business segments. In addition, ORN (2009) presents that 48% of manufacturing companies consider enhancing capacity for innovations as a major strategic role, for instance:

> Now in Colombia we have acquired a large company in order to bring technology from there to the domestic market. Then we'll begin to create a new business here. We are going abroad especially in order to learn technologies, doing this migration of technology into the domestic market. (COMPANY F)

Costs advantages are clearly the main strategic role of offshore operations for companies B, C, E, and H. Achieving this aim is possible because of the global operation flexibility offshore operations allows. In other words, offshore operations permit companies B and C to move their production to locations that can be more advantageous in terms of costs, for instance:

> What we have savings we produce or assemble there. (COMPANY E)
>
> Today the main thing is cost. It is cost. The raw material out there with is cheaper, labor cost is lower, and quality is within what the company considers sufficient. (COMPANY H)
>
> Indeed, whenever we go to another country what we seek is to figure out an interesting business. So, what has happened, for example? It is a practical example, right? We produce a product in Brazil making no money, okay? For now we do not have any income. What do we do? Also, we have a facility of the same product in India, producing it cheaper. So, what is our strategy? We have plants in countries where we can move the production from one country in order to make money. (COMPANY B)

> A key issue is the economic part, producing where is profitable, getting a better margin. Costs are a fundamental issue. (COMPANY C)

Additionally, companies C, E and H are reducing costs by getting **close to main suppliers** through moving their operations abroad. Hence, it is possible to suppose these motives to adopt offshore operations are somehow related. ORN (2009) shows that 78% of manufacturing companies consider labour cost savings and 74% other cost savings as a major strategic role. Taking this way, one may suggest that strategic roles to offshore operations may complement each other.

> The position of the location of raw materials is important, being more practical. We have a production line that we are moving from Argentina to France. Because today, raw material has been transported from Europe to there. (COMPANY C)

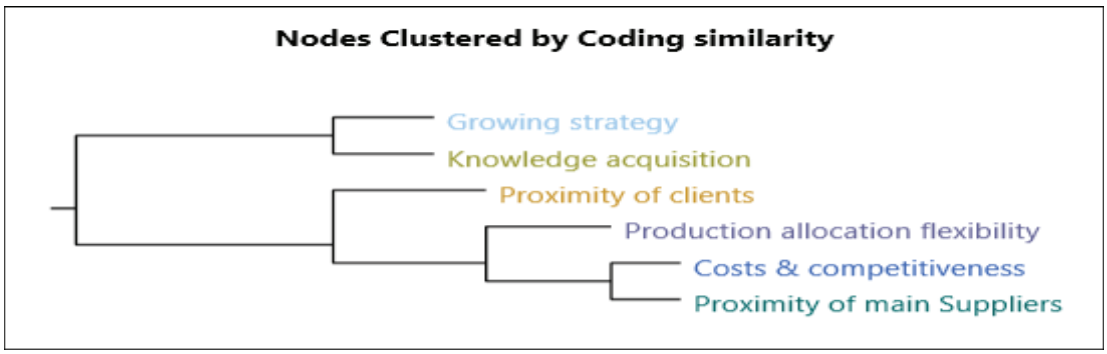
> We have tried to produce a main component by our own technology, but we have got problems. So, we couldn't buy form our main competitor because they didn't guarantee delivery on time. So, we have started to import, but the costs were expensive. So, when the government authorized the use of another type of component, which was long used in Argentina, we started to assemble this component in our products there. This was very important to our operations in Latin America. (COMPANY E)

> The strategic role of these operations is to strengthen relationships with suppliers and to ensure a warranty, or try a better quality product. This source, for example, where labor is still more affordable than here, the key is to ensure highest quality products from there. We believe it is so important that we are there, close to the supplier in order for the supplier to really feel that what we want is what we are going to be supplied. I have to guarantee what comes from there. So this gives you some confidence, it gives you some security. Being present there is very important. (COMPANY H)

As it can be seen in Figure 20, six strategic roles "drivers" of offshore operations were coded according to managers' perceptions as follows: growing strategy, knowledge acquisition, proximity of main clients, production allocation flexibility, costs and competitiveness, and proximity of main suppliers. Figure 20 also shows clusters by similarity among those aspects. It is possible to see two main clusters: one grouping includes proximity of main clients, costs and

competitiveness, and then production allocation flexibility; and another, grouping growing strategy and knowledge acquisition. In addition, proximity of main clients is closer to the first cluster than to the second. Thus, it is possible to suggest that strategic roles of offshore operations may complement each other, while some strategic roles may characterize a trade-off.

Figure 20: Cluster analysis horizontal dendrogram of drivers to offshore



As Table 27 presents, there are aspects correlated positively, negatively, and some not correlated. For instance, costs and competitiveness, proximity of main suppliers, and production allocation flexibility are positively correlated to each other, while they are negatively correlated to knowledge acquisition as growing strategy. In addition, there is no correlation between proximity of clients and costs and competitiveness. This finding leads us to present the following proposition:

P2: *There is a trade-off between growth strategy and cost savings strategic roles of offshore operations.*

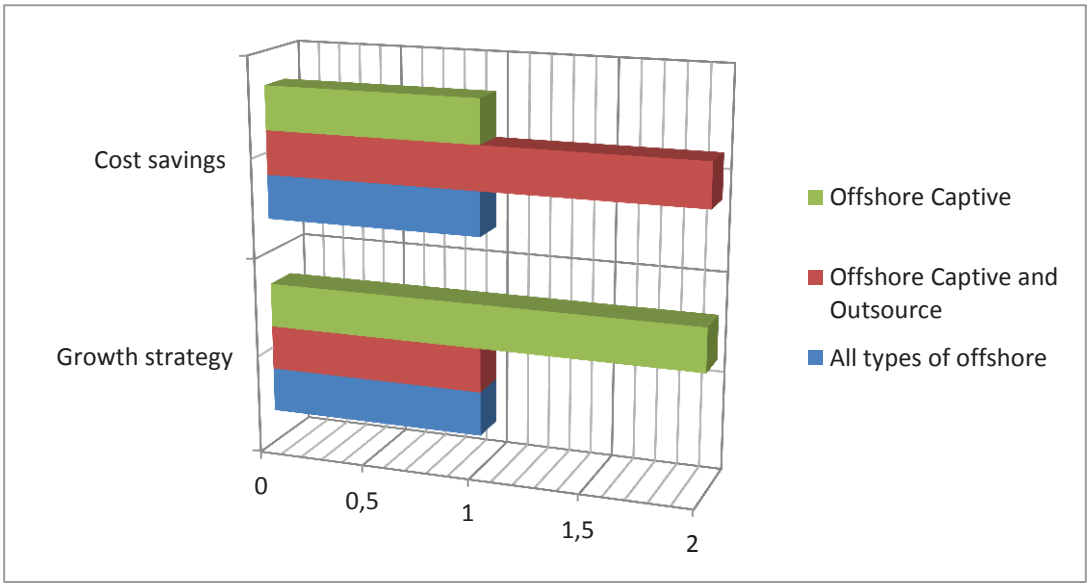
Table 27: Pearson correlation among nodes coding similarity of strategic role or offshore operations

	Proximity of main Suppliers	**Costs & competitiveness**	**Proximity of clients**	**Production allocation flexibility**	**Knowledge acquisition**	**Growing strategy**
Proximity of main Suppliers	1	**0.654654**	0.356348	0.218218	-0.218218	**-0.534522**
Costs & competitiveness	**0.654654**	1	0	**0.5**	-0.333333	**-0.816497**
Proximity of clients	0.356348	0	1	0.102062	-0.27	-0.25
Production allocation flexibility	0.218218	0.5	0.102062	1	-0.166667	-0.408248
Knowledge acquisition	-0.218218	-0.333333	-0.272166	-0.166667	1	0.408248
Growing strategy	**-0.534522**	**-0.816497**	-0.25	-0.408248	0.408248	1

It is interesting to note that we group these strategic roles of offshore operations into two distinctive categories: growth strategy driving, and cost savings. We have observed that 4 of our company cases are driven by growth strategies, and the other 4 of companies are driven by cost savings. However, as Figure 21 shows, crossing those categories to offshore operations type, we identified that companies that pursue growth strategy have implemented more offshore captive only. On the other hand, companies that pursue cost savings strategy have concomitantly implemented more offshore captive and offshore outsource. This suggests the strategy role of offshore operations has influence on offshore type implemented by companies. This finding leads us to present the following proposition:

P3: *Strategic role of offshore operations affect the type offshore operations implemented by companies.*

Figure 21: Number of companies implementing types of offshore operations by strategic role



4.2.3 Barriers to implementation of offshore operations

Regarding barriers to the implementation of offshore operations, it was possible to identify that **cultural aspects** are the most commonly perceived barriers among companies. Companies A, D, E, G, and H perceive that cultural aspects are a major barrier to implement offshore operations. For instance, managers from company A and D argue that cultural differences and language barriers inhibit the transfer of the company's own management and operation system to abroad facilities. Managers of company E perceive that cultural differences affect the production performance of abroad operations. According to ORN (2009), captive offshore operations require a full understanding of local cultures, which also requires development of capabilities to deal with them. In addition, 47% of the manufacturing companies consider cultural difference as a major risk to offshore operations. For instance,

> So mainly the culture. It was hard to us to establish a rhythm of work as we have here. We could not say we had a shift of 8.8 hours that did not exist. We could

> not tell that a worker produced 80% of her/his work, why he/she did not achieve that. It was a very cultural difficulty (COMPANY E).
>
> Barriers, mainly cultural differences, were quite impressive at the start of operations (COMPANY H).
>
> Are you to overcome these cultural barriers, because the Mexicans have a speed, the Indian has his speed, the African has his speed. So when we go abroad, we are the aliens. They are in their domain. We have a very fast speed to do things. So I think the biggest constraint is cultural differences. It is not because they (Mexicans) will not do, but they have their time. Now, if he does not do the activity well done and you press, you push, he'll say that he will do at the first time. That he will do at the second time, and then at the third time, he disappears. Because he is not, is not one, the style of person who can withstand pressure. In Africa we also have some features as well. There the tribal cultural relationship is so strong. So, for example, if you're assembling a team of welders, you have to seek for the people of the same tribe. If you put people from different tribes together, we will have trouble. Because they will go fight, they will, they will kill themselves inside your company. (COMPANY A)
>
> When we acquire companies, they have completely different cultures and are family companies as well. Because, even in Europe, there are family companies, which as robust, and export worldwide, but they have a different culture. So it, it is difficult to adapt our corporate system. (COMPANY G)
>
> When you buy a company, which already has its way of working, their organizational culture, to transform this, of course, preserving what they do well, also trying to put our way, this is the most difficult to make that synergy. (COMPANY D)

Companies A, D, and G, which employ offshore captive through acquisition of abroad facilities, also perceive **adaptation of acquired facilities** as a barrier to implementing offshore operations. Managers from those companies argue that takes time to adapt an abroad acquired facility to a company's own management and production systems, and standardization of procedures. For instance,

