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ABSORPTIVE CAPACITY AS FEEDBACK ON THE SUSTAINABILITY OF ORGANIZATIONS




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ABSTRACT

Purpose: To describe the characteristics of the phases that make up the evolution of knowledge, such as, innovation, social innovation, innovation oriented to sustainability, organizational sustainability and absorptive capacity, as well as their correlations.

Originality/value: It provides a panoramic view of the potential of absorptive capacity relating it to social innovation, innovation oriented towards sustainability and organizational sustainability. It addresses related themes and concepts that incorporate strategies to achieve organizational sustainability and have been gaining more importance and space between these discussions. Three scientific databases were used to select the articles: Scopus, Web of Science and SciELO. Then, to support the main concepts, theoretical references from more recent scientific studies were needed, which could contribute to clarifying the terms and definitions.

Design/methodology/approach: This is a narrative bibliographic review. Works characterized by broader discussions were used, ideal for identifying and describing the conceptual state of a specific theme.

Findings: Through the researched articles, it was possible to explore the characteristics of innovation, innovation oriented towards sustainability, and social innovation, which guide the values of society and influence the strategies of organizations more and more, thus, observing and understanding the absorptive capacity as a fundamental instrument for the strategies that ensure organizational sustainability.

KEYWORDS

Innovation. Social innovation. Organizational sustainability. Learning. Absorptive capacity.

1. INTRODUCTION

Having two thoughts at the same time, apparently at opposite ends as a thesis and its antithesis, seems to have been the great stimulus for the transformation of the industrial society towards the knowledge society (Takeuchi & Nonaka, 2008).

Paradoxically, the arguments that contradicted the basic and general principles that guided human thought or defied an ordinary belief shared by all were something to be eliminated in industrial society, according to Taylor's proposal (1976). In addition, other methods to increase production efficiency, for example, assembly lines, automation and robotics, were seen as attempts to eliminate the paradox of the factory floor (Takeuchi & Nonaka, 2008).

According to what Frederick Winslow Taylor (1976) proposed, the top-down rationalization of work should be done through the study of times and movements, in which workers should be selected according to their skills to perform certain tasks and trained so that the execution occurred without errors and in the shortest time. And, finally, the remuneration should be in accordance with the production achieved, without the slightest concern for the workers.

Recalling, the model proposed by Taylor (1976) at the end of the 19th century spread the application of the scientific method in administration with the objective of eliminating waste and guaranteeing the best cost-benefit to productive systems. At that time, an increase in demand transformed the handicraft work of artisans, who used to manufacture the artifacts from the beginning to the end, into a divided work.

The difficulty of human beings in assimilating this division of the process created a problem for organizations, which had to divide this reality into easy parts, so that workers could perform them efficiently, specializing the organizational structures (Takeuchi & Nonaka, 2008; Taylor, 1976).

However, the threat of new competitors and new products, the bargaining power of customers and suppliers, and the rivalry between existing competitors, which are Porter's forces, in addition to a variety of other factors (for example, customers' new needs, technological advancement, and globalization), characterized the need to have innovations as a process. Such a process can transform an opportunity into an original idea linked to scientific or technological knowledge, with the objective of adding value and reaching larger extensions, and, thus, giving competitive advantages to the organizations (Porter, 2008; Tidd & Bessant, 2018).



In this race for market success, the manufacturing companies start to use a larger amount of resources, which increases the concern with sustainability and society, leading to thinking about social innovation and innovation oriented towards the sustainability of resources within the organization.

Within organizations, changes are inevitable in innovative processes. However, employees are often prone to resist. Therefore, innovations may not be successful if these employees are not involved in making decisions related to the conception of an innovation or its implementation (Cowie, Sandall, & Ehrich, 2013; Dover & Lawrence, 2012).

Permeating what has been mentioned is the absorptive capacity, which is considered the master key for the sustainable growth of organizations and which recognizes and integrates external knowledge, facilitates learning, incorporates knowledge and makes it ready for use. It is important to note that the ability to assimilate external information comes from existing prior knowledge (Cohen & Levinthal, 1990; Zahra & George, 2002).

A strong argument is that companies are experiencing a lot of pressure today to find new sustainability practices that incorporate economic, social and environmental factors. In addition, for organizations to become sustainable, there is the challenge of achieving a collective approach involving all employees towards the organizational sustainability (Rezapouraghdam, Alipour, & Arasli, 2019).

The approach of this article was to present, through a literature review, the phases and relationships that appear within the evolutionary context of the organizations' knowledge, starting from the industrial society. Although the definition of environmental sustainability was presented, the greatest focus was given to organizational sustainability and absorptive capacity. In the next sections, the theoretical framework, the methodology, the discussion, the final comments, the limitations, the suggestions, and the references will be presented.

2. THEORETICAL REFERENCE

2.1 Organizational sustainability

Due to the fact that the concept of sustainability generates doubts, mainly because there are several interdisciplinary interpretations and applications, in this article, emphasis was placed on the concept of organizational sustainability, used to designate the state in which organizations present a



production flow aiming to remain active and competitive (Wall, 2018). In addition, organizational sustainability has a strong relationship with sustainable development.

The definition of “sustainable development” given by the United Nations (UN) comes from the Brundtland Report of 1987 and conceptualizes it as “a development that meets the needs of present generations without compromising the ability of future generations to meet their own needs”. Thus, it respects the reproductive capacity of the ecosystems, therefore, demanding from the organizations a balance between the three primary axes: economic development, environmental management, and social equality (ONU, 1987; Lozano & Huisingh, 2011).

