Using bibliometric research to advance the business-to-business sustainability literature: Establishing an integrative conceptual framework for future application

USING BIBLIOMETRIC RESEARCH TO ADVANCE THE BUSINESS-TO-BUSINESS SUSTAINABILITY LITERATURE: ESTABLISHING AN INTEGRATIVE CONCEPTUAL FRAMEWORK FOR FUTURE APPLICATION

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Abstract

With 4,249 articles and 245,255 citations, this study identifies four important research topics for three time periods spanning five decades (1971-2020) in business-to-business (B2B) sustainability research: stakeholder orientation and corporate social performance, environmentally-focused resources and their influence on competitive supply chains, internal organization and relational contracting, and trust and commitment. Based on established theory identified in this evaluation of the B2B sustainability literature, an integrative research framework is introduced for future consideration by the domain. The model possesses three components of a firm's strategic focus (partnership type, stakeholder orientation, and sector emphasis) that affect its supply chain collaboration. A greater understanding of the company's supply chain collaboration lies in how the influence of its relationship stage, sustainability capabilities, and channel pressure can impact different sustainability performance outcomes – be they social, environmental, or economic. Additionally, we identify internal (top management initiatives and sustainability investments) and external (economic, technological, and market uncertainties) non-channel drivers and barriers as critical in their moderation of the proposed framework to provide considerable opportunity for future B2B sustainability research endeavors.

Keywords: business-to-business; B2B; sustainability; bibliometrics; co-citation analysis; multidimensional scaling

1. Introduction

Over the years, sustainability has become more important for business-to-business (B2B) firms as various stakeholders increasingly demand good corporate citizenship (Bové, D'Herde, & Swartz, 2017). This focus has further intensified with the adoption of the United Nations (UN) Sustainable Development Goals (SDGs) by 193 countries in 2015 which, in essence, identify sustainability as a global priority and provide organizations with a long-term framework for investments and new business opportunities (Pedersen, 2018). Viewed as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 43), sustainability requires B2B marketers to simultaneously address the principles of environmental integrity, social equity, and economic prosperity in their business practices and policies (Bansal, 2005). As such, sustainability represents a shift in B2B organizations' mindsets from a sole focus on the financial bottom line to the triple bottom line, which integrates environmental and social issues into the fundamental tenet of business operations: profitability (Elkington, 1994).

As a starting point, we begin with the following definition of B2B marketing: "dealing with markets in which goods and services are purchased because they are used as capital, material, or service inputs into the production of other products and services" (Kleinaltenkamp, 2015, p. 129). However, as many B2B firms are realizing that collaboration across the supply chain is imperative to assess their social and environmental footprint and ensure responsible practices (Lee & Berthon, 2016), this relationship often needs to be extended from solely among private companies to also include public organizations (Caldwell, Roehrich, & George, 2017). This requires a broader approach to our definition of B2B marketing. As such, we view *B2B marketing* as incorporating all marketing, sales, and interactive marketplace processes, including

demand management, targeted to companies and other forms of organizations (be they governmental- or nongovernmental-related) downstream in the value chain, but also upstream to include supply chain management (SCM) activities, as these play a vital role in the competitiveness of B2B firms (Sharma et al., 2010). In line with this perspective, we consider purchasing, distribution, marketing channels, buyer-seller relations, relationship marketing, and interfirm collaborations as different facets of B2B marketing.

Turning to the concept of *B2B sustainability*, we assert this is an essentially contested concept as it is based on a certain degree of judgment and perspective, is rather complex, is context-dependent, has been variously described, and may be challenged by others (Gallie, 1956). Accordingly, the meaning of B2B sustainability appears to vary based on whether the researcher belongs to the corporate *responsibility* or the corporate *sustainability* research tradition (Bansal & Song, 2017). Taking a normative stand, the corporate responsibility tradition considers the firm to have responsibility not only towards its shareholders, but also more broadly, toward its other stakeholders (Bolton & Mattila, 2015; Hillman & Keim, 2001). While early conceptualizations of corporate responsibility included environmental issues as a subcomponent in a much larger group of concerns (Carroll, 1979), this field of study has largely developed by focusing on social issues, with considerably less emphasis on the environmental aspects. Consistent with this, the marketing literature has traditionally viewed B2B sustainability from a corporate *responsibility* perspective, as, for example, it has been concerned with the potential harm of marketing on society (Homburg, Stierl, & Bornemann, 2013). Going further, this can be seen in the large body of research conducted on corporate social responsibility (CSR) in the B2B marketing literature, which examines social issues, such as ethical and philanthropic topics (Han & Lee, 2021). In fact, by applying corporate responsibility principles to marketing channel

partners, corporate reputation has been found to become a potent competitive advantage (Hoejmose, Roehrich, & Grosvold, 2014).

On the other hand, the corporate sustainability research tradition, which is largely visible in operations and SCM research (Walker & Jones, 2012), but also increasingly present in the B2B marketing literature (Sharma et al., 2010), is heavily concerned with the potential harm of economic development on natural systems (Ageron, Gunasekaran, & Spalanzani, 2012). This stance views firms as entities nested within other systems, often as parts of complex supply networks (Schmidt, Foerstl, & Schaltenbrand, 2017; Walker & Jones, 2012). The main emphasis has mostly been on environmental issues, such as ecological conservation, environmental practices, and the impact of firms' activities on the environmental system (Zarei, Carrasco-Gallego, & Ronchi, 2019), with less direct focus on social concerns.

The notion that B2B sustainability is an essentially contested concept explains the different perspectives and definitions in the literature – with the corporate responsibility research tradition in the B2B marketing literature emphasizing the social component and the corporate sustainability tradition in the operations and SCM literature concentrating on the environmental dimension. This has resulted in fragmentation in the B2B sustainability body of knowledge. As B2B sustainability gains traction and becomes more integrated into the B2B marketing domain, a more holistic understanding of B2B sustainability is imperative. This study follows previous insightful bibliometric applications in the marketing literature (Chabowski & Mena, 2017; Chabowski, Mena, & Gonzalez-Padron, 2011; Chabowski, Samiee, & Hult, 2013; Foroudi et al., 2020, 2021; Zha, et al., 2020, 2021) and strives to integrate the two research traditions to build a framework which synthesizes the corporate responsibility and corporate sustainability perspectives for future research.