> The big problem is the adaptation of our management system. Our strength point is our system of industrial management. And how does it produce a high quality product at a low cost? This is our problem. Management is very difficult and when you enter is these countries, because if you look at the map we're in third world countries. (COMPANY A)
>
> The greatest difficulty is not the distance, but when you buy a company it already has its way of working, it is very difficult to maintain what they have that's good and moreover introduce our way; it is a great difficulty to do this synergy. (COMPANY D)
>
> First then, as companies are acquired, we have to standardize all processes. Barriers are very large, so mainly by the peculiarities of the newly incorporated company. (COMPANY G)

Lack of structure and knowledge is considered as a barrier to implement offshore operation by companies A and H. This barrier hampers implementation of offshore operations because companies have to deal with restriction of resources, which requires companies to develop resources procedures from zero. As managers argue, it seems to start a new business where everything is quite unknown. For instance,

> When you move to a new market, whether domestic or international, you have to develop many things from zero. You have to develop the whole structure and location awareness. (COMPANY H)

> In India there is not the structure with minimal conditions for training. Here we have a training center. So do staff ask? What is better - to go there or come here? But we have to adapt, going to there and do it with the resources they have available, so maybe these are the greatest barriers, right? The staff there do not have any experience. There you can see a worker welding. Instead of having those special curtains to weld the guys put a cloth to separate the solder. (COMPANY A)

In addition, company E considers **products approval** a main barrier to implement its offshore operations. As managers argued, local legislation requires that all products and main components have to be approved by local authorities, even though there are already similar in the market or the product has already been approved in other country, for instance:

> I think the biggest problem is to do the approval of products, each product outside the country have to be approved. So what happens? We have to approve that product every time we produce a new product there. I think it's a bit more work than the management system itself. The approval depends on tests and more costly tests. (COMPANY E)

Hidden costs are other barrier to implement offshore operations. Managers from company C and F have observed that offshore operations involve costs that are unexpected. These costs may affect negatively companies' competitiveness. As company F's managers argued, offshore operation require significant investments in order to implement it. Thus,

companies should be prepared to support these investments in order to not challenge their competitiveness. As managers from both companies highlight, only when it has moved operations abroad may these costs be perceived.

> The first thing is cost, the cost is high. You have to invest a lot, travel, contacts, and then logically, if you find new opportunities, you will have to invest in order to developed market and operations. So, the biggest barrier is cost. You have to be able to financially support these operations. (COMPANY F)
>
> Exactly, you only figure out costs after you begin to operate. When you can see, I mean, measure cost of operations abroad. (COMPANY C)

In addition, Company C also considers **local legislation changes** as the main barrier. These changes are increasing its operational costs, and this aspect can be in some way associated with hidden costs. As noted before, one reason for the drop of numbers of new offshore operations is the costs associated with it (ORN, 2009). In addition, hidden costs mainly affect companies that are new in this kind of operation. For instance,

> A while ago, it was easy to settle a factory in China as well as close it. Both governments of China and India opened their countries for firms to enter there, requiring few regulations. It was only to settle a factory and produce. But now, governments are closing. After companies were installed there, now they have to fit the security issue, an issue of pollution, and others. First they opened theirs countries for companies, and now they are rising barriers and requisites, especially when one is trying to move back from there. (COMPANY C)

Company B is focused on the barrier related to logistics operations, which highlights possible **inventory problems** among locations. As Company B constantly moves line production among global locations, it has encountered issues with inventories of components. This continuous movement of production allocation from one location to another has often caused accumulation of inventory's components. This situation creates disagreement among facilities because no facility wants to assume a surplus of components. One way or another, companies B, C, and G are all facing barriers that may result in additional costs. Thus, these barriers may be considered examples of costs not readily apparent prior to implementing offshore outsourcing

(Ellran, Tade, & Billington, 2008). Additionally, according to the ORN (2009), 36% of manufacturing companies consider loss of synergy across firm activities as a major threat to offshore operations. For instance,

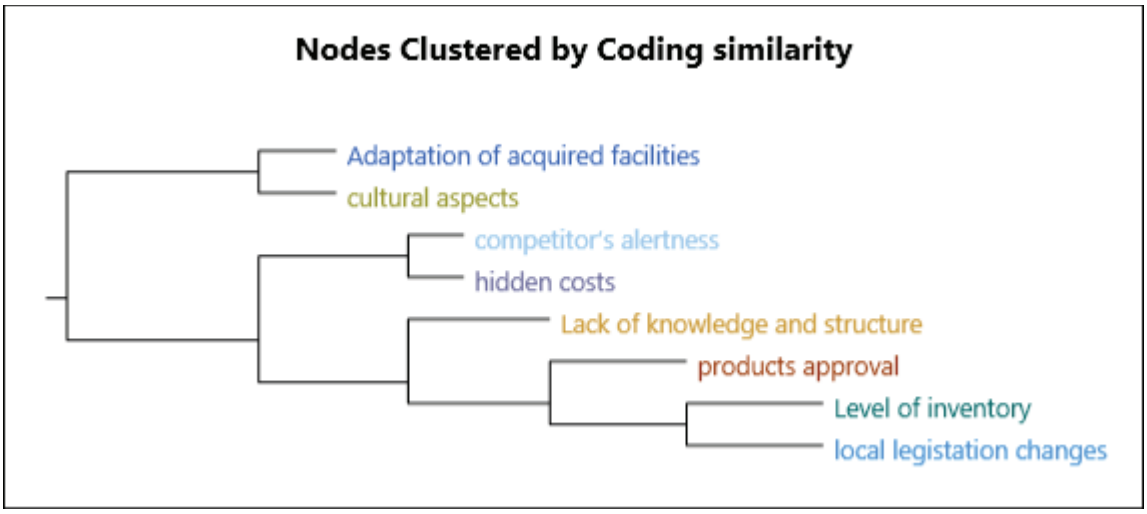
> If I have a lot of stock of an item at home and this item no longer interests me ... produce, formerly what would I do? I would transfer all my stock to this facility where it would begin production. This facility would absorb my stock and start production. So, one barrier is that most abroad facilities do not want to take stock from the other abroad facilities. Then what are they willing to do? They are willing to do that we take our entire stock, to produce what we have at home and only after it shut down production. Only there, we do not want to accept it, why? Why we do not make money on top of it. So today at the current moment this is the constraint that we are facing. (COMPANY B)

Regarding barriers to implement offshore operations, it was possible to identify a diverse number of aspects, seven as a whole. Cultural aspects were the most commonly perceived barrier to implement offshore operations; five companies have identified cultural aspects as a major barrier to implement offshore operation. Additionally, these companies practice offshore captive or it together with offshore partnership and/or offshore. Thus, cultural aspects appear to be a barrier to implement the three types of offshore. This finding leads us to present the following proposition:

P4: C*ultural difference is the main barrier to companies implement and manage offshore operations.*

Conversely, other barriers may be specific to each type offshore operation, as well as the way that offshore operation has been implemented. For instance, adaptation of acquire facilities was only commented on by managers of companies that use offshore captive, especially, when those companies implement offshore operations by acquisition of abroad facilities. And other aspects, such as the level of inventories and products approval, are also associated with the way as companies implement offshore operations. Figure 22 below shows a diverse number of clusters; suggesting that a barrier of offshore operations may be distinctive among aspects.

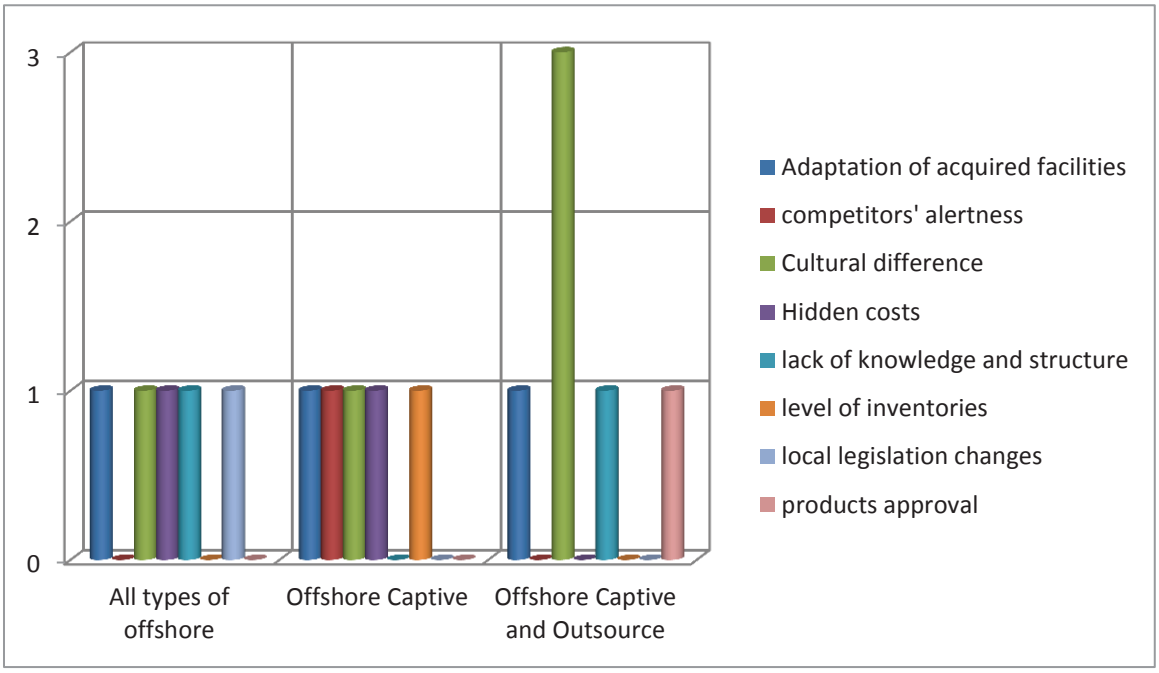
Figure 22: Cluster analysis horizontal dendrogram of barriers to implement offshore operations



In addition, Figure 23 below shows that companies implementing all types of offshore and those only implementing offshore captive have reported more diverse number of barriers. On the other hand, companies implementing offshore captive and outsource have reported perceptions more centered on cultural aspects. In fact, all companies implementing offshore captive and outsource have reported cultural difference as a barrier. This finding leads us to present the following propositions:

P5: *There is a direct relationship between the type of offshore implemented by companies and the level of barriers to implementing offshore operations faced by companies.*

Figure 23: Barriers to implement offshore operations by type of offshore operations



4.2.4 Coordination of offshore operations

Regarding coordination of offshore operations, managers from all companies highlight **decision centralization** at country home headquarter as a main aspect. This way, companies are trying to keep abroad facilities' goals aligned with company proposals, as well as to keep standardization of management procedures among locations. For instance,

> Thus, the entire system is integrated and centralized. Today all our production needs are centered in our headquarters. So they know what we have to produce, as is our warehouse, as is our process ... everything is centralized there. (COMPANY G)
>
> All guidelines leave from here; here is the controller. So, investment risk, expansion of industrial units, all is born here. These units make their business plans, which we consolidate when we make our strategic planning. (COMPANY D)
>
> In fact, the unit abroad has to generate profit itself, it has to generate revenue, it is a Business Unit. But it is subordinated to headquarters. So it depends very much, and all the planning it is executed here. (COMPANY E)