More recently, in 2015, the UN launched the 2030 Agenda for Sustainable Development, which presents 17 Sustainable Development Goals (SDGs) aimed at addressing complex global challenges and improving the quality of life of all people everywhere on the planet. Sachs (2017) recognizes the SDGs as a comprehensive and visionary manual; however, it is not binding and does not have a sanction mechanism.

According to Zahra and George (2002), a fact to be mentioned is that environmental sustainability practices are constantly used to pressure organizations to minimize resource consumption and reduce operational costs, in addition to the need to improve their performance, that is, to do more with less. This deviates from the real goal of being committed to the environment and to the society.

Also, policies are kept up to date and monitor harmful attitudes, requiring organizations to avoid waste and control their impacts on the environment, forcing them to incorporate sustainable strategies and innovations. These strategies provide organizational sustainability, that is, the organization generates profits and remains active in the market. For example, the use of resources can be decreased and costs can be reduced by recycling products with reverse logistics (Hsu & Liao, 2014).

In this way, organizations can manage environmental and social issues to transform them into a business opportunity and to innovate and adapt in order to avoid risks and achieve competitive advantages. Thus, sustainability becomes an innovative concept for organizations capable of developing, promoting, and spreading sustainable innovation (Schaltegger et al., 2013).

Considering that absorptive capacity and sustainable strategy are difficult and complex and often tacit processes, any competitive advantage based on these principles makes it impossible for competitors to copy (Roszkowska-Menkes, 2018). In addition, Cohen and Levinthal (1990) state that the



acquisition of sustainability information on one field can facilitate the absorption on other interconnected areas.

In addition, the significant recognition of the importance of innovation oriented to sustainability makes organizations aware of their actions and their impacts on the environment and on society. However, there is a benefit in following the governmental guidelines on sustainability because it helps to manage risks, engage in innovation, and drive internal change, and thus helps to keep the business running (Deloitte & MHI, 2016; Rodriguez & Da Cunha, 2018 ; Upstill-Goddard, Glass, Dainty, & Nicholson, 2016).

2.2 Social innovation

To understand social innovation, it is important to first understand the definition of innovation. According to Baregheh, Rowley, and Sambrook (2009), innovation is a continuous and interdisciplinary process, not just the difference between radical and incremental. These authors consider it a multi-stage process, in which organizations direct ideas for the improvement or development of products, services or processes, with the objective of achieving success in the market, which establishes the organizational sustainability construct.

The organizational procedures that lead to innovation include training and development (Simpson & Flynn, 2007). However, Mathewson (2014) suggests that training sessions are insufficient; on the contrary, an ongoing commitment to learning is necessary, suggesting that only organizations that take on a learning culture with respect to people's development are successful in becoming more innovative.

Social innovation has characteristics that are also related to the concept of social responsibility. An increasing number of authors (Husted & Allen, 2007; Husted & Salazar, 2006; Jamali, 2007) have addressed social responsibility in organizations, with a strategy focused on the shared value of creation and integration, as the main model of business.

The strategic approach to social responsibility in organizations is reflected in the definition of the term proposed by the European Commission (COM, 2011) as a concept in which companies voluntarily integrate social, ethical and environmental concerns in their business operations and central strategy, in close cooperation with their stakeholders, with the objective of maximizing the creation of shared value and identifying, preventing, and mitigating their possible adverse impacts.

As such, social responsibility can be understood as a commercial contribution to sustainable development (Van Marrewijk & Werre, 2003). But the



key to achieving the necessary strategic corporate sustainability is innovation, particularly social innovation, as Osburg (2013) mentioned, and this requires an open approach to the innovation processes that drive collaboration between all sectors of the company and stakeholders.

Social innovation is defined as a technological structure developed locally, which is based on the creative and collective process with the organizations' social participation and cooperation. The application of knowledge to develop or improve products, methods and services aims to modify a problematic situation of vulnerable groups (education, health, employment, culture, and environment). Thus, there is a transformation in the relationship between threats to and the capacities of vulnerable groups, promoting their sustainable integration in an accepted pattern of well-being. The inclusion of vulnerable groups is one of the differences between social innovation and other types of innovation (Shin, 2016; Unceta, Castro-Spila, & García Fronti, 2017).

The value created by social innovation accumulates not only for vulnerable groups, but also for society as a whole (Phills, Deiglmeier, & Miller, 2008) According to Mulgan et al. (2007, p. 8), social innovation

[...] refers to new ideas that work to achieve social goals [...]. It is innovative activities and services motivated by the objective of meeting a social need and that are predominantly developed and disseminated through organizations whose main objectives are social.

The fact that social innovation differs from technological innovation makes the former require different models, processes and indicators. However, it must be considered that both are complementary and both technological and social innovations generate an increase in social and economic capital (Murray, Caulier-Grice, & Mulgan, 2010).

It is important to mention that only in recent years has social innovation gained increasing scientific interest and that it brings improvements to explore the problems of today's society, mainly because these problems are not evident and, in most cases, are associated with other problems, making it difficult to know if they have already been solved or if another problem of greater complexity and urgency encompassed them. In an epistemic context, social innovation requires absorptive capacity (Unceta et al., 2017).

2.3 Absorptive capacity

Absorptive capacity is described by the dimensions of knowledge such as interpretation, acquisition, transformation, assimilation, and application;



however, it is a relative concept, as it depends on the ability of each organization to use external knowledge based on the acquired internal knowledge and to generate business proposals (Cohen & Levinthal, 1990; Picoli & Takahashi, 2016).

