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ARTICLE REVIEW

TECHNOLOGICAL EVOLUTION IN THE CONTEXT OF DYNAMIC CAPABILITIES: A STUDY IN AN INDUSTRY OF AGRICULTURAL IMPLEMENTS IN RIO GRANDE DO SUL

A EVOLUÇÃO TECNOLÓGICA NO CONTEXTO DAS CAPACIDADES DINÂMICAS: UM ESTUDO EM UMA INDÚSTRIA DE IMPLEMENTOS AGRÍCOLAS DO RIO GRANDE DO SUL

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ABSTRACT

Purpose: The objective of this study is to understand the process of technological evolution in an industry of agricultural equipment and implements, located in the Northwest Frontier Region of Rio Grande do Sul, under the theoretical lens of dynamic capabilities.
Methodology/approach: A descriptive and qualitative research was developed, with a case study, longitudinal in nature with cross-sections, applied to an organization in the metal-mechanic sector, whose data was collected through an interview with one of its managers and access to the corporate website, and then content analysis was performed.
Originality/Relevance: The study integrates the theme of organizational changes and strategies resulting from the technological evolution that has occurred in recent decades, with the theory of dynamic capabilities and, therefore, has an important differential by combining these relevant approaches in the same research. Furthermore, a gap in research on the subject was identified in this same locus.
Key findings: The research conducted allowed to see how the modernization of the industry's products and operations occurred over the years, reinforcing the importance of dynamic capabilities in this process, to keep up with the market's changes and demands in relation to new technologies.
Theoretical/methodological contributions: The theoretical framework of the study contributes to the understanding of aspects related to the theory of dynamic capabilities, as well as to organizational changes and strategies, especially with regard to the need for companies to adapt to technological evolution. Furthermore, the empirical analysis complements this understanding, with real findings and an effective methodology, which can serve as a basis for future studies.

Keywords: Change; technology; strategies; dynamic capabilities.

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RESUMO

Objetivo: O objetivo desse estudo consiste em compreender o processo de evolução tecnológica em uma indústria de equipamentos e implementos agrícolas, localizada na Região Fronteira Noroeste do Rio Grande do Sul, sob a lente teórica das capacidades dinâmicas.
Metodologia/abordagem: Foi desenvolvida uma pesquisa descritiva e qualitativa, com estudo de caso, de caráter longitudinal com cortes transversais, aplicado em uma organização do setor metal mecânico, cujos dados foram coletados por meio de entrevista com uma de suas gestoras e acesso ao *site* corporativo, sendo realizada, posteriormente, a análise de conteúdo.
Originalidade/Relevância: O estudo integra a temática das mudanças e estratégias organizacionais decorrentes da evolução tecnológica, ocorrida nas últimas décadas, com a teoria das capacidades dinâmicas e, portanto, possui um importante diferencial por aliar essas abordagens relevantes em uma mesma pesquisa. Ademais, identificou-se uma lacuna de pesquisa acerca da temática nesse mesmo lócus.
Principais conclusões: A partir das análises realizadas foi possível conhecer como ocorreu a modernização dos produtos e operações da indústria ao longo dos anos, reforçando a importância das capacidades dinâmicas nesse processo, para acompanhar as mudanças e demandas do mercado em relação às novas tecnologias.
Contribuições teóricas/metodológicas: O referencial teórico do estudo contribui com a compreensão de aspectos relativos à teoria das capacidades dinâmicas, bem como, às mudanças e estratégias organizacionais, sobretudo, no que tange a necessidade de adaptação das empresas frente a evolução tecnológica. Além disso, a análise empírica complementa esse entendimento, com constatações reais e uma metodologia efetiva, que pode servir como base para estudos futuros.

Palavras-chave: Mudanças; tecnologia; estratégias; capacidades dinâmicas.

1 INTRODUCTION

The 21st century has been characterized as a period of great changes in the economy, in organizational structures and in the knowledge required for the management of companies, causing organizations of all types to have been faced with changeable and more dynamic scenarios. Therefore, understanding this instability and adapting to it is essential for any company that wants to stay in the market (Oliveira, & Silva, 2006).

