SUPPLY CHAIN SUSTAINABILITY: CONCEPT CLARIFICATION AND FRAMEWORK PROPOSAL

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ABSTRACT

Considering the diversity of definitions and understandings of some concepts related to sustainability and its importance in the context of the supply chain, the main objective of this paper is to clarify and propose a conceptual framework to help clarify the concept of supply chain sustainability. Based on a comprehensive literature review, different perspectives and ideas are considered for understanding the meaning of supply chain sustainability. Also, the main differences between some concepts that have been used interchangeably with the meaning of sustainability are pointed out. In the proposed framework, a focus on the triple bottom line approach and the supply chain stakeholders' expectations at intra and inter-organizational levels are considered

Keywords: Sustainable development, Corporate Sustainability, Supply chain sustainability, Framework.

1. INTRODUCTION

In recent decades the increasing demand for and consumption of products has put pressure on organizations and their supply chains and resulted in negative impacts on the environment and society (Rajeev et al., 2017). Organizations' decisions, for example, regarding their choice of materials and suppliers, manufacturing processes, employment and labor practices, customer services, land use, or community activities, impact the natural environment, workforces, and society in general (Diesendorf, 2000). It is recognized that industrial production has been a major cause of growing socio-environmental problems (Khan et al., 2021), such as vast solid and liquid waste creation, air and water pollution, global warming, depletion of the world's critical non-renewable resources and materials (Shekarian et al., 2022), and human health problems (Carvalho et al., 2013). Pressure from the media and non-governmental organizations (NGOs), requests from the global community (e.g., 17 sustainable

development goals set by the UN and the recent World Climate Change Conference held in Glasgow in 2021), and various sustainability expectations from customers and stakeholders are some of the significant motivations driving organizations to integrate the concept of sustainability into their supply chain operations (Shekarian et al., 2022). Extensive regulations and legislation (for example, the European Commission has developed a wide range of policies and legislation regarding these issues) are also a driving factor in changing the behavior of organizations (Mota et al., 2015).

Since the definition in 1987 of Sustainable Development with the increased interest in the topic of sustainability, it has been a noticeable significant increase in studies, especially since 2011 on the subject (Olawumi & Chan, 2018). The diversity of research from different fields has caused, in the academic community, a lack of clarity around the use of the concepts of Sustainable development (SD), Sustainability (S), and Corporate Sustainability (CS). This lack of clarity can also be identified in companies that have referred to sustainability only in the environmental field (Costa et al., 2022).

On the other hand, integrating sustainability into the Supply chain (SC) context has become considered a key component of Sustainable development (Tonelli et al., 2013) and a way to achieve improvements in resource utilization (Carter & Easton, 2011). Fahimnia et al. (2019) point out that sustainability improvement can be more fully realized when concerns outside the firm's boundaries are considered. The growing importance of sustainability in the context of SC (Sajjad et al., 2020) has also translated into a prolific field of research with multidisciplinary perspectives (Martins & Pato, 2019; Negri et al., 2021; Khan et al., 2021), and has added terms such as green supply chain management and Sustainable supply chain management and Supply chain sustainability, to the field of terminology. Thus, there is also some confusion regarding the concepts related to sustainability in SC.

The main objective of this paper is to propose a conceptual framework to help clarify the concept of supply chain sustainability. Based on a comprehensive literature review, different perspectives and ideas are considered for understanding the meaning of supply chain sustainability.

The paper is organized as follows: in section 1, the concepts of sustainability, sustainable development and their relationship with corporate sustainability are analyzed. In section 2, the factors that make it essential to consider sustainability in the CS context and the concepts of SSCM are analyzed. Section 3 presents the conceptual framework. The paper ends by highlighting the main conclusions and limitations of the study.

2. LITERATURE REVIEW

2.1. Sustainability

The concept of Sustainable Development (SD) as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987, p. 43) was introduced in 1987 in the Brundtland Commission Report, the scope of sustainable development has been both enlarged and deepened. According to Steurer et al. (2005), the concept has expanded from the

macroeconomic to the microeconomic and individual levels. Sustainable development at the organizational level is treated as Corporate sustainability. Thus, Sustainable development is commonly perceived as a societal guiding model, which addresses a broad range of quality of life issues in the long term; Corporate sustainability is perceived as a corporate guiding model, addressing the short and long-term economic, social and environmental performance of corporations (Steurer et al., 2005).

