



A systematic literature review on corporate sustainability: contributions, barriers, innovations and future possibilities

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Abstract

This paper aims to understand the current research scenario through published studies on corporate sustainability, emphasizing the environmental approach. Methodologically, this research develops a systematic literature review based on papers published in the Web of Science database in the last ten years. As a result, there was an upward evolution of research on the searched topic, with one hundred fifteen publications in the last three years compared to one hundred six documents published in the previous seven years. It is also observed that studies published at the beginning of the time frame between 2011 and 2020 were more concerned with the adoption of corporate sustainability, while the most recent research focuses on new approaches and methodologies for its implementation. And, with regard to its implementation, one of the main barriers is the incorrect perception of senior managers that the results from corporate sustainability must be more linked to the economic than to the environmental and social spheres. As relevant aspects, this study observed that new technologies, currently led by the 5th generation mobile network (5G) and Fourth Industrial Revolution (Industry 4.0), can contribute to the insertion of corporate sustainability in the industrial context. It also noted that, despite being recent, COVID-19 was considered by several researchers as an event to be considered in terms of corporate sustainability.

Keywords Corporate sustainability · Social responsibility · Sustainable development · Social performance · Triple bottom line · Environment

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1 Introduction

The term “sustainable” has been used since 1978 by the United Nations as a synonym for ecological development. However, with the popularization of other terms in this context, such as sustainability and sustainable development, there was a large number of definitions proposed for both (Johnston et al., 2007), reaching, for example, the number of 70 only for sustainable development (Lozano, 2008). Discussions continued with the dissemination of the term through the Brundtland Commission Report in 1985 and at the United Nations Conference on Environment and Development, which took place in Rio de Janeiro in 1992. In the business context, some variations and definitions were used, among them are the “triple bottom line” (TBL) theory, suggested by Elkington (1998), which consists of the balance in equal harmony between the social, environmental and economic aspects of the companies.

As noted above, adoption by a culture concerned with the macroenvironment is not new. Corporate Social Responsibility has addressed the issue for more than 50 years (Bowen, 1953). This way of thinking also has several definitions, but there is an understanding regarding the responsibilities that corporations apply in addition to what the legislation requires them to practice (McWilliams et al., 2006a; 2006b). Besides, there are several points in common between Corporate Social Responsibility and corporate sustainability (CS), however CS can be defined as the application of sustainable development at the micro-level, that is, at the corporate level, through a short-term concern related to the economic and environmental aspects and long-term regarding the social performance of the company (Steurer et al., 2005).

Throughout our research, we observed the existence of several literature reviews on corporate sustainability that sought (and were able) to organize the state of the art of the topic, consolidating the individual efforts of several researchers in a single document. However, we also identified some gaps, namely: (i) the methodological characteristics of the publications, broken down into context, application area and research methods used; (ii) the main research clusters on corporate sustainability, which took into account current aspects, such as COVID-19; (iii) the main contributions of corporate sustainability to organizations, segmented into improving the organization’s performance and reputation, partnerships between the organization and stakeholders, improving the organization’s environmental management and, finally, improving the organization’s human resources; (iv) the main barriers that organizations must overcome in order to adopt corporate sustainability; (v) the main guidelines that organizations must follow to overcome barriers and, thus, be able to implement corporate sustainability, and; (vi) the main innovative approaches in corporate sustainability.

In view of so many aspects, the main objective of this research is to identify, analyze and organize information on corporate sustainability that will help us fill the gaps presented. Through a Systematic Literature Review (SLR), the intention is to analyze the evolution of CS within the scholar community in the last ten years, with particular attention on the contributions of the topic to organizations, the limitations and guidelines for the adoption of CS, besides the innovations implemented in the focused period analysis. With the proposed mapping of publications in the last ten years, it will also be possible to observe the main research clusters and recommendations of future research that have been completed, as well as the promising areas within this field of action and study.

The present research is relevant for at least three aspects: (i) corporate sustainability has become a matter of growing international concern (Zhang et al., 2020), being considered

as a fundamental solution for the creation of a prosperous future (Ikram et al., 2020); (ii) eco-efficiency and society should be prioritized to improve corporate sustainability performance, with a focus on encouraging environmental innovation (Xia et al., 2020)—our research addresses issues related to innovation in the area of corporate sustainability, including the COVID-19 pandemic as one of the research clusters to be considered; (iii) the progress of organizations towards sustainable development has been slow (Baumgartner & Rauter, 2017), indicating the need for more concrete guidelines that allow companies to achieve corporate sustainability—our research raises barriers that hinder the adoption of corporate sustainability and presents guidelines for the adoption of corporate sustainability by organizations. Several other justifications for carrying out this research could be included here, but we will end with the one we consider most relevant: filling each of the gaps pointed out in the previous paragraphs of this introduction.

Finally, it is observed that the theme of corporate sustainability can be approached from the social, environmental and economic perspectives; which, in turn, unfold into the most diverse categories, such as environment, management and business, ethics, finance, economics, engineering, among others. In this sense, due to the broadness of the theme, the research was delimited from the environmental perspective. More details on this delimitation can be found in Sect. 3 (materials and methods). Besides, in addition to this introduction, the present research is organized into five other sections, as follows: the next section will address a theoretical review on SC and the main findings in literature review works on this topic; Sect. 3 contemplates the research methodology; Sect. 4 addresses the SLR; Sect. 5 presents the agenda and directions for future research; Finally, Sect. 6 describes the conclusions of the study, followed by bibliographic references.

2 Review of corporate sustainability

CS can be defined as the adaptation of economic, environmental and social factors to the activities and mechanisms of corporate decision-making, together with principles of corporate governance and risk management applied to these issues (Vardari et al., 2020), seeking sustainable development while minimizing risk and increasing the value of a company, including shareholder value (Lee, 2019). It results from a complementary and connected relationship between the organizational capacities that affect its strategic dimension and the socio-environmental practices that contribute to its operational dimension (Mohammadi et al., 2018).

The application logic emphasizes the thinking of the TBL (Triple Bottom Line), which brings together people, planet and profit, within the scope of its business plan. The objective of CS is that a company can positively and simultaneously impact economic growth, social equity and human development, benefiting in terms of risk management and competitive advantage (Cho et al., 2018). It is an approach that creates long-term value through the integration of financial and non-financial indicators (Rustam et al., 2019).

For its implementation, it is of fundamental importance that organizations incorporate sustainability strategies in their business models, from changes in their governance, in the short term related to the economic and environmental aspects and, in the long term related to the social performance of the company, having focus on results that contribute to a continuous improvement (Ashrafi et al., 2018).

In addition to internal issues, CS is seen as paramount to comply with government regulations in the pursuit of economic benefits and improve the company's image, thus

restricting external pressures from suppliers, customers, investors and NGOs (Ashrafi et al., 2018), being developed from economic development policies and government approaches, through the adoption of policies and regulations in support of sustainable development (Mishra et al., 2020).

It is possible to create social value by contributing to the development and well-being of society by carrying out and supporting social initiatives and projects for poverty alleviation, human and child development, equity and social and gender justice (Ray & Chaudhuri, 2018). In an analysis of the 20 main materials published in the area Vildasen et al. (2017) observed that 3 explicitly dealt with the economic-environmental context, 7 with the social-economic and 10 with the socio-environmental-economic context, confirming the link between the areas in the definition described above.

2.1 Corporate sustainability approach

Although corporate performance can be evaluated separately, from the social, environmental, economic and responsibility perspectives, it is interesting that Montiel (2008) and Bansal and Song (2017) observed a tendency to converge these elements into an integrated evaluation from the corporate sustainability approach. Also, it is noticed that academic research still diverges from the practice of firms in terms of corporate sustainability (Montiel & Delgado-Ceballos, 2014), possibly because of the complexity that corporate sustainability measurements have gained over time from the scholars' perspective. This can be evidenced, for example, in Wagner (2010), in which the author shows that innovation does not necessarily relate to corporate sustainability in the presented case study. However, it is important to highlight that as higher requirements are expected from clients and firms that operate at different geographical scales, the academic community is highlighting the need to improve corporate sustainability in theoretical, methodologic and operational terms, in order for companies to deliver more integrated results on corporate performance from a sustainable perspective (Baumgartner, 2014; Wagner, 2005), and therefore be aligned with the global 21st-century challenges in terms of corporate performance and sustainability.

Endiana et al. (2020) affirm that the accounting sector of a company can promote environmental conservation through environmental costs, and at the same time, improve performance when implementing a Corporate Sustainability Management System (CSMS). Mainly, Endiana et al. (2020) evidence that allocating appropriate environmental costs through CSMS can effectively improve the company's financial performance. Besides, it is believed that a proper application of CSMS, with the disclosure of environmental activities and costs (e.g., of a land, materials, energy, etc.), can enhance customer loyalty. From the employees' perspective, Chang et al. (2020) analyzes the effect of green product psychological ownership on their behavior and performance. Specifically, Chang et al. (2020) evidence that it is important to establish a solid Green Shared Vision to avoid green confusion, related to the environmental characteristics of a company's products or services, and improve employees' economic performance. From a methodological concern Kafa et al. (2020) evidences the need for companies to build supply chain management processes that consider the adequate criteria to achieve corporate sustainability.