Against this backdrop, the overarching research question follows as: in an attempt to resolve the notion it is an essentially contested concept, how has the B2B sustainability literature's intellectual structure developed over time, how does this inform our current understanding of the domain, and how does it contribute to future research directions? To answer this question, this study sets five specific objectives with the attainment of each representing a particular contribution to extant B2B sustainability research. The first goal of this study is to portray a detailed understanding of the intellectual structure of the B2B sustainability literature. Second, the current research seeks to improve the domain's knowledge concerning its longitudinal development using a well-known article grouping approach. The third objective examines the most influential recently published B2B sustainability articles to offer perspective regarding short-term future research opportunities. Fourth, based on the literature to date, the present article introduces an integrative conceptual framework for consideration in the continued development of the B2B sustainability domain. Lastly, and building on the previous four objectives, this study provides potential prospects for research leadership with lasting unaddressed topics requiring consideration for advancing the B2B sustainability literature.

In the following section, we provide an overview of several theoretical perspectives that inform the B2B sustainability domain and highlight select studies that have employed these perspectives. Next, we describe the method used and present our results. Then, we introduce the research framework as a basis for future research opportunities. Finally, we offer some concluding thoughts.

2. Theoretical background

Different theoretical perspectives have been used to describe, explain, and predict the B2B sustainability topic. These include institutional theory, the resource-based view (RBV) of

the firm, the natural resource-based view (NRBV) of the firm, social network theory, stakeholder theory, and relationship marketing. The rest of this section briefly reviews these theoretical perspectives within the context of this study. Table 1 provides their central arguments along with key insights for B2B sustainability.

Insert Table 1 about here.

2.1. Institutional theory

Institutional theory is concerned with the processes that lead organizations within a given environmental context to resemble each other over time (DiMaggio & Powell, 1983). A key assumption of this theory is that organizations seek legitimacy (Meyer & Rowan, 1977), which refers to the perception that "the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). To ensure legitimacy, firms emulate others in their environment as a result of three types of institutional pressures (DiMaggio & Powell, 1983). Coercive pressures arise from those organizations a firm depends on, including its supply chain partners (Guler, Guillén, & Macpherson, 2002). Mimetic pressures come into play when a firm faces uncertainty (Galaskiewicz & Wasserman, 1989), while normative pressures revolve around social networks, such as professional and trade associations (DiMaggio & Powell, 1983).

In the B2B sustainability domain, previous studies have employed institutional theory to examine the role of institutional pressures on the implementation of green supply chain management (GSCM) practices (Agarwal, Giraud-Carrier, & Li, 2018; Hoejmose, Grosvold, & Millington, 2014), the adoption of green purchasing by multinational corporations' subsidiaries (Hsu et al., 2014), the execution of CSR initiatives in supply chains in different markets (Jean et al., 2016), and the improvement of environmental performance in the supply chain network

(Dubey, Gunasekaran, & Samar Ali, 2015). For example, in a study that examines the industry-level determinants of cooperative and coercive GSCM practices, Hoejmose, Grosvold, and Millington (2014) find that coercive institutional pressures drive the buyer's decision to implement cooperative GSCM practices. In turn, the adoption of GSCM is found to be positively associated with environmental, economic, and operational performance (Agarwal, Giraud-Carrier, & Li, 2018).

2.2. Resource-based view of the firm / natural resource-based view of the firm

The resource-based view (RBV) of the firm recognizes the role of the firm's unique resources and capabilities in the attainment of a competitive advantage (Barney, 1991; Wernerfelt, 1984). Resources and capabilities refer to the firm's portfolio of tangible and intangible assets, including the management skills, organizational processes, and knowledge possessed by the firm (Barney, Wright, & Ketchen, 2001). To generate a competitive advantage, these resources and capabilities must be valuable, rare, imperfectly imitable, and organizationally embedded (Barney, 1991). An extension of the RBV which is closely related to sustainability is the natural resource-based view (NRBV) of the firm (Hart, 1995). This perspective argues that the firm's relationship to the natural environment can confer a competitive advantage to the firm through the implementation of three interconnected strategies: pollution prevention, product stewardship, and sustainable development.

For research emphasizing B2B sustainability, the RBV and the NRBV have been applied to investigate the relationship between the possession of green resources and capabilities – such as environmental orientation (Li et al., 2016), green supply chain capabilities (Li et al., 2016), and GSCM practices (Schmidt, Foerstl, & Schaltenbrand, 2017). In addition, Li and colleagues (2016) develop and test a model that links environmental orientation to green product- and

process-related capabilities and performance. Their results show that environmental orientation facilitates the adoption of green product design and green supply chain processes, which in turn lead to superior environmental and financial performance.

2.3. Social network theory

Social network theory views social structures as networks consisting of nodes that represent actors, and where the ties linking the nodes represent relationships between the actors (Brass et al., 2004). According to this perspective, firms operate within networks composed of interdependent relationships (Huang & Li, 2017), where firms are connected to each other by the exchange of goods, influence, information, and affect (Tichy, Tushman, & Fombrun, 1979). Specifically, the social network paradigm concentrates on the types and patterns of relationships between actors in a network (Tichy & Fombrun, 1979) to explain, describe, and predict network consequences (Borgatti & Halgin, 2011). While networks have several properties, a particularly important one is the strength of the tie (Granovetter, 1973). Strong ties link similar actors that are interconnected and, as a result, tend to transmit redundant information (Ibarra, 1993). On the other hand, because weak ties can bind actors from otherwise disconnected parts of the network, they play a significant role in the diffusion of business strategies and innovations by disseminating novel information across the network (Granovetter, 1973).

Studies in the B2B literature have mainly focused on how network characteristics as well as firms' interactions with others in the network impact the sustainability practices of firms throughout the network (Adhikary et al., 2020; Huang & Li, 2017; Vurro, Russo, & Perrini, 2009). In addition to examining networks at the organizational level, other studies adopt a micro-level analysis to investigate the relationship between networks and sustainability. For example, Akhtar and colleagues (2018) find that top management tangible competencies drive the

formation of relationship-based business networks, which in turn, influence environmental sustainability.