Political and scientific oppositions have marked the debate over sustainable development and sustainability concepts, and multiple definitions of them have emerged (Barkemeyer et al., 2011). According to Ahi and Searcy (2015), the complex and multifaceted nature of sustainability, covering a broad spectrum of issues, may explain the diversity of definitions. In the literature, the terms Sustainability and Sustainable development are used in different ways and with different meanings (Waas et al., 2011). Sometimes, some authors use the terms interchangeably (Lozano, 2008; Golicic & Smith, 2013; Müller & Pfleger, 2014; Amini & Bienstock, 2014). Other authors make distinctions between the concepts. For example, Diesendorf (2000) and Lozano (2008). Ahi and Searcy (2015) argue that Sustainability stands for the "goal", an ideal dynamic state, which needs to be continually reassessed. In contrast, Sustainable development refers to the "path" or "process" to achieve it" i.e., Sustainable development is concerned with processes, while Sustainability is a state (Ahi & Searcy, 2015). The Council for Supply Chain Management Professionals (CSCMP, 2013) has another perspective. This organization provided the concept of sustainability as a business effort to comply with the Sustainable development elements, taking into account stakeholder requirements and corporate social responsibility. To Waas et al. (2011), the two concepts are distinct, with sustainable development being mainly about economic development/growth. The concept of sustainability has evolved and has come to be interpreted in terms of three dimensions "that must be in harmony: social, economic and environmental" (Kuhlman & Farrington, 2010, p. 3438). This perspective is shared by Zailani et al. (2012), who recognize Sustainability as the balance between "economic development, caring for the environment, and social equity" (p. 331). Despite the different definitions in the literature, the most notable and consistent notion is the inclusion of all three dimensions and the assurance of future evolution (Seuring & Müller, 2008; Sánchez-Flores et al., 2020).

The growing interest in sustainability has attracted, especially since the 1990s, researchers and practitioners to study various aspects of sustainability (Rajeev et al., 2017). At the organizational level, this has translated into different approaches (e.g., concerning key elements necessary for integrating it into corporate practices) and definitions of Sustainability and Corporate sustainability (Pazienza et al., 2022). Table 1 shows studies that analyze/suggest various approaches and proposals in conceptualizing CS and their main conclusions.

The growing interest in sustainability has attracted, especially since the 1990s, researchers and practitioners to study various aspects of sustainability (Rajeev et al., 2017). At the organizational level, this has translated into different approaches (e.g., concerning key elements necessary for integrating it into corporate practices) and definitions of Sustainability and Corporate Sustainability (Pazienza et al.,

2022). Table 1 shows some studies presenting various approaches in the analysis of Corporate Sustainability and their main conclusions.

Table 1. Overview of approaches for analysing the concept of CS and main conclusions

Authors (year)	Objective/Approach	Conclusions
Montiel & Delgado-Ceballos (2014)	Literature Review article to bring a better understanding of the field of Corporate Sustainability	A standardized definition of CS does not exist. CS has been conceptualized using different approaches: 1. phenomena-driven analysis not framed within traditional approaches concluding within the observed phenomena;2. Framed within organizational theories: stakeholders, resource-based etc.; 3. New theoretical frameworks
Lankoski, (2016)	Unpacks the contested concept of Corporate Sustainability into three constituents: management relevant dimension, substitutability and goal orientation	It concludes that the concept of sustainability is interpreted in quite different ways, hindering the sustainability transition achievement. Introduces a novel typology for categorizing conceptions of sustainability into eight basic types to improve the clarity of the concept and build a typical frame of reference
Bergman et al. (2017)	Empirical analysis of the relevant academic literature on Corporate Sustainability using Content Configuration Analysis	The findings reveal three conceptual types and nine subtypes of Corporate Sustainability
Hahn et al. (2017)	Illustrate the diversity of scholarly enquiry in the field of Corporate Sustainability and the various angles that authors adopt by analysing six articles which are relevant to the subject of Corporate Sustainability	Given corporate sustainability's complex and diverse nature, further definitional and conceptual convergence seems unlikely to happen. Diversity of views to be celebrated as a fruitful way to foster novel insight in the field
Swarnapali (2017)	Review of 50 articles from 2002 to 2016 summarizing the Corporate sustainability evolution, definitions, measures and applied theories	The findings highlight that the corporate sustainability field is still evolving, and different approaches have been used to define, measure and theorize Corporate Sustainability. Overall, the review evidence that a commonly agreed definition of sustainability is lacking.
Frecè & Harder (2018)	Explain how the current approaches to address the definitional gaps in Corporate sustainability are insufficient for enabling implementation in corporate practices by analyzing the sustainability practices of 50 companies in Switzerland	Companies often base their sustainability effort on the Brundtland Commission's definition, which shows conceptual problems when removed from its original context of social policies and transposed to the corporate context. Companies are more willing to engage in new norms when they are presented in a specific form and with limited scope.
Shah & Rahim, (2019)	Literature review to address the ambiguities of the conceptual understanding of Corporate Sustainability	Corporate sustainability is still considered to be a vague concept, and scholars on a single definition have developed no consensus.
Meuer et al., (2020)	Address the lack of conceptual clarity of the concept of Corporate sustainability by adopting the Aristotelian perspective on definitions, one that promotes reducing concepts to their essential attributes	Argues that the criticism of Corporate sustainability practices failing to contribute to sustainable development effectively is due to the fundamental ambiguity around the nature of corporate sustainability. Develops the Corporate sustainability Cube framework to compare Corporate sustainability definitions

Urdan & Luoma (2020)	Clarify the elusive and complex definitions and uses of Sustainability and Corporate social responsibility by reviewing the nomenclature from academics, corporation, and business and society course textbooks.	Sustainability and Corporate social responsibility are commonly and frequently used interchangeably in academic research and the classroom by textbook authors and business reports. Corporate terminology heavily influences student work, which supersedes textbook, nomenclature, and classroom instruction. Call for future research to delve into the issue of clarifying the definitional complexity and conflation.