In a similar approach to Chang et al. (2020), Mazur and Walczyna (2020) indicate that it is relevant that the sustainable management of human resources (SMHR) is adequately implemented when the company has a solid view of its corporate sustainability perspective, with particular attention on meeting the firm's needs without compromising the ability to meet future stakeholders' needs. Also, Mazur and Walczyna

(2020) indicate that the SMHR should support the company's sustainable development strategy, promote fair treatment and well-being of employees, support environmentally-friendly practices within the organization, and other functions.

From a broader perspective, Kantabutra and Punnakitikashem (2020) believe that a sum of practices, such as long-term orientation, gradual expansion, risk management, employee priority, innovation within others, leads to an improvement in corporate sustainability performance, because they will impact on the rational use of resources, better working conditions for employees, the longevity of the company and its operations.

Xia et al (2020) highlight practices that can improve the corporate sustainability performance of a company, in terms of socio-environmental, socio-economical, and eco-efficiency aspects. Specifically, these practices are related to encouraging environmental innovation, redesigning consumers' offer, raising support for institutions and policy measures, and organizing synergetic involvement among stakeholders. In this same direction, Crisóstomo et al. (2020) identify determinants for corporate sustainability performance. Within these determinants, there are: ownership concentration; companies from environmentally risky sectors; profitability; the firm's size; growth opportunities; and dept.

Considering the global concern that companies should align their corporate sustainability goals to international requirements, Zhang et al. (2020) propose using indicators from the global reporting initiative (GRI) for the corporate sustainability disclosure of firms. However, Zhang et al. (2020) assure that there are still challenges because firms in different countries may have a different understanding of corporate sustainability compared to international guidelines, such as those established in the GRI.

Also, Weber and Chowdury (2020) point out the relevance of evaluating corporate sustainability by separating indicators into four groups: social sustainability, environmental sustainability, green products; and services. With a more in-depth approach, Ikram et al. (2020) believe that more categories are needed in order to value specific aspects of the firms, such as social sustainability. In specific, Ikram et al. (2020) proposes nine categories: Corporate Governance; Product Responsibility; Transparency and Communication; Economic; Environmental; Social; Natural Environment and Climate Vulnerability; Energy Consumption; and Pandemic COVID-19 impact. The proposed diverse categories to evaluate corporate sustainability is aligned with the current needs of companies to achieve "real" sustainability, because the traditional triple bottom line of sustainability is not sufficient and may even lead to a business-as-usual perspective, as mentioned by Milne and Gray (2013).

In complement to this, it is relevant to issue how different perspectives on sustainability by managers can influence on decision-making, whether they are more radical or moderate. About this, Hahn et al. (2014) assure that the team setting of a company should be diverse in terms of views on problem-solution and sustainability issues. Authors affirm that if teams are dominated by business case-minded (more focused on economic objectives) or paradoxical types (with higher awareness on environmental and social issues), they may be less successful in achieving a significant corporate sustainability performance, while a mixed team may be better in these terms.

Interestingly, Baumgartner and Rauter (2017) argue that to achieve expected corporate sustainability standards, it is important to explore how management can contribute to creating value for businesses, society and nature. Mainly, the authors defend that performance could be improved through strategic management, specifically looking at its three dimensions: strategy process, strategy content, and strategy context. Thus, this may strengthen the relationship between strategic management and the sustainable development of a company.

2.2 Main findings in literature review papers on corporate sustainability

In terms of literature review papers on corporate sustainability, there are more than a dozen relevant articles, each with its own focus. Precisely for this reason, it is worth giving a brief description of some of them, as follows.

Goyal et al. (2013) developed a descriptive analysis of papers published between 1992 and 2011 on corporate sustainability performance. The data collected is from the following database: Emerald Full Text; EBSCOS; Elsevier's Science Direct; JSTOR; Taylor & Francis; and Springer-Verlag. The search keywords used by Goyal et al. (2013) were "corporate sustainability performance", "green", "triple bottom line", "environment performance", and "CSR". In total, 101 papers were selected for the quantitative descriptive analysis. In this literature review, the authors identify that there is a trend toward evaluating corporate sustainability from an integrated perspective, in which social, environmental and economic issues are jointly considered.

With a focus on integrating corporate sustainability and strategic management, Engert et al. (2016) reviewed 114 articles through descriptive and content analysis methods published until 2014. As key search terms, authors used: strategic; strategy; strategies; management; corporate sustainability; sustainability; environmental; green; eco; ecological; social; socially; ethical; responsible; and responsibility. The databases for this review were Scopus, Web of Science and Google Scholar. This review shows that there has been an increasing number of publications on the explored research field over the years, that more interdisciplinary work on corporate sustainability is appearing and that there is still a need for more empirical research.

From a conflictive perspective, Van der Byl and Slawinski (2015) undertake an extensive literature and content review to assess tensions of corporate sustainability regarding achieving a balance between economic, social, and environmental aspects. Authors selected 149 papers from 2003 to 2014 from top-tier management and strategy journals that focused on corporate sustainability and tensions related to four approaches: win-win; trade-off; integrative; and paradox. This review identified that while the win-win approach seeks to reconcile social or environmental issues with economic goals, the trade-off puts these issues into conflict. On the other hand, the integrative approach aims to achieve solutions that balance the dimensions of sustainability and the paradox approach seeks to understand the nature of tensions in regard to achieving corporate sustainability, besides looking into innovative and creative solutions.

Under the argument that there is not much application of theories of firm on corporate sustainability, Lozano (2015) review the most used theories and how they can contribute to corporate sustainability. Authors do not undertake a specific process to choose literature, and focus on what they believe is the adequate literature to be reviewed on this topic under an interpretative perspective. Results show that each theory is limited to addressing a particular dimension of corporate sustainability, however it is also argued that there could be a sustainability oriented theory of firm that could gather elements of each theory in order to be aligned with and contribute to corporate sustainability.

Diez-Cañamero et al. (2020) argue that there are no specific instruments that can support an alignment of companies to achieve similarly corporate sustainability. Therefore, the authors identify common indexes, ranking and ratings of corporate sustainability systems to organize a common proposition that could support corporate sustainability development on a larger scale. The documents reviewed in this study were articles and

reports that specially applied corporate sustainability systems within 2010 and 2019. The authors did not specify particular keywords or database systems to search documents but focused on specific websites and reports. The authors conclude that the different approaches to measuring corporate sustainability cause a biased view of sustainability, leading to a diminished importance of sustainable development.

With a focus on corporate sustainability and organizational capabilities, da Cunha Bezerra et al. (2020) proposes a framework based on a systematic literature review under a descriptive approach. The papers reviewed by the authors were found in the web of science database, considering those that were published until February of 2019. The keywords used for the search are related to capabilities, sustainability social performance and social responsibility. Papers were filtered based on the literature review's focus, which led to the consideration of 88 articles. The results of da Cunha Bezerra et al. (2020) indicate that corporate sustainability is closely related to business strategy and the development of specific organizational capabilities.

Arguing that there is a gap between policy and implementation regarding corporate sustainability, Ahmed et al. (2021), through a systematic literature review, explores factors that make implementing corporate sustainability policies difficult. With this aim, Ahmed et al. (2021) selected 107 papers published between 1950 and 2020 in six major editorial groups: Wiley; Taylor and Francis; Emerald; Springer; Sage; and Elsevier. The keywords for the search were: policy; small and medium enterprise; sustainability; Corporate Social Responsibility; corporate sustainability; corporate ethics; corporate philanthropy; corporate citizenship; and corporate sustainability responsibility. Results of this review show that adequate policymaking on corporate sustainability is closely related to several business approaches such as the grassroots approach, environmental impact assessment, integrated sustainability assessment, evidence-based practice approach, and systematic approach.

Schaltegger et al. (2022) highlight the importance of understanding the role of management accounting on corporate sustainability. Within this context, the authors undertake a systematic literature review on sustainability management accounting, based on content analysis. In this review, the 62 papers selected were articles published until 2019 focusing on environmental, social and sustainability accounting found in five databases: EBSCO Host-Business Source Premier (BSP); JSTOR; ScienceDirect; Scopus and Web of Science. This study identifies that the literature shows a timid relationship between the micro-level of sustainable management accounting with a company's meso and macro organizational levels, which means that there are still challenges with regard to extending sustainable management accounting beyond organizational barriers.

Based on the diverse existing challenges for companies to balance economic, social and environmental goals, Luo et al. (2020) conducted a systematic literature review on corporate sustainability paradox management. The 141 papers selected were published in high ranking journals dedicated to management and sustainability until December 2019. The authors undertaken a content analysis of the selected papers and concluded that environmental and cognitive factors create tensions to adopt sustainable solutions; proactive strategies are more present in studies related to corporate sustainability and result more effective in the short- and long-term sustainable goals of a company; and strategies to manage corporate sustainability paradoxes deals with complex business scenarios, on the multi-level and multi-stage approach.