Technological disruption and digital transformation are visible examples of this movement that is happening, and such factors may represent opportunities for new ventures, as well as a major challenge for organizations established in the traditional business context. Thus, it is observed that the changes have been impacting a number of sectors, especially those more dependent on technology (Coutinho, 2021a). This is the case of large industries, for example, which manufacture complex products and in large batches, and it is essential to integrate technology into the processes, from the acquisition of raw materials, production, sale and delivery of goods, in order to ensure efficiency gains, increased agility, reduced costs and high quality products. In view of this, it is important that companies are aware of new technologies in the market and seek to use them in favor of optimizing their operations in order to remain active in a scenario of intense competition and constant innovations (Almeida, 2019).

In this sense, António and Costa (2017) point out that to survive and thrive under conditions of change, it is necessary to develop dynamic capabilities to create, expand, and modify the routines of the internal structure of organizations. Basically, it can be stated that dynamic capabilities serve to identify needs or opportunities for change and formulate a response in the face of them, aiming to lead organizations in developing new corporate strategies that can generate competitive advantages.

Based on this assumption, Ferreira, Santos and Freire (2020) sought to identify how dynamic capabilities can help organizations in their digital transformation. Therefore, the results of the study pointed out that dynamic capabilities can support organizations in this process, since they allow adaptation to business ecosystems, shape them through innovation and collaboration with other institutions and in the organizational transformation itself.

In turn, Couto, Teberga, Castro and Oliva (2019) set out to investigate and describe how startups residing in a coworking space, located in the city of São Paulo, develop their dynamic capabilities and how these capabilities contribute to innovation in their business models. From this, the authors concluded that dynamic capabilities can be drivers of innovation in business models, especially in environments characterized by high competitive and technological dynamics.

In the same vein, Ganzer, Biegelmeyer, Oliveira, Camargo and Olea (2017) developed a study with the purpose of associating the approaches of selected articles, in order to compare the similarities and discrepancies between theoretical constructs, involving innovation and competitive intelligence in industry. The results of the analysis allowed to verify that, among the constructs related to this theme, there is the dynamic capabilities, being one of the main theoretical approaches used to support the research conducted in the industrial sector in its various segments.

Given the relevance of the theme and its approach in articles already published, it is considered valid to conduct a research focused on the metal mechanical sector focused on agriculture, in order to analyze how they innovated in their processes and products to keep up with the demand for modernization in the field. From this perspective, the Northwest Frontier region of Rio Grande do Sul stands out, where there is the consolidation of companies operating in this industry because it is an area characterized by typically rural activities (Bianchi, 2013).

Therefore, this study aims to understand the process of technological evolution in an industry of agricultural equipment and implements, located in the Northwest Frontier region of Rio Grande do Sul, under the theoretical lens of dynamic capabilities. Thus, it is justified by expanding scientific knowledge on the subject, with a practical application that can serve as a model for future studies.

2 THEORETICAL FRAMEWORK

The theoretical framework is the textual element in which the findings of the literature search are presented and the various theories of authors and relevant works are clarified, allowing deepening the knowledge on the subject investigated (Baptista, & Campos, 2016). Thus, in this section, it is highlighted the main constructs that underpin this study and, for a better understanding, it is divided into subsections that deal, respectively, with organizational changes and strategies, dynamic capabilities and technological evolution.

2.1 Organizational change and strategy

Change is the transition from one state or situation to another, resulting in new directions, new approaches, new solutions, new habits and attitudes. It varies as to speed and

depth, and can be gradual and constant, or abrupt, fast and impacting, but what is certain is that every change implies something different and, therefore, is always accompanied by many challenges and learning (Chiavenato, 2021).

Organizations undergo changes all the time, regardless of what their functions and purposes are, because they are open systems, subject to interference from the external environment that is constantly changing. That is, in the face of changes in the external environment, organizations seek to adapt, from the incorporation or regeneration of certain resources or capabilities, which causes frequent changes in their internal structure (Dias, 2013).

Corroborating with this understanding, Mações (2017) describes that organizational change is a movement made by entities, in order to move from their current state to a future state, in order to respond to changes in the environment, increasing their effectiveness and efficiency. It is also added that, this process is indispensable for the success of an organization in the long term, since those that do not adapt to the transformations of the environment, end up losing space in the market.

However, not every change brings improvements, because when they are not well planned, they can cause a feeling that losses are greater than gains, or produce real disadvantages (Coutinho, 2021b). In view of this, it is necessary that changes in the structure, training and logistics of companies, be carried out through appropriate strategies, which need to be carried out systematically, involving all members of the organization (Costa, 2012).