Source: Adapted from Pazienza et al. (2022)

In research, some effort has been made to clarify the different corporate sustainability interpretations and integrate the various viewpoints. This clarification is considered essential since the lack of clarity can constitute an obstacle hindering the progress of theoretical development and hinder decision-making and the existence of guidelines for organizations to adopt sustainability (e.g., Meuer et al., 2020; Frecè et al., 2018). Table 2 shows some definitions of Corporate Sustainability. It highlights some of the main components present in the definitions (TBL Focus, Time dimension and reference to stakeholders)

Table 2. Definitions of Corporate Sustainability

Author(s), Year	**Definition**	**Components**		
		TBL Focus	Time dimens.	Stakehol.
Dyllick and Hockert, 2002	Corporate sustainability can be defined as meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities, etc.) without compromising its ability to meet the needs of future stakeholders as well.		✓	✓
Van Marrewijk, 2003	In general, corporate sustainability […] refers to voluntary company activities that include social and environmental concerns in business operations and interactions with stakeholders.			✓
Bansal, 2005	Corporate sustainability means applying the principles of economic integrity, social equity, and environmental integrity simultaneously to products, policies, and practices.	✓		
Russell et al., 2007	Working toward long-term economic performance, working toward positive outcomes for the natural environment, supporting people and social outcomes, and adopting a holistic approach.	✓	✓	
Lozano, 2012	Corporate activities that proactively seek to contribute to sustainability equilibria, including the economic, environmental, and social dimensions of today, as well as their interrelations within and throughout the time dimension while addressing the company's system (including Operations and production, Management and strategy, Organizational systems, Procurement and marketing, and Assessment and communication); and its stakeholders.	✓	✓	✓
Hahn et al., 2014	A concept that "refers to a company's activities […] demonstrating the inclusion of social and environmental concerns in business operations and interactions with stakeholders.			✓
Sharma, 2014	The achievement of a firm's short-term financial, social, and environmental performance without compromising its long-term financial, social, and environmental performance	✓	✓	

According to Pazienza et al. (2022), one of the most cited definitions of Corporate sustainability is that of Dyllick and Hockerts (2002). The authors defined corporate sustainability as "... meeting the needs of a company's direct and indirect stakeholders (such as shareholders, employees, customers, pressure groups, communities, etc.) without compromising its ability to meet the needs of future stakeholders as well" (Dyllick & Hockerts,2002, p. 131). This definition highlights a temporal perspective. Other definitions emphasize other elements. Some of the elements common to several definitions are: i) they focus on economic, social and environmental aspects and present an integrated triple bottom line perspective; ii) they focus on addressing the needs of key stakeholders; iii) and sustainability contemplates a short and long-term perspective (Van Marrewijk, 2003; Bansal, 2005; Gao & Bansal, 2013; Hassini et al., 2012). In Table 1, only Lozano's (2012) definition simultaneously considers these various elements. Figure 1 seeks to represent Corporate sustainability considering this perspective.

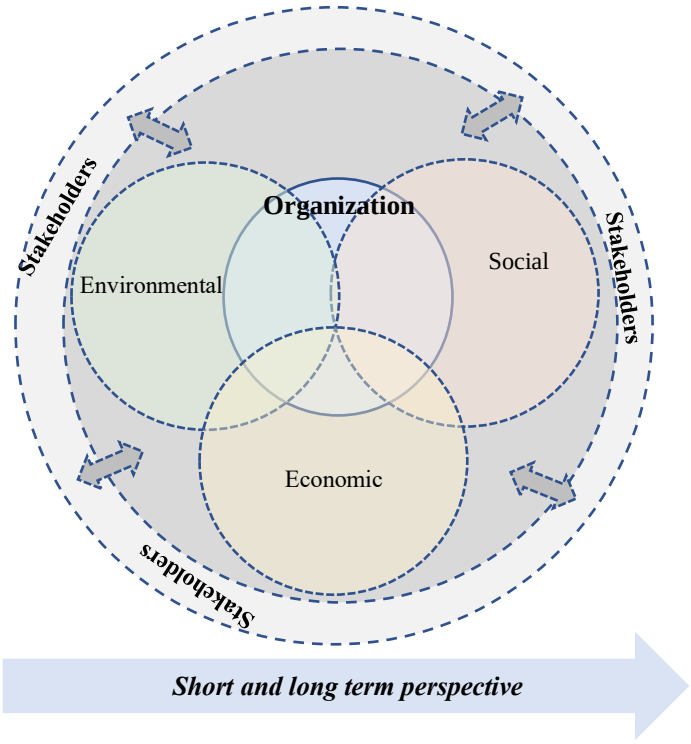

Figure 1. Corporate sustainability

Considering the different approaches and definitions of CS present in the literature and after ontological analysis of the various concepts and their main constitutive elements, Pazienza et al. (2022) conclude that this concept is more straightforward than most authors claim. According to the authors, corporate sustainability can be well defined around its environmental, social and economic constitutive pillars to provide equal opportunities to future generations.