From a human resources perspective, Kainzbauer et al. (2021) conducted a bibliometric analysis to understand how sustainable human resource management contributes to

corporate sustainability. This review selected 807 Scopus-indexed papers from 1982 and 2021 on sustainability in human resource management. The review identified three research development areas: green human resource management; Corporate Social Responsibility; and sustainable human resource management. However, the authors highlight that recently, more importance has been given to environmental issues, leading to the need to generate more contributions to human and social aspects of sustainability.

Analyzing the findings of the research in this subsection, it is observed that they are complementary and have different focuses, despite all of them being methodologically guided by a literature review. In this perspective of complementarity, our work will address the following issues on corporate sustainability: (i) historical evolution over the years; (ii) methodological features; (iii) citation networks and research clusters; (iv) contributions to organizations; (v) Barriers to the adoption by organizations; (vi) guidelines for the adoption by organizations; (vii) innovations; (viii) agenda and future research directions. To this end, we will continue with the methodological approach described and detailed in the next section.

3 Materials and methods

Methodologically, this research was supported by a SLR. Its function is to organize the knowledge disseminated over the last ten years (between 2011 and 2020) on the topic of corporate sustainability, thus increasing the visibility of this subject (Meredith, 1993) and contributing to the topic's investigative process (Easterby-Smith et al., 2002), in addition to providing a historical perspective and the consolidation efforts in this area of knowledge.

According to Gough et al. (2012), SLR is a structured, transparent and reproducible method, characterized by being an objective, replicable approach that, according to Badi and Murtagh (2019), can provide a comprehensive knowledge of scientific research published in a given field of study. The aim of a literature review is to identify gaps in the literature (Tranfield et al., 2003), as well as to address existing limitations on a given topic (De Oliveira et al., 2018). For Wee and Banister (2016), a literature review should gather the research material in a structured way, adding value by discussing relevant aspects and raising promising paths for future research, based on key and emerging topics (Seuring et al., 2005).

In general, SLR begins with clarifying the scope of the research (Agi et al., 2020), followed by the objective of the review (Agi et al., 2020; Tranfield et al., 2003), with a well-defined strategy for data search (Agi et al., 2020; De Oliveira et al., 2018; Tranfield et al., 2003), and collection of research material (Agi et al., 2020; De Oliveira et al., 2018; Tranfield et al., 2003). For Tseng et al. (2019), SLR has four stages, which, in short, involve the identification of data, the screening of initial data, the determination of eligibility and, finally, the inclusion of data.

Taking into account the notes covered in the previous paragraphs, this SLR followed the steps presented in Fig. 1, as a structured research protocol.

In order to focus on the research, the first step started from clarifying its scope and also its objective, which are duly pointed out in the introduction section of this research.

The second step consisted in choosing the database for the research, which in this case was the Web of Science (WoS). Considered one of the main databases in terms of content volume (Abrizah et al., 2013), the platform had more than 38 million publications in its collection for more than a decade (Vieira & Gomes, 2009). Such information reinforces

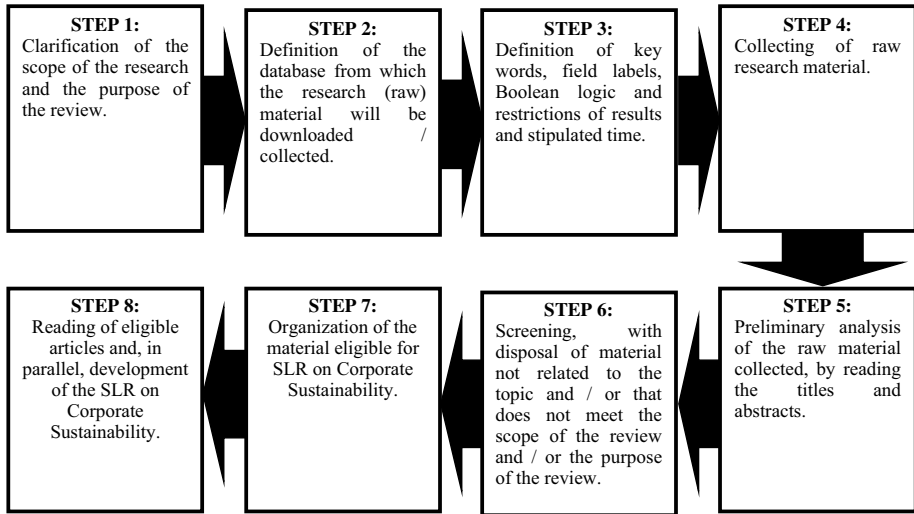


Fig. 1 Structured research protocol for the SLR

the reach (De Oliveira et al., 2021) and, mainly, the amount of content (Machado & De Oliveira, 2021) in this database. Another important point is the quality and numbers of scientific journals published in the WoS (Chadegani et al., 2013).

The third stage of the research identified all articles published from January 1, 2011 until December 31, 2020, and the search was carried out through the "advanced research" tool on WoS. As a search argument, the term "Corporate Sustainability" was used in the title and the term "Environmental" was used in the topic section, simultaneously, using the Boolean logic "AND". As a limitation of this step, it is found that the papers that did not use any of the research arguments in the title, abstract or keywords at least once, did not have their work related to the present study. The number of manuscripts found in this stage was two hundred twenty-one.

The fourth step involved downloading all papers that met the research conditions outlined in the previous step. This material was stored in a folder for later reading of their titles and abstracts. In the fifth and sixth stages, the titles and abstracts were read so that a sorting of the materials could be made, thus discarding papers not related to the topic and inserting in a spreadsheet relevant data from the remaining papers for future reading. Of the 221 initially downloaded articles, 48 were discarded at this stage because they were not directly related to the topic.

Following the technical procedures, the seventh stage addressed the organization of the material eligible for the SRL on CS, and, in the eighth and final stage, the eligible material was read in its entirety, from which the understanding about the CS topic was elaborated over the last 10 years, providing a view of the current scenario, its evolution in the period, as well as opportunities for future research and developments in the field. At this stage, another 17 articles were discarded, leaving 156 articles that were duly cited and referenced in the present research. Figure 2 summarizes this section, segmenting the steps into two macro processes, one for data collection and the other for data analysis.

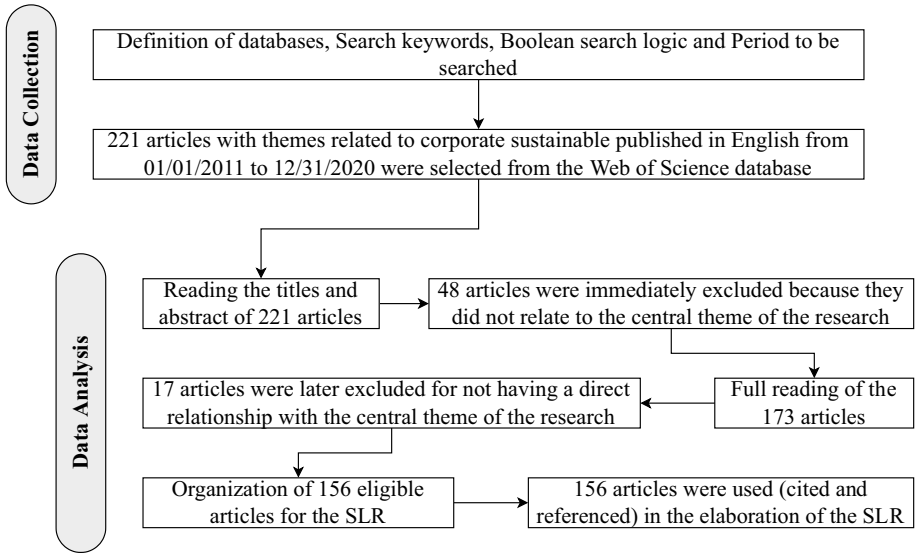


Fig. 2 Summarized methodological scheme for performing the SLR

4 Results of the systematic literature review

In this section, the main results will be presented, starting with the details of the definition found in the collected materials.

4.1 Historical evolution of corporate sustainability over the years

There was a quantitative evolution in relation to the papers published over the last 10 years on CS. From Fig. 3, it is possible to observe an increasing number of publications in this topic, particularly in English-language journals.