According to Mintzberg, Lampel, Quinn and Ghoshal (2007), strategy consists of a pattern or plan that integrates the organization's major goals, policies, and sequence of action into a cohesive whole. When well formulated, a strategy helps to order and allocate an entity's resources into a single, viable posture based on the respective internal competencies and deficiencies, changes in the environment, and contingent moves by competitors.

The strategy needs to be an intelligent, economical, feasible option and, whenever possible, it is also important that it be original. Thus, it constitutes the best alternative that a company can have to optimize the use of its resources, become highly competitive, overcome the competition, reduce its problems, and improve the exploitation of any opportunities that the environment may provide (Oliveira, 2014).

Thus, strategic planning can be divided into three parts. In general, this process begins with the analysis of the context in which the organization is inserted, to then formulate the strategy, using appropriately the technological, physical, financial, and human resources available, and finally there is the implementation stage, with all the energies and resources that were previously considered (Cavalcanti, Farah, & Marcondes, 2018).

It should also be emphasized that it is not possible to establish an ideal standard for strategic formulation, and each organization will need to find its best conception and implementation model, given its own culture, previous experiences, economic and financial situation, products and services, market position, level of employee training, and desired objectives, among other specific factors. Each model will offer differentiated challenges, but what is invariably true is that strategies will provide the basis for business success (Gonçalves, Gonçalves Filho, & Reis Neto, 2006).

In a complementary manner, Coutinho (2021a) and Coutinho (2021b) add that changes are a natural feature of civilizations and that humanity has carried out strategic planning since ancient times. The difference is that now the pace of transformations, the depth of the impacts, and the quantity of factors to be managed have increased considerably, making an imperative demand for strategies to be more flexible and, thus, to be able to be adapted more quickly, without causing instability in the course of organizations. It is in this context that the concept of dynamic capabilities was created.

2.2 Dynamic capabilities

As of 1997 there was the diffusion of a new perspective for the study of organizational reality, called dynamic capabilities. The term emerged with the publication of the article "Dynamic Capabilities and Strategic Management", written by David Teece, Gary Pisano and Amy Shuen, and is based on the evolution of the Resource Based View - RBV concept (Oliveira, Saito, & Domingues, 2020).

The VBR aims to explain the sustainable competitive advantage through the resources and specific competencies of organizations. This theory is built through internal and external analysis, focusing on the development of strategies so that a company can differentiate itself from another, always seeking new opportunities to remain prosperous in the market (Dalfovo, Machado, Gonçalves, & Baumgartner, 2017).

For a long time, VBR was considered an interesting approach to explain competitive advantage in several situations, but the dynamic context experienced in recent years has challenged its premises, since companies need to change their characteristics so quickly and constantly that the concept of sustainable competitive advantage does not seem to make much sense. Thus, the main capacity of an organization is to change, innovate, adapt, in short, adapt to the scenario, and to explain this process the dynamic capabilities approach has been used (Abdalla, Conejero, & Oliveira, 2019).

Dynamic capabilities combine two factors that have not been emphasized in previous strategic approaches. The term "capability" highlights the fundamental role of strategic management in adjusting organizational resources in the most appropriate way possible, while "dynamic" refers to the ability to renew competencies to achieve alignment with the changing competitive environment (Lacerda, Teixeira, Antunes, & Corcini Neto, 2014).

Therefore, dynamic capabilities can be defined as the mastery of an organization in reconfiguring its strategic capabilities to meet the needs of changing environments, achieving and sustaining competitive advantages. Among the dynamic capabilities, one can mention relational leadership, competence to engage stakeholders, communication, know-how for knowledge development, and sensitivity to deal with cultural aspects (Coutinho, 2021a).

Under this approach, Abdalla et al. (2019) state that there are three factors that make up the dynamic capabilities and together explain the organization's mechanisms that unite the advantages in internal resources with the position of competitive advantage in the market. One of these factors is the adaptive capacity, which corresponds to the ability to take advantage of market opportunities; in addition, there is the absorptive capacity, which is the potential to use external information in an appropriate way for business purposes; and, to complete, the innovation capacity consists of the ability to develop new products and/or markets.

