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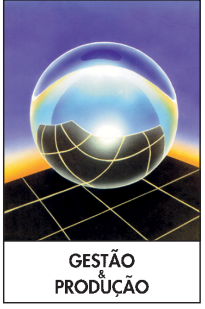

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The decision to innovate and the movement of dynamic capabilities

A decisão de inovar e o movimento das capacidades dinâmicas

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Abstract: This article presents a proposal for the operationalization of the concept of dynamic capabilities. It created a model of analysis based on the literature review. The study was carried out through the analyses of multiple cases, which retrieves historical data. Also, it was triggered by a strategic decision focused on innovation. The reconfigurations that were necessary for the ordinary capabilities of the studied companies were observed. Then, their new configuration was shown, considering the movements necessary to implement the strategic plan that led them to innovate. The study contributes to the literature by presenting the operation of dynamic capabilities. Moreover, there is the possibility of applying the expertise about ordinary and dynamic capabilities in the strategic decisions of companies as a managerial contribution.

Keywords: Dynamic capabilities; Ordinary capabilities; Reconfiguration; Innovation.

Resumo: *O presente artigo apresenta uma proposta para operacionalização do conceito de capacidades dinâmicas, criando um modelo de análise a partir da revisão teórica realizada. A pesquisa é feita por meio de estudo de múltiplos casos, resgatando dados históricos, e começa de uma decisão estratégica voltada à inovação. Em seguida, observam-se as reconfigurações que foram necessárias nas capacidades ordinárias das empresas, e apresenta-se a sua nova configuração, considerando os movimentos que foram necessários para implantar o plano estratégico que as levou a inovar. O estudo contribui com a literatura por apresentar a operacionalização das capacidades dinâmicas, e tem como contribuição gerencial a possibilidade de aplicação do conhecimento sobre capacidades ordinárias e dinâmicas nas decisões estratégicas das empresas.*

Palavras-chave: *Capacidades dinâmicas; Capacidades ordinárias; Reconfiguração; Inovação.*

1 Introduction

Studies involving dynamic capabilities seek to understand how companies can sustain competitive advantages in environments of constant change. Teece et al. (1997, p. 509) describe dynamic capabilities as a relevant approach in "[...] a Schumpeterian world of innovation-based competition". The authors define dynamic capabilities as the ability to integrate, construct and reconfigure competencies to meet rapidly changing environments. Moreover, the authors emphasize that the competitive advantage of companies lies in their organizational and managerial processes, that is, the way things are done in the company (Teece et al., 1997).

Concomitantly, Eisenhardt & Martin (2000) point out that references to dynamic capabilities are usually made using vague terms. Thus, they are criticized for not being operable. For Barcelos & Contador (2015) the perspective of dynamic capabilities is a constant target of confusions and criticisms related to the lack of consensus on the theoretical basis and the lack of empirical progress (Easterby-Smith et al., 2009; Schilke, 2014).

Several studies converge to support the assertion that companies need to develop a set of capabilities in order to be innovative. Yet, there is still no precise definition of what those capabilities would be or how

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to measure them. There are researchers who consider the existence of capabilities that have not yet been identified and described, which indicates a field for the deepening of researches that allows to broaden the understanding of the innovation of companies considering several possibilities (Christensen, 1995; Yam et al., 2011; Zawislak et al., 2013a, b).

In order to deal with the scenario of uncertainties and inaccuracies, this study creates a model for the qualitative empirical study of dynamic capabilities according to Teece's (2007) theoretical perspective, which defines the need for three moments to understand the dynamic capabilities: sense; seize and reconfigure. In the last moment (reconfiguration), the company would make moves to modify its tangible and intangible assets. The author only presents the moments without deepening or dealing with its operationalization. Thus, the proposal of this article, grounded on the evolutionary perspective of the economy of the organizations, is guided by the following research question: "How do the dynamic capabilities allow companies to reconfigure themselves internally?" In order to answer that question, this article aims to analyze how companies reconfigure their internal capabilities, developing a dynamic capability for innovation.

The proposal presented here makes a substantial contribution to the theory of dynamic capabilities by operating its concept in a way that allows the measurement of different internal capabilities of companies. The capabilities represent the tangible and intangible assets of companies. Additionally, the proposed reconfiguration model can be used by strategists and decision makers of companies, directing efforts to achieve concrete results from their different capabilities.

The FINEP (2003) on the basis of R&D investments, establishes four categories of enterprise in terms of technological intensity: high; medium-high; medium-low and low intensity. Researchers such as Furtado & Carvalho (2005) point out that the classification would not exactly apply to Brazil and to developing countries in general, given the differences in the patterns of technological efforts found among them and the developed countries. However, the OECD classification continues to be the basis for several studies on innovation in the world, allowing comparison among countries. This work studies companies classified as being of low technological intensity by both the OECD and Furtado & Carvalho (2005). In that way, the possibility of comparison is maintained without losing sight of the context of the national reality.

The choice to carry out the study in companies of low technological intensity is due to the expressive number of this type of industry in the Brazilian context, and also to the search of observing different types of innovation by different capabilities, not only the technological one. Out of a total of 98,420 industrial companies listed by IBGE in 2010, 54,035 (54.90%) were of low technological intensity (IPEA, 2011). The study of the combination of capabilities in low-tech sectors is at an early stage (Reichert et al., 2016). However, it is an object of interest in several countries - a study by Robertson et al. (2009) highlights the predominance of low-tech enterprises in most economies, which makes them central to social welfare.

The article is organized into four other parts besides this introduction. The second part presents a theoretical revision of the dynamic capabilities, the ordinary capabilities and the innovation capability, constructing a framework that allows operationalizing the concept of the dynamic capabilities in practical studies. The third part describes the study in methodological terms, followed, in part four, with the presentation of the cases studied. Finally, the article presents some considerations, as well as the limitations of the study and suggestions for future research.