2.4. Stakeholder theory

Stakeholder theory concentrates on the firm's complex set of relationships with its various stakeholders and the implications of these relationships for the effective management of the firm (Clarkson, 1995). A stakeholder refers to "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46). This includes customers, suppliers, employees, shareholders, regulators, and local communities, which are particularly important in marketing (Hult et al., 2011). According to Donaldson and Preston (1995), stakeholder theory consists of three strands: descriptive, instrumental, and normative. Descriptive stakeholder theory describes and explains the firm's specific actions toward stakeholders. The instrumental facet of stakeholder theory proposes a link between stakeholder management and performance objectives as it asserts firms that cultivate mutually trusting relationships with stakeholders can attain a competitive advantage (Jones, 1995). Lastly, the normative stakeholder perspective identifies moral principles that guide firms in their interactions with stakeholders (Donaldson & Preston, 1995).

Based on the notion that tending to stakeholder demands leads B2B firms to engage in sustainability-oriented activities (Sheth & Sinha, 2015), stakeholder theory has been largely used in the B2B sustainability domain to establish the connection between CSR and performance outcomes including channel sales performance (Luo & Zheng, 2013), customer loyalty (Homburg, Stierl, & Bornemann, 2013), and the financial performance of buyers and suppliers (Yang et al., 2020). In a recent study, Shafiq, Ahmed, and Mahmoodi (2020), draw on stakeholder theory to argue that B2B customers, a highly salient stakeholder group, play a central

role in suppliers' adoption of socially responsible practices. Their findings indicate that the supplier's supply chain analytics capability interacts with the B2B customers' pressure for ethical conduct to prompt the supplier to implement employee-focused social practices, which in turn, improve supplier firm performance.

2.5. Relationship marketing

Relationship marketing is concerned with the marketing activities that aim to establish, develop, and maintain successful relational exchanges (Morgan & Hunt, 1994). While it is not a theory, it is a well-established concept within the marketing literature that can inform the B2B sustainability domain. Therefore, its inclusion in this discussion is warranted. Relationship marketing is based on the notion that building and maintaining ongoing relationships, where trust and commitment are present, is fruitful for the firm (Morgan & Hunt, 1994). Such relationships can bring benefits like turnover reduction, greater partner cooperation, simpler governance structures, learning and experience effects, reduced uncertainty, and greater efficiencies (Gundlach, Achrol, & Mentzer, 1995). This perspective, which represents a departure from the concept of discrete transactions, views relationships as progressing through five stages: awareness, exploration, expansion, commitment, and dissolution (Dwyer, Schurr, & Oh, 1987).

Prior relationship marketing research in the B2B sustainability area has examined the linkage between supply chain relationship constructs such as trust (Hoejmose, Brammer, & Millington, 2012), joint action and relationship quality (Sheu, 2015), relationship norms (Bolton & Mattila, 2015), and supply chain collaboration (Theißen, Spinler, & Huchzermeier, 2014), with their sustainability-related outcomes including engagement with GSCM (Hoejmose, Brammer, & Millington, 2012), green channel performance (Sheu, 2015), consumer response to CSR (Bolton & Mattila, 2015), and readiness to engage in collaborative CO_2 reduction

management (Theißen, Spinler, & Huchzermeier, 2014). Other studies have focused on how sustainability-related factors may influence relationship constructs. For example, Canning and Hanmer-Lloyd (2007) investigate the trust effects of environmental adaptations. Their study demonstrates that, while these adaptations have the potential to strengthen trust in buyer-seller relationships, they can also undermine the trust that already exists between companies.

3. Method

The foundational basis for implementation of this study is social network theory which views social structures as networks consisting of nodes that represent actors, and where the lines linking the nodes represent relationships between actors (Hedström & Swedberg, 1994). Following this perspective, an intellectual structure is a network composed of influential works such as articles and books connected to one another by co-citations made in publications (Chabowski et al., 2010; Chabowski, Hult, & Mena, 2011). A particularly important structural characteristic relevant to this study is convergence within the network as it can reveal the existence of groups, cliques, or chains. A clique is a subset of the network that is densely connected, where all or most actors are directly linked to one another (Burt, 1980; Mizruchi, 1994). By having the same relationship patterns, actors within a clique tend to be similar to each other (Burt, 1987; Marsden & Friedkin, 1993). In contrast, a research chain consists of a series of research groups connected together to form as interrelated components focusing on a broad topic (Borgatti et al., 2009; Samiee & Chabowski, 2021). This formation in an intellectual structure indicates the publications which comprise a research chain are linked in a general way based on their co-citation patterns. As a result, this shows the common underpinnings of the research chain as possessing a core with related branches to form a unit of research topics (Small, 1986). Over time, as new information and ideas enter the network, its structure and patterns, including the

composition of groups, cliques, and chains are likely to change (Carley, 1991). As a result, when studying the B2B sustainability literature's intellectual structure, a longitudinal assessment is necessary to gain a better understanding of the impact of influential works on the development of the domain. This analysis helps identify key historical and emergent trends which can serve as a basis for future research opportunities.

The starting point for this examination of the B2B sustainability literature's intellectual structure is based on previous studies examining the sustainability topic using bibliometrics (cf. Chabowski, Mena, & Gonzalez-Padron, 2011). In fact, the theme of sustainability has grown substantially in the past ten years by focusing on topics such as branding and the supply chain (Czinkota, Kaufmann, & Basile, 2014). Following this trend, we decided to take a broad approach to our search of the research theme and, based on previous bibliometric research in the B2B marketing area (Martínez-López et al., 2020), we included the Business, Management, and Operations Research Management Science categories in our analysis of the WOS data required to conduct our evaluation. As a result, this captures the relevant marketing, management, operations, supply chain, and other related business disciplines necessary for properly evaluating the domain.