Baumgartner and Ebner (2010) highlight the link of corporate sustainability to the concept of Sustainable Development, which also seems to be present in Pazienza et al.'s (2022) perspective. According to Baumgartner and Ebner (2010), corporate sustainability is the "transfer of the concept of

sustainable development from society to the business context in a fundamental way that enables a company to achieve the twin goals of sustainable development and organizational objectives".

According to Elkington (1998), sustainable development "involves the simultaneous pursuit of economic prosperity, environmental integrity, and social equity" (Elkington, 1998). Economic prosperity promotes a good quality of life through the productive capacity of organizations and individuals in society. It involves creating and distributing goods and services that will help raise the standard of living worldwide. Environmental integrity ensures that human activities do not erode the earth's land, air, and water resources. Finally, social equity ensures that all members of society have equal access to resources and opportunities (Bansal, 2005). The author believes that corporate sustainability is only achieved through the intersection of the previous three principles: environmental integrity, through environmental management of enterprises; social equity, through corporate social responsibility; and economic prosperity, through value creation. These three principles are aligned with the TBL perspective that companies need to pursue to become more sustainable. The TBL model operationalises sustainability as the intersection and balance of economic, environmental, and social concerns (Elkington, 1998).

Analyzing the concepts of sustainable development and corporate sustainability, Steurer et al. (2005) argue that the concept of Corporate sustainability is rooted in the idea of Sustainable development since it captures the company's desire to achieve long-term sustainability, supporting the continuous improvement of social, environmental and economic conditions. Each sustainable development principle can be put into action through some practices. For example, to minimize and mitigate environmental impacts, companies can undertake initiatives, such as using green materials, renewable energy for lighting and transportation, recycling or reusing all waste, or applying leadership to influence the industry, i.e. buying green energy or green materials from suppliers to drive the industry (Hitchcock & Willard, 2006). To contribute to community development, companies can also play a proactive and cooperative role in creating a community that is an excellent place to live and conduct business. Therefore, sustainable development principles or sustainability values must be embedded in all aspects of the company, in the different functional areas and activities, including those involving supply chain partners (Seuring & Gold, 2013) and other stakeholders such as ONGs.

2.2. Sustainability dimensions

Golicic and Smith (2013) highlight the term "sustainability" without a dimensional descriptor preceding it (i.e., environmental, economic or social) refers to the broad definition of sustainability which encompasses all three dimensions. The social, environmental, and economic dimensions are complementary and connected

However, each has its emphasis, and in practice, not all dimensions are always considered together (Sánchez-Flores et al., 2020). Thus, when a specific dimension of sustainability is meant (e.g., environmental), the dimensional descriptor is used (e.g., environmental sustainability), an approach we follow in this paper. Negri et al. (2021) point out that while many studies define sustainability, including

the three pillars of the TBL, some consider only the environmental dimension, others only the social dimension, and there are even studies that combine two dimensions. The meaning of each of these dimensions is discussed below.

Environmental dimension

The environmental dimension of sustainability is related to the natural environment, which includes land, water, plants, and animals (Sánchez-Flores, et al. 2020).

The environmental dimension da sustentabilidade is related to the natural environment, which includes land, water, plants, and animals (Sánchez-Flores et al., 2020). More specifically, it involves preserving natural resources for society (Bansal, 2002; Waas et al., 2011; Hanss & Böhm, 2012) and using them responsibly (Appelbaum, Calcagno, Magarelli and Saliba, 2016). It relates to the need to avoid the depreciation of natural capital (natural resources and ecosystem services) (Dyllick & Hockerts, 2002). At the corporate level, the environmental component of sustainability primarily addresses the organisation's impact of processes, products and services on living and non-living natural systems, including ecosystems, land, air and water (Jamali et al., 2006). A company acting according to the TBL tries to preserve the natural environment, limit its impact, or at least not damage it (Żak, 2015).

Jamali et al. (2006) point out that "environmental responsibility involves more than compliance with all applicable government regulations or even initiatives such as recycling or energy efficiency". It involves a comprehensive approach to a company's operations, products and facilities that includes assessing business products, processes and services; eliminating waste and emissions; maximising the efficiency and productivity of all assets and resources; and minimising practices that might adversely affect the enjoyment of the planet's resources by future generations. The responsibility to the environment (the planet) manifests itself in the company's undertaking environmental protection practices to prevent water, soil and air pollution, using appropriate materials and substances, as well as installing filters and sewage treatment plants (Żak, 2015). In the same vein, Goel (2010) points out that this dimension refers to engaging in practices that do not compromise the environmental resources for future generations and contribute to the efficient use of energy resources, reducing greenhouse gas emissions, and minimizing the ecological footprint, etc.

Social dimension

The social dimension of sustainability is related to human capital (Morais et al., 2018). To Hanss and Böhm (2012), sustainability's social dimension means improving the living conditions of the world's poor and promoting equal opportunities for all. According to Waas et al. (2011) this dimension means social justice to achieve an equal distribution of welfare, equal access to natural resources and equal opportunities between people (gender, social groups, *etc*.). Mani et al. (2015) highlight that it primarily focuses on social interactions that include inequality, gender discrimination, poverty, diversity, wages and education. To McKenzie (2004), the social aspects support the creation and development of skills,

and the capabilities of current and future generations, to promote health and support fairly and equitably to everyone.