2 Dynamic capabilities and innovation

For Amit & Schoemaker (1993) internal capabilities are the resource exploration skills used in combination with organizational processes to achieve a specific goal. They point out that the capabilities are developed in functional areas of companies, combined with physical, human and technological resources. Therefore, a capability is a potential ability of companies to coordinate and explore internal resources. Dynamic capabilities, however, are organizational and strategic routines through which companies can reconfigure their resource base. Hence, Innovation Capability is a dynamic capability that allows companies to sustain competitive advantages in changing environments (Teece et al., 1997).

In his article, Teece (2007) argued that to sustain a prominent position, companies constantly develop their dynamic capabilities and that for analytical purposes this process can be divided into three parts: i) perceive and shape opportunities and threats (sensing); ii) seize the opportunities (seizing); iii) increase, combine, protect and reconfigure its tangible and intangible assets when necessary. With that separation, the author answers the critics about the lack of operationalization of the concept. However, the three parts of the analysis proposed by Teece (2007) do not allow, in isolation, to measure the dynamic capabilities of companies in companies. This study aims to use specific categories to analyze what has changed in terms of tangible and intangible assets after the phases of perception and appropriation of opportunities that generated the internal reconfiguration of companies.

An understanding that has been consolidated with the advance of the dynamic capabilities approach is the centrality of managers and the entrepreneurial behavior in the generation of such capabilities. Researchers such as Teece (2007), Augier & Teece (2009) and Zahra et al. (2006) share the aforementioned view.

2.1 Dynamic capability and innovation

By linking the innovative capability of Chinese companies with their export performance, Guan & Ma (2003) classified innovativeness in seven dimensions: learning (which includes nine items); R&D (thirteen items); production (eight indexes); marketing (nine indexes); organizational (twelve indexes); resources (eight indicators) and strategic (twelve indicators).

In a survey of 213 Chinese companies, Yam et al. (2011) also identified seven capabilities to explain the companies' competitive success: R&D; allocation of resources; allocation of learning; allocation of manufacturing; allocation of the organization; and finally allocation of marketing and strategic planning. In the findings, R&D and resource allocation capabilities were highlighted as the most important ones in the sample. However, the authors recognize the need to better investigate the impacts of learning and organizational capabilities.

Some researchers have based their work on models to explain the capability innovation (Lawson & Samson, 2001; Terziovski, 2007; Zawislak et al., 2012, 2013a, b). The aforementioned studies are important because of the possibility of using the models to operationalize empirical research that broadens the understanding of how innovation is achieved by companies. Lawson & Samson (2001) explained the ability to innovate by investing in the *newstream*, that is, to create new products, markets, technologies and businesses. Terziovski (2007) emphasized the importance of developing processes and effective communication networks to support the capability innovation. Zawislak et al. (2012, 2013a, b) extended the analysis perspective by dismembering the innovative performance of companies in four capabilities, describing them, which contributes to the operationalization of empirical research in this field of study.

Zawislak et al. (2011, p. 5) describe the capability for innovation as

> […] the ability to absorb, adapt and transform a given technology into managerial, operational and transactional actions that lead the firm to achieve Schumpeterian profits.

According to Zawislak et al. (2012, 2013b), as discussed in Chart 1, operational, management and transaction capabilities involve routine aspects. The capability for technological development can be perceived with a dynamic capability for the aspect of "change" that

Chart 1. Definitions of capabilities and types of innovation.

Definition of Capability	Type of Innovation
Technological Development Capability Ability to interpret the state of the art, absorbing and eventually transforming a given technology to create or change its operating capability and any other capability in order to achieve higher levels of technical-economic efficiency.	**Technological Innovation** Type of innovation that encompasses the development of new design, material and product standards. In this typology, the development of machinery, equipment and components are included.
Operational Capability It is the ability to use a given productive capability in conducting daily routines that involve knowledge, technical systems and skills at a given time.	**Operational Innovation** This type of innovation includes new processes, improvements in existing processes, the introduction of new techniques, change of layouts. It allows the firm to produce with quality, efficiency and flexibility, and with the lowest possible cost
Management Capability It is the firm's ability to turn technology into a coherent operational and transactional arrangement.	**Management Innovation** This type of innovation includes the development of managerial skills that reduce internal friction between the different areas of the firm. It includes creating new management methods and business strategies, improving the decision-making process and internal coordination.
Transaction Capability Ability to reduce transaction costs. It involves bargaining power, logistics, delivery costs, outsourcing, that is, both customer and supplier transactions.	**Transaction Innovation** This type of innovation involves developing new ways to minimize transaction costs with customers and suppliers. It aims to create new business strategies, improve relationships with suppliers, boost knowledge about the market, etc.

Source: Adapted from Zawislak et al. (2013a).

is described in it. However, this study considers the perspective that this aspect is not enough to define a capability as dynamic (Winter, 2003), and Helfat & Winter (2011).

The model of Zawislak et al. (2012) observes aspects of the capabilities described in its application to business routines, which justifies classifying them as ordinary capabilities. Although there is a technology development routine, this is approached in the analysis carried out in this research and it allows the company to continue doing what it does with proficiency (Dosi et al., 2002) in order to have the ability to solve routine problems (Zahra et al., 2006). If a company needs the technological development capability to maintain or improve its innovative performance, technological development activities should be routines for that company.

The work of Zawislak et al. (2012, 2013a, b) can complement the work of Teece et al. (1997) and Teece (2007), insofar as it describes the capabilities that guide the innovation process and the consequent generation and/or expansion of competitive advantage. This study considers that the works of Teece et al. (1997) and Teece (2007) maintained the process of reconfiguration in a "black box" that could be opened when creating an empirical study model that considers the lenses of Zawislak et al. (2012, 2013a, b).

At the same time, the work of Teece (2007) allows establishing a starting point for the analysis of the development of the innovation capability as described by Zawislak et al. (2011, 2012, 2013a, b). Teece (2007) emphasizes the strategic dimension of management, which, in its process of observation and appropriation of opportunities makes the decisions that will make possible changes aimed at achieving higher profits (innovation). A starting point is needed to apply the construction of Zawislak et al. (2011, 2012, 2013a, b), and at the same time, researchers and managers need concrete definitions to operationalize the dynamic capabilities.