> The units abroad, all units, we can say, they are their own, but are supervised by headquarters. Everything here has to have approval from headquarters. COMPANY C)

Management committees are another main coordination aspect. Managers from companies B, D, F, and G have highlighted this as a way to keep management practices aligned, as well to discuss strategies, goals, achievements, and share experience among abroad facilities. Thus, decision centralization appears to be a main way to coordinate offshore operations. For instance,

> There is a management committee involving all the units. This committee meets every two weeks to discuss and review all the guidelines and overall management goals that are transmitted to all units. So, our decisions depend on what is deliberated on those meetings. (COMPANY B)
>
> We are having meetings, which managers from all locations join. We have committees for logistics, production, purchase and management. So the idea is to try to put everyone on the same alignment. (COMPANY D)
>
> We meet monthly, the whole team; we analyze the outcome of each unit, analyzing what happened and setting new management goals. (COMPANY F)
>
> We have weekly meetings with the entire network, even here. So we have meetings with all unities abroad. We discuss market, management issues, and so on. Corporately, in order to keep the synergy among locations. (COMPANY G)

Although these above aspects have been considerably emphasized, other detached coordination aspects seem to be associated with companies' own experience on implementation of offshore operation. **Back office support structure** was highlighted by company A as a way to support expatriates on management of abroad locations. For instance,

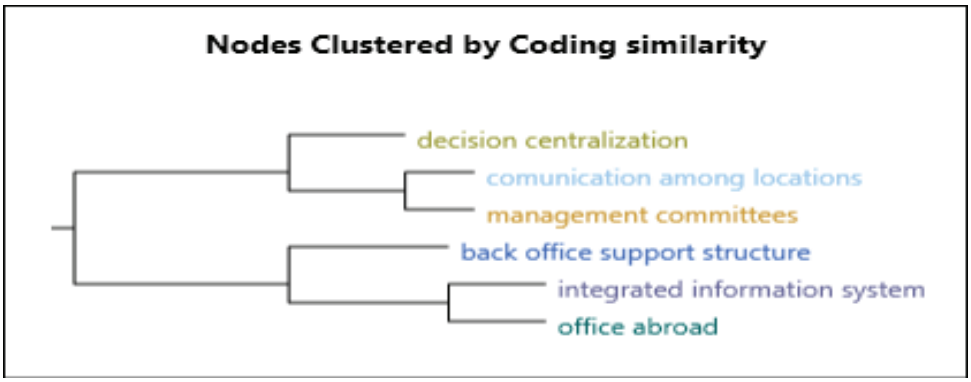
> We have people working 24 hours to provide support to areas such as engineering logistics, purchasing, and this kind of the organizational support for all plants. We have people working 24 hours. For example, in the support of HR to expatriates, it has three people who turn 24 hours just to stay on full time. The phone rang; they are available to that external staff. It's hard, who's out there, it's hard when you do not have a connection or a telephone, or need a decision, a document, information, and it is difficult. (COMPANY A)

Integrated information system was highlighted by companies G and H as a way to transfer essential information, as well as control abroad facilities' achievements**.**

Communication among locations highlighted by company B and G as a way to share management experience among abroad location, which is central to aligning management issues. Finally, **offices abroad** were highlighted by company H has a way to ensure control of its offshore outsources operations. For instance,

> We frequently communicate among locations. Periodically we analyze management guidelines and then transform this in operations decisions that are communicated to all units. (COMPANY B)
>
> We use integrated systems in all locations. We have a network for exchanging information between the units here and abroad. This system allows most management processes to be done in country. (COMPANY H).
>
> We have an integrated information system that allows centralization of all information in headquarters. (COMPANY G)
>
> We frequently have virtual meetings to address regular issues, but mainly for exchange of information among units. (COMPANY G)
>
> With the level of development that we have both the supplier and the product, you cannot do it just being here. You have to be there, you literally have to live it. You have to define what level of quality and product that you want. For this, you have to keep someone there in order to control the operations. (COMPANY H)

Figure 24: Cluster analysis horizontal dendrogram of coordination aspects of offshore operations



Additionally, Figure 24 above shows a diverse number of clusters; suggesting that coordination aspects of offshore operations may be distinctive among each other. It suggests that aspects of coordination of offshore operations are associated with companies' own experiences on implementation of those operations. As it can be seen in Table 28 below, the higher similarity

among aspects is between management committees and communication among locations, followed by similarity between integrate information system and communication among locations, by office abroad and integrated information system, and by management committees and decision centralization. Most pairs of aspects showed negative index of correlation.

Table 28: Pearson correlation among nodes coding similarity of coordination of offshore operations:

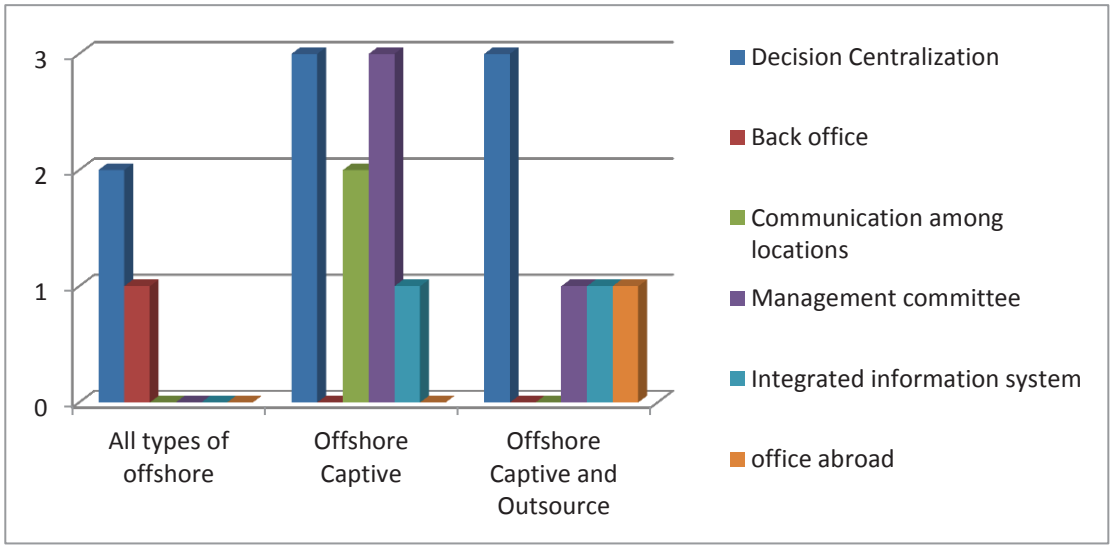
Node A	Node B	Pearson correlation coefficient
management committees	communication among locations	0.597614
integrated information system	communication among locations	0.357143
office abroad	integrated information system	0.357143
management committees	decision centralization	0.316228
decision centralization	communication among locations	0.188982
decision centralization	back office support structure	0.125
management committees	integrated information system	0.059761
communication among locations	back office support structure	-0.188982
integrated information system	back office support structure	-0.188982
office abroad	back office support structure	-0.188982
office abroad	communication among locations	-0.285714
management committees	back office support structure	-0.316228
office abroad	management committees	-0.478091
integrated information system	decision centralization	-0.661438
office abroad	decision centralization	-0.661438

In addition, Figure 25 below shows that companies implementing offshore captive only have reported more diverse numbers of coordination mechanisms as follows: decision centralization, management committee, and communication among location. On the other hand, companies implementing offshore captive and outsource have reported perceptions more centered on decision centralization. These findings lead us to present the following propositions:

P6a: *The more companies centralize their decisions, the better companies coordinate their offshore operations.*

P6b: *There is a direct relationship between the type of offshore implemented by companies and the type of offshore operations coordination mechanisms used by companies.*

Figure 25: Coordination mechanisms by type of offshore operations



4.2.5 Resources and capabilities developed to manage and implement offshore operations

Regarding resources and capabilities developed to manage offshore operations, we have identified three main aspects. **Development of human resources** was the most commented resource developed to manage and implement offshore operations. Seven of eight companies have highlighted this aspect as a resource/capabilities developed to manage offshore operations. Human resources have been developed by companies in different ways. For instance, companies A, C, G, and H have developed **expatriates** in order to develop internal capabilities to manage their offshore operations. More specifically, company A prefers to develop expatriates who have experience both in the company's home country and in the abroad facility country. Companies E and F have **developed local employees** to become managers, reducing effects of cultural difference, as well as contributing to implementation and management of their abroad operations.

Company F has created **a team of managers** with international business experience in order to developed abilities and capabilities to manage its offshore operations, for instance:

> There is a turnover of about three, four years as the top executive manages each abroad facility. For example, now the executive of this plant came here from Spain, but is a Brazilian. So that turnover among managers even from different segments, this occurs in the company. They stay 3-4 years in each unit. This allows continuous development. Then you can see the diversity of culture inside of a facility (COMPANY G).

> We take a long way. I say so, it was in the second half, all the managers that we have brought to manage abroad units, who are Brazilians. Brazilians, who have immigrant parents from a country. Then, we have in Russia a Brazilian who is the son of a Russian. He knows very well Brazilian culture, the Brazilian system and he knows very well Russian culture. In India the same thing, we have an Indian, the son of Indian, but he was born in Brazil. In China we have a Brazilian who was born in China and came to Brazil when he was ten years old; he is already Brazilian citizen and married a Chinese woman. He has a Chinese son. So we adapted them, we got people who know the realities and we teach them our processes and they know very well the cultures and can manage within the two cultures within the two great differences. This is knowledge that we have learned over time. Why it is not just send a representative for India that he will be able to adapt very well, we needs people who know both sides, ok? (COMPANY A)

> I would say the team that was assembled, which is being assembled in this area, is a team, the majority of people have 25 to 35 years of experience in international business. The team I set to put the company abroad has lots of accumulated experience. (COMPANY F)

> We identify capable people who have placed themselves side by side with us, people from there. They understood what is to operate a factory in every way. And these people were walking along our side, until they get able, day by day, to be able to manage by themselves. (COMPANY E)

As can be seen, there is a diversity of developed resources, but they convert to the development of human resources in order to develop capabilities to manage and implement offshore operations. These finding leads us to present the following proposition:

P7: *Development of human resources positively affects the companies' capability to manage and implement offshore operations.*

Knowledge is also considered an important resource to manage and implement offshore operations. As it occurs in human resources aspects, knowledge has also been developed by

companies in different ways. For instance, managers from companies B and E have commented on development of specific knowledge on supporting the logistics of offshore operations among locations. Thus those companies have been developing knowledge of how to operate each location and deal with legislation. This knowledge seems essential to ensure agility and flexibility of offshore operations among locations. Additionally, managers from companies D, F, and H have highlighted that knowledge of international business is essential to management and implementation of offshore operation. Company D has gotten access to that knowledge by other companies of the corporation. Company F has formed a team of executives with past experience to acquire that learning. Company H, in its turn, has been accumulating knowledge on international business by its own experience. For instance,