The absorptive capacity model by Todorova and Durisin (2007) connects the capacities to recognize the value of external knowledge to two principles: 1. sources of external knowledge and 2. extension of the overlap a company's prior knowledge and the knowledge to be acquired.

Absorptive capacity expresses a set of organizational skills and abilities related to the development of innovations (Cook & Brown, 1999; Lane & Lubatkin, 1998; Szulanski, 1996). It can also help by implementing sustainability strategies that impact product differentiation (Zahra & George, 2002).

The concept of absorptive capacity is also related to an epistemic perspective of social innovation, according to which innovation is the result of a complex process of knowledge codification. This codification is a recursive process based on knowledge, therefore, socially, temporally, and spatially located (Nonaka & Toyama, 2003; Ancori, Bureth, & Cohendet, 2000; Cohendet & Meyer-Krahmer, 2001; Lam, 2000).

Considered an essential element for the success of organizations, the absorptive capacity complements and transforms what they already know. In addition, it is a process that occurs continuously, is linked to changes and adaptations as a way of responding to events, and makes it possible to internalize new knowledge through learning and apply it to commercial purposes. This flow of knowledge is the key to both organizational learning and absorptive capacity (Chalmers & Balan-Vnuk, 2013; Cohen & Levinthal, 1990; Picoli & Takahashi, 2016).

Change-oriented characteristics in the employees are positively related to innovations (Jewel, Davidson, & Rowe, 2006). Hiring practices aimed at employees accepting changes are likely to increase absorptive capacity (Shier & Handy, 2016). Reinforcing this thinking, an organization that expects to change its employees' values will gain a competitive advantage and, consequently, create a culture of promoting innovation (Glisson, 2015; Mathewson, 2014).

Still with respect to the knowledge absorptive capacity, it is important to note that it is closely related to organizational learning. However, for the organization to develop its absorptive capacity, it is necessary to incorporate knowledge, which is optimized if it is a constant flow process. However, it occurs in a specific way at each organization (Picoli & Takahashi, 2016). Sharing basic knowledge with the source of new knowledge makes it easier to recognize the value of new external knowledge (Cohen & Levinthal, 1990).



Still, for organizations to remain active in a dynamic market, they need to adapt and develop improvements in their processes, identify opportunities and capture information external to them, in order to generate knowledge. Adding value and evolving internal operations based on knowledge are linked to the absorptive capacity that, as previously mentioned, is defined as the ability to recognize the value of new information, and to transform and exploit it (Picoli & Takahashi, 2016; Unceta et al., 2017).

3. METHODOLOGY

This theoretical research did not carry out a systematic search and, for this reason, it is classified as a narrative literature review, which is characterized by publications broad and suitable to describe the current state of a given theme (Marconi & Lakatos, 2017). Therefore, descriptive and qualitative attributes have been attributed to it (Creswell, 2010).

The search addressed the topic of absorptive capacity in the context of the sustainability of organizations, and related it to innovation, social innovation and innovation oriented to sustainability. Three databases were used to select the articles for full reading and further analysis. Therefore, in order to substantiate the concepts, it was sought a bibliographic reference of recent scientific studies that could contribute to the clarification of the terms and their characterizations.

The databases used were Scopus, Web of Science and SciELO. The search was carried out in 2019, from the 25th to the 28th of February, with the descriptors: 1. “absorptive capacity” AND “innovation”, 2. “absorptive capacity” AND “organization sustainability”, and 3. “absorptive capacity” AND “social innovation”, used in combination and in English, only.

As inclusion criteria, articles published in the last few years were selected, starting in 2011, containing at least one of the descriptors in the title, abstract or keywords. Duplicate documents were excluded and books, book chapters, reviews and proceedings of congresses, theses and dissertations were not considered, resulting in 18 articles, shown in Figure 4.1

A new search was carried out between October 1st and 4th, 2019, with the objective of broadening the analysis on the theme, using the same criteria, with the difference that only articles published in 2019 were included. From that, four new articles were added (shown in Figure 4.1 with numbers 19 to 23).

All the articles selected for the discussion, present in Figure 4.1, as well as all the articles used to support the concepts, were inserted in the Mendeley desktop, used as the reference manager.

4. RESULTS

The articles used to support the discussion of this study are shown in Figure 4.1.

(Figure 4.1)

ARTICLES USED TO SUPPORT THE DISCUSSION

No.	Year	Authors and titles	Constructs
1	2011	Lozano, R., & Huisingh, D. Inter-linking issues and dimensions in sustainability reporting.	<i>Sustainability reporting; sustainable development; inter-linkages.</i>
2	2012	Murphy, M., Perrot, F., & Rivera-Santos, M. New perspectives on learning and innovation in cross-sector collaborations.	<i>Absorptive capacity; cross-sector alliances.</i>
3	2013	Chalmers, D. M., & Balan-Vnuk, E. Innovating not-for-profit social ventures: Exploring the microfoundations of internal and external absorptive capacity routines.	<i>Social entrepreneurship; social innovation; absorptive capacity.</i>
4	2013	Osburg, T. Social innovation to drive corporate sustainability.	<i>Social innovation.</i>
5	2014	Hsu, C. L., & Liao, Y. C. Sustainability strategies and reverse logistics management: A contingent link.	<i>Proactive environmental strategies; reverse logistics management; market demand pull.</i>
6	2016	Upstill-Goddard, J., Glass, J., Dainty, A., & Nicholson, I. Implementing sustainability in small and medium-sized construction firms.	<i>Construction industry; corporate social responsibility; absorptive capacity.</i>
7	2016	Unceta A., Castro-Spila, J., & Fronti J. G. Social innovation indicators.	<i>Social innovation indicators; absorptive capacity; Basque Country; RESINDEX.</i>
8	2016	Seo, H. G., Chung, Y., Woo, C., Chun, D., & Jang, S. S. SME's appropriability regime for sustainable development-the role of absorptive capacity and inventive capacity.	<i>SMEs; appropriability; knowledge exploration.</i>
9	2016	Picoli, F. R., & Takahashi, A. Capacidade de absorção, aprendizagem organizacional e mecanismos de integração social.	<i>Absorption capacity; organizational learning; social integration mechanisms.</i>
10	2017	Unceta, A., Castro-Spila, J., & García Fronti, J. The three governances in social innovation.	<i>Social innovation indicators; governance index; RESINDEX.</i>
11	2017	Garay, L., Font, X., & Pereira-Moliner, J. Understanding sustainability behaviour: The relationship between information acquisition, proactivity and performance.	<i>Sustainability information; absorptive capacity; sustainability motivations; sustainability practices; small firms.</i>