In this work, the framework of dynamic capabilities is observed (Teece, 2007) with the lenses of the model of Zawislak et al. (2012). The combination of the two works results in a study model and is specifically about the reconfiguration, in the sense of observing the possible actions of the development of capabilities that can occur whenever a company decides to implement a change in search of reaching and/or maintaining its competitive position. When a company realizes an opportunity (sense) and makes a strategic decision that focuses on innovation (seize), then the company will reconfigure its internal processes (reconfiguring). In order to identify the reconfiguration, a direction based on the model of Zawislak et al. (2012) is necessary insofar it describes the different areas of the company involved in the innovation process.

2.2 Reconfiguration in ordinary capabilities

The investigation of the present study starts from a moment before the changes that occur in the capabilities, which is the one of the strategic decision that seeks to increase or achieve competitive advantage through innovation. Moreover, the study identifies an event in which the company perceived and appropriated an opportunity, developing and reconfiguring its ordinary capabilities to maintain or expand its innovative *status*. Figure 1 shows the relationships between the capabilities, assuming that evolution and development can take place in the internal capabilities whenever a company makes a strategic decision oriented towards innovation.

The relationships in Figure 1 consider that the capabilities of firms must necessarily change over time so that they remain competitive and that in such a movement there is a permanent interpellation. Teece (2006) draws attention to the gap that remains in understanding the roles of strategy and organization in the innovation process. Also, he points to this theme as one of the most critical to business and the contemporary economy. In his efforts to understand the factors that influence profitability with innovations, Teece (2006) highlighted the complementarity of business assets. Therefore, the evolution of capabilities can be studied as an important piece of this profit-driven puzzle with innovations. The perspective of contributing to both the management theory of innovation and the practice of innovation management in companies was the motivation for the carry out of this study. Next section presents the method used to conduct it.

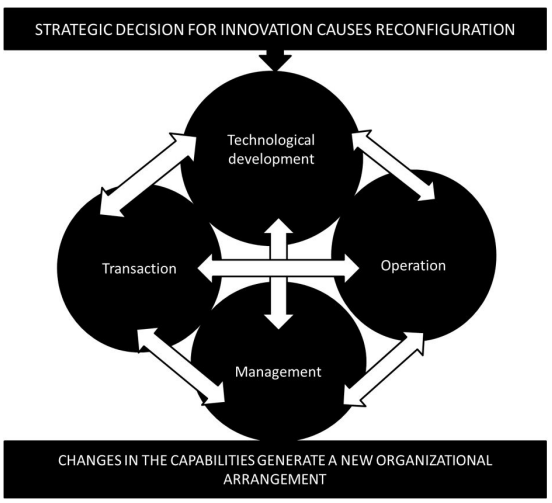

Figure 1. Reconfiguration and the different capabilities of the company.

3 Method

The study of changes in the ordinary capabilities of companies presupposes the retrieval of historical data. For that reason, the method of the case study was adopted for the analysis. In order to do so, we have used historical research techniques and the observation of the reality that is added as sources of evidence. Finally, yet importantly, we have used interviews with the people involved in the events (Yin, 2010). The fact that dynamic capabilities are developed over time is another reason for the choice for the case study as a method. It responds to the investigation of the phenomenon by rescuing the temporal perspective in documents and personal interviews. We have opted for an analysis of multiple cases, which makes it possible to compare the findings.

The companies for this study were chosen from industrial sectors of low technological intensity (furniture and clothing), for their expressive predominance in the Brazilian context. This choice is important since the study of the combination of capabilities in low-tech sectors is at an early stage (Reichert et al., 2016). It is also worth noting that these industrial sectors represent an object of interest in several countries. According to Robertson et al. (2009), there is a predominance of companies of low technological intensity in most global economies, which makes them central to social well-being.

A first criterion to select the cases was their time of activity (more than 20 years of existence). Zahra et al. (2006) argue that this is an important factor in the development of dynamic capabilities. According to them, the way of learning and the dynamics of change is diverse throughout the life of a company. Furthermore, companies of different sizes were chosen for this study. Teece (2012) understands that in both large and small companies there is a need for "entrepreneurial capitalism" to achieve superior financial results.

Data were collected in the second half of 2013, covering the collection of preliminary information available in electronic media, document analysis and in-depth interviews. We visited the companies for local observation. During the visits, interviews were conducted with those responsible for the different areas of the companies, as well as with the senior manager, who can present another view of the facts, allowing the triangulation of the data under analysis. The information about the interviewees is described in Chart 2. Public documents and company websites were visited before and after the interviews, which allowed the comparison between the information.

A script of open questions was used in the interviews. They aimed at the free expression of the experiences and perceptions of the interviewees. The scripts were grounded on the literature review and adapted to each case based on secondary data collected by electronic means before the visits. In that way, the questions were directed to the interviewees according to the specificity of each of the companies to confirm and validate the secondary data collected, in order to evaluate the company's innovative posture and its search for competitive advantage (sensing/seizing).

The analysis of the collected data was developed with the purpose of initially identifying the perception

Chart 2. Interviewees.

Case	Professional interviewed	Information
1 – Furniture industry	Director of the Design Center	Architect, furniture design specialist (Italy).
1 – Furniture industry	Production manager	15 years in the company. Incomplete higher education.
1 – Furniture industry	Administrative and Financial Director	Member of 3rd. generation of the owner family. Holds a degree in Administration
1 – furniture industry	Purchasing manager	13 years in the company; higher education complete.
1 – furniture industry	Responsible for retail sales	5 years in the company; higher education complete
2 – textile industry	Production and creative director	Member of the 2nd. generation of the owner family; holds a degree in Economics; a specialization course in creativity, products and fashion business; specific courses of fashion creation.
2 – textile industry	Administrative-commercial director	Member of the 2nd. generation of the owner family, he has worked for the company since 2003. Holds a degree in Administration; specialist in Marketing; holds a master's degree in Business Administration. Previous experience in the leather market and the international business market.

and appropriation (*sensing/seizing*) of opportunities by the companies. Then, to investigate what developments and reconfigurations occurred in their different capabilities and in what way this reflected in the innovation capability of each company, identifying the type of innovation resulting from the reconfiguration of capabilities.