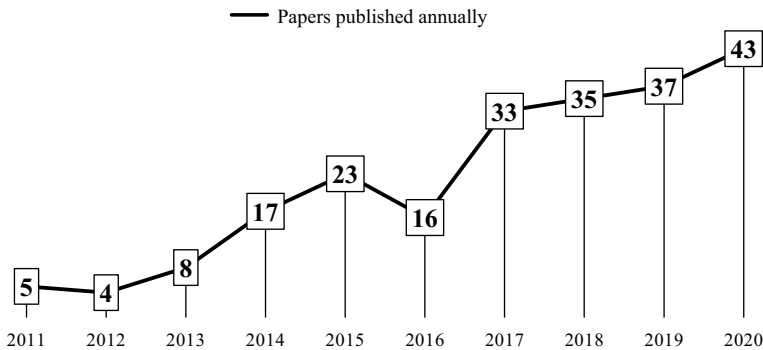


Fig. 3 Historical evolution of the quantity of materials published on CS

Table 1 Year-over-year objectives of the studies analyzed

Year	Objectives	Source
2011	Profitability through CS, adoption of CS	Hahn and Figge (2011), Tang et al. (2011)
2012	CS evaluation, CS adoption	Paraschiv et al. (2012), Schneider and Meins (2012)
2013	Importance of CS, sustainable and financial performance	Przychodzen and Przychodzen (2013), Ramos et al. (2013)
2014	Use of new approaches, evaluation of CS	Hack and Berg (2014), Hahn et al. (2014), Sueyoshi and Goto (2014), Sueyoshi and Wang (2014)
2015	External performance and economic impact, implementation in specific sectors	Fuisz-Kehrbach (2015), Kozlowski et al. (2015), Orsato et al. (2015)
2016	Interaction with producers and stakeholders	Grimm et al. (2016), Jitmaneroj (2016), Pogutz and Winn (2016)
2017	CS assessment, resource and personnel management	Bergman et al. (2017), Bottani et al. (2017), Jung and Ha-Brookshire (2017)
2018	Implementation in untapped sectors, external performance and economic impact	Bodhanwala and Bodhanwala (2018), Mdolo et al., (2018), Reale et al. (2018)
2019	New approaches and methodologies for applying CS	Crifo et al. (2019), Nikolaou et al. (2019), Sueyoshi and Goto (2019), Van den Berg et al. (2019)
2020	Implementation, human resources (diversity and perception)	Cancela et al. (2020), Feng and Ngai (2020), Stahl et al. (2020)

There has been a growing increase in published content, especially over the past four years. It is important to note that the number of materials collected for 2020 covers the entire year, i.e., until December 31, 2020.

Research on CS has undergone variations in terms of objectives, contexts and areas studied. Table 1 shows the historical evolution of the research objectives over the years.

Even with variations over the researched decade, it is noted that the adoption and evaluation of sustainable practices in companies, as well as issues related to the management of CS linked to human resources, received greater attention when compared to other objectives, as shown in Fig. 4.

Complementing this analysis of the historical evolution of CS, one could not fail to address the journals that contributed most to research advances in the area of CS. From the data tabulation, it was possible to perform the mapping shown in Table 2.

From its analysis, it is important to highlight that the journals mentioned in Table 2 have become a reference for obtaining materials on this topic.

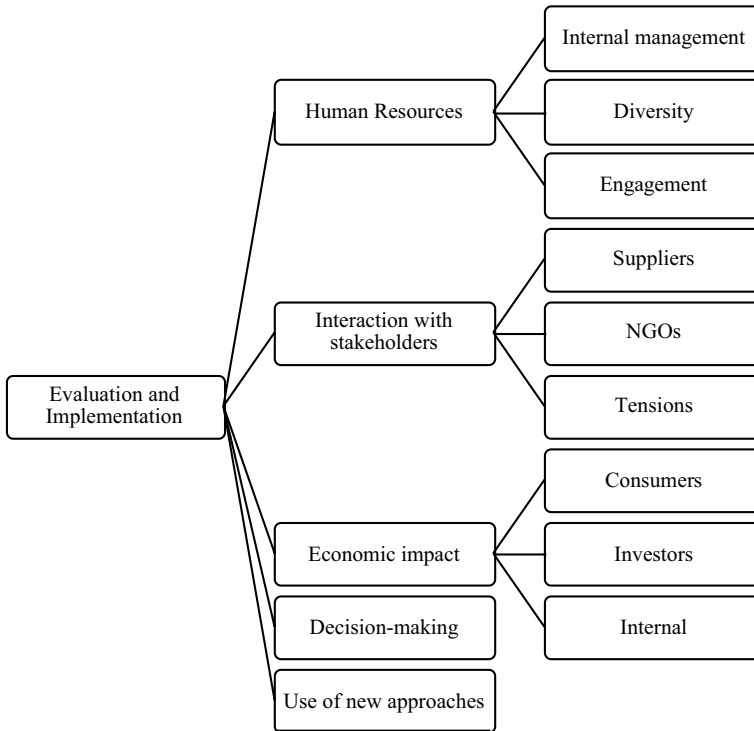


Fig. 4 Main objectives and themes related to the researched materials

Table 2 Main journals with content on Corporate Sustainability environment-focused

Journals	Absolute values	Relative values (%)
Sustainability	31	14.03
Journal of cleaner production	28	12.67
Business strategy and the environment	19	8.60
Journal of business ethics	17	7.69
Corporate Social Responsibility and Environmental Management	13	5.88
Sustainable development	5	2.26
Management decision	4	1.81
Organization environment	4	1.81
Ecological indicators	3	1.36
Energy economics	3	1.36

4.2 Methodological features on corporate sustainability

In the reading phase of the selected material, it was found that the research could be divided into 8 contexts, as shown in Table 3.

Table 3 Context of the analyzed studies

Contexts	Source
Adoption of CS	Mishra et al. (2020), Ashrafi et al. (2019), Fuisz-Kehrbach (2015), Lampikoski et al. (2014), Klettner et al. (2014)
CS analysis	Kozlowski et al. (2015), Amini et al. (2018), Cho et al. (2018), Tarquinio et al. (2018)
Bioeconomy	Aquilani et al. (2018)
Financial performance	Vardari et al. (2020), Gomez-Bezares et al. (2016), Hahn and Figge (2011), Venkatraman and Nayak (2015)
Environmental governance	Wilshusen and MacDonald (2017)
Importance of CS	Smith (2013), Stolz and Bautista (2015), Goyal et al. (2013)
Human resources	Stahl et al. (2020), Tseng (2017), Sadatsafavi and Walewski (2013)
Sub-suppliers and stakeholders	Grimm et al. (2016), Grimm et al. (2018)

Table 4 Areas of application of the analyzed studies

Areas of application	Source
Agro-food	Mangla et al. (2019)
Aquaculture	Vildasen and Havenvid (2018)
Building and architecture	Lu and Zhang (2016)
Banks	Aras et al. (2018), Weber (2017), Aras et al. (2017)
Beverages	Jones et al. (2015), Annunziata et al. (2018)
Consumers	Stolz and Bautista (2015), Jung and Ha-Brookshire (2017), Bradford et al. (2017)
Ocean cruises	Jones et al. (2017), Bonilla-Priego et al. (2014)
Companies in general	Garcia-Sanchez et al. (2019), Kucukbay and Surucu (2019), Ahern (2015)
Energy	De Almeida and de Melo (2017), Kim and Lyon (2015)
Manufacturing	Zillur et al., (2015), Kocmanova et al. (2017), Pechancova et al. (2019)
Fashion	Lueg et al. (2015), Kozlowski et al. (2015), Feng and Ngai (2020)
Oil and gas	Henry et al. (2019), Cho et al. (2018), Dragomir (2012)
Ports	Ashrafi et al. (2019), Afreen and Kumar (2016), Schrobback and Meath (2020)
Technology	Wang et al. (2014), Saeli (2019)
Retail	Grimm et al. (2016), Pellegrini et al. (2018)

From the definition of the context, the grouping of materials began according to their main application area. Table 4 organizes these areas.

Concluding the segmentation, it was found that the research methods used have 3 predominant divisions: (i) empirical studies (Gomez-Bezares et al., 2019; Jones et al., 2015; Mishra et al., 2020; Baumgartner & Rauter, 2017; Ahern, 2015); (ii) mathematical modeling using diverse techniques (Yang et al., 2017a, 2017b; Aras et al., 2018; Weber, 2017; Kucukbay & Surucu, 2019; Hu et al., 2011; Zillur et al., 2015) and; (iii) literature review (Amini & Bienstock, 2014; Goyal et al., 2013; Kourula et al., 2017; Vildasen et al., 2017).

Based on these three characteristics (context, area and method), publications on CS were stratified according to Fig. 5.

