

# DYNAMIC CAPABILITIES FOR THE DEVELOPMENT OF INNOVATION CAPABILITY

## *AS CAPACIDADES DINÂMICAS PARA O DESENVOLVIMENTO DA CAPACIDADE DE INOVAÇÃO*

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### ABSTRACT

The present article aims at analyzing the dynamic capabilities' contributions for the development of innovation capability in a chemical sector company. The company headquarters are located in the state of Rio Grande do Sul, Brazil, with branches in other states in Brazil, Latin America and China. More specifically, it concerns the company's innovation strategies and practices related to sensing, seizing and reconfiguration capabilities and their micro-foundations, as presented by Teece (2007). This research is classified as a descriptive and qualitative case study. Data were collected through 10 semi-structured interviews and analyzed through the qualitative content analysis. The main results show that the dynamic capabilities help to develop innovation capability. This research checked that the approach on dynamic capabilities is of fundamental importance for the development of innovation capability by reinforcing it as an organizational strategy.

**Keywords:** Innovation Capability. Dynamic Capabilities. Micro-foundations.

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## RESUMO

*O presente estudo tem como objetivo analisar as contribuições das capacidades dinâmicas para o desenvolvimento da capacidade de inovação em uma empresa do segmento químico. A matriz da empresa localiza-se no Rio Grande do Sul, possui unidades em outros estados no Brasil, na América Latina e na China. Mais especificamente, foram estudadas as estratégias e práticas de inovação da empresa relacionadas com as capacidades sensing, seizing e reconfiguring e seus microfundamentos apresentados por Teece (2007). Essa pesquisa classifica-se em descritiva e estudo de caso qualitativo. Os dados foram coletados através de 10 entrevistas semiestruturadas e analisados por meio da análise de conteúdo qualitativa. Os principais resultados mostram que as capacidades dinâmicas auxiliam o desenvolvimento da capacidade de inovação. Essa pesquisa verificou que a abordagem das capacidades dinâmicas é fundamental para o desenvolvimento da capacidade de inovação consolidando-a como uma estratégia organizacional.*

**Palavras-chave:** Capacidade de Inovação. Capacidades Dinâmicas. Microfundamentos.

## 1 INTRODUCTION

Researches on dynamic capabilities are seen as a consistent theoretical view over studies about strategic management, organizational changes, innovation and competitive advantage. However, this approach is criticized by Arend and Bromiley (2009), authors who emphasize that such concept is vague and tautological. Tautology can be caused by the fact this concept is eminently theoretical and holds a difficult operationalization.

On the other hand, Güttel, Konlechner and Müller (2011) argue that addressing dynamic capabilities can be linked to actual business operations in a more realistic way with an empirical validity, soothing the tautological character. Yet, exploring the empiric focus' approach more deeply is still needed.

To Helfat and Peteraf (2011), this approach is wide and complex because it covers domains about the organizational strategy process and several analysis levels and represent a wide scope of analysis that go from a strategic character (more abstract) to a more operational one (processes and organizational practices).

According to Ambrosini, Bowman and Collier (2009), and despite the reviews concerning the dynamic capabilities' approach, the theoretical and practical importance of the development and application of dynamic capabilities in order to support the competitive advantage in a company brought this issue to the foreground in the research agendas of several investigators, which shows its current importance and relevance. It can be stated that this approach is able to explain how certain organizations manage to identify opportunities in the external environment and incorporate them to their routines and processes by managing and mobilizing resources, which brings positive results, whereas others do not develop such capability.

Teece and Leih (2016) state that dynamic capabilities allow the organization to idealize, test and implement new innovations, which significantly affects its success or failure (Kindström, Kowalkowski, & Sandberg, 2012). This happens through the procedural variation, which is the basis of the dynamic capabilities' development (Pasian, Sankaran, & Boydell, 2012). Thus, this approach helps and offers support for the innovation capability's development comprehension.

Innovation capability enables the transformation of knowledge and learning into new products, services and processes, and introduces them into the innovation market. According to Tidd, Bessant and Pavitt (2008), for this to take place, innovation depends on the way the entire process is carried out, that is, it depends on resources, routine and managing capability.

Therefore, this article tries to answer the following research question: How can the dynamic capabilities' approach contribute to the development of innovation capability? This study

aims at analyzing the dynamic capabilities' contributions for the development of innovation capability in a chemical sector company. In order to reach the general objective, the following specific goals were outlined: (1) identify the dynamic capabilities which help the innovation capability development; (2) check the development of dynamic capabilities which help the innovation capability.

This research tries to bring in some contributions from an empiric study in order to soothe the tautological character presented by the authors. The study presents each dynamic capability, such as sensing, seizing and reconfiguring, and how they are developed through managerial and organizational processes, their status and path towards the development of innovation capability in a case study carried out in a chemical sector company, which stands out in the Brazilian international ranking, is renowned in the market due to its innovation capability and received almost 30 awards related to innovation.

The managerial and organizational processes' analysis, status and path allow checking whether there is innovation process systematization, and if the organization is really able to constantly mobilize resources, that is, it shows the innovation capability dynamic process in order to keep and widen the competitive advantage in the global market, even despite scenarios like an economic crisis and slowdown.