The syntax developed concerning sustainability was based on the search terms employed by Chabowski, Mena, and Gonzalez-Padron (2011). However, to accommodate the B2B marketing aspect to this study, we began with the search terms in a review of B2B research (Backhaus, Lügger, & Koch, 2011), then this list was expanded as the literature was consulted, and, as a result, B2B-related keywords were established for the database search, as well.[1] Then, the WOS database was searched using the established keywords. Each article was included in our analysis based on the B2B sustainability syntax searching the title, abstract, author-supplied

[1] The syntax is available from the authors upon request.

keywords, and reference identifiers of the journals in the three WOS categories noted previously (Chabowski, Mena, & Gonzalez-Padron, 2011; Foroudi et al., 2020). After this step, the articles and their citations were coded and examined for verification purposes. Following established bibliometric practice (Zha et al., 2020, 2021), book reviews, biographical items, editorial material, method-centered articles, and other indirect research were withdrawn from the analysis to ensure this study focused on the primary theoretical themes related to B2B sustainability research. Also, review articles and meta-analyses were not included in the evaluation of the domain's intellectual structure since these literature overviews typically conceal the development of research groups (Ho, Lu, & Chang, 2017). The result of this approach included all relevant articles in the WOS database and rendered 245,255 citations in 4,249 articles for the study.

Using the approach of previous bibliometric studies (Chabowski et al., 2018; Chabowski, Hult, & Mena, 2011; Samiee, Chabowski, & Hult, 2015), we attempted to divide the data into 10-year periods. However, since the earlier periods of the study had considerably fewer citations and articles which made initial decade analysis impractical, this process instead resulted in three periods for examination: 1971-2000 (8,563 citations from 237 articles), 2001-2010 (40,387 citations in 834 articles), and 2011-2020 (196,305 citations with 3,178 articles). After the citations were analyzed, the most highly cited publications in the B2B sustainability literature were established. Precedent in bibliometrics has indicated that, for optimal goodness-of-fit in low dimensional space, about 25 most highly cited publications maintain a low stress value (Ramos-Rodríguez & Ruíz-Navarro, 2004). Therefore, since all three periods did not adhere to this count of influential works exactly due to identical citation counts as the sample approached this specified limit, 32 publications were used in 1971-2000, 28 for 2001-2010, and 26 during 2011-

2020.[2] Utilizing the classical method in co-citation analyses, MDS was employed to depict the intellectual structure of the B2B sustainability literature across the three time periods.[3] Since MDS is a series of dimension-based applications that use data to provide spatial representations so the data are more interpretable by researchers, the method is quite appropriate for use in this study as it is applied commonly in bibliometrics.

Based on the expectation of utilizing MDS in bibliometrics, the data were normalized using Ochiai coefficients as this is a superior technique vis-à-vis Pearson or cosine similarities given the co-citation matrices are binary, co-occurrence data (van Eck & Waltman, 2009; Zhou & Leydesdorff, 2016).[4] A proximity-based function of MDS was used to evaluate and depict the intellectual structure of the research area across each of the three time periods (Commandeur & Heiser, 1993). The loss function that is minimized in low-dimensional space follows as:

$$f(\boldsymbol{X}_1, \ldots, \boldsymbol{X}_m) \equiv \frac{1}{m} \sum_{k=1}^{m} \sum_{i<j}^{n} w_{ijk} \left[\delta_{ijk} - d_{ij}(\boldsymbol{X}_k)\right]^2$$

where the similarities δ_{ijk} between n objects ($i, j = 1, ..., n$) for m sources ($k = 1, ..., m$) determine m configurations $\boldsymbol{X}_k$ of order (n x p) such that Euclidean distances $d_{ij}(\boldsymbol{X}_k)$ between the rows of the

[2] As indicated in the data gathering and analysis processes of this study, the unit of analysis is the article or publication. Therefore, by examining the most highly cited publications, this study assesses the most influential works on the overall B2B sustainability domain. Other sub-topics related to, for instance, individuals, teams, organizations, inter-organizational relationships, et cetera, may be examined with different syntax that is beyond the scope of this study.

[3] There are other tools which can be used in certain quarters of the bibliometrics domain. One such approach that is touted as a competitor tool to MDS is visualization of similarities (VOS). However, VOS is only viewed as a superior application with 100 items or more in a model (van Eck et al., 2010). As the present study is well below this threshold and has satisfactory stress values, MDS remains the method used. Furthermore, based on the overwhelming data-driven nature of an intellectual structure depicted in VOS studies, MDS allows the researcher to better manage the interpretability of the results (Hair et al., 1998). Thus, using the approach in the present study, theory-based future research opportunities are more readily advanced with greater clarity.

[4] Data normalization is used in bibliometrics for two primary reasons: (a) due to "the skewness of the distribution in bibliometric data (Seglen, 1992) and (b) [based on] the expected prevalence of zeros in most of the vectors of the citation matrix" (Zhou & Leydesdorff, 2016, p. 2805). In the context of this study and following bibliometric protocol, the raw co-citation data are binary and must be transformed by way of the normalization process to be analyzed further in MDS.

$\boldsymbol{X}_k$'s (derived as n points in p dimensions) approximate the given similarities δ_{ijk} as well as possible for $i, j = 1, ..., n$ and $k = 1, ..., m$ where w_{ijk} is a given nonnegative weight.

The result was the establishment of the domain's social network that provided representativeness and reliability to the findings (Kilduff & Tsai, 2003; Kuhn, 1962; Price, 1965; Walker, Wasserman, & Wellman, 1993; Wasserman & Faust, 1994). This is unique in B2B sustainability research as previous reviews have been conducted, but on a much smaller scale (Sharma et al., 2010). However, distinct from literature reviews and Delphi studies aimed at determining future research opportunities in a given field, bibliometrics can be used as a more objective tool as it directly applies the Kuhnian approach to the development of domains which clearly states that the combination of past and present research typically influences the future studies of a field (Kuhn, 1962; Small, 2003).

Since stress values are used to determine the goodness-of-fit of MDS models, specific ranges indicate particular levels for judgment: 0.00 to 0.025 shows a perfect fit, 0.025 to 0.05 indicates an excellent fit, 0.05 to 0.10 renders a good fit, 0.10 to 0.20 displays a fair fit, and 0.20 and higher provides a poor fit (Kruskal, 1964; Ramos-Rodríguez & Ruíz-Navarro, 2004). In fact, these statistics are referred to as stress values because they "measure … how well the given configuration represents the data" (Kruskal, 1964, p. 8) and, as a result, reduces stress in a given model. Each period in this study was determined to have a good fit as the stress value for 1971-2000 was 0.05477, 2001-2010 was 0.06301, and 2011-2020 was 0.05734. A Euclidean distance threshold of 0.25 was used to form research areas into groups (Foroudi et al., 2020; Zha et al., 2020, 2021). This allowed for the establishment of not only research groups, but also research cliques, known as groups of three or more publications, and research chains (interconnected research groups) within the context of bibliometrics (Chabowski et al., 2018; Wasserman &

Faust, 1994). The names for research groups and cliques were determined based on a detailed evaluation of the content of both the publications cited in the B2B sustainability literature's intellectual structure for each group as well as the terminology used in the citing articles extracted from the WOS database for this study.