(continue)

(Figure 4.1 (continuation))

ARTICLES USED TO SUPPORT THE DISCUSSION

No.	Year	Authors and titles	Constructs
12	2017	Gunasekaran, A. et al. Big data and predictive analytics for supply chain and organizational performance.	<i>Big data; assimilation; routinization.</i>
13	2017	Klewitz, J. Grazing, exploring and networking for sustainability-oriented innovations in learning-action networks: An SME perspective.	<i>Boundary spanning; learning-action network.</i>
14	2017	Liao, S.-H., Chen, C.-C., Hu, D.-C., Chung, Y.-chun, & Yang, M.-J. Developing a sustainable competitive advantage: Absorptive capacity, knowledge transfer and organizational learning.	<i>Absorptive capacity; knowledge transfer; organizational learning.</i>
15	2018	Roszkowska-Menkes, M. T. Integrating strategic CSR and open innovation. Towards a conceptual framework.	<i>Corporate social responsibility; open innovation; sustainable innovation; strategic CSR; corporate social innovation.</i>
16	2018	Zhai, Y. M. et al. An empirical study on entrepreneurial orientation, absorptive capacity, and SMEs' innovation performance: A sustainable perspective.	<i>Entrepreneurial orientation; innovation performance; absorptive capacity.</i>
17	2018	Rodriguez, L., & Da Cunha, C. Impacts of big data Analytics and absorptive capacity on sustainable supply chain innovation: A conceptual framework.	<i>Absorptive capacity; sustainable supply chain innovation.</i>
18	2018	Melane-Lavado, A., & Álvarez-Herranz, A. Different ways to access knowledge for sustainability-oriented innovation. The effect of foreign direct investment.	<i>Sustainability-oriented innovation; foreign direct investment.</i>
19	2019	Shier, M. L., Handy, F., & Jennings C. Intraorganizational conditions supporting social innovations by human service nonprofits. Nonprofit and voluntary sector quarterly.	<i>Social innovation; human service; social services.</i>
20	2019	Shahzad, M. et al. Impact of knowledge absorptive capacity on corporate sustainability with mediating role of CSR: Analysis from the Asian context.	<i>Sustainable development; knowledge absorptive capacity; corporate social responsibility.</i>
21	2019	Xue, M., Boadu, F., & Xie, Y. The penetration of green innovation on firm performance: Effects of absorptive capacity and managerial environmental concern.	<i>Green innovation; absorptive capability; managerial environmental concern.</i>
22	2019	Liu, L., Zhang, M., & Ye, W. (2019). The adoption of sustainable practices: A supplier's perspective.	<i>Sustainable supply chain management; supplier development; knowledge base.</i>

(continue)

(Figure 4.1 (conclusion))

ARTICLES USED TO SUPPORT THE DISCUSSION

No.	Year	Authors and titles	Constructs
23	2019	Rodriguez, R., Svensson, G., Hogevoid, N. M., & Eriksson, D. Factors and determinants of value- and business-driven sustainability initiatives in health care organizations: Intrinsic differences and extrinsic similarities.	Spain; sustainability; health care.

Source: Elaborated by the authors.

The reviewed articles showed the correlation between the constructs addressed, highlighting the characteristics and emphasizing the importance of absorptive capacity for organizational sustainability, as it will be explored in the following discussion.

5. DISCUSSION

In the past decades, organizations have followed a path to develop a successful relationship with their stakeholders. One of the essential pillars of this relationship is organizational sustainability, which aims to preserve the social, cultural, economic and environmental components in which the organization operates (Shahzad et al., 2019).