This is a bibliographic, descriptive research, and a qualitative case study. The data were collected through 10 semi-structured interviews and analyzed through a qualitative content analysis. The study's theoretical referential, which encompasses the conception of innovation capability and of dynamic capabilities and their classifications, will be presented next.

## 2 INNOVATION CAPABILITY CONCEPT

Innovation capability is a skill used for the design and implementation of innovation strategies, for it involves the capability of creating, widening and modifying the resources used to develop new products, services, processes and markets (Dodgson, Gann, & Salter, 2008). Table 1 presents these concepts.

Author	Concept	Focus
Neely and Hii (1999)	An organization's innovation capability is defined as the internal potential to generate ideas, identification of new market opportunities and the development of an innovation with commercial purposes from the organization's resources.	Innovation development with commercial purposes.
Lawson and Samson (2001)	Innovation capability is the ability to transform knowledge and ideas into new products, processes and systems so as to benefit both the company and its stakeholders.	Knowledge transformation into goods or services.
Pekka and Thomas (2006)	Innovation capability can be defined as the capability a company has to generate value to client through the development and the introduction of new products or services into the market, or the reduction of costs caused by the process of value creation.	Value creation.
Bell (2009)	Innovation capability is necessary to imagine, develop and implement new technology settings of products and services, and to perform improvements in the technologies under use.	Generate new technologies or improve them.

**Table 1: Innovation capability concepts**

Source: Elaborated by the authors.

From the concepts presented in Table 1, innovation capability can be seen as an organizational capability of strategic nature. In other words, it is about aligning innovation practices with organizational strategies. This usually happens deliberately, in a systematized way, and uses one or more models for the development of innovation. This way, it transforms knowledge and

learning into new products, services and processes, and introduces radical and incremental innovations into the market. This study adopts the concepts presented by Lawson and Samson (2001), and Pekka and Thomas (2006).

According to Tidd, Bessant and Pavitt (2008), for a capability to be considered strategic, it must meet the users' needs, be unique, so that the products and services can be distinguished, and be hard to copy, so that the profits are not consumed by competition.

The authors emphasize that innovation is a process and not an isolated event. Therefore, it must be dynamically and fully managed, that is, it is not about managing or developing skills in some areas only. This way, innovation capability must not rely solely on Research & Development (R&D) (Tidd et al., 2008).

### 3 DYNAMIC CAPABILITIES' CONCEPT

Teece, Pisano and Shuen (1997) specify the concept of dynamic capabilities, such as the ability to notice and seize new opportunities, reset and protect the assets or resources of knowledge, competencies and assets with the objective to reach a sustainable competitive advantage.

It can be stated that the concept by Teece, Pisano and Shuen (1997) is groundbreaking and worked as a foundation for further works. From the definitions found in the bibliographical review for the term "dynamic capabilities", similarities and complementarities were identified among the researchers who adopt this approach as an analysis perspective. Since then, there have been several theoretical efforts turned to developing the concept, especially from its operationalization point of view.

Upon analyzing the concepts on the dynamic capabilities' approach, it is possible to see that some authors state that dynamic capability is a process (Galunic & Eisenhardt, 2001), while others emphasize dynamic capability is a skill (Teece, Pisano, & Shuen, 1997; Andreeva & Chaika, 2006), and others say that dynamic capability is a qualification (Helfat et al., 2007; Mckelvie & Davidson, 2009). This way, dynamic capabilities can be the processes or the capabilities to integrate, combine, build, reconfigure and transform the organization's resources and routines in order to create changes and obtain a competitive advantage.

Process means a set of activities that are logically interconnected and which use the organization's resources in order to support goals and generate results. That is, process means a specific organization of activities in time and space, with defined inputs and outputs, or, in other words, an action structure (Harrington, 1993).

According to Javidan (1998), skills and capabilities can be used as synonyms. Capability is the organization's ability to explore its resources and, according to Teece, Pisano and Shuen (1997), it involves the use and the adaptation of resources based on the accumulated organizational or collective experience to reach the company's objectives, and supply it with a competitive advantage. From these concepts, it can be understood that there is a subtle difference between skill and capability. Thus, the company must have skills to employ the capability to use and adapt resources. This way, skills can be understood as practical know-how. Therefore, what is done in practice means a capability that is mobilized by skills.

In short, and based on the concepts of the dynamic capabilities presented, the following words are especially emphasized: (a) environmental changes; (b) processes, skills, capabilities, resources, routines and assets; (c) integration capability, combination, construction, reconfiguration, modification and transformation of resources; (d) path dependency and status; and (e) competitive advantage. The combination of these words presented by the authors becomes the foundation of the dynamic capabilities' approach concept (Froehlich, 2014).

### 3.1 Dynamic Capabilities' Classifications

This research concerns the dynamic capabilities suggested by Teece (2007) in the article entitled "Explicating dynamic capabilities: the nature and micro-foundations of enterprise performance". In this article, the author presented a framework with the objective to incorporate the approaches of strategy and innovation in order to create a "model which highlights the management of critical resources to sustain the company's evolutionary ability" (2007, p. 1322).

The framework by Teece (2007) presents three dynamic capabilities, and each one has micro-foundations which enable their operationalization. These dynamic capabilities are: a) the ability to identify the environmental context (sensing); b) the ability to seize/incorporate opportunities (seizing); and c) the ability to manage threats and transformations (reconfiguring). The dynamic capabilities and their micro-foundation are described below.