4. Results

This portion of the study gives an outline of the B2B sustainability literature's intellectual structure for the three periods under analysis (1971-2000, 2001-2010, and 2011-2020). In fact, there are three particular trends that emerge from the results. First, the relation between stakeholder orientation and corporate social performance is noteworthy during the 2001-2010 and 2011-2020 periods. Second, the role of environmentally-focused resources takes on a more competitive supply chain emphasis across the 2001-2010 to 2011-2020 periods. Finally, the influence of internal organization and relational contracting, critical in the 1971-2000 and 2001-2010 periods, transitions to a focus on trust and commitment for the 2001-2010 and 2011-2020 periods. As a result, the following subsections indicate more exact descriptions regarding these topics.

4.1. B2B sustainability intellectual structure, 1971-2000.

Shown in Figure 1, six research groups can be found during the first period of our analysis. In fact, though there are six distinct research topics, four research chains (interconnected research groups) emerge as a part of these results. Research related to organizational citizenship and vertical dyadic exchange and power (Group 1) is found at the top of the intellectual structure for this period. While a significant aspect of this theme relates to organizational citizenship (Organ, 1988), there is a very influential facet related to the psychology of exchange and power in dyadic relationships (Blau, 1964; Graen & Scandura, 1987;

Liden & Graen, 1980). Next, a research chain emphasizing marketing and ethical decisions (Group 2) and marketing ethics, beliefs, and decisions (Group 3) is located on the right side of the MDS map. Focusing specifically on ethical decision making in marketing interactions (Ferrell & Gresham, 1985; Ferrell, Gresham, & Fraedich, 1989; Trevino, 1986), one approach deals with the origins of marketing ethics as cultural, industry, organizational, and personal components that determine norms and consequences (Hunt & Vitell, 1986) while the other side to this research chain addresses the perceived differences of ethical beliefs and actions between the individual, their peers, and corporate policy enforcement (Ferrell & Weaver, 1978; Murphy & Laczniak, 1981). The following research chain focusing on comparative economic and internal organizations and relational contracting (Group 4) and internal organization, differentiation and integration management, and organizational resource dependence (Group 5) is situated at the bottom of Figure 1. This area centers on the importance of internal organization (Williamson, 1975), but has two main features: one emphasizing topics related to the institutional environment and organizational structures (March & Simon, 1958; Williamson, 1985, 1991) while the other pursues the integration of resource dependence in an organization's differentiation strategy (Lawrence & Lorsch, 1967; Pfeffer & Salancik, 1978; Thompson, 1967). Then, located on the left side of the MDS results, research on radioactive isolation, management, disposal, and risk (Group 6) can be found. While the four publications displayed highlight engineering, environmental, and government issues related to the nuclear energy field (Bertram-Howery et al., 1990; Federal Register, 1985; Helton, 1993a, 1993c), the other publications not shown are still a part of this group.[5]

Insert Figure 1 about here.

4.2. B2B sustainability intellectual structure, 2001-2010.

[5] Confirmation was made in consultation with the Ochiai coefficients matrix for this period.

Figure 2 shows the ten research groups in this period. In fact, upon further evaluation three research chains and two standalone research groups are found. The first research chain is comprised of topics related to internal organization, cooperative strategy, and interorganizational competitive advantage (Group 1) and internal organization and relational contracting (Group 2). With the focal point on internal organizations (Williamson, 1975), the two aspects of this chain relate to relational rents (Dyer & Singh, 1998) and economic institutions (Williamson, 1985). The next research chain emphasizes themes such as environmental resources, responsiveness, and competitiveness (Group 5), environmental resources, responsiveness, commitment, strategy, and capabilities, managerial perceptions, and stakeholders (Group 6), and environmental responsiveness, commitment, strategy, and capabilities, managerial perceptions, and stakeholders (Group 7). While this area focuses on the motivations for corporate ecological responsiveness (Bansal & Roth, 2000), different traits of this chain relate to environment-focused innovation and regulation (Porter & van der Linde, 1995a), nature-based competitive advantage (Hart, 1995), and environmental commitment, capabilities development, and profitability (Henriques & Sadorsky, 1999; Russo & Fouts, 1997; Sharma & Vredenburg, 1998). The final research chain is anchored by research on the characteristics of long-term relationships between buyers and sellers (Ganesan, 1994) with one section relating to the antecedents and consequences of trust (Mayer, Davis, & Schoorman, 1995) and the other portion pursuing aspects of working partnerships, trust-building, and relational exchange (Anderson & Narus, 1990; Doney & Cannon, 1997; Dwyer, Schurr, & Oh, 1987; Morgan & Hunt, 1994). In addition, the first of two isolated groups examined the relevance of search cost reduction and competitive strategy (Group 3) which provided attention to the topics of increasing buyer search costs (Bakos, 1997) and competitive strategy (Porter, 1980). The final unconnected research group related to stakeholder orientation

and corporate social performance (Group 4). This theme focused on the importance of a stakeholder focus to corporate strategy as well as CSR and responsiveness at the institutional, firm, and social levels (Clarkson, 1995; Freeman, 1984), but also related to the influence of power, legitimacy, and urgency as key aspects to different types of stakeholders (Mitchell, Agle, & Wood, 1997).

Insert Figure 2 about here.