> First, people from accountability went to there, they stayed three, four months abroad. Then they had mainly to learn how to deal with forms and custom legislation, in order to ensure the materials and production flow among locations (COMPANY E).
>
> Well, that is one thing that caught my attention and I think it is worth mentioning in your study. When the company started in Europe, it moved to the United States. However, the systems of customs legislation are completely from Brazil, China, and Japan. When we go into these markets, we had to develop a structure just to address these differences, understanding and acquiring knowledge about it. So I think that was a so interesting practice and that really came to help us. (COMPANY B)
>
> We have used the experience of other companies in the corporation, which already had offshore operations. Then we tried to use the experience that we had here on how to manage an abroad business. (COMPANY D)
>
> Of course, and also the team that already existed, but the company is learning to play internationally. The company already had international operation, the most in Latin America, but now we are making movements in other countries. Thus, we have group a team with knowledge on offshore operations. (COMPANY F)
>
> The company has been doing importation for so long. So many international suppliers have been partners for over ten years. So this knowledge in international business is very important to our operations abroad. (COMPANY H)

ORN (2009) shows that companies in manufacturing sectors that have less experience in offshore operations are more concerned with losing of control of operations than companies that

have more experience. The report suggests that less experienced companies seem not to have accumulated enough knowledge to develop capability to manage offshore operations. These finding leads us to present the following proposition:

P8: *Accumulated knowledge of international business and international operations positively affects the companies' capability to manage and implement offshore operations.*

Finally, we identified that the **development of management systems** is considered by companies C and G as an important resource to manage and implement offshore operations. That system allows companies to achieve an integrated communication and information flow among locations abroad, as well as standardization of management and operational procedures. This aspect was not as commented as the others aspects commented above. In addition, as human resources, knowledge also represents development of specific capabilities. This suggests that the development of resources and capabilities may be influenced by specific elements during the implementation and management of offshore operations, for instance:

> Our management system is a set of management processes that are crucial to the company. It is a significant advantage when the application is for the whole company, making all the company's business in the world join in the same direction, considering the existence of a single company. (COMPANY G)
>
> The company has invested more in the management system. We work with an integrated management system. This system is essential to manage them throughout this range of operations abroad, keeping all processes aligned. (COMPANY C)

This finding leads us to present the following proposition:

P9: *Development of its own management and production system positively affects the companies' capability to manage and implement offshore operations.*

Table 29: Pearson correlation among nodes coding similarity of development of resources and capabilities to manage and implement offshore operations

Node A	Node B	Pearson correlation coefficient
management system	development of HR	0.2
knowledge	development of HR	-0.447214
management system	Knowledge	-0.447214

As can be seen in Table 29 above, the correlation coefficient of similarity between items is low or negative, suggesting that those aspects are distinctive among them. Table 30 below shows that there are pairs of aspects between drivers and resources and capabilities developed with higher correlation similarities than the previous Table shows. This also occurs between pairs of barriers to implement offshore operations and developed resources and capabilities. We can also see negative correlations. This suggests that specific barriers and drivers can be positively or negatively correlated to resources and capabilities developed by companies to implement and manage offshore operations. For instance, correlation between proximity of clients to management system is 0.63, to knowledge is 0, and to development of HR is -0.158. These findings lead us to present the following proposition:

P10: *Both drivers and barriers shape the effect of resources and capabilities developed for companies' capability to manage and implement offshore operations.*

Table 30: Pearson correlation among nodes coding similarity between drivers and development of resources and capabilities to manage and implement offshore operations; barriers to implement offshore operations and development of resources and capabilities to manage and implement offshore operations

Coding similarities between nodes: drives x resources and capabilities developed		
Drivers	**Resources and Capabilities developed**	**Pearson correlation coefficient**
Proximity of clients	management system	0.632456
Costs & competitiveness	knowledge	0.507093
Production allocation flexibility	management system	0.4
Knowledge acquisition	knowledge	0.301511
Proximity of main Suppliers	development of HR	0.258199
Proximity of main Suppliers	management system	0.258199
Proximity of main Suppliers	knowledge	0.19245
Knowledge acquisition	development of HR	0.13484
Costs & competitiveness	management system	0.075593
Growing strategy	knowledge	0
Production allocation flexibility	knowledge	0
Proximity of clients	knowledge	0
Costs & competitiveness	development of HR	-0.075593
Knowledge acquisition	management system	-0.13484
Growing strategy	development of HR	-0.158114
Proximity of clients	development of HR	-0.158114
Growing strategy	management system	-0.316228
Production allocation flexibility	development of HR	-0.4
Coding similarities between nodes: barriers to implement x resources and capabilities developed		
Barriers	**Resources and Capabilities developed**	**Pearson correlation coefficient**
local legislation changes	management system	0.6742
hidden costs	management system	0.4
competitor's alertness	knowledge	0.301511
Level of inventory	knowledge	0.301511
products approval	knowledge	0.301511
Adaptation of acquired facilities	management system	0.258199
hidden costs	development of HR	0.2
Lack of knowledge and structure	development of HR	0.2
competitor's alertness	development of HR	0.13484

local legistation changes	development of HR	0.13484
products approval	development of HR	0.13484
cultural aspects	development of HR	0.075593
hidden costs	knowledge	0
Lack of knowledge and structure	knowledge	0
cultural aspects	management system	-0.075593
competitor's alertness	management system	-0.13484
Level of inventory	management system	-0.13484
products approval	management system	-0.13484
cultural aspects	knowledge	-0.169031
Adaptation of acquired facilities	knowledge	-0.19245
Lack of knowledge and structure	management system	-0.2
Adaptation of acquired facilities	development of HR	-0.258199
local legistation changes	knowledge	-0.301511
Level of inventory	development of HR	-0.6742

4.2.6 Organizational processes

All case companies identified the contribution of organizational processes on the development of capabilities to manage offshore operations; however, these processes vary among companies. As it can be seen in Table 31, there are high levels of similarities between aspects, suggesting some degree of association among organizational processes and resources and capabilities developed.

Table 31: Pearson correlation among nodes coding similarity between organizational processes and development of resources and capabilities to manage and implement offshore operations

Node A - Organizational processes	Node B - Resources and capabilities developed	Pearson correlation coefficient
planning and control processes	Knowledge	1
RH development processes	Development of RH	0.774597
RH development processes	Knowledge	0.774597
management and production system and routines	Development of RH	0.6742
planning and control processes	Development of RH	0.6742
planning and control processes	management system	0.6742
management and production system and routines	Knowledge	0.555556
Informtion process	Development of RH	0.426401
Informtion process	Knowledge	0.426401
management and production system and routines	management system	0.4
Informtion process	management system	0.158114
RH development processes	management system	-0.258199

Eight organizational processes were highlight by companies as important to management and implementation of offshore operations. Those processes were categorized in four aspects. The first aspect regards **management and production system and routines**. Company A's managers consider **standardized production system** as a process that allows the company to move its production system abroad, keeping production standardized among offshore facilities. Managers from companies G and H have highlighted **management routine standardization** as an important process to develop capabilities to implement and manage offshore operations. This process allows companies to ensure that the same management routines will be made in all abroad facilities. **Management and production system** has been highlighted by companies D and G as a fundamental process to implement offshore operations. This system allows companies

to transfer its own system to abroad facilities, facilitating the management and implementation of operations. Finally, **process and project management** has also been highlighted by company D as an important process. This process has been contributing to the company's implementation of offshore operation, regarding the implementation as a whole project and operational processes. For instance:

> We have been improving our management system that already existed and searching for well-established models and theories, and we created our own way. Our own way helped us to work better by processes and also by projects. We developed it; it was very important. (COMPANY D)
>
> Our external procedures, in fact, is nothing more than replication of our own internal procedure, adapting to other external needs Then we replicate management procedures abroad, standardizing the management procedures in all units. (COMPANY H)
>
> So this is the big business, that is, we have a standardization of products and processes. So we can go anywhere in the world. Our management is the same, is the same in any of the factories that you go. If you will go to our factories, you will find the same management and same quality of product, obviously with some product adjustments to local market. (COMPANY A)
>
> Our management and production system is fundamental. Today it is part of our culture. It is an integrated business management. Oh well then, it is the integration of key elements: tools and processes, it has seven pillars that guide the company for efficient management of components, then: the management basics, planning, growth, operational excellence, functional excellence, evaluation and learning. So, so each unit can incorporate it all. (COMPANY G)

The second aspect regards **planning and control processes**. Managers from company G consider that abroad operation planning, which is done in advance of implementation of offshore operation is a significant processes, requiring the company to prepare for implementation and management of offshore operations. Additionally, **controlling routines** are considered by managers of company F as a central process. They allow the company to get control of achievement of abroad facilities, as well as ensure alignment of management and operational procedures among locations. For instance,

> The company has its own policy, corporate policy. Of course, it always respects the laws of each region of the country that it is operating, and also the

> characteristics, the characteristics of the people. Then there is an analysis, research, about people, local culture, the local employee needs, what they care about a company. Thus, all this is done before the company moves toward any location. (COMPANY G)
>
> How do we do? As I said, every move we place outside a local manager, and a controller, to have someone there, to have your eyes looking after the operation there. We analyzed the outcome of each unit in the previous month of each unit. This process is central to the control and management of the operations. (COMPANY F)

The third aspect regards **information process**. Managers from companies A, C, D, and F consider **integrated information system** as essential processes, allowing companies to access information from abroad facilities, keep aware of managerial and operational information, as well as sharing knowledge among facilities. Those flows of information are considered important to develop capabilities to manage and implement offshore operations, for instance:

> We seek to implement an information system. We had another before, but it was not an integrated one. So we opted for an integrated information system, looking for our strategy of offshore operations. So, we implemented a system here that we access to all the information of our facilities. (COMPANY A)
>
> The thing is that once we acquired these units abroad, within a certain time, we implemented our integrated information system to control the operations. (COMPANY F)

Finally the fourth aspect regards **human resources development proce**ss. As managers from companies B, E, and F have emphasized, **training** of local human resources is central to developing capabilities to manage offshore operations, especially production, quality, and management skills. For instance,

> We had to develop almost all there. Mainly, training had to be given to everyone, in order to ensure processes and product quality. (COMPANY E)
>
> So what have we practiced here in the company? One of the most important is training people. So we have continuously training with the team. We are careful to ensure that people who are conducting this business really know what they are doing. (COMPANY B)

On the evidence of the above cross-case analysis and discussion, we present the following proposition:

P11: *Internal development* of *managerial and production routines positively affects the development of resources and capabilities to manage and implement offshore operations.*

4.2.7 Path

Managers of all companies have highlighted the contribution of companies' path on the development of capability to manage and implement offshore operations**. Learning and past experience** were aspects the most observed by managers. During its path, company A has been learning how to deal with cultural differences. This learning has contributed to implementing and managing offshore operations, particularly regarding the adaptation of expatriates and implementation of its own management and production system. Company B also considers learning during its path important. Unlike company A, company B sought learning as related to the transfer of businesses among countries that offer costs advantages. This learning is essential to its captive offshore operations. Company D, F, and H consider past experience in international business a key issue. That leaning has been fundamental to management and implementation of offshore operation by development of capabilities. It is interesting to note that those companies together represent the three types of offshore operations. For instance:

> There is no doubt. The company goes by its learning. If you analyze the company's growth and how it grew, it is much related to its past. Why did it venture to Asia in 1994? Because our CEO did a joint venture with an American company 30 years ago. He did not speak any English. The whole experience for 30 - 35 years ago has spread, and it is used to seek new markets. So, it is not a coincidence. We have been accumulating experience in foreign markets. (COMPANY H)

> We had management, knowledge of operations management, but we had no knowledge of internationalization management. The big problem was how to move our operations abroad. We learned, but over time, facing different cultures, meeting different people, meeting different systems. We knew how to produce, but not how to take it out of the country. So over time we have been learning. (COMPANY A)
>
> We always export. We always had a strong relationship to import and export. Many things were imported in the past. We had to import, so we went out as well, seeing other markets. Then we learn our way to look out since the company was born. Experience with import and export has helped, because it is not something totally new. (COMPANY D)
>
> The company has already made moves abroad in the past; some worked, and others did not. I would say that past attempts gave enough experience to company learns. Shall we say, people who were managing the company learn how to do this abroad. (COMPANY F)

Organizational culture was also emphasized by managers as a main aspect of companies' path. Company C attributed to its path the formation of an organizational culture that was fundamental to the implementation and management of offshore operations. In addition, companies E and H also believe the development of a strong organizational culture allows both companies to develop capabilities to manage and implement offshore operations, especially to overcome barriers. For instance:

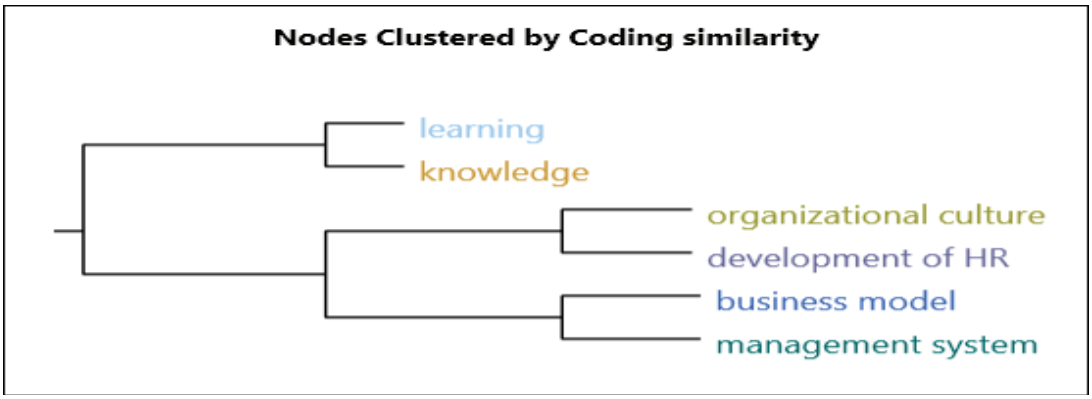
> Experience accumulated for 30 - 35 years ago has spread into the company's culture. The company always had an inclination to negotiate abroad. So surely the company only reached the size that it is today due to its entrepreneurial culture, which is strong today. (COMPANY H)
>
> I believe in history, the company has developed its culture. The business culture of international business is essential operations abroad. (COMPANY C)
>
> We have a very strong culture. A culture that enforce we help each other. This is fundamental to the development of our operations. (COMPANY E)

Finally, **business model** was the third aspect regarding companies' path. As managers of companies A, F, and G have highlighted, their business model was central to guide the implementation of offshore operations, allowing companies to move their own management and

operational systems and routines abroad. This aspect has been essential to the development of implementation and management of offshore operations. For instance,

> I think in 1986 when we began to implement the integrated management system, which started by manufacturing area; it was the key point. We changed the mode of doing business. The founder went to Japan and returned with a new understanding of the business. Many of these cultures, these processes we implement abroad. (COMPANY A)
>
> The expansion of the company abroad is also linked to customer growth and how the company sees your business. The company has developed a well-formed business model, which is transferred to all units. (COMPANY G)
>
> The company has completely changed its business model, going deep in operations abroad. (COMPANY F)

Figure 26: Cluster analysis horizontal dendrogram between path and development of resources and capabilities



In addition to cross-case analysis and discussion, Figure 26 above presents pairs formed by one aspect of path and one aspect of resources and capabilities developed aspect. Table 32 below also shows positive correlations between aspect of each pair; for instance, the correlation between knowledge (resource and capability developed aspect) and learning (path aspect) is 0.66, suggesting that there is an association between those aspects. Thus, path has a pivotal contribution to development of resources and capabilities. These findings and evidence from cross-case analysis lead us to present the following proposition:

P12*: Development of path-dependent resources and capabilities (e.g. accumulated knowledge, strong organizational culture, and well defined business model) positively affects the development of capabilities to manage and implement offshore operations.*

Table 32: Pearson correlation among nodes coding similarity between path and development of resources and capabilities

Node A - Resources and capabilities developed	Node B - Path aspects	Pearson correlation coefficient
Knowledge	Learning	0.666667
Knowledge	organizational culture	0.353553
development of HR	organizational culture	0.316228
development of HR	business model	0.258199
management system	business model	0.258199
management system	organizational culture	0.158114
Knowledge	business model	-0.19245
development of HR	Learning	-0.447214
management system	Learning	-0.447214

4.2.8 Positions

Concerning positions, all companies identified its contribution to developing capabilities to manage offshore operations. However, these aspects vary among companies. It was possible to identify five main aspects: specific resources, technology, and organizational culture as internal positions; and relationship with suppliers and relationship with clients as external positions aspects.

Regarding **specific resources** development, company A attributes its position on maintaining its own production of the majority of its components as a main contributor to the implementation and management of its offshore operations. This way, company A controls all central operations of its supply chain. Company B attributes its position on utilizing offshore

captive. In some way, the positions of companies A and B are similar. The two companies have a centralized posture in relation to offshore operations that orients the development of their capabilities. And finally, companies E, F, and G consider their position of developing dedicated facilities abroad, facilitating the flow of items and production among locations. For instance,

> Development of plants dedicated to niche markets was essential for the growth of abroad operations. For example, there is such high demand, we produce in a specific facility that was developed for large scale production. Low demand or a specific request, we produce in a facility that was designed to be flexible and performance low volume. (COMPANY G)

Position of development of **technology** was also considered by companies as a major aspect of the development of capabilities to manage and implement offshore operations. Companies A, D, and G have emphasized the development of their own management and production systems, allowing those companies to replicate their procedures and routines in abroad facilities. Production allocation among abroad was considered by Company B as a main position, contributing to management and development of its offshore operations. Development of specific technology was considered by Company F an important position made by the company, which has been central to implementation of offshore operations. Additionally, company H considers its position on product innovation and product development process as central to its offshore operations. For instance,

> The technology and operational capability is always important. We have invested in innovation and product development. The product is developed by us, and we developed suppliers abroad that are able to produce there, with the same quality as ours here. (COMPANY H)

Development of strong **organizational culture** was also emphasized by companies. Managers of companies E, F, and H highlighted that a strong culture of international business has been developed during their companies' history. This aspect was central to companies being willing to move abroad; it has also been essential to the development of capabilities to manage

and implement offshore operations. Complementary positions on development of HR were regarded by companies A, E, F, and H essential as well. For instance,

> Organizational culture is a constant. The company has changed a lot. The first thing was to redesign the HR area. With offshore operations and our international expansion, we had to develop an HR director, bringing modern concepts of HRM. In terms of organizational culture the first thing was to develop an effective HR. One thing is certain; it does not work only investing in physical assets without investing in people. Without it nothing happens. Many companies can invest in assets; it is only to have money in the bank. Now, having expertise and people, this is the most difficult. (COMPANY F)

Relationship with supplier aspect was considered by companies as a main external position. Companies A, D, F, and G highlighted keeping a close relationship with main suppliers as essential to implement offshore operation and to develop capabilities as well. Companies A, E, G, and H also emphasized the development of suppliers abroad as a key issue in their offshore operations. For instance,

> In 2007, we use to send 80% parts and components from here to there. In 2009, we were doing 80% locally. I have invited many suppliers to visit the factory there in order to see our production system. Many of these have implemented our management procedures. One vendor had a certain pride when I visited him and saw the processes implemented in his factory. (COMPANY A)

> The development of suppliers has important role. We develop in this period of five years here, we develop suppliers who worked with 2, 3 machines, dirt floor, with no processes. Today they are providers to the automotive industry. They were developed by us. (COMPANY G)

Similarly, **relationship with** abroad **clients** was considered a main position made by companies. Companies D, E, and F consider that aspect is central to reputation of companies in the market, especially when companies are moving abroad. For instance:

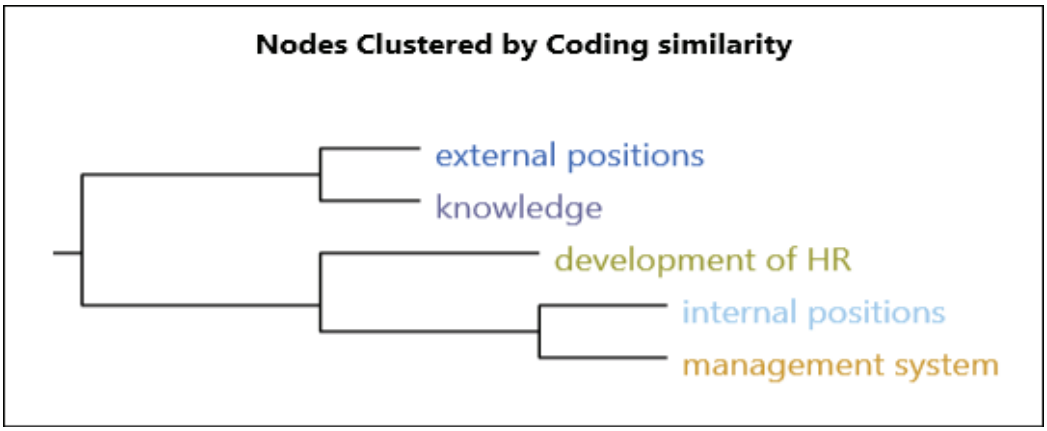
> We already have a name in Argentina. This was important to development of our operations there. For example, we have some competitors. They face difficulties to enter there because they are not known. (COMPANY E)

> Logically this word reputation is also central. It is a very important word. When you interact with someone outside, you have to be correct. You have to keep a correct relationship. That is our strategy, generating results for both sides. (COMPANY F)

On the evidence of the above cross-case analysis and discussion we present the following proposition:

P13: Past commitment on development of resources and capabilities affects the development capabilities to implement and manage offshore operations.

Figure 27: Cluster analysis horizontal dendrogram between positions and development of resources and capabilities



As it can be seen in Figure 27 above, there are two clusters; each one is a pair formed with an aspect of position and an aspect of developed resources and capabilities. Table 33 below also presents some positive correlation between both aspects; for instance, the correlation between knowledge (resource and capability developed aspect) and external position (position aspect) is 0.5070, suggesting that there is an association between those aspects. These illustrate the association between commitments and development of capabilities to implement and manage offshore operations.