We choose categories to identify the changes that occurred in the different capabilities of the companies. They are presented as follows

3.1 Categories

Categories were established to identify innovation and for each of the common capabilities analyzed (Chart 3).

Next section presents the cases of the companies studied.

4 The cases

In the first case, a furniture factory was studied. Its managers made the strategic decision to establish an own design center next to their factory park, with the intention of promoting innovation in their products. The company has a vocation for innovation in its history. However, this feature has been losing its intensity over time, and the creation of the design center has represented a resurgence in the search for innovation.

The second case describes a knitwear factory that made the strategic decision to create a new brand that would provide greater identity with their children's line products to expand their relationship with the market by intensifying their sales. The company already acted in the children's market and developed collections for third parties, which provided them with the learning to develop products. Despite being a family business, it was concerned with professionalization and it was under the second generation management when the opportunity for change was identified. See below for the presentation of the cases. They were analyzed separately and then compared.

4.1 The case of innovation in the furniture industry

The researched company, identified here with the fictitious name of Furniture, from the beginning of its activities served as an exporter in the retail market and in 2013 exported to more than 60 countries, having pioneered the export of Brazilian furniture in the mid-1970s. The company has been on the market for 36 years. It stands out for its culture focused on innovation, and by the closure of this study, it had required eighteen patents in Brazil.

It is a family business that has been attentive to market opportunities since its foundation. According to the company's administration, the decision to invest

Chart 3. Study Analysis Categories.

Category	Indexes	Theoretical Framework
Innovation	Increase in sales; increase in market share and an increase in profits.	Schumpeter (1942); OECD (2003).
Capability Technological	Acquisition, imitation, adaptation, modification and development of knowledge and technical systems for internal application in products and processes.	Lall (1992); Bell & Pavitt (1995).
Capability Operation	Quality control; flexibility in the production process; continuous improvement actions; stock management; just-in-time practice; pulled output.	Hayes & Pisano (1994); Chandler (1992).
Capability Management	Integration between company areas; establishment and monitoring of goals and objectives; the existence of formal rules and procedures; autonomy in decision making within hierarchical levels; development and management of human resources and investment policies.	Penrose (1959); Barnard (1996); Mintzberg (1973); Chandler (1977); Zawislak et al. (2012, 2013a, b).
Capability Transaction	Distribution; logistics; negotiations; contracts; relationship; Branding and Outsourcing.	Coase (1937); Williamson (1985); Argyres (1996); Argyres & Zenger (2011); Madhok (1996); Langlois & Foss (1999); Mayer & Salomon (2006); Zawislak et al. (2012, 2013a, b).

in design for innovation was taken so that it would leave a situation of competition for prices in the retail sector, starting to sell higher value-added products in the different markets in which it is acting. This decision was made in the early 2000s. In order to achieve that, the company partnered with a renowned Italian design center. Furniture inaugurated, in 2005, the first and by the closing of this research the only Design Center installed next to the factory plant among the companies of the furniture industry in Brazil. Chart 4 shows the changes that occurred with this process in each of the company's capabilities.

After analyzing the changes that occurred in each of Furniture's capabilities, the reconfiguration resulting from the creation of the Design Center was identified. Figure 2 shows the evolution of the dynamic capabilities development process at Furniture, as described by Teece (2007). At the end of the process, the company presented a better performance and expansion of its competitive advantage.

Teece et al. (1997), and Teece (2007) point out to the reconfiguration of internal capabilities. However, the authors do not describe what those capabilities would be. For that reason, and considering that the strategic decision selected for the study involves innovation, the analysis resulting from this research focused on the capabilities described in the model of Zawislak et al. (2012).

The analysis of the collected data showed that management was one of the areas that presented the least

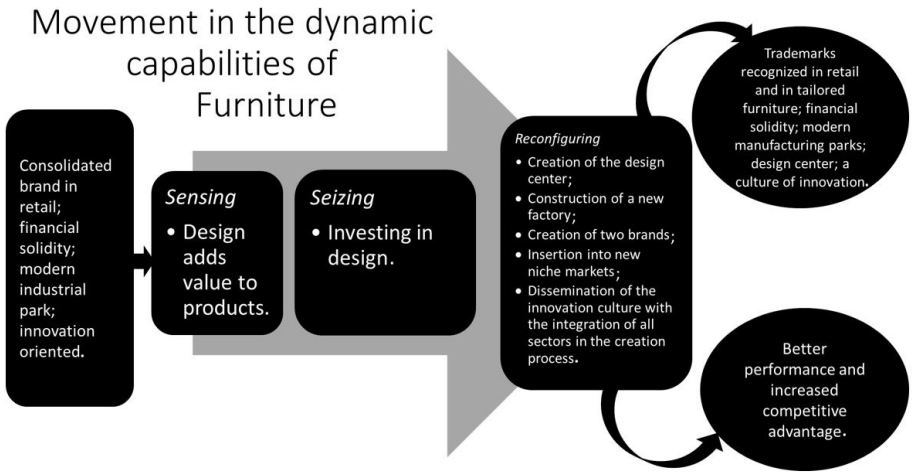

Figure 2. Dynamic Capabilities at Furniture.

Chart 4. Changes in the Capabilities of the Company Furniture.