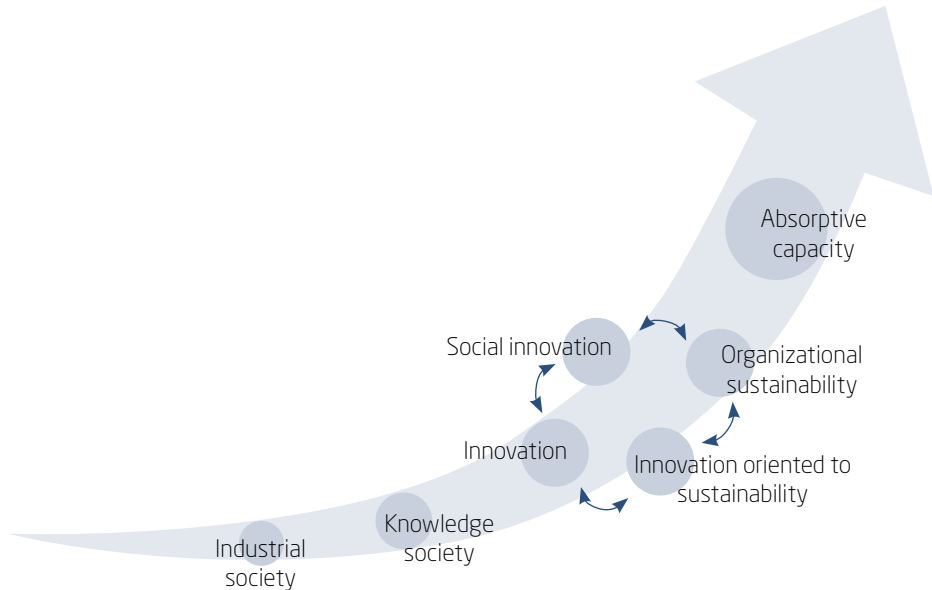
Thus, current researches discuss the remarkable moments of the transformations in these relationships and considers the knowledge absorptive capacity as the master key for success. The analyzed studies showed these relationships in four contexts: innovation, social innovation, innovation oriented to sustainability, and organizational sustainability, which can be seen in Figure 5.1.

The transition from the industrial society to the knowledge society was long, lasting approximately two centuries, driven by the demands of the growing population and by the search for new products and competitive advantages. An organization’s ability to recognize the value of information is essential to its innovative capacity (Takeuchi & Nonaka, 2008; Zhai et al., 2018).

Innovation in organizations can be considered systemic and interactive because organizations use any elements or people that may have internal or external information, and use it to create businesses (Garay, Font, & Pereira-Moliner, 2017; Roszkowska-Menkes, 2018).

(Figure 5.1)

EVOLUTIONARY CYCLE OF THE MAIN CHANGES THAT OCCURRED IN KNOWLEDGE ORGANIZATIONS STARTING FROM THE INDUSTRIAL SOCIETY



Source: Elaborated by the authors.

It is necessary to remember that, at this phase, the concepts of innovation and competitive advantage were driven by Porter's five forces and generated profit and organizational sustainability. The concept of absorptive capacity, in its turn, obtained significant relevance, supported by the thought that the greater the internalized knowledge, the easier it will be to acquire new knowledge. This new way transforms management modes and leads to paths that make it possible to differentiate the innovative organizations from the others (Cohen; Levinthal, 1990; Porter, 2008; Roszkowska-Menkes, 2018).

As already mentioned, the evolution of innovations creates – both for the organization and for national and international government policies, in view of the difficulty to manage its impacts on natural resources – a concern about society, about the organization itself and about how to respect and better understand the reproductive capacity of ecosystems. This context encompasses several themes, described below, and is the target of researchers (Hsu & Liao, 2014; Lozano & Huisingh, 2011; Rodriguez & Da Cunha, 2018; Seo, Chung, Woo, Chun, & Jang, 2016).

According to Hsu and Liao (2014), proactive corporate social responsibility has been considered an advocate of innovation oriented towards



environmental sustainability (or as the authors say, of “eco-innovation”), together with the creation of more restrictive policies to punish harmful behaviors to the environment and that prevent the risks of bad reputation.

Another aspect discussed in the same study concerns the growing awareness of consumers in relation to environmental protection and to the reduction of manufacturing costs. The authors analyzed these aspects with attention to the management of reverse logistics, which is closely related to “eco-innovation”, and extended the transaction cost theory in relation to the corporations, which can develop strategies for organizational sustainability in their search for competitive advantage. In most cases, although green strategies can differentiate products and target certain markets, they usually come with an additional cost. Therefore, organizations should develop proactive environmental strategies that are also focused on reverse logistics activities, reducing costs by recovering products through recycling, repairing or manufacturing (Hsu & Liao, 2014).

In their considerations, Melane-Lavado and Álvarez-Herranz (2018) stated that sustainability-oriented innovation demonstrates the intention to develop a product or service that contributes to social, environmental and economic sustainability and, for this reason, it increasingly attracts institutional and academic attention.

The study by Shier, Handy, and Jennings (2019) with 65 nonprofit organizations in the humanitarian services sector in Pennsylvania, provided empirical evidence that served to identify, within intra-organizational conditions, factors that create barriers to their efforts to undertake social innovations. They concluded that the areas of organizational development related to leadership, teams, volunteer involvement, procedures, and processes are indicators that positively support the development and accomplishment of social innovations.

Another experimental study with 324 small and medium-sized companies analyzed the relationship between entrepreneurship, absorptive capacity, environmental dynamism and corporate technological innovation performance. The results showed that when the external environment exhibits a high dynamism, the moderating effect of the absorptive capacity will be stronger than when the environment is at low dynamism. In addition, the moderating effect of absorptive capacity on entrepreneurial orientation is generally affected by the dynamism of the organizational culture, as well as by the performance of innovation (Zhai et al., 2018).

The dynamic capacities of organizations have the absorptive capacity as an important component because it provides learning between partners and



access to external information and knowledge, which can be integrated and stored, in addition to establishing a significant correlation between absorptive capacity and innovation processes (Xue, Boadu, & Xie, 2019).

Thus, it is advisable for companies to strengthen their absorptive capacity and improve the ability of employees to adapt, in order to guarantee the development of the company's innovation capacity and a dynamic environment, in addition to strengthening cooperation with research centers (with universities, for example) (Zhai et al., 2018).