At the corporate level, Winter and Knemeyer (2013) consider that the social dimension is bipolar: it refers to both individual and organizational levels. Improving this dimension involves developing and implementing fair and beneficial practices for workers, the community, and the region where the firm operates (Elkington, 1997; Żak, 2015; Morais et al., 2018). Examples of practices that show companies' responsibility to workers may include fair wages, treating workers according to the principles of fairness and honesty in mutual relations, creating the best working conditions in terms of safety, ensuring satisfactory employment conditions, and providing health care coverage (Żak,2015). Companies can also undertake and support actions to benefit the strengthening and development of the local community in matters such as healthcare and education (Żak, 2015). To Mani et al. (2015), the social aspects that need to be considered at the firm level may include, for example public health issues, community issues, public controversies, skills and education, social justice, workplace safety, working conditions, human/ labor rights, and equal opportunity (Jamali et al., 2006). Social aspects such as diversity, philanthropy, safety, and human rights have been established in US manufacturing firms (Carter & Jennings, 2002); equity, gender discrimination, gender diversity, education, wages, ethics, child and slave labor, health and safety, and hygiene have emerged related to Indian manufacturing industries (Mani et al., 2015). To Klassen and Vereecke (2012), the social dimension at the supply chain level involves aspects related to the products or processes of operations that affect human safety and well-being, community development, and protection from harm.

Economic dimension

Sustainability's economic dimension is related to the economic viability and growth that secure human well-being (Hanss & Böhm, 2012). Para Waas et al. (2011) this dimension is associated with economic growth as an engine for long-term welfare creation to satisfy essential needs for jobs, income, food, energy, water, sanitation, social security, and consumption opportunities.

At the firm level, Vachon and Mao (2008) point out that the economic aspects have to do with whether they generate sufficient cash flow to produce persistent returns, which includes an idea of long-term success. According to Jamali et al. (2006, p. 398), this dimension "refers to financial viability and encompasses issues of competitiveness, job and market creation, and long-term profitability." Although it is focused on the efficient use of resources and cost reduction (Jamali et al., 2006), economic sustainability is increasingly understood as referring to the generation of added value in the broader sense, rather than conventional financial accounting" (Jamali et al., 2006, p. 398). Similarly, Sheth et al. (2011) point out that economic sustainability should encompass two distinct aspects: "one relating to the firm-centric aspect of financial performance, the other relating to the economic interests of external stakeholders, such as a broad-based improvement in economic well-being and standards of living." Jamali et al., (2006) emphasize the fact that the economic dimension includes the financial aspect and

comprises aspects such as: reducing the cost of doing business through rigorous business integrity policies, increasing productivity through a motivated workforce, satisfying customers with goods and services of real value, obtaining a fair return on the funds entrusted to the firm by its investors. According to Torugsa et al. (2013), to support economic growth and prosperity, firms anticipate problems (e.g., customer satisfaction, product quality and safety) that may arise in their interactions with customers, suppliers and other stakeholders. Economic prosperity can also be achieved through value creation (Bansal, 2005). It can contribute to value creation, for example, by encouraging the development of new and different products that are desired by consumers, reducing resource costs, and improving production efficiency (Bansal, 2005, Torugsa et al., 2013).

3. INTEGRATING SUSTAINABILITY IN THE SUPPLY CHAIN CONTEXT

Any company interacts with other organizations and creates interdependencies at the strategic level and daily operations. Its decisions in many different areas (e.g. purchasing, production, design) have various implications for its supply chain (Seuring & Gold, 2013). The supply chain can be defined as a "set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer" (Mentzer et al., 2001). For the same authors, supply chain management is understood as "the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, to improve the long-term" (Mentzer et al., 2001). In a more recent definition of supply chain management, it is understood "as the organization and coordination of the set of distinctively performed functions within and across firms that constitute the supply chain to create value by delivering products and services to the market" (Martins & Pato, 2019, p. 996). Other definitions exist emphasizing certain aspects.

For example, in a proposed definition of SCM, Lambert et al. (2006) highlight the goal of adding value for stakeholders. An effective and efficient SCM can represent advantages for the organization, translated for example, in terms of service, cost reduction and speed of response to market needs, and fewer errors, delays and losses along the SC (Soni & Kodali, 2008). Incorporating sustainability into SCM is a challenge for organizations. The debate on the application of sustainability in an SC context has grown (Ahi & Searcy, 2015) and has translated into an increasingly large research output (Martins & Pato, 2019).

3.1. Sustainable Supply Chain Management (SSCM)

The fact that the incorporation of sustainability into CS initially focused on the environmental dimension (Martins & Pato, 2019) perhaps accounts for the initial attention to Green supply chain management (GSCM), with the first studies appearing in the 2000s (Negri et al., 2021).