Capability	Result
Technological development - although there was product development, there was no organization and integration for the process. It was sporadic and with rework	A high level of reconfiguration, predominantly due to the remarkable internal construction of knowledge (Lall, 1992; Bell & Pavitt, 1995) that was observed in Furniture after the creation of the Design Center. That required the development of the company's other capabilities, in particular, the ability to transact and operate.
Operation - There was a need to create a new factory structure.	A reconfiguration is needed mainly due to the increase in flexibility of production and also to better quality (Chandler, 1992; Hayes & Pisano, 1994).
Management - It has remained relatively stable, due to the culture of a family business and to the fact that the capability was already well developed before the study being conducted.	Advances in product development integration, and a modest change in the relative autonomy for decision making.
Transaction – A need for new relationship structure with customers and change in relationship with suppliers	Changes were observed in the following items: relationship with customers and suppliers; distribution; logistics; negotiations; contracts; branding and outsourcing. The competitive advantage has been extended with a transactional innovation, but it is the result of the changes introduced in the development capability that generated the new products.

changes in the process of capability reconfiguration. Probably, this is due to the family business culture. Nevertheless, it is necessary to recognize that the management capability of the company had already been developed prior to the decision to seek in design a way to foster innovation and increase competitiveness. However, the integration between the areas of technological development, operation, management and transaction was fundamental to the development of the reconfiguration process.

The professionals interviewed understand that there has always been integration. Therefore, the integration achieved for the development of innovations was a result of the knowledge acquired during the process, either by hiring a renowned international institute specialized in design, or by a professional to be fully dedicated to design within the company. Furniture can thus be described as a company with outstanding management ability that in the process of investing in design reached a higher level in innovation management.

The operating area was also well organized in Furniture. There was an increase in the capability that may be directly related to the capability for technological development. Two new brands (A and B) were created, and throughout that process it was necessary to hire and also train personnel to produce the brand A. That expertise was also used in the launching of brand B. The manufacturing park that produces tailored furniture is separated from that one that produces retail furniture and that was built during the process. Investment in machinery and equipment has always been constant since it is the minimum necessary to stay in the market. The change that can be noticed is with regard to the dissemination of the culture of innovation that leads those involved with production to think of different applications for tools and hardware.

Furniture reconfigured its capabilities from an innovation-driven decision that was central to the product development process. However, the generated innovations were transactional - two new brands, a new form of commercial approach, as well as large retailers, allowed investors to buy the exclusive right to their stores with the A and B brands of Furniture. It is clear that without product development there would be no such new approach. However, innovations are transactional because profitability came from new business approaches, albeit influenced by product development.

4.2 The case of innovation in the textile industry

The knitwear company, which we call by the fictitious name Tricot, is a small family business and it has forty years of history. The company, which is now run by the second generation of the family (three children), was formally founded in July 1973. Tricot's commercial success allowed the family to diversify its business. In 1991 its founders permanently disconnected themselves from Tricot to manage another business.

In 2003 the idea of launching a new brand for children's products came out. The intention was to segment the market with the creation of a ludic brand, which we now call by the fictitious name of Ludic Clothes. Additionally, the company that once sold only in the states of Rio Grande do Sul and Santa Catarina enlarges its market, having representatives in Paraná, São Paulo and Rio de Janeiro. That period marked the strengthening of the relationship with shopkeepers with the beginning of participation in exclusive fairs through which fashion entrepreneurs circulate all over Brazil. Between 2004 and 2006, Tricot standardized and expanded its own stores. In 2009, it produced its first sales catalog, aimed at shopkeepers. Also, it only produced for the autumn/winter collection of Ludic Clothes, which represents the largest part of the company's billing. Ludic Clothes launches two collections a year - spring/summer and fall/winter. The changes occurred after the strategic decision to create Ludic Clothes in each of the company's substantive capabilities are presented as follows (Chart 5).

Chart 5. Changes in the Capabilities of Company Tricot.

Capability	Result
Technological development - research activity and investment in product development were extended.	A reconfiguration, especially by the internal construction of knowledge (Lall, 1992; Bell & Pavitt, 1995) was intensified after the creation of the Ludic Clothes brand. The capability continues to increase with continuous learning. However, there is a concern with the risks involved in the introduction of novelties.
Operation - Organization and investment in quality and modernization already existed at the company.	A reconfiguration with a small increase in production flexibility and quality (Chandler, 1992; Hayes & Pisano, 1994).
Management - integration was intensified.	A reconfiguration mainly in formalization (norms and procedures) was perceived.
Transaction- demand for children's products	A significant reconfiguration, with changes in the communication strategy and specific commercial approach for the new brand.

Tricot kept its financial solidity. It was recognized as a brand of quality and good taste in the retail market, and it maintained its modern and up-to-date manufacturing park. Tricot worked with sales of children's and adults' products. Nevertheless, there was no professional organization in the commercial approach. In order to sustain a prominent position, companies constantly develop their dynamic capabilities (Teece, 2007). This development is identified in Tricot according to the steps described by Teece (2007): i) Attractive space in the market for children's products (*sensing*); (ii) investment in the creation of specific brand for the children's public (*seizing*); iii) application of knowledge of the administrative-commercial director in the area of transactions with clients; structuring a product development routine; change in the business approach; restructuring of stores (*reconfiguring*).

Figure 3 shows the evolution of the dynamic capabilities development process in Tricot, as described by Teece (2007). At the end of the process, the company presented a better performance and expansion of its competitive advantage.

The results from the analysis of collected data show that the management of the company presented medium intensity in terms of changes in the process of reconfiguration of the studied capabilities. The management of the company had priory been developed before the decision to create Ludic Clothes, mainly through the gradual use of the specific software for knitting that was acquired in 2002. The existing integration between the areas of technological development, operation, management and transaction was fundamental to the development of the reconfiguration process. Moreover, the fact that the company was small, with few employees and functions accumulated among the directors, seems to have been a favorable point in the integration between the Tricot areas.

The area of operation was well organized at Tricot. It represents the capability highlighted before the strategic decision studied here. The changes and alterations are noticeable but observed to a lesser degree.

There was a high level of reconfiguration in the development capability, with a notable internal construction of knowledge (Lall, 1992; Bell & Pavitt, 1995) observed at Tricot due to the greater dedication to the activity from the creation of the *Ludic Clothes* brand.