Another important factor for this to become a reality is that suppliers must adopt sustainable practices, as they are responsible for a critical role in the environmental performance of global organizations (Liu, Zhang, & Ye, 2019).

Regarding innovation oriented towards organizational sustainability, a survey involving small and medium-sized companies, investigated how they can conquer new markets, reduce expenses and improve the quality of life. The author states that companies that follow innovative strategies in their processes, products and organizational structures or that have their innovation systems modified, improved or entirely new when compared to the previous version are environmentally or socially superior (Klewitz, 2017).

In addition, observing three network patterns (grazers, explorers and networkers) that influence on how the strategic orientation of a small or medium-sized company can be affected by the interaction with its knowledge network, he concluded that, through processes of extension of boundaries towards sustainability-oriented innovations, small and medium-sized companies can engage in interactions that complete their innovation processes (Klewitz, 2017).

For a better understanding of the relationship between absorptive capacity, proactivity in sustainability practices and performance in organizational sustainability, a study was carried out, with 408 small and medium-sized companies in the tourism industry. The study notes that absorptive capacity is treated only at the level of knowledge acquisition, and the various sources and channels of information on sustainability and the perception of its usefulness are analyzed (Garay et al., 2017).

In this context, Garay et al. (2017), focusing on proactivity, analyzed three types of motivations for sustainability, adopted at the social, environmental, and economic level: 1. oriented towards growth, related to communication with sources within organizations and to individual and informal channels, while lifestyle motivations are related to communication with other stakeholders; 2. implementation of sustainability, related to commu-

nication with other stakeholders, to the use of collective and formal channels and to the perceived usefulness of information; 3. sustainability performance, related to the introduction of environmental and economic practices, to the use of industry and wider sources of information, and to the perceived usefulness of the information. It is pointed out that training and education in sustainability can be more successful in achieving a change in behavior when they are adapted to the absorptive capacity and learning styles of its target audience.

Sustainability performance is related to the factor communication within organizations and to the perceived usefulness of information on sustainability (Garay et al., 2017).

Civil construction organizations, which are becoming increasingly aware of the impacts of their operations, both from an environmental and, more recently, from a social point of view, have also aroused the interest of researchers. Sustainability patterns can allow an organization to show a level of performance compared to a specific problem (Upstill-Goddard et al., 2016).

By studying how learning capacity and absorptive capacity can contribute to the successful implementation of sustainable patterns within small and medium-sized construction companies, the researchers obtained, as a result, communication channels and commitment to training programs that increase the ability to implement these patterns, but they also found out that small and medium-sized companies tend to adopt them only if they see immediate financial benefits (Upstill-Goddard et al., 2016).

In addition, they noted how important it is that stakeholders put pressure on organizations to positively influence engagement with sustainability patterns. Another fact observed was that the lack of efficiency in communication, both internally and with other organizations, represents a major barrier to the implementation of organizational sustainability and, therefore, it will only be possible to break these resistances if everyone is involved to create and manage knowledge within the company (Upstill-Goddard et al., 2016).

A survey using a questionnaire was carried out to collect data and information from financial and high-tech industries, and proposed a theoretical model to investigate sustainable competitive advantage through the development of absorptive capacity, knowledge transfer and organizational learning. It was concluded that organizational learning can be used as a partial mediator between absorptive capacity, knowledge transfer, and sustainable competitive advantage (Liao, Chen, Hu, Chung, & Yang, 2017).

For the sustainable growth of small and medium-sized companies, it is necessary to protect their innovations and increase their profit. In this context, Seo et al. (2016) investigated the appropriability regime, which are formal mechanisms (such as patents, licenses, and trademarks), and informal ones (such as secrecy and complex design), which allow to guarantee financial returns through investments in research and development. It is also necessary to continuously invest in innovation, but this depends on the ability to explore the acquired knowledge, which is understood in the article as inventive capacity and absorptive capacity. This research showed evidence that formal and informal appropriability regimes can improve the performance of innovation in the organization (Seo et al., 2016).

Therefore, small and medium-sized companies can increase their knowledge assets and obtain a competitive advantage and financial return from their knowledge exploitation capabilities, that is, when the knowledge exchange is made safely using the informal appropriability regime, the effects of creating value absorptive capacity can improve innovation performance. However, the ability to extract knowledge external to the organization is beneficial for innovation, but it generates risks of knowledge overflow when the values created come from external sources (Seo et al., 2016).

In the same direction, Rodriguez and Da Cunha (2018) investigated in the literature how absorptive capacity can facilitate the use of Big Data and predictive analysis in the innovation of the sustainable supply chain. Through conceptual analysis, the authors proposed a conceptual framework that links innovation drivers (internal and external), big data and predictive analysis, absorptive capacity, and innovation performance in the sustainable supply chain.

Big data and predictive analysis is an emerging paradigm, understood as a comprehensive expression that encompasses several techniques to deal with data characterized in terms of large volume, speed, variety, truthfulness and value. In addition, this paradigm helps facing the critical challenges of predictive analysis, which refers to knowledge capture, storage, transfer and sharing it with decision-making (Gunasekaran et al., 2017).

In this context directly related to innovation stands the society, which has become increasingly aware of the production processes of the organizations. Social innovation is a well-known expression, and it is considered a process that makes public the institutional changes related to social entrepreneurship phenomena (Chalmers & Balan-Vnuk, 2013).

Chalmers and Balan-Vnuk's (2013) study on social innovation addresses the reason why people get involved in this process and especially the understanding of how it is implemented by organizations. It also analyzes

the means by which non-profit ventures, which seek socially innovative activities, develop the necessary capacities to innovate.