4.3. B2B sustainability intellectual structure, 2011-2020.

Eleven research groups were found during this period as seen in Figure 3. Four research chains can be identified as well as two isolated research groups. In fact, there are two general characteristics among the research chains during 2011-2020 that should be noted. One trait is an emergent focus on the supply chain in specific. This is found first in research related to competitive international green supply chain management (Group 1) and public and private environmental supply chain management (Group 2). Centered on internal and external issues such as supply chain- and cost-related pressures (Zhu, Sarkis, & Geng, 2005), one aspect of this research chain emphasizes the role of innovation and regulation in environmental-related decisions (Porter & van der Linde, 1995a) while the other highlighted regulatory compliance and customer pressure as drivers toward environmental SCM regardless of whether the organization is in the public or private sector (Walker, Di Sisto, & McBain, 2008). Going further, research emphasizing competitive international green supply chain interaction and manufacturing performance (Group 9), competitive international green supply interaction and profitability (Group 10), and supply chain interaction, sustainability, and profitability (Group 11) provides more evidence of the supply chain research trend developing during this period. With a concentration on the relationship between green strategies, competitiveness, and economic

performance (Rao & Holt, 2005), the interaction with suppliers based on the competitive priorities of vendors and customers (Vachon, Halley, & Beaulieu, 2006), and the impact of green SCM on environmental and economic performance (Zhu & Sarkis, 2004), the two parts of this research chain relate to environmental collaboration, plant facility characteristics, and manufacturing performance (Vachon & Klassen, 2008) as well as the integration of sustainability-focused strategies that lead to new behaviors in the supply chain and, subsequently, positive performance (Pagell & Wu, 2009). Appendix 1 provides greater detail concerning the sustainability-specific publications appearing in the B2B sustainability's intellectual structure during this time period.

Insert Figure 3 about here.

Meanwhile, the other general attribute of research chains in this period shows a continued emphasis on traditional sustainability issues such as firm-level environmental and social issues. This is seen in research related to stakeholder orientation and corporate social performance (Group 4) and stakeholder orientation and the corporation (Group 5). While the center of this chain focuses on the importance of stakeholder strategy to firms (Freeman, 1984; Mitchell, Agle, & Wood, 1997), its two aspects emphasize the role of stakeholder management at the individual, managerial, and relationship levels (Clarkson, 1995) and the external interactive requirements of a stakeholder strategy based on descriptive, instrumental, and normative elements (Donaldson & Preston, 1995). Going further, related research deals with firm resources and sustained natural-based competitive advantage (Group 7) and resource-based firm environmental performance (Group 8). The focal point for this small research chain is the development of environmentally-focused capabilities (Hart, 1995) while the two facets relate to, on the one hand, firm resources and sustained competitive advantage (Barney, 1991) and, on the other hand, the role of resources

in contributing to environmental performance and profitability (Russo & Fouts, 1997). In addition, one of the standalone research groups addresses buyer and seller trust and commitment (Group 3). This was done by emphasizing the relational exchange in interactions with different partnerships while delivering value to the marketplace (Dwyer, Schurr, & Oh, 1987; Morgan & Hunt, 1994). The other single research group examined corporate strategy, social responsibility, and competitive financial performance (Group 6). This topic deals with the relationship between corporate social performance and financial performance as well as the value chain impact of responsive and strategic CSR (Porter & Kramer, 2006; Waddock & Graves, 1997).

4.4. B2B sustainability intellectual structure dimensions

The ungrouped and grouped articles appearing in Figures 1-3 provide the foundation to establish the horizontal and vertical dimensions of the B2B sustainability literature longitudinally (Chabowski, Hult, & Mena, 2011; Chabowski, Samiee, & Hult, 2013). First, with the MDS results for 1971-2000 in Figure 1, the horizontal axis can be contrasted with articles on the left side emphasizing radioactive risk and waste (Bertram-Howery et al., 1990; Federal Register, 1985; Helton, 1993a, 1993c) while the right side focuses on marketing ethics (Ferrell & Weaver, 1978; Murphy & Laczniak, 1981). Meanwhile, the vertical axis highlights issues related to dyadic citizenship at the top of the MDS map (Graen & Scandura, 1987; Liden & Graen, 1980; Organ, 1988) and at the bottom the topic of organizations is underlined (Lawrence & Lorsch, 1967; Thompson, 1967).

Next, for the findings during the 2001-2010 time period in Figure 2, the horizontal axis deals with buyer-seller relationships on the left side (Doney & Cannon, 1997; Dwyer, Schurr, & Oh, 1987) and the right side addresses an environmental focus (Bansal & Roth, 2000; Hart, 1995; Porter & van der Linde, 1995a). Concerning the vertical axis, the top of the MDS map

emphasizes competitive search cost reduction (Bakos, 1997; Porter, 1980) and the bottom focuses on external institutional structure (DiMaggio & Powell, 1983; Granovetter, 1985; Pfeffer & Salancik, 1978).

Then, the last period of 2011-2020 as shown in Figure 3 possesses specific traits along its axes, as well. For instance, for the horizontal axis, the left side underscores the importance of environmental sustainability (Porter & van der Linde, 1995a) while the right side pursues the topic of stakeholder social responsibility (Donaldson & Preston, 1995; McWilliams & Siegel, 2001; Mitchell, Agle, & Wood, 1997). Then, concerning the vertical axis, the top of the MDS results relate to exchange power (Blau, 1964) while the bottom deals with performance and advantage (Dyer & Singh, 1998; Russo & Fouts, 1997; Waddock & Graves, 1997).

4.5. B2B sustainability literature longitudinal development.

Based on an examination of the three specific periods of the MDS results (1971-2000, 2001-2010, and 2011-2020) as discussed above, four trends are found to exist across periods in this longitudinal investigation of the B2B sustainability literature's intellectual structure. These themes emphasize: (1) internal organization; (2) stakeholder orientation; (3) trust and commitment; and (4) environmental resources, responsiveness, and performance. To indicate the lasting nature of specific research topics as found in Figure 4, publications appearing in research groups were paired across time periods to show maintenance, expansion, or contraction of specific themes. Stated differently, for development to occur from an earlier period to a later period, the same publication must appear in a group with another publication in each period to become an advancement related to B2B sustainability research. This follows established protocol for longitudinal studies using bibliometrics in the business literature and provides an approach to observe the chronological expansion of the domain (Chabowski, Hult, & Mena, 2011;

Chabowski et al., 2010, 2018; Chabowski, Mena, & Gonzalez-Padron, 2011; Samiee & Chabowski, 2012; Samiee, Chabowski, & Hult, 2015; Small, 1977). As such, this application displays the shifts that take place in this literature base for the study's duration.

Insert Figure 4 about here.