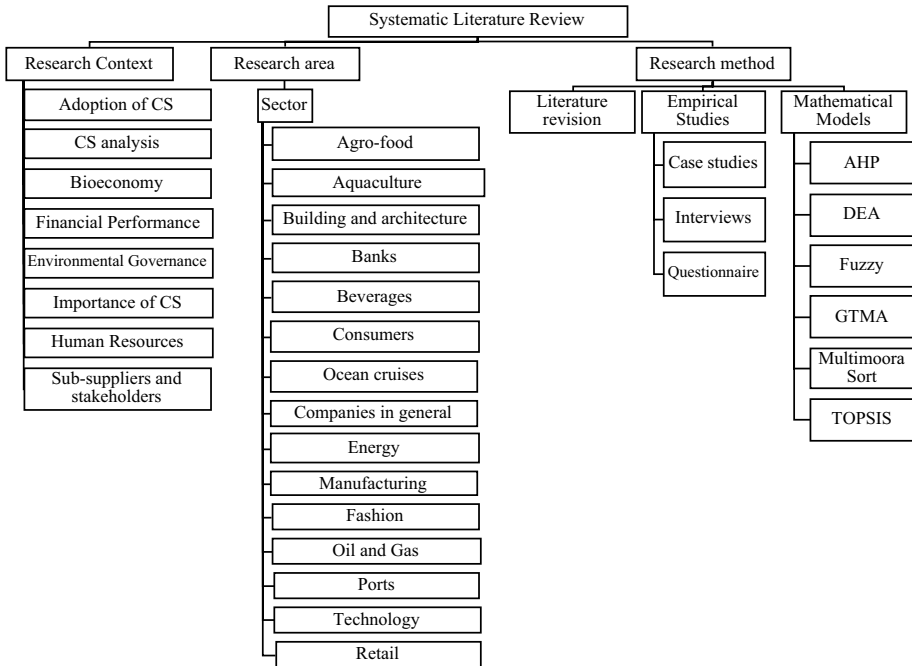


Fig. 5 Map of the SLR (2011–2020)

4.3 Citation networks and research clusters on corporate sustainability

For the purpose of visualizing and analyzing citation networks in the papers that comprised the study material of this research, we used the CitNetExplorer software, which focuses on the topic of field-normalized citation impact indicators.

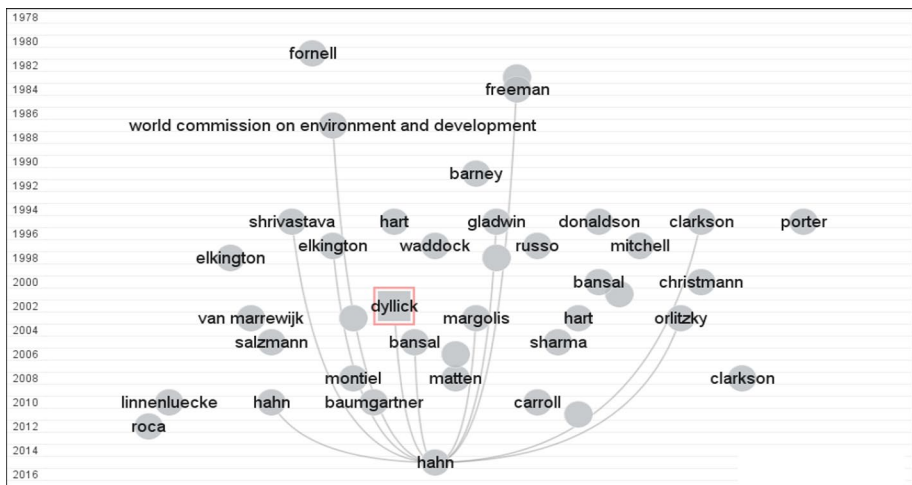


Fig. 6 Network of citations for publications on CS and their connections—extracted from CitNetExplorer

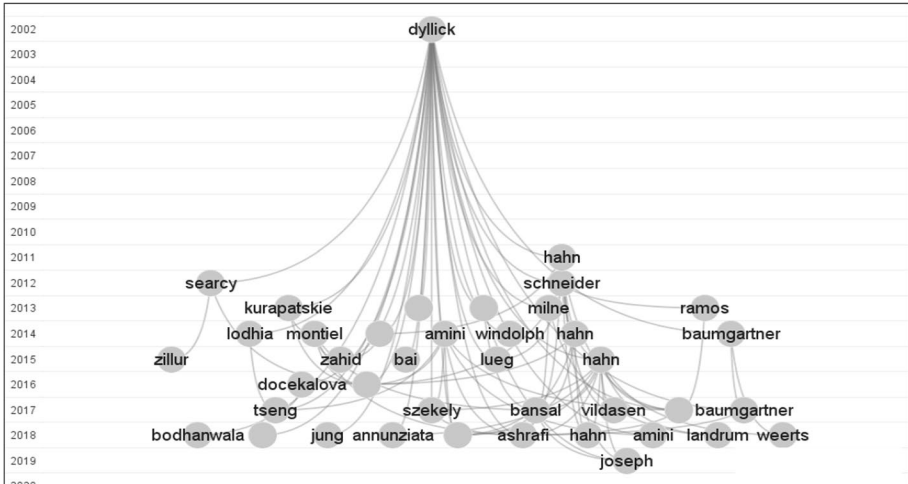


Fig. 7 Publications on CS originated from Dyllick and Hockerts (2002)—extracted from CitNetExplorer

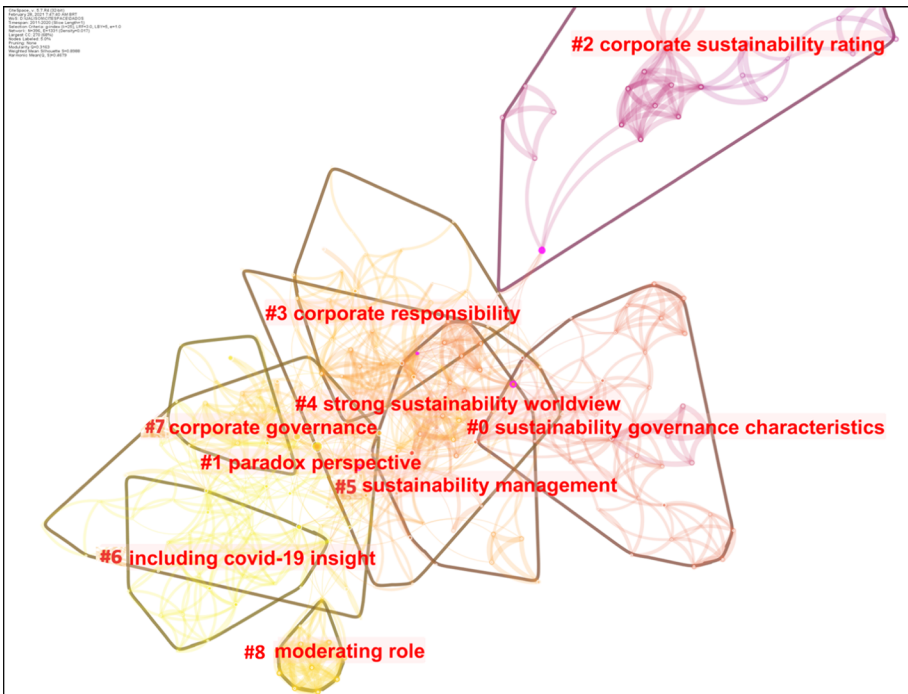


Fig. 8 Main research clusters on CS in the period from 2011 to 2020

The CitNetExplorer software analyzed 1756 citation links, derived from references cited by papers on CS published on WoS, in the period from 2011 to 2020. Figures 6 and 7, which were generated from this software, have the following parameters:

- Each circle represents a publication;
- Publications are labeled by the last name of the first author;
- To avoid overlapping labels, some labels may not be displayed;
- The horizontal location of a publication is determined by its citations relations with other publications;
- The vertical location of a publication is determined by its publication year;
- The curved lines represent citation relations;
- Citations point in upward direction;
- The cited publication is always located above the citing publication.

Figure 6 allows the visualization of most frequently cited publications (select based on their Citation Score) and their connections (links). It is interesting to note that countless publications from past decades have been used to compose the theoretical framework of the publications of the last ten years on CS, with a significant part of these publications maintaining a citation relationship (see curved lines) with current publications.

In the center of Fig. 6, we can see the Dyllick's seminal paper publication, "Beyond the business case for corporate sustainability", that among the publications that directly address the topic CS is the one with the highest Citation Score index. From Fig. 7, we can see the unfolding of the work of Dyllick and Hockerts (2002) in several other publications, expanding the visual information of the previous figure.

Although Figs. 6 and 7 allow the visualization of the most relevant citation networks and their relationship with other citations over time, it is not possible to extract from these figures what are the main areas of investigation, how these areas are related, or even what are the most active research areas. Thus, in order to answer these questions, the CiteSpace software was used. According to Chen (2006), CiteSpace is software designed to generate an "X-ray" of an area of knowledge represented by a set of bibliographic records from relevant publications. Figure 8, which illustrates the most active areas of research on CS in the past ten years, was developed by CiteSpace.

Clusters are numbered in descending order of cluster size, starting with the largest cluster #0, the second largest #1, and so on. In this case, the largest area (#0 sustainability governance characteristics) has the largest number of members' references, being, therefore, the subject that has had the most activity in the last decade.