**a) Ability to identify the environmental context (sensing):** Companies must create activities with the objective to know, interact with and evaluate information about the expectations from clients, science and technology production centers, suppliers, competitors and the company's internal environment, such as R&D and other areas in order to benefit the creation and the interpretation of new opportunities. For such, four micro-foundations are necessary: processes to lead internal works of research and development; processes turned to partnerships with suppliers in order to complement the organization's innovations; processes to explore exogenous scientific and technological developments; and processes to identify the target market's sectors, clients' needs and the generation of innovations that might interest the clients (Teece, 2007).

**b) Ability to seize/incorporate opportunities (seizing):** This capability is related to the direction of opportunities for the development of new products, processes, services and business models. It is based on four micro-foundations:

- **Clients' solutions and the business model:** It involves aspects related to the business model, such as the target client's selection, client's value delivery, and mechanisms to capture value; selection of technologies and product architecture which must be directed to the clients' needs service (Teece, 2007).

- **Selection of organizational borders:** It aims at the creation of capabilities in order to manage the innovation process by defining the activities' scope of coverage and the organization borders. It includes the definition of norms and limits which must be established in order to make sure that the innovation benefits the developer instead of the imitators (Teece, 2007).

- **Routines for selecting decision-taking protocols:** To Teece (2007), the existence of dynamic capabilities is linked to the decision on how to allocate the organization's resources. The author defends the need to have a balance in the organization's portfolio of investments coordinated by decision-taking protocols, which properly select the investments to be made, acknowledging tipping points and complementarities in order to avoid decision mistakes.

- **Routines for building up loyalty and compromise:** Employees' compromise can increase the company's performance. Because of this, the organization must consider means for building up loyalty and compromise, which must be aligned with innovation culture (Teece, 2007).

**c) Ability to manage threats and transformations (reconfiguring):** It concerns the activities that are needed to keep innovation capability overtime and to deviate from unfavorable paths as well. This capability is composed of three micro-foundations which help to sustain the company's continuity upon environmental change: decentralization and decomposition; co-specialization, and knowledge administration and management (Teece, 2007).

- **Decentralization and decomposition:** It emphasizes the decisions' decentralization needs in order to optimize the capability of response in relation to meeting the clients' demands, and to investigate the technologies which might be acquired (Teece, 2007).

- **Co-specialization:** It deals with the set of assets, seen as private, which create value and are not easily identified by competitors. The manager's ability to identify and use this combination should be emphasized (Teece, 2007).

- **Knowledge administration and management:** Administration must concern the development of external and internal knowledge integration processes and learning. The creation of partnerships and joint ventures must be considered in the development of procedures of technology transfer management and intellectual property (Teece, 2007).

In short, a company's capability to manage competition threats and to reconfigure depends on its investment activity, which, in turn, depends on its ability to identify an opportunity and seize it by including it in its routines. This dynamic capabilities' aspect shows that the probability of reaching positive results depends on issues and their solutions (Teece, 2007).

According to Teece (2007), sensing, seizing and reconfiguring are needed in order to align the organizational strategies with innovation. Therefore, the study points out the first research's assumption **(P1): The identification of the dynamic capabilities suggested by Teece (2007) helps to explain the development of innovation capability.**

Teece, Pisano and Shuen (1997) present three elements that are necessary for the dynamic capabilities' development: path, status and managerial and organizational processes. These elements were pointed out by Tidd, Bessant and Pavitt (2008) as the innovation capability's strategic dimensions.

**a) Path:** The actual routines of an organization affect its future behavior. In this sense, the concept of path dependency means that the company's previous investments and its routine set limit its future options. According to Teece, Pisano and Shuen (1997), this happens because learning takes place around previous activities through a process of trial, feedback and evaluation. Therefore, a company is the result of its history and previous decisions.

**b) Status:** It defines the business axis where the company operates and is characterized by its products and services by defining its external relationships with both clients and suppliers at the same time (Teece et al., 1997). The strategic position is determined not only by learning and by the consistency in its internal and external processes and stimuli, but also by its specific goods.

**c) Managerial and organizational processes:** They refer to the way the activities are developed in the company, its routines, standards, practices and learning. This function concerns the identification and the solution of coordination problems in the different activities carried out by the company.

To Teece, Pisano and Shuen (1997), the past has an impact on the organization's current and future performance, defining its status. Therefore, it is important to understand the trajectory, since the company depends on its journey. From the development of such comprehension, the company can design processes and structures for innovation and, at the same time, get free from dysfunctional processes and structures previously defined, thus disrupting the above mentioned path dependency and creating new paths, new positions and, consequently, new processes. So, it demands the creation, the integration and the commercialization of a continuous flow of innovation that is compatible with the clients' needs and technological opportunities (Teece, 2007).

Therefore, it can be stated that innovation capability can be developed through dynamic capabilities that help its development and give the necessary support. This leads to the second research's assumption **(P2): Innovation capability can be understood as a dynamic capability through the elements' analysis – path, status, managerial and organizational processes.**

## 4 METHODOLOGY

This research adopts the three dynamic capabilities: a) the ability to identify the environmental context (sensing); b) the ability to seize/incorporate opportunities (seizing); and c) the ability to manage threats and transformations (reconfiguring), and their micro-foundations as necessary means to help with the development of the organization's innovation capability. In order to analyze how these dynamic capabilities, which support innovation capability, are developed, the research adopted these three elements (path, status, and managerial and organizational processes), suggested by Teece, Pisano and Shuen (1997).