Table 33: Pearson correlation among nodes coding similarity between positions and development of resources and capabilities

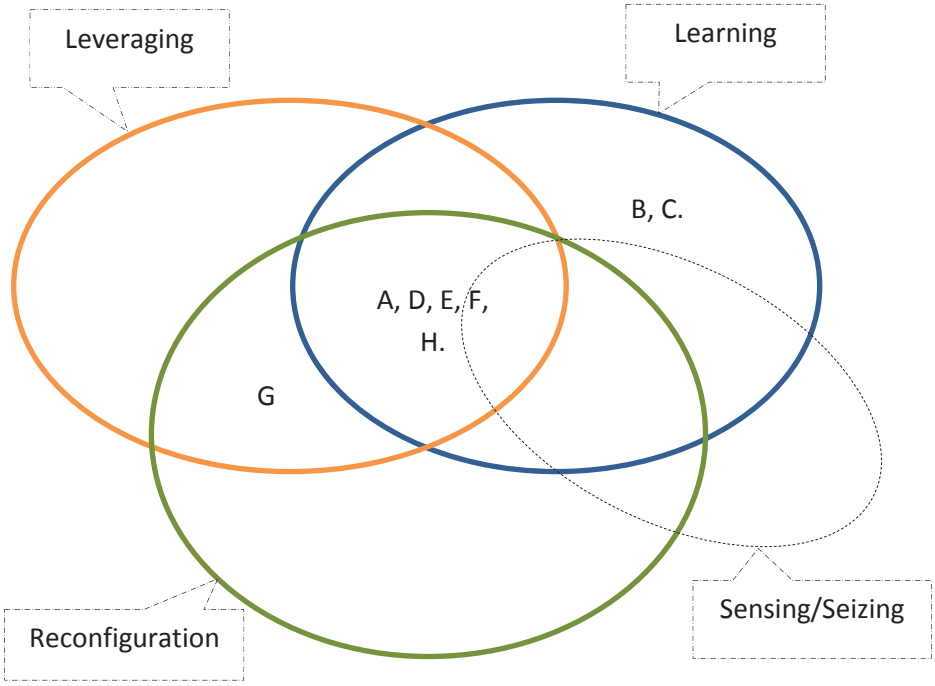
Node A - Resources and capabilities developed	Node B - Positions	Pearson correlation coefficient
Development of HR	External positions	0.075593
Knowledge	External positions	0.507093
Management system	External positions	-0.075593
Development of HR	Internal positions	-0.316228
Knowledge	Internal positions	0
Management system	Internal positions	0.316228

4.2.9 Firm-specific DC processes

Finally, firm-specific processes were also identified as contributors to development of capabilities for managing and implementing offshore operations. As expected, leveraging, learning, and reconfiguration were observed as firm-specific Dynamic Capabilities processes used by companies. Moreover, two more firm-specific processes have emerged: seizing and sensing. The most observed firm-specific process was learning (7 companies), followed by leveraging (6 companies), reconfiguration (6 companies), and seizing and sensing (1 company).

As can be seen in Figure 28 below, it was possible to observe that 5 companies have been using leveraging, learning, and reconfiguration together. Even though they are firm-specific processes, which means according to DC literature they are path-depend process, varying among companies, here it seems a pattern. This suggests that companies have been using a combination of firm-specific processes for development of capabilities.

Figure 28: Case companies and firm-specific DC processes



As it can be seen in Figure 29 below, there are two pairs of firm-specific DC processes as follows: seizing and seizing, and reconfiguration and leveraging.

Figure 29: Cluster analysis horizontal dendrogram between positions and development of resources and capabilities

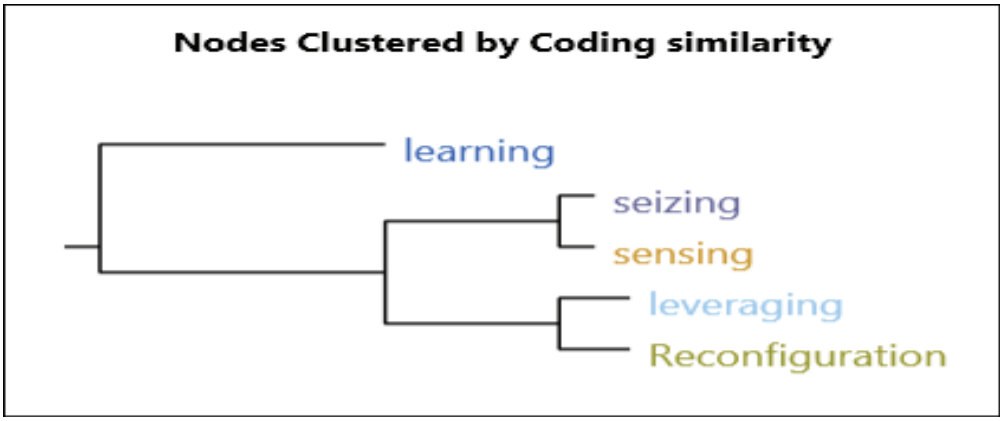


Table 34 presents Pearson correlation coefficient between pairs. As can be seen, the majority of pairs are positively correlated. This suggests similarities among firm-specific DC processes.

Table 34: Pearson correlation among nodes coding similarity between positions and development of resources and capabilities

Node A	Node B	Pearson correlation coefficient
sensing	seizing	1
Reconfiguration	leveraging	0.801784
seizing	Reconfiguration	0.272166
sensing	Reconfiguration	0.272166
seizing	leveraging	0.218218
sensing	leveraging	0.218218
seizing	learning	0.166667
sensing	learning	0.166667
leveraging	learning	-0.327327
Reconfiguration	learning	-0.408248

Learning process has been fundamental to companies' management and implementation of their offshore operations. Companies have been using both past experience and learning in order to develop capabilities to manage and implement offshore operations. For instance, companies A, E, and H have learned how to deal with cultural differences. Company B recognizes learning as a central process for performing operations at dispersed locations. Company B employees are continuously stimulated to revise current processes so as to generate new knowledge about tasks and routines used at offshore operations. Company C also recognizes learning as a main firm-specific process. Managers of each site meet periodically to share experiences and information. This practice contributes to the sharing of knowledge and learning on the management of offshore operations. By practicing, company H has improved its management of offshore outsource operation, starting from frequent overseas trips to settling its own office in Asia in order to control those operations. For instance,

> The operations have evolved by people from here developing people there. But it took, it took about two years, there are areas that are still being coordinated by us. But we had to learn how to manage these operations over time. (COMPANY E)
>
> The company started with no investment, no money and we have grown. We have developed our own method of growth and development. So we are learning how to manage these operations by our own way. (COMPANY H)
>
> The company has learned over time how to move operations among locations. This was a gain to the company. We have learned how to achieve this flexibility. (COMPANY C)

Leveraging process has been used by companies specially to transfer their own management and production system to abroad facilities. That process allows companies to standardize management and production process and routines among locations. For instance, companies A, D, and G have transferred their management and production system to abroad facilities. Company E has replicated its operation structure on abroad facilities. Companies E and H have also transferred their management routines to abroad facilities. Leveraging processes have also allowed companies to align procedures and strategy issues among locations. For instance, after company G has replicated its own management and production system to a specific abroad facility, that unit has improved its status of supplier as a main client from the worst to the best in a matter of one and a half years, for instance:

> Then we deployed that all our systems and procedures there. We had to move to our tools and processes there. Everything we have developed here was deployed there. (COMPANY E)
>
> These external operations, the external procedures, in fact, are nothing more than replication of the internal procedure, adapting to other external needs, basically, law, language, culture. Then we replicate our internal models abroad. (COMPANY H)
>
> We move abroad all our procedures, methods, processes that have worked here. Everything is our reference, no matter the location. Since three years ago, I have not visited a factory abroad, it seems that I was here, everything is equal. (COMPANY A)

Reconfiguration process has been used by companies as a main process to adapt resources and capabilities already developed in order to fit with abroad facility conditions.

Reconfiguration has allowed companies to deal with offshore barriers, especially cultural aspects and lack of local resources and capabilities. Reconfiguration fits companies' management and production systems and procedures in order to them to be implemented on abroad facilities. Reconfiguration also adapts local facilities to receive management and production implementation. For instance, company G allows its abroad facility to make minor adjustments and complements to company management and production systems. Company F has to adapt itself by changing its business model in order to be prepared to implement its international strategy by offshore operations. Thus, both companies and their abroad facilities may be subjects of reconfiguration process. For instance:

> We adapt the processes to the local reality. The engineers had to go there to see the market itself, see how we would assemble, produce, adapt our method. So all had to be adapted, even people who left here to go there have had to adapt in order to perform our operations. (COMPANY E)
>
> It is important that you make this site acculturation, also the local management. You use it as a reference base, any development that we have here, the moment you take it out, you have to, cannot be top down, not at all. You have to know people, get close to see the local culture, and there you will implement the management, adapting to the conditions. (COMPANY A)
>
> When you go, these units abroad, they are smaller, we must be careful to do not make life difficult for them because their structure is different. We have to maintain what is essential within the process. They can adjust and work within the structure they have. I cannot want to have another big structure like here at all locations. No way. The structures are all very different in smaller units and they need to succeed. So we have to adapt the processes in order to fit to our model and local conditions. (COMPANY D)

Finally, **sensing and seizing** processes have been used by company F in order to develop capabilities to manage its offshore operations. Companies try to be aware of what is happing among their business markets in order to not be obsolete in terms of production and processes. Companies use their abroad facilities to identify trends and news, as well to know the latest's practices of management internationally. Companies also assign local managers to figure out new opportunities. Those opportunities are exploited by companies, become new services,

products, markets, and even new abroad facilities. By those processes, companies are trying to go beyond offshore operations. For instance,

> There is no problem, because we determine the interfaces on each side and promotes a workshop, let's say. Look, we have a manager there now in Colombia, he is coming to Brazil. He will stay here in Brazil two weeks to learn each unit here. He is certainly a person who already knows the market, making it easier for him just to know what is in each unit, and will begin to find new opportunities there. He knows that we are supporting, giving the necessary in order to take the opportunity there. [...] We have to be careful that our product will never become obsolete, always looking to identify the movements, observing the changes and emerging demands in the market. (COMPANY H)

On the evidence of the above cross-case analysis and discussion we present the following and last propositions:

P 14: *Firm-specific dynamic capabilities processes positively affect the development of resources and capabilities to implement and manage offshore operations.*

P15: *Firm-specific dynamic capabilities shape the effect of resources and capabilities developed on companies' capability to manage and implement offshore operations.*

4.2.10 Integrated model

Based on evidence from cross-case analysis and suggested propositions, we propose a model of capability development to manage and implement offshore operations. The model presented in Figure 30 below regards two main relationships. The first one is the effect of Dynamic Capabilities on the development of capabilities to manage and implement offshore operations. Thus the main argument is that the outcome of Dynamic Capabilities is the development of required capabilities to offshore operations. The second one is the moderator effect of aspects of offshore operations, as follows: barriers and strategic roles. Thus the main

argument is that barriers and strategic roles of offshore operations moderate the effect of resources and capabilities developed by Dynamic Capabilities elements (path, positions, organizational processes, and firm specific DC processes) on companies' capability to manage and implement offshore operations.