Of these clusters, one that draws attention is the seventh (#6 including covid-19 insight), which is understandable because the world has reached a critical point of volatility due to the emergence of COVID-19 (Karnama & Vinuesa, 2020), which would thus justify the growing interest of the scientific community in research that includes aspects of the 2020 Pandemic.

In Fig. 8, the total time span is from 2011 to 2020 and the clusters show the most important traces of related research activities. Each dot represents a node in the network, which are the citations. And the lines that connect the nodes are co-citations links. The colors of these lines are designed to show when a connection was made for the first time. Color coding makes it easy to identify which part of the network is old (lilac shade) and which is recent (yellow shade).

4.4 Contributions of corporate sustainability to organizations

A large part of the CS contributions are linked to the improvement in environmental management related to areas close to the organizations, where the increments may be related to cultivation and preservation in high standard environments, continuous control of environmental pollution, protection for threatened plants and animals, implementation of successful environmental protection programs, optimal use of resources and anticipation of possible problems related to the environment (Vardari et al., 2020). CS improves business performance and reputation, reducing or eliminating risks and linking operations to results that can improve the common good (Wilshusen & MacDonald, 2017).

However, its implementation only has the power to become a rich source of competitiveness if the opportunities related to sustainable development are properly identified (Baumgartner, 2014). Integrating CS into the company's strategy is more than a responsibility, being essential that each business recognizes the need to be socially, environmentally and financially sustainable in order to survive over time (Ashrafi et al., 2018).

The adoption of CS contributes to eco-innovation, responsible leadership, sustainable and organizational culture (Paraschiv et al., 2012), as well as the need to adopt certifications such as ISO 14001 to accelerate the company's commitment to sustainable issues (Maletic et al., 2015; Ramos et al., 2013). It was also observed the establishment of partnerships between companies and NGOs that defend the environmental cause, generating improvements, legitimacy and value for both parties (Daddi et al., 2019; Joensuu et al., 2015).

In addition to the environmental context, there were several contents regarding the financial aspect triggered by sustainable practices, such as the improvement in the relationship with investors (Garcia-Sanchez et al., 2019; Serafeim, 2020), long-term returns in times of financial crisis (Gomez-Bezares et al., 2016), creating long-term value for business owners through the exploitation of opportunities and risk management (Kocmanova et al., 2017), environmental and social governance activities positively affecting economic performance (Budsaratagoon & Jitmaneeroj, 2019) and image improvement before the entire market (Schroback & Meath, 2020).

It was found that both early adopters of CS and late adopters benefit greatly. The pioneer receives all payment from stakeholders in the sustainability market, since it is the only operator. In contrast, late adopters gain an advantage as they benefit from cumulative side effects in an explored and expanded market (Usar et al., 2019). Foreign ownership positively impacts the level of adoption of CS, as the pressure exerted ends up being greater culminating in a need for constant training of the workforce (Pechancova et al., 2019).

In the internal environment, experiences with CS encourage managers to devote more attention to environmental and social problems (Grewatsch & Kleindienst, 2018), as well as the leading role of leadership in their application (Tomsic et al., 2015), in addition to promote employee involvement (Horisch et al., 2019; Pellegrini et al., 2018). The establishment of gender diversity on the company's board, for example, has a significant positive impact on the financial performance of the business (Zahid et al., 2020).

The public sector realized the importance of such knowledge and drives progress in sustainability through state-led projects with the development of concepts and legislation, as in the case of China (Liu & Yan, 2018). More specifically related to that country's financial sector, green credit policies have increased the CS of banks and/or helped to create a more stable and successful sector (Weber, 2017).

Fig. 9 Contributions of CS to organizations

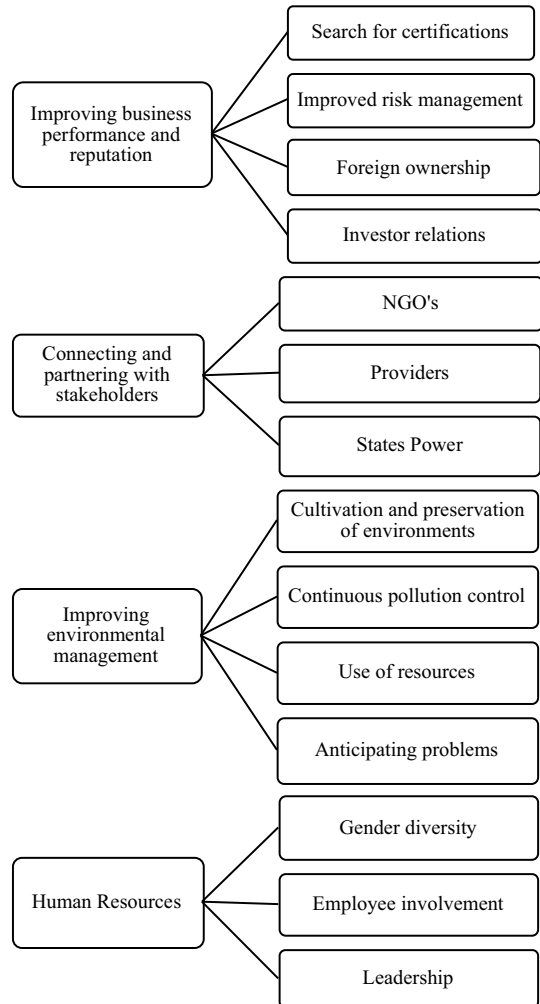


Figure 9 presents, in a summarized form, the main contributions of CS, divided into 4 axes:

4.5 Barriers to the adoption of corporate sustainability by organizations

As presented in the previous section, the application of CS is seen as fundamental in organizations of all types and sectors, but there are several obstacles to its implementation.

Among the difficulties imposed, barriers related to the adoption of sustainable practices by employees were mentioned in several studies. Some examples are, the inability to motivate managers with highschool education level (Henry et al., 2019), the internal difficulty with managers and other employees (Ashrafi et al., 2019; Pechancova et al., 2019), the lack of internal understanding (Stahl et al., 2020), the lack of human resources management (Sadatsafavi & Walewski, 2013) and the wage gap (Gomez-Bezares et al., 2019).

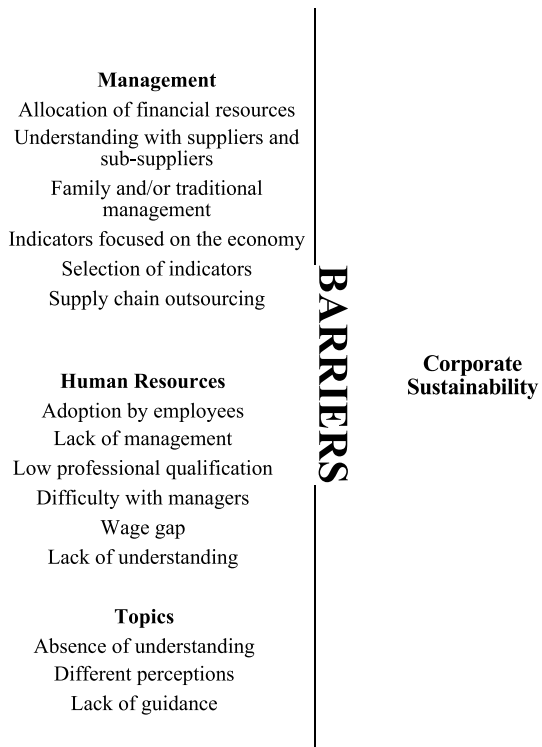
The lack of guidance on CS is another barrier in its implementation (Ahern, 2015; Baumgartner & Rauter, 2017; Deng et al., 2017), as well as the different internal perceptions about this topic that can cause difficulty in its dissemination (Nyuur et al., 2020). The lack of understanding on the subject also occurs in the process of selecting appropriate economic, environmental and social indicators for measuring sustainability, which has several methodological structures and a wide range of assumptions (Nikolaou et al., 2019).

CS needs to be anchored in the economic, environmental and social sphere, but the sources and indicators used, normally, focus only on economic factors, resulting in the mistaken recognition that sustainability is an optional contribution, rather than something present in the company’s culture. (Schneider & Meins, 2012). Another important point is that just “institutional pressure” is not enough to improve the sustainable performance. The allocation of financial and human resources is also necessary for the practices to be effectively completed (Mishra et al., 2020).

Another relevant aspect refers to the communication of the companies’ sustainable activities, which usually occurs through the sustainability report. As there is no specific standard for the dissemination of results, erroneous or incomplete disclosure of data to specialists, partners and investors becomes common (Barkemeyer et al., 2015; Garcia-Sanchez et al., 2019; Klettner et al., 2014; Lee, 2019).

According to Bae et al. (2018), another barrier involves difficulties related to the family management mode, very common in different parts of the world, in which the family benefit is seen as superior to the negative effects generated for society and other

Fig. 10 Barriers faced for the adoption of corporate sustainability



interested parties. Modifying traditional issues and balancing business performance with sustainable issues is seen as a paradox (Daddi et al., 2019).