For this research, a qualitative, descriptive case study was carried out in a chemical sector company, established in 1984, whose headquarters are located in Southern Brazil. The company has branches all over the country and some branches abroad (Latin America and the Caribbean), and it produces several types of stickers for markets such as shoe, furniture, automobile, textile, etc.

The criteria used for choosing this company were: a) market recognition due to its innovation capability; b) innovation must be the organization's strategy; c) innovation must be part of the company's mission, vision and organizational values.

For data collection, 10 semi-structured in-depth interviews were carried out with managers appointed by the company. All the interviews were recorded with the interviewees' due consent and, then, transcribed so that they could be analyzed. For data analysis, and in order to maintain the interviewees' identity confidential, they were named Interviewee 1 (I1), Interviewee 2 (I2) and so on, randomly.

The research was based on primary and secondary data. The primary data were obtained through semi-structured interviews. The secondary data were obtained through files made available by the company.

The collected data were analyzed through the qualitative content analysis. Based on the theoretical referential, the following categories were created: (1) Dynamic capabilities; (2) Elements of dynamic capabilities. The first category, "dynamic capabilities", analyzes the three capabilities, named sensing, seizing and reconfiguring, and each of their micro-foundations, in order to check how they help the development of innovation capability. The second category, "elements of dynamic capabilities", analyzes the managerial and organizational processes developed by the company and the view adopted to develop innovation capacity along its path.

Besides the procedures presented, and in order to validate the study, the N-Vivo software, version 10, was used as a support for content analysis, aiming at the qualitative data triangulation surveyed.

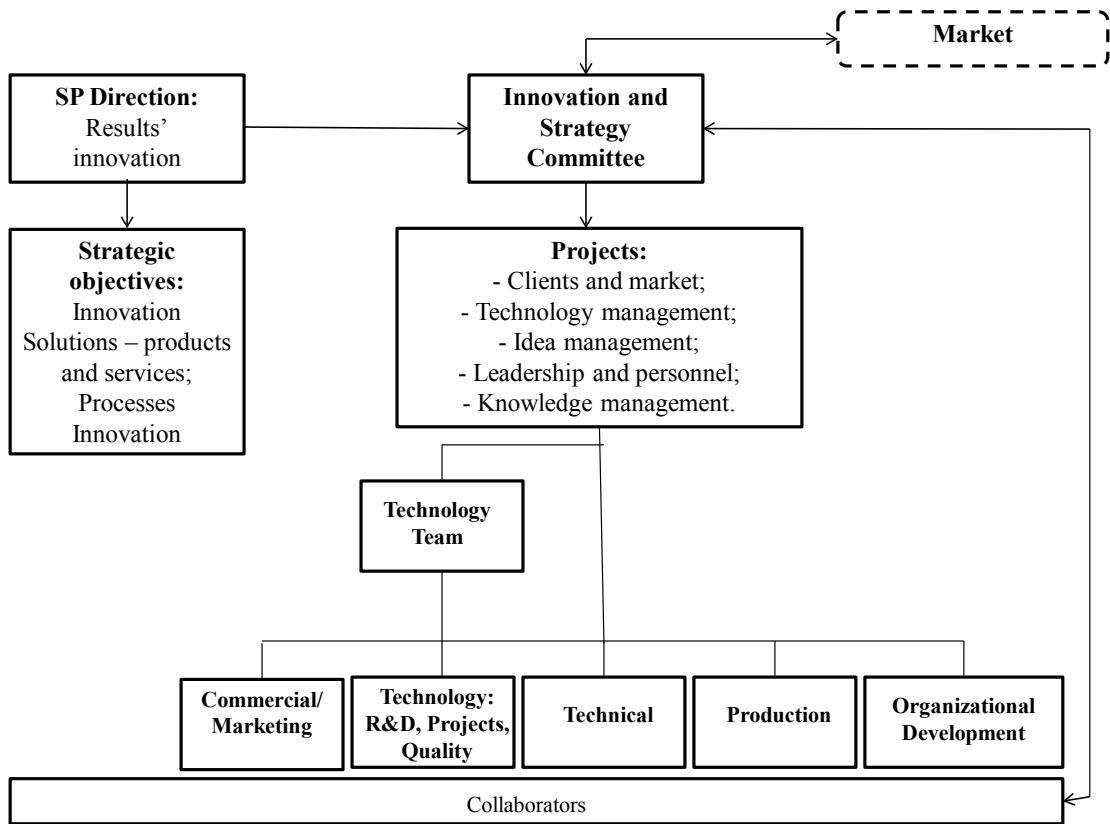
## 5 RESULTS' ANALYSIS

The first dynamic capability is called the **ability to identify the environmental context (sensing)**. Concerning this capability, it was possible to see that the company has observed and analyzed what multinationals develop on a product, process and service level since the 1970's. Then, they identify or create requirements for their clients. Over the years, the opportunities' identification process became formal and, according to Interviewee 4, *"the more involved the stakeholders are, the higher the chances to identify new opportunities"*.

The managerial and organizational processes presented by the case studied, and which relate to the capability to identify the environmental context (sensing), are presented below.