In short, what is explicit in the dynamic capabilities approach is the importance of maintaining a continuous flow of innovation, consistent with the needs and opportunities identified in the environment, so that the organization remains in a prominent position in the market. Such capabilities are especially important in strongly technological sectors, which depend on the efficient combination of knowledge and innovation, the implementation of best practices in operational processes, the invention of new business models, and the ability to make innovative management decisions (Gonçalves, Castro, & Felício, 2017).

2.3 Technological evolution

One of the key points for successful strategic planning is the ability to understand the environment in which the organization operates, and technology is a very important component in this context, so much so that it has already caused the end of many old companies, while representing an opportunity for the creation and growth of innovative companies. Therefore, generally, technological changes have a much greater impact on business success than other

competitive forces (Mattos, & Guimarães, 2012).

Technology is understood as an ordered set of knowledge, empirical or scientific, which results from accumulated experiences and observations. Technology involves both knowledge (know-how) and the physical manifestations of this knowledge, which are things made, such as machines, equipment and facilities, that allow the development of techniques capable of transforming inputs into results (Chiavenato, 2022).

Thus, in recent years it is difficult to talk about industries without relating technology, since it has been present in all stages of manufacturing of products, including in the process of quality control, ensuring productivity and economic gains (Almeida, 2019). In this sense, Fenerick and Volante (2020) comment that, over the years, numerous technological innovations have been important for the development of the manufacturing sector, resulting in industrial revolutions that have marked history.

The three industrial revolutions experienced so far have promoted economic growth in societies, raising workers' income through mass production, optimization of assembly lines, advances in the generation, transmission and distribution of electricity, always associated with information technology. Continuing this process, lately, society has experienced a new stage in technological evolution, assisted by the progress of information technology, electronics and their interactions with humanity (Thomazini, & Albuquerque, 2020).

According to Filatro, Cavalcanti, Junior and Nogueira (2019), the moment of rupture currently experienced has already been considered the Fourth Industrial Revolution, in which a set of exponential technologies, such as big data, artificial intelligence, internet of things, and many others, enable the fusion of the physical, digital, and biological worlds. Behind these technologies, it is possible to identify some distinctive drivers for the transition from the Third to the Fourth Industrial Revolution, such as the dramatic and rapid increase in the volume of data, the power of computing and connectivity, the introduction of new forms of human-machine interaction, and innovations facilitating the transfer of digital data into something physically usable, through improvements in robotics and 3D printing, for example.

Therefore, technology cannot be separated from the socioeconomic context in which it evolves and which is responsible for its production and use. It can be described as an expression of human creativity, which transforms organizations and places them in a position of competitive advantage, by contributing to cost reduction, increased productivity and the creation of market segments (Akabane, & Pozo, 2020).

Finally, it is noteworthy that technological evolution has constant change as a backdrop, in which something new quickly becomes obsolete, generating several transformations in the economy, in business and in society. Therefore, the ability to adapt is a necessity and the development of dynamic capabilities is fundamental in the search for strategies that allow one to go through the revolutions of the contemporary world with balance (Garcia, 2020).

3 METHOD

Regarding the methodology, it is evident first that the research is descriptive, as to its objective, since it addressed the process of technological evolution of a company, discussing about each stage, based on the theory of dynamic capabilities. The main characteristic of this type of research is that it uses techniques to assess and describe a reality, the nature of a certain population or phenomenon and the relationship between variables (Santos, Kienen, & Castiñeira, 2015). As for the technical procedures, this is a case study, focusing on the optimization of operations and products of a metallurgical industry, due to the technological advances that have occurred in recent decades. According to Yin (2015), the case study arises from the desire to understand social phenomena, allowing researchers to focus on a "case" and retain a holistic, real-world perspective.

The approach, in turn, is qualitative, given that the study was intended to report the modernization process of a company, without the use of statistical and mathematical methods. Supporting this claim, Gil (2019) states that qualitative analysis involves verbal descriptions rather than numbers and is therefore based on the assumption that reality can be viewed from multiple perspectives.

The research was applied in an industry of agricultural equipment and implements, installed in the Northwest Frontier of the state of Rio Grande do Sul, which requested that its name be kept confidential. It was selected by convenience and accessibility, justified, above all, by the representativeness of the metal-mechanic and agriculture sectors in the region. Furthermore, it should be noted that the study covers the period from 1993 to 2018 and is of the longitudinal type with cross-sections, which according to Santos et al. (2015), aims to describe changes over time, from data collection performed at a single point in time.