The outsourcing of supply chains in various sectors, which occurred mainly in the last two decades, to developing countries and with considerable cultural differences in relation to the matrix, are attempts to react due to increased competition and shorter product cycles. This decentralization makes it difficult to control operations, in which they may contain slave labor and the use of products that are degrading to the environment (Lueg et al., 2015). The fashion industry clearly illustrates the barriers presented. In addition to being one of the most polluting globally, it has professionals with low level of qualification, education and easily replaceable, also causing labor barriers (Feng & Ngai, 2020).

In different sectors and businesses, there are tensions between the various stakeholders (Vildasen & Havenvid, 2018) with respect to searching for a joint sustainability perspective. When it comes to suppliers and sub-suppliers, there is a considerable range of factors critical to the success of sustainable actions: trust between the focal company, direct supplier and sub-supplier; buyer power of the focal company and the supplier; the long-term committed relationship between direct supplier and sub-supplier; direct supplier involvement; value perceived by the direct supplier and sub-supplier; subcontractor's ability to meet requested sustainability standards; and cultural and geographical distance between supply chain partners (Grimm et al., 2018). Figure 10 illustrates barriers that hinder the adoption of CS:

4.6 Guidelines for the adoption of corporate sustainability by organizations

It was found that the search for certifications is a relevant path for the adoption of CS, as they contain basic guidelines for obtaining the titles (Ramos et al., 2013), mainly in sectors with high environmental impact (Ashrafi et al., 2019). However, organizations need to see it beyond a mere certification with an environmental focus and clearly address the social aspect (Maletic et al., 2015). NGOs are important actors for implementing CS in an effective, planned and positive way (Lee, 2019, Joensuu et al., 2015).

The dissemination of sustainable culture from the creation of the position of "Chief Sustainability Officer" (CSO) within organizations is a viable way for its implementation to occur (Henry et al., 2019). If the manager has extensive previous experience in sustainability issues, the results tend to be positive in the long term (Peters et al., 2019).

As an alternative or complement to the creation of a specific position, investment in training for the existing workforce, the use of local labor, and the improvement of internal processes are factors that assist performance, in addition to promoting a broad and sustainable philosophy (Lloret, 2016). Companies can use the leadership of their team members to create a favorable and collaborative environment for the innovation process linked to sustainability, offering employees training, rewards and a system for monitoring innovation performance (Lampikoski et al., 2014; Pellegrini et al., 2018; Tomsic et al., 2015; Yang et al., 2017a, 2017b). The emphasis on human development and training in the workplace should focus on environmental practices and the exercise of power to transform pollution prevention thinking to promote sustainable actions (Feng & Ngai, 2020).

Investment in the Research & Development sector also plays an important role, as it promotes innovative products and modern technologies that improve the efficiency of the entire organization, including the sustainable aspect (Zillur et al., 2015). In the same vein,

Table 5 Innovative approaches to CS

Approach	Source
Elaboration of frameworks/models for evaluation and understanding	Pryshlakivsky and Searcy (2017), Nikolaou et al. (2019), Yang et al., (), Bottani et al. (2017), Docekalova and Kocmanova (2016), Hahn et al. (2015), Schneider and Meins (2012)
Governance structuring	Cancela et al. (2020), Schrobback and Meath (2020), Crifo et al. (2019), Manning et al. (2019), Peters and Romi (2015)
Generation of bioeconomics through co-creation of value	Aquilani et al. (2018)
Multicriteria classification method	Kucukbay and Surucu (2019)
Use of machine learning	Raghupathi et al. (2020)

a better and adequate design of the facilities contributes to the internal development of resources and the extension of organizational capacities (Sadatsafavi & Walewski, 2013).

The Sustainability Report is one of the most used tools for communicating sustainable practices, which can go unnoticed internally and externally. Its range of information can attract attention from the market and investors (Garcia-Sanchez et al., 2019). In this type of document, companies can publish their corporate responsibility policy with strategic drivers, structure for monitoring and implementation, methods for receiving contributions from interested parties and requirements in which executives present true views (Klettner et al., 2014). Communication can incorporate other aspects of innovation, economic competitiveness, third-party involvement and education initiatives (Ramos et al., 2013).

The design of an open and low-barrier system encourages system stakeholder to have confidence in resolving conflicting interests. From this understanding, it is possible to reach a common and beneficial point for those involved (Afreen & Kumar, 2016). According to Sukitsch et al. (2015) its practical implementation can be carried out respecting several factors such as: sustainability drivers; sustainability strategies; sustainability issues; integration into the main business; organizational areas in question; motivators for a sustainable business scenario; stakeholder involvement; and methods for sustainability management and measurement/evaluation.

Involving direct suppliers in building sustainable policies is paramount, as they are points of contact with sub-suppliers that will impact the construction of a final product (Grimm et al., 2016). Considering relationships and assessing suppliers' commitment to subcontractors is essential for the success of focus companies, as alignment of perceptions about sustainability among the various supply chain partners is necessary (Grimm et al., 2018), even if it generates costs for the final company (Smith, 2013).

Finally, Lozano (2015) highlights that, internally, leadership and the business case are the most important motivators to catalyze CS, while the most relevant external drivers are related to the reputation, demands and expectations of customers and regulation/legislation.

4.7 Innovations on corporate sustainability

In addition to the guidelines, the analyzed documents detailed innovative approaches to review the adoption and measurement of this topic. Table 5 highlights the main ones:

Innovations in segmented markets were also observed, such as exploring the sustainability performance of Chinese banks (Weber, 2017), creating an index to measure CS in the cruise industry (Bonilla-Priego et al., 2014), the proposition of 5 radical models to examine the sustainability rate of Japanese industrial sectors (Sueyoshi & Goto, 2014), identification of 87 sustainability-related indicators for the fashion industry (Kozłowski et al., 2015), a tool for analyzing the dimensions of sustainability in Ecuadorian cooperatives (Alcivar et al., 2020), sustainable innovation model for energy companies (de Almeida & de Melo, 2017), an analytical scheme for the generation and capture of the value of Mexican companies (Lloret, 2016), analysis of materiality for companies related to water technology (Calabrese et al., 2019) and its adoption by Italian companies in the wine sector (Annunziata et al., 2018).

Adding to the list of the previous paragraph, other topics were found, among them the addition of social media to the decision-making analysis process (Tseng, 2017), the use of innovation games as a roadmap for the development of value creation strategies (Lampikoski et al., 2014), the configuration of behaviors with the provision of incentives to employees in conjunction with human resource management tools (Sadatsafavi & Walewski, 2013) and the classification of the types of trade-offs found through a hierarchical structure (Haffar & Searcy, 2017).

To conclude this section, the most recent innovation observed on CS refers to the inclusion of COVID-19 as a new attribute of sustainable business practices. Ikram et al. (2020), believing that after the COVID-19 pandemic, organizations will be sensitized to achieve a more sustainable business environment, developed an indicator structure that has 45 sustainability subcriteria, classified according to the nine main categories (Corporate Governance, Transparency and Communication, Product Responsibility, Environment, Social, Economy, Natural Environment and Climate Change, Energy Consumption and Economy and Pandemic). COVID-19 is even included as one of the research clusters on CS, as shown in Fig. 8 (see Sect. 4.3).

5 Agenda and future research directions

This section will discuss the recommendations of future research that were observed in the papers included in the SLR, emphasizing CS pathways that remain open.

5.1 Recommendations for future research that remain open

In the field of Human Resources, the possible connection between sustainability and wage disparity, recommended by Gomez-Bezares et al. (2019), remains without new materials. Zahid et al. (2020) studied about gender diversity in business boards in Malaysia, but found the need for a broader discussion and in different realities. In the case of Lozano et al. (2017), the study happened by segmenting managers' understanding of the complexities and multidimensional issue of CS in Japan, where the authors recommended the development of research to analyze experiences on this topic in the West and East, verifying what can be translated into other territories and cultures.