As Figure 38[21] presents, DC elements have a direct effect on development of resources and capabilities developed to manage and implement offshore operations. However, this effect is indirectly related to companies' capability to manage and implement offshore operations. Thus, we suggest that companies first develop resources and capabilities, and then companies use those resources and capabilities developed in order to achieve a certain level of capability to manage and implement offshore operations. For instance, companies develop knowledge based on their path. After that, companies use that knowledge to be able to improve this capability to manage and implement offshore operations. In another example, companies, based on their path and commitments, develop over time a management system, which is useful for managing and implementing offshore operations. However, the way that system contributes to the companies' capability to manage offshore operation is influenced by how that system will be leveraged and adapted by companies.

We have identified that human resources development, knowledge, and management systems are the main resources/capabilities, which also have a major contribution to companies' capability to manage and implement offshore operations. Thus, it is suggested that those resources/capabilities have a direct effect on companies' capability to manage and implement offshore operations.

[21] (+) and (-) indicate the positive or negative effect from one element to another suggested by our model.

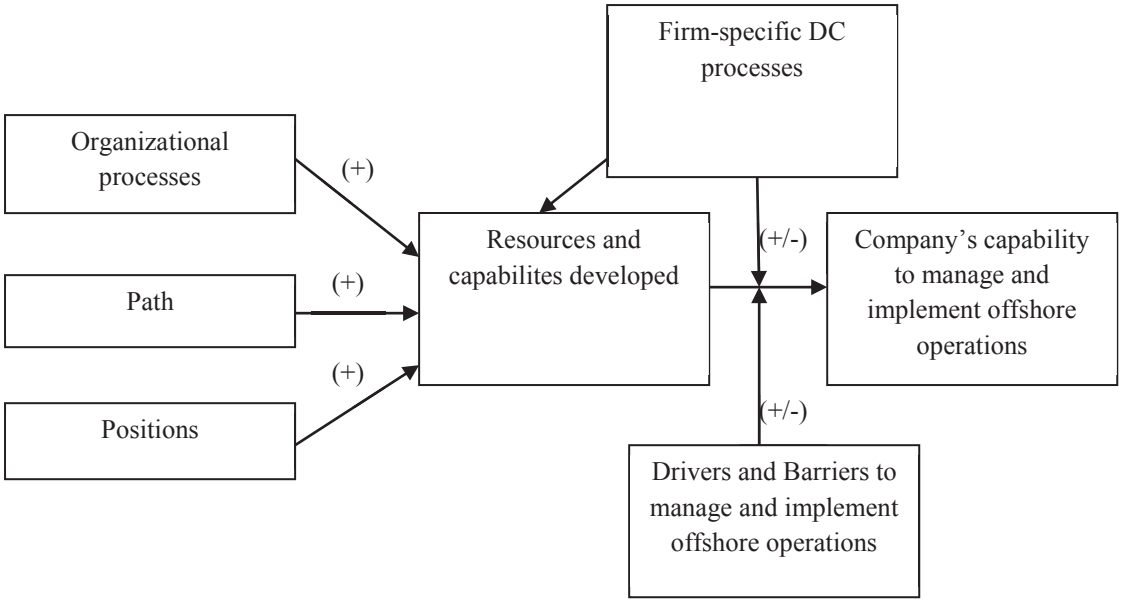
The model also suggests two moderator effects on the relationship between resources and capabilities developed and companies' capability to manage and implement offshore operations. The first one is the moderator effect of barriers and strategic roles of offshore operations. As we have observed, offshore operation is a strategic oriented processes. This means that offshore operations are driven by the company's goal of implementation of those operations. Thus, one might realize that if a company implements offshore operations in order to achieve cost savings, the way as that company has been developing and using resources and capabilities will be less intensive than those companies searching for growing strategies.

In addition, as offshore operations is a learning-by-doing processes, different level of barriers faced by companies during the implementation of offshore operations will require different level of use of those resources and capabilities. For instance, a company that has faced a strong cultural difference will be stressed to use its knowledge to manage those conflicts in order to implement offshore operations. If a company has been accumulating during its path enough knowledge to deal with cultural barriers, it will more easily succeed than those companies that have not been accumulated the same amount and quality of knowledge needed to deal with that barrier.

The second is the moderator effect of firm-specific DC processes on the relationship between resources and capabilities developed on companies' capability to manage and implement offshore operations. For instance, two companies have developed a management system over time. However, the way its system is leveraged and adapted to an abroad location may vary between those companies, resulting in different effects of management systems on companies' capability to manage and implement offshore operations. Thus, we suggest that development of resources and capabilities is fundamental. However, how those will impact on

companies' capabilities to manage and implement offshore operations will vary according to, for example, how companies have learned to use those resources and capabilities and how companies have adapted then to abroad conditions. Thus, companies with similar resources may achieve different levels of capabilities.

Figure 30: Integrated model of capability development to manage and implement offshore operations



5 CONCLUSION AND DISCUSSION

Using eight cases, we analyzed how companies develop capability to manage and implement offshore operations. That development is based on Dynamic Capabilities elements (path, positions, organizational processes, and firm-specific DC processes), being also shaped by offshore aspects (barriers and strategic role of offshore operations). We focused on clarifying how companies developed capability to manage and implement offshore operations. As a managerial process, the spread of offshore is due to the development of organizational and managerial capabilities to implement this process (e.g. Levy, 2005). Although offshore operations is not a recent organizational practice (e.g. Sturgeon & Florida 2000), how companies develop capabilities to manage and implement it remains unclear (e.g. Stratman, 2008).

We have used DC perspective in order to address that issue. Different from other studies that see DC as a singular capability (e.g. innovation), we see DC as a set of elements resulting in the development of specific capabilities to fit companies' needs. Thus, we aim to contribute to DC theory as well, exploring how DC elements develop companies' capability. As Wang and Ahmed (2007) pointed out, more research efforts are needed toward an integrated understanding of DC. We have sought to contribute to DC theory and offshore operations literature by offering propositions regarding offshore operations and DC, and an integrated model as well. In this section, we conclude this study, presenting its theory implications, practice implications, limitations, and future research directions.

5.1 Theory Implications

We have conducted this study seeking to understand how companies develop capability to manage and implement offshore operations. We have selected eight cases in order to address that issue. Our main focus was companies implementing offshore operations through captive type. We believe in this type of offshore, companies are more likely to develop capability than in offshore outsource. Even though generalizability is not a main focus of qualitative studies, we qualitatively attend that methodological aspect, performing analytical generalization through comparisons among cases. This allowed us to identify patterns that can be observed quantitatively in further studies.

We have identified that 2 cases that only use offshore captive, 3 cases use offshore captive and outsource, and 3 cases that use offshore captive, outsource, and partnership. Comparing cases, we have identified that companies perceive offshore captive less complex to manage and implement than offshore outsource and partnership. The main management differences among types of offshore operations are risk of losing control of operations for outsource type, and definition of partner's role for partnership type. Thus, we found that management challenges vary according to type or types of offshore implemented by companies. This is an important contribution to offshore operations literature, considering that these aspects are so far unclear in previous studies.

We have identified six strategic roles of offshore operations as follows: growing strategy, knowledge acquisition, proximity of main clients, production allocation flexibility, costs and competitiveness, and proximity of main suppliers. We have classified those strategic roles into two categories: growth strategy and cost savings. Comparing cases into these two categories, we

identified 4 cases that consider growth strategy as the main strategic role, and 4 other cases that consider cost savings as the main strategic role. Moreover, companies implementing only captive offshore operations are more classified into the growth strategy category. On the other hand, companies implementing captive and outsource offshore operations are more classified into the cost savings category. Thus, we suggest strategic role of offshore operations influences the way that companies chose to implement their offshore operations. This find corroborates Maskell, Pedersen, Petersen, and Dick-Nielsen (2006) and Kedia and Mukherjee (2009), who suggest that drivers determine how companies should conduct offshore operations.

We have identified so many barriers as the amount of cases included in this study. We have identified eight barriers to implementing and managing offshore operations as a whole. Moreover, cultural difference was the most perceived barrier to implementing offshore operations. Five companies have highlighted cultural difference as a major barrier. These companies involve the three types of offshore operations. Thus, we point to cultural difference as the major barrier to implement and manage offshore operations. Previous studies also present cultural difference as a main barrier (e.g. Efendioglu 2006; Meters 2008a).

We have also identified different patterns among companies implementing different combination of types of offshore operations. Companies implementing all types of offshore and those implementing only offshore captive have reported the more diverse number of barriers. On the other hand, companies implementing offshore captive and outsource have reported perceptions more centered on cultural aspects. This finding suggests that barriers to implementing offshore operations may vary according to how companies have been implementing those operations. We consider this a central finding to offshore operations literature, since there is not a clear understanding the barriers to implementing each type of

offshore operations. We have here a clue, suggesting that cultural difference is the main barrier to implement offshore operations as a whole; barriers vary according to the way offshore operations have been implemented; finally, cultural differences may have a higher effect on offshore outsource than others types of offshore operations.

Mechanisms of coordination of offshore operations emerged in the first three case studies we analyzed. Because of that, we have added coordination of offshore operations as a category of analysis. We have identified six coordination mechanisms used by companies. We have observed one interesting pattern among companies: all cases reported decision centralization as a way to coordinate their offshore operations. These findings suggest that decision centralization is the main coordination mechanism of offshore operations. Previous studies (e.g. Grote & Täube, 2007; Kedia & Mukherjee, 2009) have pointed out that losing control of operations is a main companies' threat to implementing offshore operations. Thus, companies have been centralizing their decisions in order to reduce that threat.

We have identified another important pattern; companies implementing only offshore captive have reported the more diverse number of coordination mechanisms as follow: decision centralization, management committee, and communication among locations. On the other hand, companies implementing offshore captive and outsource have reported perceptions more centered on decision centralization. Based on this finding, we suggest that development of coordination mechanisms varies according to how companies have been implementing offshore operations. This is an important finding since there is no clear understanding of coordination mechanisms of each type of offshore operations in the literature.

We have identified three main resources and capabilities regarding development of capability to manage and implement offshore operations. Companies have been developing

human resources in order to develop capability to manage offshore operations. Companies have also developed and accumulated knowledge in order to develop capability to manage offshore operations. Additionally, as offshore operations are organizational and operational processes, companies have also developed their own management and production systems. This is a central finding of this study, helping to clarity what kind of resource and capability is fundamental to companies' ability to manage and implement offshore operations. Previous studies (e.g. Ellran, Tade, & Billington, 2008; Lewin & Peeters 2006b; Maskell, Pedersen, Petersen, & Dick-Nielsen, 2006) have pointed out that companies need to develop resources and capabilities to manage and implement offshore operations, but none of them have point out what those are. Thus we suggest that companies' capability to manage and implement offshore operations is developed by HR development, knowledge, and management systems.