The necessary data were obtained in conversation with a manager of the company, on June 27, 2022, via messaging application, and in the opportunity some open questions were forwarded, previously prepared, asking the manager to explain how the incorporation and improvement of technology in the company occurred, highlighting what benefits and challenges perceived, as well as how this process happens, from the identification of market trends and strategic decision-making about it, until the implementation of innovations. At the same time, we also used materials available on the company's corporate website and social networks, in order to seek additional information about its history and development over the years.

From that it was performed the content analysis, which consists of a technique to study the communication in an objective and systematic way, seeking reliable inferences and information about a given context, from oral or written speeches (Martins, & Theóphilo, 2016). The data collected, during conversation with the manager and in publications available on the internet, were organized in the format of a historical retrospective, in order to portray the technological progress in the industry, establishing connections with the dynamic capabilities approach, as shown in the following section.

4 RESULTS AND DISCUSSIONS

In this stage of the research, there is the presentation of the process of technological evolution in the company studied, since its constitution, in 1993, until the inauguration of the new plant, in 2018, which represented an important milestone in its history. This process was systematized in evolutionary stages, based on a model used in the study by Fagundes and Sausen (2021), indicating the main facts that occurred in each period, with regard to the modernization of the industry, as can be seen in Table 1.

Table 1 – Technological Evolution in the Industry Studied

PERIOD	STAGE	MAIN FACTS
1993 - 2002	Development	- Creation of the industry; - Investment in the first production equipment; - Inclusion of new products; - Expansion in the technological framework; - Acquisition of its first delivery truck.
2003 - 2012	Consolidation	- Computerization of administrative operations; - Application of state-of-the-art technology in the production lines; - Modernization of the truck fleet; - Acquisition of CNC equipment; - Production of larger implements.
2013 - 2018	Renewal	- Innovation in the product line; - Expansion of production capacity; - Inauguration of the new industrial plant.

Source: Prepared by the authors based on the model by Sausen and Fagundes (2021).

The first stage was called "Development" and covers the first ten years of the industry's operations. In this period, certainly, the main event was the opening of the enterprise, in 1993, which was idealized by three partners, who started their activities in a garage, located in a small town in the Northwest Frontier region of Rio Grande do Sul. In the beginning, the metallurgy was dedicated, exclusively, to making small repairs, manufacturing grids, and bodywork, with a limited structure and few tools.

Two years later, in 1995, the activities were still predominantly manual and, with the increase in sales, the partners realized the need to expand their staff. Even that year, their first commercial representative was hired, who would travel around the region by bus, visiting potential customers and presenting the products through printed photographs. Quite different from the current moment, where much of the promotion occurs in digital media, such as social networks, YouTube channel, and the company's own website.

As the years went by, the industry spread a strong legacy in the region and also started to be recognized in other municipalities in the state. Thus, in 1997, investments were made in new production equipment, the acquisition of land for the construction of its own building, and the hiring of more salespeople to serve the entire state. Moreover, at this time the industry also innovated in its products, starting to manufacture small agricultural implements, such as crushers, choppers and silage machines.

In 2000, another milestone was the participation in the first Expodireto Cotrijal, which is one of the main agribusiness fairs held in Rio Grande do Sul, and other important events in the state and in the country, always looking for news and marketing opportunities in order to expand its operations in the agricultural industry. With this, new investments were made and, in 2001, besides the expansion in the technological framework, qualification, and increase in the number of employees, the industry promoted changes in its physical structure, to increase it once again.

In the following year, a new organizational plan for production and logistics activities was drawn up, and the industry also acquired its first truck to start its own delivery process. Furthermore, it was also in 2002 that the states of Santa Catarina and Paraná started to integrate its area of coverage, marking the beginning of its expansion in the national territory.

Having seen the facts that make up the "Development" stage, it is possible to perceive that, in the very first years of the industry's operation, managers have already begun to develop dynamic capabilities, in order to expand the business, improve their production and service, in addition to making other strategic decisions focused on value creation, aiming to improve them more and more by considering their mistakes and successes, strengths and weaknesses, as well as the opportunities and threats of the external environment. In this context, Lacerda et al. (2014) point out that experiences in related situations are particularly effective in shaping dynamic capabilities and contributing to their evolution, resulting in robust routines that keep pace with changing markets and expand the possibilities for growth.