**a) Strategy and innovation committee:** it aims at planning and managing innovation

strategies. It is composed of shareholders, counselors and chief officers who are experts in the topic, and was implemented in 2007. The committee's role, presented in Figure 1, is "to innovate and systematize innovation in order to comprehend and foresee market changes and clients' expectations" (I9).



**Figure 1. Strategy and innovation committee's role.**

Source: Elaborated by the authors.

Figure 1 shows that, in order to follow the guideline and the innovation strategy objectives, the committee must identify and read the market signs, besides capturing the collaborators' ideas that come from any area of the company and from trend researches in a systematized way. The signs and ideas selected are arranged in five dimensions for the development of projects: clients and market, technology management, idea, leadership and personnel management, and knowledge management. Upon such arrangement, the committee commissions the demands to the areas that are capable of making the project come to be.

The strategy and innovation committee is the result of a practice created in order to follow the innovation strategic guideline for the results. The committee meets five times every semester to discuss issues on innovation, and commissions the demands internally. According to Interviewee 2, "the committee's idea came up to align the different fronts of innovation with organizational strategies".

Therefore, the organization's innovation capability starts from the strategic guideline aligned with the strategy and innovation committee, which, along with the company sectors, identifies market opportunities and captures and evaluates ideas from different external and internal



sources. These ideas are sent to the projects' design area according to the categories defined, and are commissioned to associated areas for the generation of innovations. This way, according to Interviewee 3, innovation *"pervades every area and is based on R&D and on other areas as well, such as marketing, commercial, technical, production, organizational development, etc."*.

This act of creation of the strategy and innovation committee shows the importance of innovation for the organization deals, and enables the identification of the environmental context in order to know, interact with and evaluate the information on the external environmental expectations.

**b) Technology team:** it is about a multidisciplinary group with representatives from several areas of the organization. The objective of this team is to capture information and knowledge from different areas that can add contributions to the innovation processes through the analysis of external and internal scenarios, trend researches and technical product researches. The team holds quarterly meetings that are organized according to projects' flows. According to Interviewee 2, *"the technology team is a strategic branch of the strategy and innovation committee"*.

The creation of the strategy committee and the technology team, composed of managerial and organizational processes, favor the environmental context's identification capability. From the identification of these actions in the empirical issue, it was possible to see that the micro-foundations by Teece (2007) are about the processes' analysis to conduct internal works of research and development (R&D). These actions, developed by the company, show there is a need of **processes to lead innovations on a strategic level**. In other words, it was possible to identify a process that was previous to the one suggested by Teece (2007).

This research suggests the inclusion of **processes to lead innovations on a strategic level** as a micro-foundation. The empirical data analysis shows that, in this company, innovation doesn't take place in R&D only. That explains the need to include this new category into the sensing capability. According to Interviewee 1, *"innovation is not promoted only by the R&D area; innovation doesn't belong to one area only, it pervades the company's areas"*.

After presenting the processes created by the company, and which are related to the suggestion of a new micro-foundation, **"processes to lead innovations on a strategic level"**, one ponders on the first micro-foundation pointed out by Teece (2007), which deals with the **processes to conduct internal works of research and development**.

Concerning the processes to lead internal works of R&D, it was possible to identify the use of methodologies for the development of innovation, such as the funnel model, by Clark and Wheelwright (1993). In order to coordinate innovation projects, there is the use of the Project Management Institute (PMI) methodology. The R&D area uses a piece of software that is customized by SAP for the management of R&D, and makes the R&D Intranet available for following up on projects for the other areas in the company. The R&D Intranet shows the projects' flow and several areas can follow up on it with the use of the R&D Intranet, such as commercial, marketing and technical department areas.

The second micro-foundation suggested by Teece (2007) addresses the **processes for partnerships with suppliers in order to complement the organization's innovations**. It was possible to see that the company holds the strategic direction "growth with partnerships", whose strategic objective is the "development of partnerships". In order to follow this strategic planning's direction, it is constantly searching for partnerships for the development of new products, and they can be done with suppliers, clients, universities, research centers, or other companies in order to complement the innovations. *"The company has an index of growth via partnerships. Therefore, the search for partnerships is part of the organizational routine" (16)*.

This way, the process suggested by Teece (2007) can be rewritten as follows: **identification processes and the creation of partnerships to generate or complement the organization's**

**innovations.** The empiric case identified that the search for partnerships do not happen only to complement innovations, but to introduce new products into the market. It also identified that it doesn't happen with the suppliers only.

The **identification processes and the creation of partnerships in order to generate or complement the organization's innovations** are coordinated by two areas: technological and planning, and new businesses. The technological area searches for technological partnerships which deal with technological licenses. These partnerships can become joint ventures. When this happens, they are coordinated by the planning and new businesses area. These areas developed organizational processes to manage these activities.

According to Kunst (2006), the company is known for being a reference in processes related to international partnerships with leading companies in their markets. These partnerships enable their clients with global patterns of productivity and competitiveness, relying on cutting-edge technology. Concerning the joint ventures, the company tries to make its transaction in a way it mostly manages the partnership, for, by doing so, it gets a higher control over all the processes.