The first development which concerns internal organization starts in the 1971-2000 period with two research cliques. One theme is more focused on relational contracting (Group 4) while the other outlines the importance of management and resource dependence (Group 5). Regardless, both research groups lead to two related topics in the 2001-2010 period. For this time frame, one subject relates to a more emergent conversation related to cooperative strategy and interorganizational competitive advantage (Group 1) while the other focuses on the traditional approach of internal organization and relational contracting (Group 2).

The second development that emphasizes stakeholder orientation begins in 2001-2010. In fact, the topic's relationship with corporate social performance (Group 4) is a critical component of this research stream. This issue continues into 2011-2020 by expanding to focus on the corporation specifically (Group 5) and maintaining its traditional standing as in the previous period (Group 4).

The third development is associated with the foundational topic of cooperative strategy mentioned earlier. However, the focus of this theme in the 2001-2010 period emphasizes the long-term relationships which can develop between firms to establish trust and commitment (Group 10). This subject transitioned in 2011-2020 to a basic emphasis on the relational exchange which takes place with the realization of trust and commitment (Group 3).

As the greatest expansion in our longitudinal analysis, the final development was found to focus on environmental resources, responsiveness, and performance. The most influential of

the three groups which appeared in 2001-2010, the importance of research on resources, responsiveness, and competitiveness (Group 5) influenced all three related research groups in the 2011-2020 period focusing on green supply chain management (Group 1), natural-based competitive advantage (Group 7), and firm environmental performance (Group 8). While the last two 2001-2010 research groups focused on issues such as commitment, strategy, and capabilities, the topic which focused on resources (Group 6) impacted the two environmental resource-focused groups in 2011-2020: one concerning competitive advantage (Group 7) and the other relating to performance (Group 8). However, the related, more narrowly focused topic from 2001-2010 (Group 7) is only related to environmental performance (Group 8) in 2011-2020.

4.6. Most influential recently published B2B sustainability articles.

Following previous approaches using bibliometrics, this study sought to establish the most influential articles published recently related to B2B sustainability. As found in Table 1, we examined the publications made in the past 10 years (2011-2020) to impart a better understanding of which articles may be influential in the future (Burrell, 2002, 2003). By using a threshold of 2.75 citations per year, a list of twenty articles appearing in the recently published influential B2B sustainability literature is equivalent in size to other bibliometric studies employing this practice (Chabowski, Samiee, & Hult, 2013; Foroudi et al., 2020, 2021; Zha et al., 2021). Appendix 2 provides greater detail concerning the most influential recently published B2B sustainability articles appearing in Table 2.

Insert Table 2 about here.

One trend discovered in our analysis relates to the competing goals and priorities in the supply chain (Wang, Lai, & Shi, 2011; Wu & Pagell, 2011). Long acknowledged as an issue in inter-firm relations, this issue is exacerbated with interactions between organizations that are

public and private (Brammer & Walker, 2011; Walker & Jones, 2012). For instance, even if these different types of organizations are focusing on sustainability issues, measurement of success is often different. As a result, the development of different types of public-private partnerships can help focus efforts more precisely to collaborate on specific policies, practices, and outcomes with sufficient coordination, embeddedness, and experience (Caldwell, Roehrich, & George, 2017). However, even though both sides of these partnerships generally find more external encouragement in implementing sustainability measures than hindrance (Walker, Di Sisto, & McBain, 2008), success can be contingent on regional subcultures (York, Vedula, & Lenox, 2018).

The second trend identified in our evaluation of the most influential recently published works relates to the impact of the supply chain on the environment. In fact, the relevance of firms' carbon footprint has been examined extensively in the recent literature (Benjaafar, Li, & Daskin, 2013; Hua, Cheng, & Wang, 2011). To deal with these problems, emission trading has emerged as a solution for less sustainable companies to benefit from those which have more developed programs (Chaabane, Ramudhin, & Paquet, 2012). Going further, government initiatives that take the form of emission reduction incentives are another way to encourage firms to develop a sustainable strategy (Jaber, Glock, & El Saadany, 2013).

A third trend found relates to the development of sustainability-focused resources and capabilities (Paulraj, 2011). Sometimes coupled with the tenets of institutional theory (Shibin et al., 2020), these topics represent the interaction between the internal and external forces exerted on the firm to remain competitive. Going further, the role of performance in these applications is critical to understanding the types of outcomes which result from sustainability activities (Green et al., 2012).

Also, some nascent trends were identified in the recent influential B2B literature, as well. One topic relates to the circular economy concept (Geissdoerfer et al., 2017; Genovese et al., 2017; Ghisellini, Cialani, & Ulgiati, 2016). Based on the notion that nothing in an overall economic system should be wasted, a circular economy is meant to convert the leftover elements of a society such as business operations and/or used and discarded consumer products into something of value to future customers. As a result, it can be considered an ideal sustainability-focused commercial system. Another emerging topic identified in this study relates to blockchain technology (Saberi et al., 2019). A transaction recording system maintained across many computers in a peer-to-peer distribution environment, blockchain provides the opportunity to have transparency, traceability, and security in the supply chain. However, adoption of this approach has not yet fully developed but offers considerable promise in the future. Taken together, these two themes appear to have an opportunity to continue influencing the domain.

5. Discussion

For this portion of the study, we address concerns in the marketing literature that there are an insufficient number of conceptually-focused studies (MacInnis, 2011; Moorman et al., 2019; Yadav, 2010). In fact, based on the approach conceptualized and pioneered by Kuhn (1962) and Price (1965) to expand the understanding and application of knowledge through bibliometrics driven by co-citation analysis, this study advances a research framework (see Figure 5) based on the B2B sustainability literature to date. As a result, this example integrates the historical, recent, and current research of the domain into a conceptually relevant structure for future applications. This follows other noteworthy bibliometric studies that have summarized specific topical areas in the business field (Chabowski & Mena, 2017; Chabowski, Mena, &

Gonzalez-Padron, 2011; Chabowski, Samiee, & Hult, 2013; Foroudi et al., 2020, 2021; Zha et al., 2020, 2021).

Insert Figure 5 about here.

Therefore, this section has two main parts. Based on the results presented above, the research framework is introduced as a way to uniquely integrate the literature and impart future research opportunities for the B2B sustainability domain. There are four components of the first portion of this section that emphasize: (1) the influence of a company's strategic focus on its supply chain collaboration; (2) the influence of a firm's supply chain collaboration on its sustainability performance; (3) in role of sustainability performance; and (4) the moderating role of non-channel drivers and barriers. Then, the second part of this section addresses the limitations of this study.