Green Supply Chain Management (GSCM) means "Integrating environmental thinking into supply-chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers as well as end-of-life management of the product after its useful life" (Srivastava, 2007, p.54). The product life cycle perspective is present in this definition. However, this and other definitions of GSCM fail to address social aspects, which is one of the significant concerns of sustainable development (Rajeev et al., 2017). Incorporating the social dimension of sustainability has led to Sustainable supply chain management (SSCM), the dominant research domain as of the 2010s (Rajeev et al., 2017). Although some authors consider GSCM a subset of SSCM (Ahi & Searcy, 2013; Ashby et al., 2012), with SSCM becoming an extension of GSCM, other authors continue to explore the environmental dimension in the supply chain and focus on GSCM. The first contributions to SSCM appear after 2003, increasing significantly after 2010 (Negri et al., 2021).

In contrast to traditional SCM, which typically focuses on the economic and financial performance of companies (Brandenburg et al. (2014), SSCM is characterized by the direct integration of environmental and social objectives that extend the economic dimension to TBL (Seuring & Müller, 2008). Figure 2 illustrates this perspective.

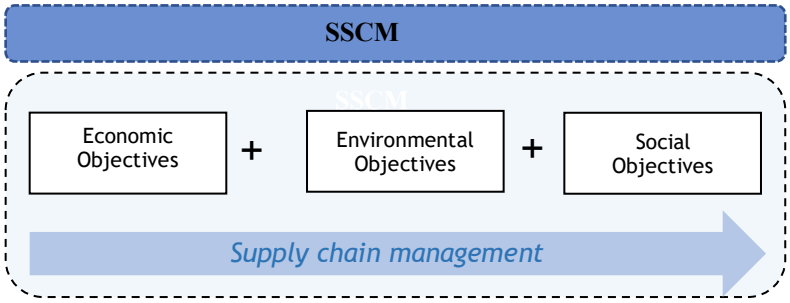

Figure 2. Integration of economic, environmental and social objectives on SCM

Negri et al. (2021) analysed a comprehensive set of SSCM definitions and concluded that there is some lack of consistency in those definitions, a point already made by Stindt (2017) and also noted the concept of Corporate sustainability. The most recent definitions of SSCM tend to include the three pillars of sustainability (Negri et al., 2021). While not claiming to be exhaustive, Table 2 presents some definitions of SSCM and highlights its main components.

Table 2. Overview of some of the main definitions of sustainable supply chain management

Author(s), Year	Definition	Components		
		TBL Focus	Time dimens.	Stakehol.
Carter and Rogers, 2008	"SSCM as the strategic, transparent integration and achievement of an organization's social, environmental and economic goals in the systemic coordination of key interorganizational business processes for improving the long-term economic performance of the individual companies and its sc." *	✓	✓	

Seuring, 2008	"The integration of sustainable development and supply chain management [in which] by merging these two concepts, environmental and social aspects along the supply chain have to be taken into account, thereby avoiding related problems, but also looking at more sustainable products and processes."	✓		
Seuring and Muüller, 2008	"SSCM is the management of material, information and capital flow as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account, which are derived from customer and stakeholder requirements." *	✓		✓
Pagell and Wu, 2009	"The specific managerial actions taken to make the supply chain more sustainable with an end goal of creating a truly sustainable chain." *			
Wolf and Seuring, 2010	"SSCM means producer collaborates with its SC members and collaboratively manages inter-and intra-firm processes for sustainable development."			
Hassini et al., 2012	"Sustainable supply chain management as the management of supply chain operations, resources, information, and funds to maximize the supply chain profitability while at the same time minimizing the environmental impacts and maximizing the social well-being." *	✓		
Ahi and Searcy, 2013	"The creation of coordinated supply chains through the voluntary integration of economic, environmental, and social considerations with key inter-organizational business systems designed to efficiently and effectively manage the material, information, and capital flows associated with the procurement, production, and distribution of products or services to meet stakeholder requirements and improve the profitability, competitiveness, and resilience of the organization over the short- and long-term." *	✓	✓	✓
Stindt, 2017	"We interpret SSCM in a broad sense as planning, execution and control of corporate value creation processes by integrated consideration of economic, ecological and social aspects to improve the long-term performance of an individual company and the supply chain as a whole."	✓	✓	
Negri et al., 2021	The planning, execution and control of corporate value creation processes along the whole supply chain by integrating economic, environmental, and social aspects into decision-making to improve long-term performance and mitigate risks.	✓	✓	

Note: (*) The most highly co-cited documents on SSCM (Nimsai et al., 2020).