The multidimensional theoretical construction of absorptive capacity and the concept of evolutionary economy of organizational routines were used to analyze 14 case studies of innovative non-profit enterprises in Australia and the United Kingdom. The results showed that configuring internal and external absorptive capacity routines to combine knowledge flows from users and technologies has a unique mediating function in the social innovation process. In addition, in both countries the surveyed organizations generally adopt flat hierarchical structures and emphasize the empowerment of employees and volunteers to participate in the innovation process; and the organization's social mission was identified as a key criterion for determining which new ideas should proceed to implementation or be aborted (Chalmers & Balan-Vnuk, 2013).

The absorptive capacity of knowledge allows understanding the dynamics through which social innovations are produced at the level of the organization. Therefore, in order to carry out a social innovation, organizations must have at least three skills: to interpret a social problem, according to a perspective on the causes, possible effects, and alternatives; to assimilate and transform interpretation according to an internal pattern of knowledge and experience, integrating this knowledge into products, services and methods that provide answers to solve the problem, and; finally, to explore the results obtained, that is, experiment, transfer solutions, and assess impacts (Unceta et al., 2017). The article by Unceta et al. (2017) also shows the dynamics between demands from social problems, social innovations/solutions in relation to the relationship between absorptive capacity and open innovation at the organizational level.

The authors further explore, through the analysis of a social innovation pilot project, the relationship between three types of governance in social innovation projects, namely, social governance, inter-organizational governance and sustainable governance.

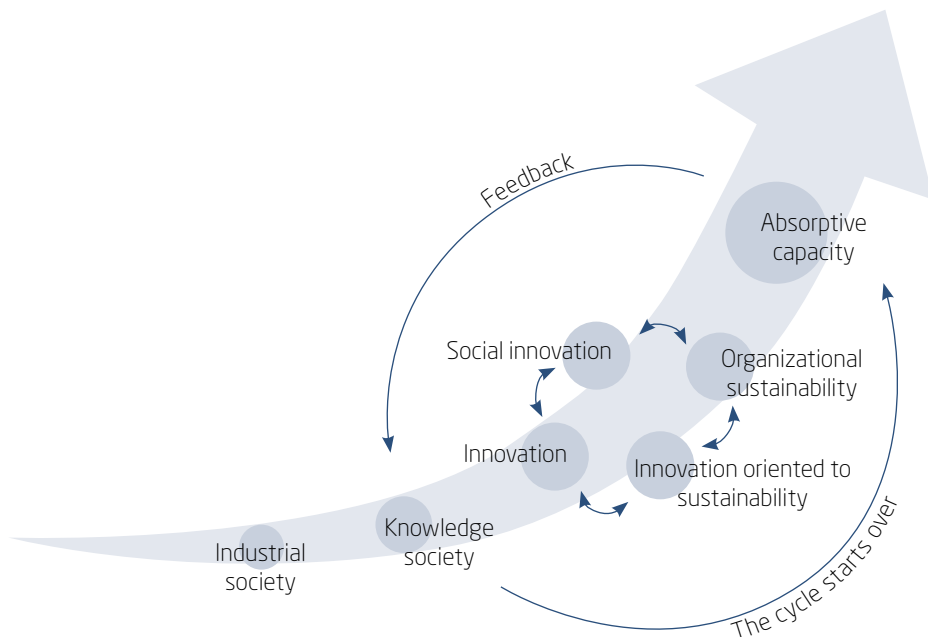
According to Unceta, Castro-Spila, and Fronti (2016), the analyzed article contributed to the conceptual and empirical discussion on social innovation indicators, at the organizational and regional level, through the results of the Regional Social Innovation Index, which makes the connection between the knowledge absorptive capacity and social innovation into four types of regional agents: profit and profitable organizations, universities, and technology centers. The Regional Social Innovation Index model conceptualizes social innovation as an epistemic intervention. From this point of view, the concept of knowledge absorptive capacity is appropriate to

explain and measure social innovation as a process of knowledge interpretation, assimilation, combination and exploitation, applied to the creation of new products, processes, methods or services to meet the unmet social demands.

Regarding the absorptive capacity, it was possible to notice that practically all the articles cited in the discussion reported it in their most varied subjects. From the moment that organizations manage to maintain the flow of knowledge, they also reach a degree of excellence. From this moment on, the sustainable cycle of knowledge occurs by means of feedback. As already mentioned in the introduction, this feedback further increases the knowledge acquired and thus increases the innovation capacity (Cohen & Levinthal, 1990). Figure 5.2 shows this mechanism.

(Figure 5.2)

ILLUSTRATION OF FEEDBACK ON INNOVATION ABSORPTION CAPACITY



Source: Elaborated by the authors.

In this same line of thought, the authors Chalmers and Balan-Vnuk (2013) and Zhai et al. (2018) reinforce that high absorptive capacity helps companies to recognize entrepreneurial opportunities and to absorb the resources of external knowledge, thus promoting quick responses to changes



that, in turn, reduce the risks and uncertainties of the market dynamics. With mastery in absorptive capacity, organizations can accelerate the acquisition, learning and use of new technologies, answer fundamental questions, and increase and improve the frequency, speed, magnitude and performance of innovation.

Another study that addresses absorptive capacity considered it as one of the most important concepts in the literature on learning between partners and innovation leveraging alliances, which can also be called intersectoral alliances. The result of the analysis suggests that, due to the differences between alliance partners, their individual goals and types of innovation imperfectly reflect the dynamics of learning and innovation. From this breaking point, the concept of relational capacity for social innovation is introduced, proposed as a more adequate model for the analysis of learning and innovation in the context of intersectoral alliances, especially those that operate at the base of the economic pyramid (Murphy, Perrot, & Rivera-Santos, 2012).