Tricot was already recognized by its style in the creation of its products. However, there was no systematic process of research and development of pieces. The task was performed at random. The capability for development presented a significant growth. In that sense, when there is an investment to develop a specific capability, the other capabilities of the companies undergo changes, modifications and/or extensions.

Next section presents a comparative analysis of the two cases studied

4.3 Comparative analysis of the cases

Both companies studied are family businesses, managed by Family members. However, both families are aware of the need for professionalization. Furniture has today members of the second and already of the third generation of the family in its administrative personnel. Tricot has been run for 20 years by members of the family's second generation. Both the directors of Furniture and Tricot sought to be highly trained (high education and/or specific courses of

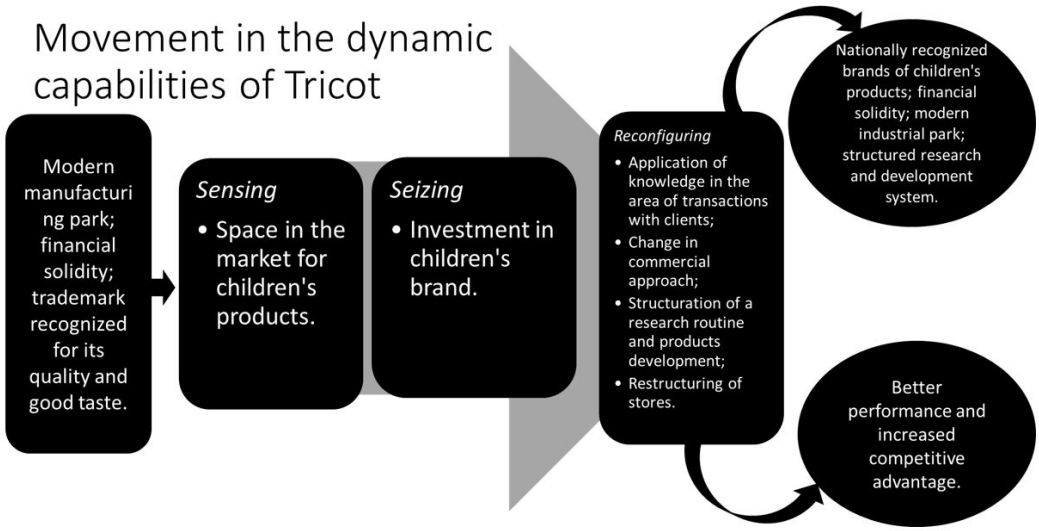

Figure 3. Dynamic Capabilities at Tricot.

interest) for their areas of expertise. In the case of Tricot, the administrative-commercial director had other professional experiences before joining the family business.

Both companies have been in the market for more than 30. They have undergone several changes and that have survived the challenges over time. Changes in the macroeconomic scenario affect all sectors of the economy, so regardless of whether they are in different sectors, the two companies have overcome challenges to remain in the market.

Despite their business sectors being different, both are influenced by fashion trends, which brings their stories closer to dynamic scenarios. Another common point between both companies is the conservative stance regarding the use of credit. They are capitalized companies that use the strategy of maintaining a gradual growth, with planned investments that use only their own resources. Both companies took advantage of resources that already existed in the studied reconfiguration process.

Furniture and Tricot, however, have many differences between them. The former has about 300 employees, while the latter has around 50. There is, in both of them, a good integration in their different sectors. Nevertheless, as you would expect, the smaller company is easier to integrate. The directors accumulate functions. They are responsible for more than one area in the company it is easy for them to glimpse the relations among the areas. Additionally, the structure is smaller and there is more physical proximity between the sectors and Tricot uses a specific management system that makes it easier for information throughout the company to flow.

Both companies have the entrepreneurial potential of families in the face of environmental dynamics. Tricot came from a home-based business and even generated resources to diversify the family business with an establishment in another branch that was opened in 1991. Furniture was not the first company run by the family, its founder had other businesses, always related to furniture.

When it comes to entrepreneurship, there is a big difference between the two companies. While Furniture is committed to *design* and proposes to take on the role of educator, preparing partners to create different standards in the market, with bold and innovative products, Tricot works with less audacious risks. Furniture seeks to be able to influence trends and new standards to the market, and Tricot demonstrates an ability to market products within a standard expected by the market.

The main intention of the case studies was to investigate how a strategic change decision focused on innovation influences the reconfiguration of the companies' capabilities. Therefore, it demonstrates that it is possible to operationalize the concept of dynamic capabilities in analytical studies. Grounded on the work on dynamic capabilities that relates the performance of companies with strategic decisions and reconfiguration of internal capabilities, (Teece et al., 1997; Teece, 2007) looked at companies that made those decisions with a focus on innovation. We observed the reconfiguration of the company's development, operation, management and transaction capabilities, which when integrated explain the company's innovation capability (Zawislak et al., 2013a, b).

Furniture is a company with a high management capability. It made a strategic decision to invest in design for innovation and with that, it presented a high degree of increase in its technological and transaction development capabilities. Tricot presented a predominance of operational capability. Its administration made a strategic decision towards a transactional innovation, and with that, a high degree of increase in its capability of development was observed.

Both companies now have an outstanding development capability. However, innovations that resulted from that development are classified as transactional. That classification of the type of innovation took into account the financial result index, that is, the profits obtained. In both companies, the business approach, the new brands, the new markets, were pointed as changes that were more profitable for both companies. Regardless of the type of innovation being transactional, those innovations, however, would not have been materialized without the reconfiguration in the capability of technological development. Likewise, there was a high integration between the four different areas of the companies in both companies studied.

After comparing the cases we can infer that:

1) There is a relationship between the capabilities of development and transaction;
2) In the reconfiguration that resulted from strategic decisions oriented towards innovation, the predominant capability in the company is the least influenced;
3) The company's ordinary capabilities exert a positive influence on each other in the reconfiguration of its internal resources.