One of the most cited definitions of Sustainable Supply Chain Management in the literature (Negri et al., 2021) is that of Seuring and Müller (2008). The authors consider SSCM as "The management of material, information and capital flow as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account, which are derived from customer and stakeholder requirements" (Seuring & Müller, 2008, p. 1700). This definition focuses on the TBL and includes stakeholders. Stakeholders are an essential component of SSCM (Beske & Seuring, 2014). In addition to being able to justify the activities and behaviors of companies in sustainability issues, stakeholders can develop relational and technical capabilities that companies can use to respond to the expectations and needs of society in general (Gualandris et al., 2015). According to Hyatt and Johnson (2016), companies need the knowledge and participation of multiple stakeholders, such as environmental groups and other non-governmental organizations (NGOs) to transition supply chain sustainability toward

economic, social, and environmental ends. These stakeholders (can play advisory, observer, coordinator or even partner roles in the design and implementation of sustainable evaluation and verification processes (Gualandris et al., 2015). Although many companies develop sustainability-level programs involving various stakeholders such as NOGs, Merchant Organizations or Consultants (Alvarez et al., 2010), these stakeholders are viewed as outsiders by traditional supply chain companies and typically identified as "non-traditional" supply chain members (Rodriguez et al., 2016). However, the movement towards sustainability in SCs requires innovation in several areas, including rethinking who is in the supply chain (Pagell & Wu, 2009). Thus, companies can develop sustainability practices involving not only traditional SC partners but also other stakeholders such as NGOs or community members.

3.2 Why integrate sustainability into supply chains?

There are several reasons for considering sustainability in an SC context. On the one hand, the entire product journey from the extraction of raw materials to its delivery to the end user involves various processes (design, sourcing, production, and distribution) that are responsible for large consumption of resources and environmental impacts (Gupta & Palsule-Desai, 2011). Thus, efforts to minimize on the undesirable effects on the environment should be made not only in the stages of production and disposal of products (Tsoulfas & Pappis, 2004) but also in other stages and activities involving other SC participants. In the same way, we can extend that idea to the social dimension and conclude that each stage of the SC affects the sustainability of the final product (Vachon & Klassen, 2006). Thus, companies not only need to consider their own environmental and social performance but also that of the other SC partners since they can easily be held accountable for a negative environmental, as well as social, performance occurring at different points (by members) of their SC (Tate et al., 2010; Gimenez & Tachizawa, 2012). This can negatively affect their reputation, negatively impacting their economic performance (Caniëls et al., 2013). Other aspects related to labor practices in non-industrialized countries have been in the spotlight of NGOs, which are increasingly relevant issues for companies because they can impact their business (Leipziger, 2017). In this regard, Lippman (1999) highlights that customers do not distinguish the company's environmental performance from its suppliers' environmental performance. For example, Apple (Garside, 2013) has been associated with child labor, but the misconduct has occurred at their suppliers in the Asian continent. Walmart has also been linked to suppliers of shrimp manufactured in Thailand, where the workers in these facilities are deprived of basic living conditions such as minimum wage, health and safety facilities, and bonded labor questioned by NGOs and human rights activists (Mani et al., 2015).

Thus, companies must implement practices promoting sustainability in SCs that avoid any association with anything that could negatively affect their reputation and sustainability performance. Given that the various SC partners are interconnected, high levels of sustainability performance from one company may be difficult to achieve due to poor performance levels from other SC partners, such as suppliers.

Implementing intra- and inter-organizational sustainability practices can improve the sustainability of the company and its supply chain.

Other roles are now required from companies about how they can contribute to sustainability, including product life cycle management or social and environmental practices involving their SC partners such as suppliers or customers. For example, Sancha et al. (2016) highlight the need for purchasing companies to implement practices that ensure their suppliers are sustainable. Suppose companies develop initiatives for their SC partners to improve sustainability, in that case, we can argue, like Ashby et al. (2012), that focusing on SCs is a step toward wider adoption and development of sustainability. In this view, Seuring and Gold (2013) also state that companies cannot, in an increasingly interconnected world, identify and address sustainability challenges alone, which has contributed to the increased interest in sustainability issues at the inter-organizational level.

In synthesis, the factors that can drive (or inhibit) progress towards sustainability considering the context of CS are of diverse order. They relate, for example, to the need to manage risks, and the desire to improve environmental, social, or economic performance, such as reducing costs or increasing quality (Ahi & Searcy, 2015). Several literature reviews (e.g., Carter & Rogers, 2008; Seuring & Müller, 2008; Walker et al., 2008) have highlighted the benefits of SSCM. According to Wolf (2014), companies improve sustainability in CS to mitigate stakeholder pressures. The will of managers, pressure from investors, responding to pressures from customers, and competitors, regulatory demands, technological developments, and corporate history are some of the drivers and enablers that can initiate or motivate in the adoption of practices that operationalize the integration of sustainability at the CS level (Ahi & Searcy, 2015; Negri et al., 2021). In a recent systematic literature review, Khan et al. (2021) identify a broad and diverse set of drivers and barriers. The implementation of sustainability in CS has been a concern of many studies, focusing on pressures or drivers, barriers, decision making and practices (Negri et al., 2021). Divergent and multiple practices identification and study are examples of SSCM being still an essentially contested concept (Negri et al., 2021).

4. CONCEPTUAL FRAMEWORK

The idea that in an SC it is necessary to guarantee that the sustainability objectives are simultaneously met considering the context of the SCs is present in the literature. For example, Pagell and Wu (2009, p. 38) argue, "To be truly sustainable, a supply chain would at worst do no net harm to natural or social systems while still producing a profit over an extended period." Thus, to achieve sustainable supply chains, it becomes necessary to manage the SC, integrating sustainability into this management (Delai & Takahashi, 2016).