The third micro-foundation reflects on the **processes to explore exogenous scientific and technological developments.** The company has partnerships with research centers and national and international universities. *"The company searches for centers of excellence in a specific area which can contribute to the development of a product's idea, and the project coordination is shared and coordinated by the university and by the technological area"* (I1).

Besides the partnerships with research centers and universities, there is the search for information, which can result in new developments in fairs that display the latest generation of innovations and technologies in their operation field. In addition, the commercial, technical and marketing areas also take part in the fair, and meetings to discuss the ideas obtained are held during the follow up visits.

The fourth and last micro-foundation of the ability to identify the environmental context (sensing) encompasses the **processes to identify target market sectors, clients' needs and the generation of innovations which interest the clients.** The company has an intelligence team which carries out studies, trend researches, and follows up on their competitors' releases, along with the technological area for the identification of new needs that can generate new products, services and markets of operation.

The micro-foundations of this first dynamic capability can be reorganized as follows: a) processes to lead innovations on a strategic level; b) processes to lead internal works of research and development; c) identification processes and the creation of partnerships to generate or complement the organization's innovations; d) processes to explore exogenous scientific and technological developments; e) processes to identify target market sectors, clients' needs and the generation of innovations which might interest the clients.

Subsequently, there is the reflection on the second dynamic capability suggested by Teece (2007), named the **ability to seize/incorporate opportunities (seizing).** It was possible to see that the organizational structure was perfected along the path in order to favor the innovations of products, services and processes. For such, new areas were created to manage the processes, such as the new business planning area (the areas of R&D and projects were incorporated into the technological area), and the strategy and innovation committee and the technological team, presented in the previous capability. Moreover, internal programs to develop the innovation culture and to involve the employees were created. This way, it can be stated that the creation of processes in order to help the environmental context's identification demanded the creation of new areas or resulted in improvements in the existing areas.

This capability's first micro-foundation deals with **clients' solutions and business model**. It should be mentioned that the company's business model is composed of a set of activities that are inter-related in order to create value to the client. It can be stated that the value generation from the business model happens through the managerial and organizational processes of innovation in products, services and systematized processes, along with the creation of partnerships with clients, suppliers, multinational and national companies, which can contribute to the improvement of current products or to the development of new ones.

The second micro-foundation deals with **the selection of international borders**, which notes that the ability to go into partnerships with clients, suppliers, companies, research centers and universities is of fundamental importance to capture and absorb the pieces of knowledge that enable the learnings of external technologies in order to internally develop them in the organization.

The third micro-foundation refers to **the routines for selecting decision-taking protocols**. The developed routines were identified through conferences for a) the evaluation of the manageability of new products and services with the participation of the administration and the technology, planning and new businesses, marketing, commercial, technical and production areas; b) formal meetings conducted by the strategy and innovation committee; c) meetings for the evaluation of the funnel model steps of innovation conducted by the technology area.

The last micro-foundation of the capability to seize/incorporate opportunities (seizing) deals with the development of **routines for building up employees' loyalty and compromise**. For such, the following actions/activities were identified: a welcome event; internal campaigns; management and human development actions; the creation of work teams; and the idea program. The disclosure of the social balance since 2004 can also be mentioned.

**a) Welcome event:** It concerns the first event of the year, done in the month of January for 100% of the employees. It aims at directing and announcing strategic intentions, and presenting relevant information to the company, such as the results achieved in the previous year and the new projects for the current year.

**b) Internal campaigns to reinforce the DNA items (innovation, internationalization and sustainability):** They are coordinated by the organizational development area. Newsletters, handbooks, journals, and folders are developed for a continuous information update.

**c) Personnel management and development:** The organizational development area conducts and manages several human development actions and activities which contribute to building up employees' loyalty and compromise.

**d) Creation of work teams:** It contributes to building up compromise and is related to the promotion of innovation in processes. It aims at promoting the employees' professional improvement through their participation in problem solution, and identification of improvements and opportunities.

**e) Idea program:** The program, which started in 2004, aims at *"being a communication channel which provides the employees with the suggestion of ideas for the improvement of processes, products and sustainability, thus contributing to reaching the results"* (14).

The third and last capability reflects on **the management of threats and transformations (reconfiguring)**. This capability's first micro-foundation addresses **decentralization and decomposition**. Concerning this micro-foundation, and before the creation of the strategy committee and the technology team, the decisions were taken by the presidency. The family management professionalization, along with the creation of the shareholders and administration councils, allowed the establishment of strategy committees, which take decisions according to their expertise with the objective to optimize the flow of internal activities.

The second micro-foundation addresses **co-specialization**, which can emphasize the capability of technological assets and the partnerships that mobilize and generate most of the products' innovations. In other words, the employees are private assets who mobilized the resources and the capabilities needed for the innovation capability management.

The last micro-foundation talks about **knowledge administration and management**, which highlight the company partnerships with clients, suppliers, multinational companies, and partnerships with research centers and universities in order to acquire pieces of knowledge and learnings to perfect and enable the organization's innovation capability.

However, concerning knowledge management, Interviewee 7 reinforces that *"some pieces of information are still departmentalized and could have a better collaboration concerning the sharing of information. This could improve innovation management"*.

This way, the company is learning how to improve this flow and this is one of the ways found through the Integrated Management System. This operation *"allowed the information flow's reconfiguration and sharing in a virtual environment, it is still undergoing some adjustments in order to achieve the desired results, and it can be accessed by all areas"* (18).