The aforementioned conclusions can be tested as propositions in other studies. Next section presents the general conclusions and limitations of this work.

5 Conclusions

In agreement with the need for a constant development of knowledge that is not available in the market (Teece, 2007), this work was developed

with the goal of proposing a framework that allows investigating the need of alteration/reconfiguration of the ordinary capabilities of the companies from the management strategic entrepreneurship.

The contribution of this study is to operationalize the concept of dynamic capabilities (Teece et al., 1997; Teece, 2007), creating an analysis model by joining the work on the innovation capability of Zawislak et al. (2012). The study of dynamic capabilities has been developed for more than two decades. However, the way in which the capabilities are developed is a subject that remains obscure, due to the lack of elements that could enable this analysis.

As a managerial implication, we can point to the importance of transactional capability as an essential piece in the innovative process (Tello-Gamarra & Zawislak, 2013). For innovation management, it is necessary to pay attention to this capability, even if the strategic decision involves the company's other capabilities. The coherence between the commercial area and the area of technological development is pointed out, in the two cases studied, as fundamental for innovation. This result also indicates an interdependence of the ordinary capabilities (Winter, 2003) for the scope of innovation in the company. Its manager must consider this process when making a decision.

In that sense, in order to manage innovation, there is a need for must attention to be paid to the integration of the capabilities of companies. Additionally, strategic decisions must take into account the need to jointly develop the capabilities to achieve and sustain competitive advantage. In the globalized world of rapid change, neglecting reconfiguration combined with the integrated development of capabilities can mean the extinction of a company's activities.

However, the cases studied here do not allow us to generalize the results of the work. They only suggest a guide to the research. A limitation of this study is that both companies studied have produced transactional innovations, and the literature presents others. Thus, there may be different relationships in cases that involve other types of innovation. The strategic decisions focused on innovation involved the areas of technological development and transaction, in that sense, the study was limited by not addressing decisions related to the operation and management capabilities.

This study was limited to the family businesses context. Therefore, new studies could deepen the dimension related to the management profile of companies, comparing Family members and professionals. Future studies that analyze cases of strategic decisions involving innovations of other natures are indicated. It is possible to conduct multiple case studies based on the conclusions of this case, using them as theoretical propositions to be confirmed.

References

Amit, R., & Schoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33-46. http://dx.doi.org/10.1002/smj.4250140105.

Argyres, N. (1996). Evidence on the role of firm capabilities in vertical integration of learning and transaction cost perspective. *Academy of Management Journal*, 17(2), 129-150.

Argyres, N., & Zenger, T. R. (2011, 19 de novembro). Capabilities, transaction costs, and firm boundaries: an integrative theory. *Organization Science*, 1-39. Recuperado em 3 de setembro de 2017, de https://ssrn.com/abstract=1961600

Augier, M., & Teece, D. J. (2009). Dybamic capabilities and the role of managers in business strategy and economic performance. *Organization Science*, 20(2), 410-421. http://dx.doi.org/10.1287/orsc.1090.0424.

Barcelos, E., & Contador, J. C. (2015). Capacidades dinâmicas, da sua origem até hoje: inconsistências, convergências, tendências e evolução de uma teoria em construção. In *Anais do XVIII Simpósio de Administração da Produção, Logística e Operações Internacionais (SIMPOI): Cadeias Globais e Competitividade em Mercados Emergentes*. São Paulo: FGV-SP.

Barnard, C. (1996). *The functions of the executive*. Cambridge: Harvard University Press.

Bell, M. Pavitt, K. (1995). The development of technological capabilities. In I. Ul Haque, M. Bell, C. Dahlman, S. Lall & K. Pavitt (Eds.), *Trade, technology and international competitiveness* (pp. 69-100). Washington: The World Bank.

Chandler, A. D., Jr. (1977). *The visible hand*. Cambridge: Harvard University Press.

Chandler, A. D., Jr. (1992). Organizational capabilities and the economic history of industrial enterprise. *The Journal of Economic Perspectives*, 6(3), 79-100. http://dx.doi.org/10.1257/jep.6.3.79.

Christensen, J. F. (1995). Asset profiles for technological innovation. *Research Policy*, 24(5), 727-745. http://dx.doi.org/10.1016/0048-7333(94)00794-8.

Coase, R. (1937). The nature of the firm. *Economica*, 4(16), 386-405. http://dx.doi.org/10.1111/j.1468-0335.1937.tb00002.x.

Dosi, G., Nelson, R., & Winter, S. (2002). *The nature and dynamics of organizational capabilities*. New York: Oxford Univrsity Press.

Easterby-Smith, M., Lyles, M., & Peteraf, M. (2009). Dynamic capabilities: current debates and future directions. *British Journal of Management*, 20(1), 1-8. http://dx.doi.org/10.1111/j.1467-8551.2008.00609.x.

Eisenhardt, K., & Martin, J. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*,

21(10-11), 105-121. http://dx.doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E.

Financiadora de Estudos e Projetos – FINEP. (2003). *Manual de Oslo: diretrizes para coleta e interpretação de dados sobre inovação*. Rio de Janeiro: Organização Desenvolvimento Econômico. Recuperado em 3 de setembro de 2017, de http://www.finep.gov.br/dcom/brasil_inovador/arquivos/manual_de_oslo

Furtado, A. T., & Carvalho, R. (2005). Padrões de intensidade tecnológica da indústria brasileira: um estudo comparativo com os países centrais. *São Paulo em Perspectiva*, 19(1), 70-84. http://dx.doi.org/10.1590/S0102-88392005000100006.

Guan, J., & Ma, N. (2003). Innovative capability and export performance of Chinese Firms. *Technovation*, 23(9), 737-747. http://dx.doi.org/10.1016/S0166-4972(02)00013-5.

Hayes, R. H., & Pisano, G. P. (1994). Beyond world-class: the new manufacturing strategy. *Harvard Business Review*, 71(1), 77-86.