Table 6 Highlighted future research recommendations

Authors	Recommendations
Linnenluecke and Griffiths (2013)	Further explore the issue of climate change and global warming
Hack and Berg (2014)	Exploring the sustainability potential of Information Technology
Klettner et al. (2014)	Explore how to incorporate non-financial performance indicators into the remuneration policy
Zillur et al. (2015)	Analyze the contribution of small organizations to sustainable development
Joensuu et al. (2015)	Include legitimacy theory and contract theory in the analysis of sustainability reports
Kozlowski et al. (2015)	Check how the disclosures of indicators in the industry change over time and the reasons behind these changes
Lueg et al. (2015)	Verify whether instrumental CS can motivate employees as well as relational or moral CS
Maletic et al. (2015)	Investigate the benefits of sustainability performance, focusing on institutional isomorphism as a theoretical basis
Journeault (2016)	Examine how a Scorecard can be applied to other types of organizations
Peters et al. (2019)	Determine how the CSO's characteristics reflect its ability to lead environmental and socially responsible activities
Lozano et al. (2017)	Analyze how the understanding of managers in the East can be used in the West and vice versa
Weber (2017)	Analyze the impact and efficiency of financial sector sustainability regulations
Landrum (2018)	Need for a better understanding of how ecological economics and sustainability apply at the company and manager level
Ashrafi et al. (2018)	Investigate the perception of companies on Corporate Social Responsibility and CS
Liu and Yan (2018)	Analyze unsuccessful attempts at sustainability projects and the role of institutional entrepreneurship
Pellegrini et al. (2018)	Explore consumers' perceptions of companies adopting CS
Alda (2019)	Analyze the influence of different types of institutional shareholders
Budsaratagoon and Jitmaneeroj (2019)	Investigate causal links between dimensions of CS at industry levels
Garcia-Sanchez et al. (2019)	Use of alternative measures to assess the quality of the information in the Sustainability Reports
Gomez-Bezares et al. (2019)	Examine the link between wage disparity and sustainability
Ashrafi et al. (2019)	Address the issue of sustainability in a broader sample of North American ports
Henry et al. (2019)	Assess CSOs, as well as their responsibilities, authority, capacity and access to resources in organizations committed to sustainability
Wasara and Ganda (2019)	Check CS in other sectors of the South African economy
Kucubay and Surucu (2019)	Apply the method developed in countries and cities to measure sustainability performance
Saunila et al. (2019)	Examine how smart technologies drive CS
Feng and Ngai (2020)	Examine how stakeholders perceive communication from fashion companies' Sustainability Reports and how to improve it
Borgert et al. (2020)	Implementation of measures for the transition from business models to sustainability

Table 6 (continued)

Authors	Recommendations
Alcivar et al. (2020)	Apply the mercantilist scale to affirm its adaptability
Oh et al. (2020)	Examine the relationship between a company's earnings transparency, sustainability management activities and company value
Raghupathi et al (2020)	Use prescriptive analysis not only as a prevention of results, but as a source of suggestion of impacts and strategies
Sasse-Werhahn et al. (2020)	Operate the model for computer science professionals
Stahl et al. (2020)	Analyze the implications of the depth of a company's involvement in CS
Zahid et al. (2020)	Study the issue of diversity more broadly in corporations

Liu and Yan (2018) argued about the need to focus on sustainability projects and failed attempts, so that complementary theoretical views can be confronted with those that were successful in their implementation. New studies are suggested to understand where and when to spend on more sustainable policies, especially in the context of bringing more benefits to shareholders. Tarquinio et al. (2018) propose the future creation of a system of indicators to summarize the overall performance of the businesses, with the aim of providing a valuable view of the information in sustainability reports.

The macro-environmental issue also has open studies, mainly in climate change and global warming, topics suggested by Linnenluecke and Griffiths (2013), as well as the use of Smart Technologies to assist CS (Hack & Berg, 2014; Saunila et al., 2019). Table 6 includes the main recommendations found in the analyzed materials:

5.2 Recommendations of relevant future research

Through the insertion of new technologies in the industrial context, at a time led by 5G together with Industry 4.0, there are several possibilities for their insertion in the context of CS. According to Seele (2017), it will be possible to predict most of the problems related to sustainability and not just analyze what has already been published. The opportunity for studies in this area is relevant, as the use of Big Data as a complementary element to traditional approaches has gained relevance in recent years (Bala et al., 2015; Weber, 2017; Serafeim, 2020).

Studies related to consumer perception regarding CS are lacking, since the analyzed materials contribute to internal understanding, whether with employees or suppliers. The study by Stolz and Bautista (2015) addresses the external perception, but related to audiences belonging to a segmented age group and location, as well as the material by Tomsic et al. (2015), which also analyzes the economic issues of small and medium-sized companies. With the growing concern about sustainable development, it is an opportunity to understand what consumers see of value when choosing certain brands, checking if the sustainable issue is taken into account, as suggested by Jones et al. (2017).

It was found in the review that issues related to Human Resources are predominant for the application of CS (Gomez-Bezares et al., 2019; Lueg et al., 2015; Zahid et al., 2020). Therefore studies that help better forms of engagement, diversity, perception, reward and leadership of employees will bring valuable information for the adoption of sustainable practices, inserting them into the organization's culture. People must understand the new

business values clearly, with respect to the sustainable concerns, so that, based on their interpretation, they practice in their daily lives.

There are also difficulties reported in the analysis of Sustainability Reports, many of them incompatible with what was expected by partners and investors, which demonstrate the gaps and the possibility of improving this essential instrument of communication and accountability of sustainable practices (Barkemeyer et al., 2015; Jones et al., 2017; Manning et al., 2019; Mishra et al., 2020; Mohammadi et al., 2018). Its total or partial standardization can generate an even greater contribution to the company's value and, consequently, brand positioning in highly competitive markets.

Another critical gap to be investigated is related to the circular economy suggested by Daddi et al. (2019) in other sectors besides the production of paper, fashion and leather because such a topic becomes increasingly relevant not only in relation to suppliers but also to the society in general and to NGOs linked to the environment, as the authors themselves cite.

6 Conclusion

To achieve the objectives of the present research, 221 articles were selected, downloaded and analyzed. These articles have corporate sustainability as their central theme, with a significant part of the material focused on environmental issues. As a time frame, we worked with articles published in the last ten years, where it was possible to observe a growth in researchers' interest in this topic year after year. In 2011, for example, we had only five articles published (see Fig. 3), while in 2020 we had 43 articles. Analyzing year by year, there is an average annual growth rate of publications around 27%.

Although a large part of the research contributions on CS is linked to improvement in environmental management (cultivation and preservation in high-standard environments, continuous control of environmental pollution, protection for threatened plants and animals, implementation of successful environmental protection programs, optimal use of resources and anticipation of possible problems related to the environment), many other relevant approaches were observed, such as improving performance and business reputation, interaction with producers and stakeholders, financial performance, bioeconomics, improvement in the human resources with content related to gender diversity, employee involvement and leadership and, finally, the implementation of CS in sectors that are still unexplored. Specifically, regarding the improvement in business performance and reputation, there is a search for certifications, improvement in risk management, foreign ownership and relations with investors and partnerships with interested parties, of which NGOs, suppliers and the government are present.

Regarding the sector (business segment/type of business) where these papers were applied, the diversity of application areas is impressive, of which stand out those of agri-food, banks, consumers, ocean cruises, aquaculture, oil, energy, manufacturing, fashion, ports, technology, among many others. Concerning methodological procedures, these surveys were, in the vast majority of times, conducted by case studies, interviews, structured and semi-structured surveys and mathematical modeling.

As opportunities on this topic, it was possible to understand the main barriers faced for the adoption of CS linked to the management area, whether in the allocation of financial resources or flawed indicators; the human resources area, with difficulties in its adoption by employees, lack of management or lack of internal understanding; to the

topic itself, in the absence of its understanding or lack of guidance. As a counterpoint, to overcome these barriers, numerous recommendations were observed, of which the investment in the Research & Development sector stands out, the implementation of an efficient communication process through the Sustainability Report and the dissemination of sustainable culture from the creation of the position of “Chief Sustainability Officer” (CSO). Alternatively, to creating the CSO role, companies can use the leadership of their team members to create a favorable and collaborative environment for the innovation process linked to sustainability.

With regard to innovations on CS, it was observed, in these ten years of research, the creation of an index for the cruise industry, the identification of 87 indicators for the fashion industry and the inclusion of COVID-19 as a new attribute of sustainable business practices. Even though COVID-19 is a very recent event, there is scientific research involving CS, and is even one of the main research clusters in the analyzed period (seventh cluster, as shown in Fig. 8). The first cluster is “sustainability governance characteristics”, with a greater number of references, being, consequently, the subject that had more activity in the last decade.

We suggest that all opportunities on CS reported in Sect. 5.2 of this paper are taken into account concerning future research possibilities. But, if we had to select only one, we would suggest further research on problems related to Sustainability Reports. Many studies have pointed out the lack of standardization of these documents, communication failures in accountability for sustainable practices and information incompatible with what was expected by partners and investors. In this direction, instigating questions on this topic could be: what would be the measurable gain that “adequate” Sustainability Reports could bring to CS? Or, in percentage terms (or any other measure that is more appropriate), how much would a Sustainability Report inspire stakeholders to make positive decisions on this matter? Or, yet, what would be an “adequate” Sustainability Report?

As a limitation, the present research considered only articles published on the Web of Science database. In addition, the search arguments used (“Corporate Sustainability” in the title field, “Environmental” in the topic field and the Boolean logic “AND”) directed the systematic review of the literature to the environmental bias. This direction is likely to be a limitation for other researchers interested in other approaches, such as financial and economic ones. Thus, for future works of a systematic review of the literature on corporate sustainability, it is recommended to work with other databases, such as SCOPUS and with other directions than the environmental one.

To conclude, it is emphasized that this article is recommended for researchers and academics who intend to start or update their knowledge in CS, since the SLR developed here can provide a comprehensive view of the studies on this topic.

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