Eventually, there was the suggestion to individually present the dynamic capabilities suggested by Teece (2007) and their respective micro-foundations. It was possible to see that these capabilities helped the company's innovation capability development through the composition of managerial and organizational processes. It can be stated that the company established a system to innovate and follow the strategic direction through the creation of organizational processes, which were presented along the dynamic capabilities' analysis and through their micro-foundations as well. In this sense, Tidd, Bessant and Pavitt (2008) point out that it is possible to build a structured environment, whose process can operate as something repetitive and which can be built around routines to be learned and refined overtime.

It is worth mentioning that some complementarities among these capabilities were identified. Most of the actions identified in the first capability (sensing) are repeated in the remaining ones. It can be stated that a certain action or activity identified in the first capability is the foundation for the development of the second capability, and so on. In this sense, redundancy is an important analysis element, for it reflects the effort to highlight what really matters, and the conjunction of actions.

The elements' status and path must be emphasized (Teece et al., 1997). Concerning the element **status**, it can be stated that the company places itself as an innovative one, its mission is about *"delivering innovative solutions to the value chains where they operate, which generate higher paybacks for all the interested parties"*. Its status can be identified in some of the company's values, such as a compromise to exceed the client's expectations, an ethical behavior in every relationship, and leadership through the differentiated technologies.

To the company, innovation is about identifying and presenting quick solutions to the clients' demands and needs, which oftentimes go unnoticed by them. Moreover, innovation capability is seen as something which must be encouraged in all the company's employees (MENO-NI, 2008). In order to follow the objective to be an innovative company, it invested in technologies, R&D, partnerships and business variation to expand its operation and growth in the market along with personnel development.

Concerning the element **path**, it was possible to see that, to the company, innovation is a strategic direction to be different in the market, generate growth and business perpetuation. This way, innovation has been part of the company's path since its founder's times, who invested in studies on chemistry with the objective to make researches and bring improvements to the stickers. *"Xavier used to study chemistry on Sundays with a private teacher"* (Boelter, 2003, p. 15), and this investment action in researches is still practiced in the organization nowadays.

In 1972, the need of a technological update was identified on an international mission that hired specialists. From the 1980's, international technological partnerships were searched for in order for the organization to acquire knowledge and release new products into the market. According to Tidd, Bessant and Pavitt (2008), almost every innovation needs some kind of cooperative arrangement for its development and commercialization. In the late 1990's, this action became the strategic direction "growth with partnerships" to contribute with the direction "results' innovation". This way, the search for partnerships is a practice incorporated into the company's routines and processes, which contributes to the introduction and development of innovations.

In short, the path, the status and the managerial and organizational processes encourage the creation of a culture turned to innovation through the development of the dynamic capabilities identified, which supports innovation capability.

## 6 FINAL CONSIDERATIONS

Three dynamic capabilities were identified in the bibliographical review and they can help the development of innovation capability. They were suggested by Teece (2007) and thus named: sensing, seizing and reconfiguring. This research tried to check that addressing the dynamic capabilities is a fundamental axis for the development of innovation capability and reinforces it as an organizational strategy. This is because this concept is turned to the study of strategies and is associated to the context of changes and innovation. It is also characterized by the continuous mobilization of resources and capabilities to follow business strategies according to the environment's performance. Due to these characteristics, the approach on dynamic capabilities enables a different look upon innovation capability by highlighting its potential to generate opportunities of business renewal.

Based on the case study, it is possible to highlight that the dynamic capabilities and their micro-foundations helped the development of innovation capability through the establishment of managerial and organizational processes. The company imposed a system to innovate and follow the strategic direction. This way, assumption 1 has been confirmed, that is, the dynamic capabilities suggested by Teece (2007) help the development of innovation capabilities. Moreover, the path, the status and the managerial and organizational processes encourage the creation of a culture turned to innovation through the development of the dynamic capabilities identified, baking up innovation capability.

Upon relating the dynamic capabilities, such as sensing, seizing and reconfiguring, with the elements that develop them (path, status, and managerial and organizational processes), it is possible to see that the path influences the status, which generates managerial and organizational processes that must be coordinated and incorporated, and are learned and reconfigured according to the development of the capabilities sensing, seizing and reconfiguring. Then, it was possible to see the competitive advantage in the current path or the need/possibility to build new paths which will determine new statuses and processes for the search of a competitive advantage.

As a conclusion, the three dynamic capabilities develop and consolidate innovation as the organization's innovation capability, since there is a system between organizational strategies and innovation practices in every organization, pervading between areas and employees.

The second assumption has not been confirmed. More specifically, innovation capability can't be understood as a dynamic capability. The study points out three dynamic capabilities, composed of micro-foundations, and which help the development of innovation capability. These three dynamic capabilities are developed through elements – path, status and managerial and organizational processes – which help consolidate innovation capability as an organizational strategy.

Moreover, the dynamic capabilities are composed of abilities, processes and routines which allow the organization to manage and mobilize its resources and assets, according to the market's needs and performance. Thus, the dynamic capabilities that are present in the internal environment promote the organizational development and support innovation capability.

By analyzing the data compared to the theoretical foundation, the following theoretical contributions to the study can be highlighted:

- The inclusion of the “processes to lead innovations on a strategic level” as a micro-foundation of the sensing capability, that is, a previous process to “processes to lead internal works of research and development” suggested by Teece (2007).