Helfat, C. E., & Winter, S. G. (2011). Untangling dynamic and operational capabilities: strategy for the (n)ever-changing world. *Strategic Management Journal*, 32(11), 1244-1250. http://dx.doi.org/10.1002/smj.955.

Instituto de Pesquisa Econômica Aplicada – IPEA. (2011). *Trajetória recente dos indicadores de inovação no Brasil*. Brasília. Recuperado em 3 de setembro de 2017, de http://www.ipea.gov.br/portal/images/stories/PDFs/TDs/td_1659.pdf

Lall, S. (1992). Technological capabilities and industrialization. *World Development*, 20(2), 165-186. http://dx.doi.org/10.1016/0305-750X(92)90097-F.

Langlois, R. N., & Foss, N. (1999). Capabilities and governance: the rebirth production in the theory of economic organization. *Kyklos*, 52(2), 351-385. http://dx.doi.org/10.1111/j.1467-6435.1999.tb01442.x.

Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: a dynamic capabilities approach. *International Journal of Innovation Management*, 5(3), 377-400. http://dx.doi.org/10.1142/S1363919601000427.

Madhok, A. (1996). The organization of economic activity: transaction costs, firm capabilities and the nature of governance. *Organization Science*, 7(5), 577-590. http://dx.doi.org/10.1287/orsc.7.5.577.

Mayer, K., & Salomon, R. (2006). Contract design as a firm capability: an integration of learning and transaction cost perspectives. *Academy of Management Review*, 49(5), 942-959. http://dx.doi.org/10.5465/amj.2006.22798175.

Mintzberg, H. (1973). *The nature of managerial work*. New York: Harper & Row.

Organization for Economic Co-opration and Development – OECD. (2003). *ISIC rev. 3 technology intensity definition*. Recuperado em 3 de setembro de 2017, de http://www.oecd.org/dataoecd/43/41/48350231.pdf

Penrose, E. (1959). *The theory of the growth of the firm*. Oxford: Oxford University Press.

Reichert, F. M., Torugsa, N. A., Zawislak, P. A., & Arundel, A. (2016). Exploring innovation success recipes in low-technology firms using fuzzy-set QCA. *Journal of Business Research*, 69(1), 5437-5441. http://dx.doi.org/10.1016/j.jbusres.2016.04.151.

Robertson, P., Smith, K., & Von Tunzelmann, N. (2009). Innovation in low and medium-technology industries. *Research Policy*, 38(3), 441-446. http://dx.doi.org/10.1016/j.respol.2008.10.019.

Schilke, O. (2014). Second-order dynamic capabilities: how do they matter? *The Academy of Management Perspectives*, 28(4), 368-380. http://dx.doi.org/10.5465/amp.2013.0093.

Schumpeter, J. (1942). *Capitalism, socialism and democracy*. New York: Harper Perennial Modern Thought.

Teece, D. J. (2006). Reflections on "Profiting from Innovation". *Research Policy*, 35(8), 1131-1146. http://dx.doi.org/10.1016/j.respol.2006.09.009.

Teece, D. J. (2007). Explicating dynamic capacidades: the nature and microfundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350. http://dx.doi.org/10.1002/smj.640.

Teece, D. J. (2012). Dynanic capabilities: routines versus entrepreneurial action. *Journal of Management Studies*, 49(8), 1398-1401. http://dx.doi.org/10.1111/j.1467-6486.2012.01080.x.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capacidades and strategic management. *Strategic Management Journal*, 18(7), 509-533. http://dx.doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z.

Tello-Gamarra, J. E., & Zawislak, P. A. (2013). Transactional capability: innovation's missing link. *Journal of Economics, Finance and Administrative Science*, 18(34), 2-8. http://dx.doi.org/10.1016/S2077-1886(13)70017-9.

Terziovski, M. (2007). *Building innovation capability in organizations: an international cross-case perspective* (Series on Technology Management, 13). London: Imperial College Press. http://dx.doi.org/10.1142/p492.

Williamson, O. (1985). *The economic institutions of capitalism*. New York: Free Press.

Winter, S. (2003). Understanding dynamics capacidades. *Strategic Management Journal*, 24(10), 991-995. http://dx.doi.org/10.1002/smj.318.

Yam, R., Lo, W., Tang, E., & Lau, A. (2011). Analysis of sources of innovation, technological innovation capacidades, and performance: an empirical study of Hong Kong manufacturing industries. *Research Policy*, 40(3), 737-747. http://dx.doi.org/10.1016/j.respol.2010.10.013.

Yin, R. K. (2010). *Estudo de caso: planejamento e métodos* (4a ed.). Porto Alegre: Bookman.

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: a review, model and research agenda. *Journal of Management Studies*, 43(4), 917-955. http://dx.doi.org/10.1111/j.1467-6486.2006.00616.x.

Zawislak, P. A., Alves, A. C., Tello-Gamarra, J., Barbieux, D., & Reichert, F. M. (2011) Innovation capabilities of the firm: the brazilian experience. In *Proceedings of the 9th Globelics International Conference*. Buenos Aires.

Zawislak, P. A., Alves, A. C., Tello-Gamarra, J., Barbieux, D., & Reichert, F. M. (2012). Innovation capability: from technology development to transaction capacidade. *Journal of Technology Management & Innovation*, 7(2), 14-27. http://dx.doi.org/10.4067/S0718-27242012000200002.

Zawislak, P. A., Zen, A. C., Fracasso, E. M., Reichert, F. M., & Pufal, N. A. (2013a). Types of Innovation in low-technology firms of emerging markets: an empirical study in Brazilian industry. *Revista de Administração e Inovação*, 10(1), 4-27.

Zawislak, P. A., Tello-Gamarra, J., Alves, A. C., Barbieux, D., & Reichert, F. M. (2013b). Different innovation capabilities of the firm: further remarks upon the Brazilian experience. In *Proceedings of the 22nd International Conference on Management of Technology (IAMOT)*. Porto Alegre: IAMOT.