Then there is the next stage, which corresponds to "Consolidation," whose period runs from 2003 to 2012. To begin with, we first highlight that in 2003 the industry computerized its offices and applied cutting edge technology to the production lines, besides investing in a new fleet of trucks, acquiring the most modern models in the market.

Later, in 2004, the first Computerized Numerical Control - CNC equipment was acquired and, from then on, all the stages of the production process started to be based on machine automation. Continuing the advances, in 2008, the industry installed its first branch and started a new cycle in its trajectory, with investment in the manufacture of larger implements, with higher added value, to meet an increasingly demanding market.

With such solidity, in 2010, the industry gained a new brand and also expanded its production area again. And, to finish the approach on this second stage, it is also worth

mentioning that, in 2012, more qualified professionals were hired, in order to meet the new demands of the company due to its expansion throughout the country.

Additionally, it is noteworthy that to make the referred changes and improvements, in addition to considering a series of external factors, managers have always taken into account industry-specific issues, such as the available resources, the learning obtained throughout its history, and other internal information regarding its operation. Therefore, it is possible to associate the issues considered with the three fundamental elements for the development of dynamic capabilities and the maintenance of competitive advantage, listed by Teece et al. (1997), which are: the position, the trajectory, and the organizational processes.

Then there is the third and last stage, entitled "Renewal", which covers a period of 5 years. Within this time interval, there are three important events to be highlighted, the first being in 2013, when the industry opened its second branch, focused on the manufacture of agricultural carts and forage wagons, as well as the cutting of parts in plasma.

Soon after, in 2015, another relevant step was the acquisition of six hectares of land, located between two of the municipalities where the company already concentrated its activities, and the space would be destined for the construction of the new industrial plant. The intention was to centralize and increase production capacity, in addition to favoring the launch of new products.

Three years later, in 2018, the new factory was inaugurated, with a fully technological and self-sustainable structure, enabling the supply of high performance agricultural implements. Currently, the industry stands out mainly in the manufacture of tilting platforms, subsoiler plows, brush cutters, winches, seed distributors, fertilizer and urea, in addition to agricultural carts and forage wagons, always adding new technologies to the products, aiming to facilitate the lives of those who live in the field.

In view of all the facts reported and the considerations of António and Costa (2017), it can be seen that dynamic capabilities have enough power to change the operational capabilities and the company's own routines, in a relentless search for change and for opportunities that the market may determine at any given time. This reinforces the understanding that dynamic capabilities have the function of identifying needs and/or opportunities to change, formulate the appropriate responses and implement a good strategy, leading the company in the development of new products or corporate procedures that can determine competitive advantages.

After making this brief retrospective, the manager spoke about the benefits and challenges perceived during this process of technological evolution, coupled with the improvement of its dynamic capabilities. According to her, all the investment made was worthwhile and resulted in numerous advantages, especially in relation to significant productivity gains and improved product quality, which allowed the expansion of business throughout the country, making the industry a reference in the sector due to its remarkable growth.

Such a statement is in line with what is highlighted by Coutinho (2021a) as being the main results achieved by companies that develop their dynamic capabilities. According to this author, among the advances perceived are: strong market positioning in relation to their competitors, the expansion of their sensitive capacity, the capture of value and attraction of new business with greater agility, the identification and search for diverse alternatives in new technologies, as well as the rapid creation of innovative products based on effective collaboration between suppliers and customers.

On the other hand, it was mentioned that, sometimes, there is a certain resistance to innovations, on the part of some employees. For the manager, one of the great difficulties in the processes of improvement in information, technology and productivity is to make the people involved in the operations willing to learn something new and change the way they perform activities that, for a long time, were done the same way.

According to António and Costa (2017), normally the search for innovation and opportunities to make changes are attitudes that create tensions, since both affect organizational routines. But as this transformation movement involves dynamic capabilities and these are strongly linked to the skills and behavior of individuals, it is necessary to encourage constant learning and invest in the qualification of the team, to promote situations that allow the broadening of the vision of employees and share knowledge spontaneously, while having managers with the ability to guide them, listen and clarify their doubts, as well as capture, evaluate and implement ideas and suggestions.