The empirical data analysis showed that, in the company, innovation doesn't take place in R&D only. The creation of a strategy and innovation committee, and the technology team formed by managerial and organizational processes, favor the environment's context identification capability. The developed actions show that processes are needed to lead the innovations on a strategic level.

- The need to adjust the second micro-foundation of the seizing capability, named “processes for partnerships with suppliers in order to complement the organization's innovations”, was identified. This process should be reviewed by considering its relevance to generate and not only complement the organization's innovations.

The case study showed that the search for partnerships doesn't happen only to complement the innovations, but also to introduce new products into the market. Actually, the partnerships don't happen with the suppliers only. The company has a strategic direction, “growth with partnerships”, whose strategic objective is the “development of partnerships”. In order to follow this direction of strategic planning, the company is constantly searching for partnerships for the development of new products, which can be with suppliers, clients, universities, research centers or national and international companies, to generate or complement innovations.

As a limitation, the present study can't be generalized, for it concerns a single-case study based on the perception from the employees of the case investigated. Moreover, the research focused on analyzing the internal environment and didn't include the remaining stakeholders, such as clients and suppliers, who could contribute to expanding the study's results.

For new studies, here is a suggestion for the analyses of the dynamic capabilities' contributions in service organizations in order to check how the micro-foundations can help the innovation capability development.

## REFERENCES

Andreeva, T., & Chaika, V. (2006). *Dynamic capabilities: what they need to be dynamic?* St.

Petersburg State University: São Petersburgo.

Arend, R. J., & Bromiley, P. (2009). Assessing the dynamic capabilities view: spare change, everyone? *Strategic Organization*, 7(1), 75-90.

Ambrosini, V., Bowman, C., & Collier, N. (2009). Dynamic capabilities: an exploration of how firms renew their resource base. *British Journal of Management*, 20, 9-24.

- Bell, M. (2009). *Innovation capabilities and directions of development*. Brighton: SETPS Centre.
- Boelter, K. (2003). *55 anos: um sonho que venceu o tempo*. Porto Alegre: Diartes Projetos Gráficos.
- Clark, K. B., & Wheelwright, S. C. (1993). *Managing new product and process development: text and cases*. New York: Free Press.
- Dodgson, M., Gann, D., & Salter, A. (2008). *The management of technological innovation: strategy and practice*. 2 ed. New York: Oxford.
- Froehlich, C. (2014). O desenvolvimento da capacidade de inovação para alcançar a sustentabilidade empresarial. *Tese (doutorado em Administração)* - Universidade do Vale do Rio dos Sinos – Unisinos. Programa de Pós-Graduação em Administração, São Leopoldo, RS.
- Galunic, D. C., & Eisenhardt, K. M. (2001). Architectural innovation and modular corporate forms. *Academy of Management Journal*, 44, 1229-1249.
- Güttel, W. H., Konlechner, S. W., & Müller, B. (2011). The boundaries of rule-breaking: dynamic capabilities and organizational defense. In: *27 EGOS Colloquium*, July 7-9.
- Harrington, H. J. (1993). *Aperfeiçoando processos empresariais*. São Paulo: Makron Books.
- Helfat, C. et al. (2007). *Dynamic capabilities: understanding strategic change in organizations*. Oxford: Blackwell Publishing.
- Helfat, C. E., & Peteraf, M. A. (2011). Understanding dynamic capabilities: progress along a developmental path. *Strategic Organization*, 7(1), 91-102.
- Javidan, M. (1998). Core competence: what does it mean in practice? *Long Range Planning*, 31(1), 60-71.
- Kindström, D., Kowalkowski, C., & Sandberg, E. (2012). Enabling service innovation: a dynamic capabilities approach. *Journal of Business Research*, 66(8).
- Kunst, E. (2006). *Balanço Social*. Campo Bom-RS.
- Lawson, B., & Samson, D. (2001). Developing innovation capability in organizations: a dynamic capabilities approach. *International Journal of Innovation Management*, 5(3), 377-400.
- Mckelvie, A., & Davidson, P. (2009). From resource base to dynamic capabilities: an investigation of new firms. *British Journal of Management*, 20, 63-80.
- Menoni, J. (2008). *60 anos: soluções inovadoras que unem*. Porto Alegre: Algo Mais Editora.
- Neely, A. D., & Hii, H. H. (1999). *The innovative capacity of firms*. Report commissioned by the Government Office for the East of England.
- Pasian, B., Sankaran, S., & Boydell, S. (2012). Project management maturity: a critical analysis of existing and emergent factors. *International Journal of Managing Projects in Business*, 5(1), 146-157.
- Pekka, O., & Thomas, R. (2006). Innovation as a source of competitive advantage in wood products manufacturing industries. *Proceedings of the 1st COST Action E51 Joint MC and WG Meeting*, 67-87.
- Tidd, J., Bessant, J., & Pavitt, K. (2008). *Gestão da Inovação*. 3ª ed. Porto Alegre: Bookman.
- Teece, D., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.

Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management J.*, 28(13), 1319–1350.

Teece, D. J., & Leih, S. (2016). Uncertainty, innovation, and dynamic capabilities: an introduction. *California Management Review*, 58(4), 5-12.