An important factor to be observed when addressing the development of an organization's absorptive capacity is the cognitive capacity of its team, considering the absorptive capacity of each individual, simply because the absorptive capacity of an organization differs from the individual capacity of its members. This can be intensified by the role of knowledge diversity within the organization. Thus, the development of absorptive capacity and innovative performance depend on the history or the path taken, and it is reported that the lack of investment in an area of anticipated specialization can hinder the future development of technical capacity in that area (Picoli & Takahashi, 2016; Zhai et al., 2018).

An excellent absorptive capacity helps companies to identify and obtain new external knowledge, assimilate this recent knowledge and combine knowledge to generate new knowledge and solve problems; it is something continuous. Similarly, this occurs in companies with proactivity, which are more likely to have accelerated speeds of environmental scanning, stronger ability to recognize opportunities, and greater discovery ability, when compared to organizations that are not proactive (Picoli & Takahashi, 2016; Zhai et al., 2018).

Therefore, organizations that have a high absorptive capacity will be able to quickly and accurately understand these information resources, and will act in advance to quickly obtain means and exploit these resources that come from information from the outside world. In general, entrepreneurial and proactive organizations with high absorptive capacity are able to promote a good technological innovation performance (Picoli & Takahashi, 2016; Zhai et al., 2018).



The result was the identification of four themes that describe the relationship between open innovation and strategic social responsibility: employee engagement, involvement of external stakeholders, conducted selective disclosure, and approach to corporate social innovation; and they explain the bidirectional relationship between strategic processes of selective disclosure conduct and open innovation. Mechanisms are also presented, through which the company, when implementing open innovation practices in its social responsibility strategy, captures the proportion of value created for its stakeholders (Roszkowska-Menkes, 2018).

A final fact of equal relevance is that organizational sustainability initiatives are based on business values (Rodriguez, Svensson, Høgevold, & Eriksson, 2019).

6. FINAL CONSIDERATIONS, LIMITATIONS, AND FUTURE DIRECTIONS

The phases that make up the evolution of organizational strategies, shown in figures 5.1 and 5.2, have different characteristics. Because it is a non-linear, cyclical and transdisciplinary process, innovation aims to increase or create processes, products and services to generate competitive advantage.

Social innovation highlights the importance of including society, especially vulnerable groups, to solve problems and improve quality of life.

Sustainability has a range of concepts that can challenge the researcher, with limitations or diversions from the research focus. In this work, emphasis was placed on understanding some of the strategies that companies need in order to achieve organizational sustainability, through the description of the characteristics of the evolutionary phases of knowledge in organizations, as well as their relationships.

Absorptive capacity as a fundamental instrument for the development and organizational success is dependent on skills and experiences acquired by the team, in addition to the continuous maintenance of the transformation.

All articles used in the discussion showed a consensus regarding the absorptive capacity: there is interrelation and interpenetration with innovation, with society or with the organization itself. Thus, it enhances the achievement of behavioral change, reduces the complexities of organizations and creates other market niches.

The use of absorptive capacity has become an important guideline for the success of organizations, with the entire innovation process being fed

back and consequently creating competitive strategies. Understanding, in a synthesized way, some of these strategies that companies need to achieve organizational sustainability is crucial for their evolution.

A difficulty factor was to differentiate the articles that related absorptive capacity to organizational sustainability, due to the fact that this term is mostly related to environmental, economic, and social issues.

Thinking about future research, studies are recommended to clarify these differences when related to other areas, with the aim of applying, complementing and integrating their benefits in generating value.

A CAPACIDADE ABSORTIVA COMO *FEEDBACK* NA SUSTENTABILIDADE DAS ORGANIZAÇÕES

RESUMO

Objetivo: Descrever as características das fases que compõem a evolução do conhecimento, como inovação, inovação social, inovação orientada para a sustentabilidade, sustentabilidade organizacional e capacidade absorptiva, bem como suas correlações.

Originalidade/valor: Fornece uma visão panorâmica do potencial da capacidade absorptiva relacionando-a com inovação social, inovação orientada para a sustentabilidade e sustentabilidade organizacional. Aborda temas e conceitos relacionados que incorporam as estratégias para alcançar a sustentabilidade organizacional e quem vem ganhando cada vez mais importância e espaço entre essas discussões. Foram utilizadas três bases de dados para selecionar os artigos: Scopus, Web of Science e SciELO. Para fundamentar os principais conceitos, foram necessários referenciais teóricos de estudos científicos mais recentes que pudessem contribuir para o esclarecimento dos termos e das definições.

Design/metodologia/abordagem: Trata-se de uma revisão bibliográfica narrativa. Foram utilizados trabalhos caracterizados por discussões mais amplas, o que é ideal para identificar e descrever o estado conceitual de determinado tema.

Resultados: Por meio dos artigos pesquisados, exploraram-se as características da inovação, da inovação orientada para a sustentabilidade e da inovação social, as quais norteiam os valores da sociedade e influenciam as estratégias das organizações cada vez mais. Dessa forma, foi

possível observar e compreender a capacidade absorptiva como um instrumento fundamental para as estratégias que asseguram a sustentabilidade organizacional.

PALAVRAS-CHAVE

Inovação. Inovação social. Sustentabilidade organizacional. Aprendizagem. Capacidade absorptiva.

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