We also identified that DC elements (organizational processes, path, positions, and DC firm-specific processes) have a central effect on resources and capabilities developed. We argue that first companies developed resources and capabilities based on those DC elements, and then, resources and capabilities developed affects the development of companies' capability to manage and implement offshore operations. This is a central finding to offshore literature and to DC theory as well. Previous studies (e.g. Ambrosini & Bowman, 2009; Menon, 2008; Wang & Ahmed, 2007) argue the need for exploring the sources and benefits of DC, as well as how companies renew routines and develop capabilities. Thus, our study offers some contribution to reduce this gap.

All companies in our study report the role of organizational processes on development of resources and capabilities. For instance, internal development of procedures and routines allows companies to develop their own management systems, which is central to companies' ability to

manage and implement offshore operations. Similarly, internal development of procedures and routines generates knowledge that is essential to move operations abroad. This finding corroborates the routine approach of DC (e.g. Zollo & Winter, 2002), which highlights the role of routines on development and changing of resources and capabilities. This finding also corroborates to the organizational processes argument of Teece, Pisano, and Shuen (1997), which points out that how things are going inside the company matters to company achievement of distinctive level of capability at specific point in time. Thus we argue that organizational processes contribute to the development of resources and capabilities for implementing and managing offshore operations.

We identified the contribution of path on development of resources and capabilities to manage offshore operations. Development of strong culture, learning and past experience, and business model were highlighted by companies as development made over time that is central to development of resources and capabilities. This finding guides us to argue that development of resources and capabilities to manage offshore operations is a path-dependent process. Our finding corroborates previous DC studies (Eisenhardt & Martin, 2000), which proposed the effect of path, or "history matters" on development of resources and capabilities. For instance, a path history of doing international business, or exporting products and importing key production components, helps companies to accumulate knowledge on international market or development of abroad suppliers. Past experience of abroad operations also contributes to accumulating essential knowledge. Thus, this knowledge accumulated during a companies' history is used for the development of a companies' capability to manage and implement offshore operations. Thus, we argue that path, as a DC element, first affects the development of resources and capabilities,

and then, resources and capabilities develops companies' capability to manage and implement offshore operations.

Positions refer to commitments done by companies during the time (Ambrosini & Bowman, 2009; Teece, Pisano, & Shuen, 1997; Zott, 2003). We showed companies have commitments to specific resources, technology, organizational culture, relationship with suppliers, and relationship with clients. Those commitments have been central to the development of resources and capabilities to manage and implement offshore operation. For instance, commitment to development of dedicate captive facilities has allowed companies to move production abroad locations. As previous DC studies pointed out, positions shape the current stock of resources and capabilities available to companies.

We have also identified five firm-specific Dynamic Capabilities processes used by companies to develop capability to manage and implement offshore operations. As expected, leveraging, learning, and reconfiguration were observed. Moreover, two more firm-specific processes have emerged, seizing and sensing. Previous DC studies pointed out that firm-specific DC processes (path, organizational processes, and positions) may vary among companies because they are path dependent (Wang & Ahmed, 2007). For instance, a company may use leveraging to replicate their processes in other locations or markets. Another company may not use leveraging, but use sensing to shape resources and capabilities to exploit new opportunities. Our finding partially agrees with that. As we observed, firm-specific DC processes vary among companies. However, five of eight companies use leveraging, learning, and reconfiguration at the same time. Thus, we argue that in management and implementation of offshore operations, companies leveraging, learning, and reconfiguration are essential DC elements as path, positions, and organizational processes.

In addition, how do companies develop capabilities to implement and manage offshore operations? Companies use DC elements (path, organizational processes, and positions), developing resources and capabilities during their path, by making commitments and continually developing routines and procedures. Moreover, firm-specific DC processes both develop resources and capabilities and also shape the use of those resources and capabilities in order to develop capability to manage and implement offshore operations. For instance, DC elements and firm-specific DC elements have contributed to a company developing its own management and production system. Learning how to move that system abroad, leveraging that system, and reconfiguring that system to abroad conditions shape how that system contributes to the company's capability to manage and implement offshore operations. We consider this finding useful to offshore literature, describing how companies develop capability to manage and implement offshore operations. It also contributes to DC theory, pointing out the twofold role of firm-specific DC processes.

Finally we have identified that barriers and the strategic role of offshore operations shape the effect of resources and capabilities developed for companies' capability to manage and implement offshore operations. This find corroborates to DC previous studies (Ambrosini & Bowman, 2009; Wang & Ahmed, 2007), which point out the moderator effect of external elements on DC outcomes. Thus, our finding suggests that barriers and strategic roles of offshore operations may be considered external elements, moderating the results of DC on companies' capability to manage and implement offshore operations.

5.2 Implications for Practice

This study contributes to practice by providing information on offshore operations aspects, what kind of capabilities companies have been developing, and how they are developing capability to manage offshore operations. Practitioners should first identify the strategic goal of offshore operations in order to align it with the company's operations. It is also important to note that this study suggests a company's strategy is the main driver of DC and consequently the development of capabilities.

Companies should develop control mechanisms to ensure control of their offshore operations. Our findings suggest that decision centralization is the main mechanism used by companies to maintain control of offshore operations. However, the need for additional mechanisms varies according to how companies have been implementing their offshore operations. For instance, companies have also been using management committees in order to align management and operational procedures among locations. As well, offices abroad have been used to reduce the risk of losing control of offshore outsource operations. Thus, companies should plan how they are going to implement offshore operations, realize which risks may be faced, and design mechanisms of coordination.

The strategic role of offshore operations influences on how companies implement those operations. Thus, companies should align their strategy goals of offshore operations to the ways they are implementing those operations, in order to facilitate offshore operations through the company's strategy plan. Additionally, cultural difference is considered the main barrier to implementing and managing offshore operations. Moreover, addition barriers, such as a lack of local resources, may be faced according to the way as companies have been implementing their

offshore operations. Keeping this in mind, companies should make an implementation plan in advance of going abroad. This is helpful to design tactics to avoid or reduce those barriers.

Three main resources and capabilities should be considered as essential to development of companies' capability to manage and implement offshore operations. Those are development of HR, knowledge, and company-based management systems. Companies should consider the development of management skills in order to ensure the implementation and management of offshore operations. This can be achieved by developing expatriates, local managers, and teams of managers with offshore operations expertise. Knowledge is a central resource; some examples are knowledge of cultures abroad, abroad market specifics, and logistics and customs procedures. Developing an management system helps companies to align management and operations routines and procedures among locations, as well as to replicate the company's production philosophy to abroad facilities.

Companies also should keep in mind that the development of capability to manage and implement offshore operations is a path-dependent process. This means that the current and future capability depends on past commitments on development of resources and capabilities, continuous development of managerial and operational routines, commitments to specific resources such as dedicated facilities, and commitments to maintaining close relationships with suppliers.

5.3 Limitations and Future research directions

Several limitations of this study merit discussion. First, the scope is limited to manufacturing companies implementing offshore captive operations. Results regarding offshore operations aspects and capability development by DC cannot be extended beyond this

contingency. This is a disadvantage of a case study: the lack of external validity and its idiosyncratic theories (Eisenhardt, 1989).

Second, the sample case companies were not randomly sampled but were chosen by manufacturing sector, type of offshore operations implemented, and access to interviews. This may cause some bias in the results. However, we have chosen manufacturing companies implementing offshore captive in order to avoid the literature confusion between offshore operations and outsource, and in order to contribute to reduce the lack of empirical studies of this kind of companies on offshore operations. Third, the small number of interviews by companies may also cause some limitations in the results. However, future studies may benefit from the propositions suggested, exploring them with other research methods such as surveys.

Future studies may explore each aspect of offshore operations (barriers, strategic role, and coordination) by type offshore, as well, comparing results between manufacturing companies and services companies. This can be done by choosing specific company cases, seeking to explain qualitatively how these elements are different among types and sectors. This can also be done by a survey, seeking to quantitatively measure the length of those differences. Looking at our suggested propositions and model, a quantitative study is also proposed in order to test the external validity of them in a large sample size of companies. Regarding aspects of offshore operations, we suggest the following questions: *(1) How do offshore aspects (barriers, strategic roles, and coordination mechanisms) vary among types of offshore operations?(2) How do offshore aspects (barriers, strategic roles, and coordination mechanisms) vary between service and manufacturing companies?* In addition, regarding Dynamic Capabilities, we suggest the following questions: *(1) What is the effect of DC on companies' capability to manage and implement offshore operations?(2) Does the effect of DC on companies' capability to manage*

and implement offshore operations vary among offshore types? (3) Does the effect of DC on companies' capability to manage and implement offshore operations vary between service and manufacturing companies?

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7 APPENDIX

APPENDIX 1 – CASE STUDY PROTOCOL

Main objective: How do companies develop capability to manage and implement offshore operations?

Specific objects:

- to identify which kind of offshore operations each company has been implementing; (2) to explore main differences on management among kinds of offshore operations;
- to explore which is/are the strategic role of offshore operations, and what moves companies to implement it;
- to explore the main barriers to implementing and managing offshore operations;
- to identify resources and capabilities developed by companies in order to be able to manage and implement offshore operations;
- to understand how Dynamic Capabilities elements (organizational processes, path, positions, and firm-specific DC processes) contribute to development of capabilities to manage offshore operations; and,
- to develop an integrated model of capability development to manage and implement offshore operations.

Steps and procedures of the study

- Selection of companies;
- Interviews;

- Data transcription;
- Individual casa analysis;
- Cross case analysis;
- Development of propositions;
- Development of integrated model.

Main definitions

- Offshore operations: The movement or reallocation of domestic firm activities and operations abroad (Bunyaratavej, Hahn, & Doh, 2008, p. 227).
- Dynamic Capabilities: firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments (Teece, Pisano, & Shuen, 1997, p. 516).

Questions:

- Could you describe your trajectory at this company?
- Could you describe offshore operations of your company? Which kind of activities? Which countries? And how these operations have been developing over time?
- Could you describe which kind of offshore operations are employed? (Captive, outsource, partnership)?
- Could you explain how offshore operations are managed/coordinated?
- Are there main differences on management among kinds of offshore operation? (captive, outsourcing e partnership)? Which?

- Could you explain which is/are the strategic hole of offshore operations for your company? What does move your company to undertake offshore operations?
- What are the main barriers to implement and manage offshore operations? How does your company have been dealt with them?
- Have your company developed capabilities/resources in order to manage offshore operations? Could you describe them? Could you explain how they have been developed?
- Could you describe which organizational processes your company owns/developed in order to manage/coordinate offshore operations? (E.g. routines, patterns, internal processes, systems, training, learning...)
- Could you explain how your company's path/trajectory has been contributing to management/coordination of offshore operations?
- Could you explain how your company has been developing the capability to manage and implement offshore operations?
- Could you explain how your company's position on development of capabilities and resources has been contributing to management of offshore operations? (E.g. development of specific resources, technology, relationship with suppliers, complementary assets,…)

Internal position: internal development of firm-specific resources and capabilities as follow: Firm-specific resources: equipment, dedicated facilities, training, …; technology: operational capacity, management systems, product development; Organizational culture;	External position: development of market assets as follow: Relationship with suppliers: development of suppliers,…; Complementary assets: distribution channel; Reputation; Relationship with clients; Development of alliances.