The literature review conducted in the previous sections allowed us to identify the main elements that support the supply chain sustainability framework proposal. There are some common elements when considering sustainability at the organizational and SC level:

i) the TBL perspective, where the economic, environmental and social dimensions of sustainability are simultaneously considered;

ii) the time dimension since it is relevant for sustainability to admit the short term ("to meet the needs of the present"), and the long term ("without compromising the ability of future generations to meet their own needs";

iii) consideration of stakeholders, i.e., meet the needs and requirements of internal and external stakeholders. These elements are present in the framework presented in figure 3 and had already been considered in figure 1, representing corporate sustainability. However, for the integration of sustainability at the CS level, it will be essential to consider the interconnections and interdependencies between the organization and its traditional partners (customers and suppliers) and also with other stakeholders such as NGOs or community groups reconfiguring the CS (ultimate SC approach) (Gualandris et al., 2015; Hyatt and Johnson, 2016). These stakeholders can play an important role in the sustainability path of companies and their CS.

Finally, and considering the context of CS, it should be noted that the integration of sustainability must be contemplated beyond the company's boundaries and included in the various processes and activities within and between the various SC members. Figure 3 presents the proposal of a framework for supply chain sustainability.

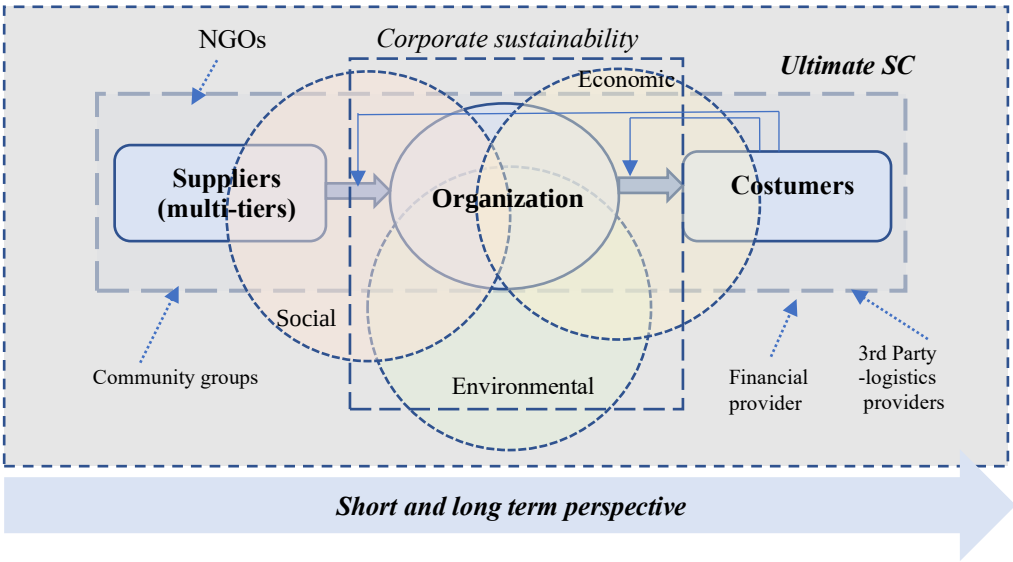

Figure 3. Supply chain sustainability framework

CONCLUSION

Considering that "sustainability requires thinking beyond the boundaries of a single entity or organization to consider entire value chains and production and consumption systems" (Lebel & Lorek, 2008), supply chains and supply chain management (SCM) are thus placed at the center of the policy

and practice agenda for sustainability. Based on a comprehensive literature review, this study analyses the importance of integrating sustainability in the context of SC and some important concepts to better understand this theme: Sustainability, Sustainable development, Corporate sustainability, Sustainable supply chain management and Supply chain sustainability. The ambiguity and the vast number of definitions and constructs related to sustainability at various levels (societal, organizational, and CSs) and the lack of clarity surrounding the use of the concepts makes it necessary to clarify them (Martins & Pato, 2019; Negri et al., 2021; Khan et al., 2021; Costa et al., 2022).

This study proposes a conceptual framework that integrates the main components to be considered for sustainability in supply chains. These components result from an analysis of different definitions and perspectives. To improve sustainability in SCs, it is necessary to consider: a TBL perspective, where the various dimensions of sustainability (economic, environmental and social) are contemplated; to consider the short and long term; to consider the expectations and needs of the SC organizations and their stakeholders and integrate the objectives of sustainability at the intra-organizational and inter-organizational levels in the management of the various processes or flows of materials, information and capital among companies along the supply chain.

This study aims to contribute to literature broadening the understanding of the meaning of supply chain sustainability and its related concepts. It is hoped that it will that it constitutes a useful contribution that can serve as a basis for other studies which intend to investigate these issues. However, some limitations should be noted. First, the literature review may have left out many studies important to the discussion and understanding of the topic. Future research could adopt a systematic review of the literature as its methodology. It would also be interesting to understand how these concepts are perceived and used in practice in organizations. On the other hand, the study focuses on the analysis and comparison of concepts and the aspects that must be considered for CS sustainability but does not explore how to operationalize the integration of sustainability. This topic may also be deepened in future research.

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