Under this focus, the manager emphasized that, within the company, there are several employees who come from the academic environment, bringing trends and new procedures that are being used around the world. Moreover, especially in relation to the technologies applied in the operations, it was informed that the owners of the industry are always attentive to what is published in the media, attend fairs and courses, and provide the opportunity for the participation of employees when possible, in order to keep up to date about what is new in the market, in terms of machines, equipment and software, which optimize the activities, both in administration and in production.

Regarding product innovation, it was found that the industry is constantly looking for creative and efficient solutions to contribute to agribusiness, trying to detect the needs of farmers and meet them in the best possible way. In this sense, the manager cites the example of the grain trailer that was developed after monitoring the harvest in various regions of the country, when producers requested equipment that had faster unloading to speed up the process, since the planting and harvesting cycles have been shorter and therefore require more agility.

From the identification of opportunities for changes in processes and products, the industry conducts a strategic planning for its implementation. Basically, in a first moment, the idea is studied by specialized personnel in the engineering area, for the creation of an adequate project. Then it goes to the administrative sector, which prepares the feasibility analyses. And, finally, the project is forwarded to the executive directors, in order to obtain final approval and put it into practice.

It is exactly in this logic that competitive strategy and dynamic capabilities combine to create and refine the business model, driving organizational change. First, there is the sensitivity and perception of the environment, considering the possibilities and technological development; followed by the exploitation of opportunities, which involves decision making to commit resources, anticipate competitors' reactions, and protect intellectual property; arriving at the stage of transforming the structure and culture, aligning existing capabilities and investing in additional capabilities (Abdalla et al., 2019).

In view of the above, it can be seen that the industry studied was able to develop dynamic capabilities to keep up with the technological advances that occurred over the years, which allowed it to remain active and competitive in the market. Inclusively, such results corroborate previous researches of Ferreira et al. (2020), Couto et al. (2019) and Ganzer et al. (2017), which also evidenced the importance of dynamic capabilities in the process of digital transformation and innovation of organizations.

5 FINAL CONSIDERATIONS

In recent years, the business environment has undergone constant and increasingly rapid transformations, besides having become highly competitive, requiring the generation of efficient strategies so that organizations can adapt to changes and, at the same time, stand out among competitors. As of this, the concept of dynamic capabilities arises, which comprises actions of adaptation to opportunities and threats, in an agile and continuous manner, aiming at market permanence and long-term success.

In this context, it is observed that technology is one of the main factors that promotes changes and has an impact on all sectors of the economy. In view of this, the present study aimed to understand the process of technological evolution in an industry of agricultural equipment and implements, located in the Northwest Frontier region of Rio Grande do Sul, making associations with the theory of dynamic capabilities.

The research was conducted by means of an informal conversation with a company manager and by consulting the corporate website. Based on the information collected, a brief history of the industry's technological progress was built, which was subdivided into evolutionary stages called "Development," "Consolidation" and "Renewal," based on the model used by Fagundes and Sausen (2021), to then discuss the main facts that have occurred since the beginning of its activities, when operations were predominantly manual, passing through the time when the industry acquired its first machines, introduced more technology into the processes, and innovated in its product line, until the year the new plant was inaugurated, with a much more modern structure.

Consequently, it was sought to establish a connection between the process of technological evolution presented and the dynamic capabilities approach. The results found allowed us to infer that, with so many years of experience, the industry studied has developed dynamic capabilities, in the sense of detecting global trends and customer needs, learning to make good choices to take advantage of the possibilities and, based on this, transforming and innovating its processes and products with the help of technology, which contributed to its growth and consolidation in the industry.

Therefore, when considering the theoretical contributions of the study, it is concluded that its approach allows a deepening of knowledge about the theory of dynamic capabilities and issues related to changes and strategic adaptation in organizations, serving as a source of research for those interested in this theme, which is very emerging in academia. Furthermore, it is worth mentioning that the presentation of the practical case of an important company in the metal-mechanic industry, regarding its process of technological evolution, favors the understanding of the theories studied.

However, one can highlight as major limitations of the study, the fact that it was not possible to schedule a face-to-face interview with the manager of the selected industry due to schedule incompatibility, which could have contributed with the access to more detailed information and, in addition, the analysis of only one company made it impossible to obtain more generalized and comprehensive findings on the theme. In this sense, it is suggested that future studies analyze different types of organizations in order to compare how technological advances impact the most varied sectors, based on the dynamic capabilities approach.

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