5.1. Future opportunities and research framework

5.1.1. The influence of strategic focus on supply chain collaboration

Taking place among managers specifically at the firm level, strategic focus is comprised of three main components within the context of B2B sustainability: the nature of the partnership type, stakeholder orientation, and sector emphasis of the company. Related to the notion that the firm can emphasize supplier-, lateral- (e.g., competitors, governments, etc.), internal-, or buyer-based relationships (Morgan & Hunt, 1994), an organization's focus influences this interaction as a negotiation that can result in cooperation and co-creation for mutual benefit (Atefi et al., 2020; Ekman, Raggio, & Thompson, 2016; Nguyen, 2020). For example, a supplier's environmental expertise or general emphasis on sustainability may be of particular interest to the company (Gualandris & Kalchschmidt, 2016). In fact, suppliers may be so aligned with their customers as

to anticipate their value propositions in a circular economy context (Ranta, Keränen, & Aarikka-Stenroos, 2020).

The notion of a firm's stakeholder orientation is based on Freeman's (1984) definition which indicates "...all of those groups and individuals that can affect, or are affected by, the accomplishment of organizational purpose. Each of these groups plays a vital role in the success of the business enterprise.... Each of these groups has a stake in the modern corporation, hence, the term, 'stakeholder...'" (p. 25). Based on this, stakeholders can be local community organizations, owners, consumer advocates, customers, competitors, media, employees, environmentalists, suppliers, governments, and other relevant groups. In fact, the stakeholder concept has appeared in various forms in the sustainability literature to date. For instance, a company's sustainability efforts have been related to the satisfaction, profitability, and operational success of others in the stakeholder network be they suppliers or resellers (Laczko et al., 2019; Song, Yu, & Zhang, 2017). Also, the possibility of stakeholders exercising their power strategically and potentially taking action against the company to correct injustice has been examined (Gama Boaventura et al., 2020; Hayibor & Collins, 2016). As it pertains to the proposed framework, a firm's low stakeholder orientation would include an organization that focuses on only one or two stakeholders. Meanwhile, a medium orientation would be a company emphasizing a few stakeholders in its operations. However, a high stakeholder orientation would indicate a firm that deals with several stakeholders at once.[6]

The final concept related to a company's strategic focus relates to the private or public sector or a hybrid of the two (Brammer & Walker, 2011; Walker, Di Sisto, & McBain, 2008;

[6] Stakeholder orientation as defined for this framework does not include the relative power or position of different stakeholders in the company's network (and the subsequent power-based attention level shown by the firm). Though this topic is covered in Freeman's (1984) seminal work (p. 60-64), it remains beyond the scope of this study as we are introducing only the orientation of the firm by its firm level strategic focus – not its collaboration with others in the supply chain – with regard to its stakeholder orientation.

Walker & Jones, 2012). For developing strategy with private partners, there is a long history of buyers demanding suppliers integrate environmental standards into the development of their products prior to selling them (e.g., Shumon et al., 2019). In addition, concerning the public sector strategy, company focus on the procurement of goods and services by governments for community benefit is a common practice (Wontner et al., 2020). Then, the hybrid approach can take many forms. One approach can be to take a more traditional view and relate the partnership of a private company with a public organization to influence the supply chain and specific industries (Goggins, 2018; Malik et al., 2019). However, another perspective can be to convey the importance of cultural norms and social expectations which bind both the private firms and public partners in unique ways (Geng et al., 2017). In other words, sharing mutual knowledge, possessing common values, and taking responsibility for specific initiative goals shared between both private and public players can enhance opportunities to develop collaborative relationships which create value socially and environmentally in both the marketplace as well as in communities (Caldwell, Roehrich, & George, 2017; York, Vedula, & Lenox, 2018).

Taken together, these three firm-based components of strategic focus (partnership type, stakeholder orientation, and sector emphasis) can integrate to influence a company's supply chain collaboration in various directions for future research. For instance, in comparative studies to evaluate the topic, a specific configuration of strategic focus may be found to have a maximum impact on supply chain collaboration. Considering a firm could have a high stakeholder orientation and hybrid sector emphasis, at issue would be the partnership type which has optimal influence: supplier, lateral, internal, or buyer partnerships. In addition, an organization may not have sufficient capacity to address all the concerns introduced with a high stakeholder orientation which could lead it to fall into disarray and, as a result, be ineffective in

its mission. As a result, a low or medium level of stakeholder orientation could be better to enhance supply chain collaboration. Then, there are tradeoffs having a public or private sector emphasis. Given the partnership type and stakeholder orientation configurations of the conceptual framework, a hybrid emphasis may be most effective to boost performance. In addition, there is also the potential that a private enterprise may be more successful in the short-term as it tends to focus on financial performance rather than human welfare. Therefore, there are a multitude of opportunities available to examine the relationship between strategic focus and supply chain collaboration in the B2B sustainability literature. As indicated in Figure 5, those presented here are only a few.

5.1.2. The influence of supply chain collaboration on sustainability performance

Focusing on the channel level for this category in the framework, the first component of a firm's supply chain collaboration efforts emphasizes relationship stage. Related to the concept that relationships pass through stages over time, five phases are typically represented: awareness, exploration, expansion, commitment, and dissolution (Dwyer, Schurr, & Oh, 1987). In fact, it is acknowledged that the alignment of strategic objectives is key for a dyadic- or network-based relationship to be successful particularly as it relates to sustainability (Miemczyk, Johnsen, & Macquet, 2012). However, opportunism has been identified as a problem in B2B sustainability relationships (Arikan, 2020). More precisely, there is an ominous approach that takes place sometimes in which buyers exert their power in a relationship and exploit their suppliers (Schleper, Blome, & Wuttke, 2017). In fact, these types of betrayals can cause the relationship to revert or dissolve altogether (Borjeson, 2018). These actions indicate that a certain level of ethics and morality is required in sustainable B2B relationships so collaborative behavior instills trust (Schwepker 2019a, 2019b). As such, trust is a critical factor to develop the relationship from

awareness to exploration, expansion, and through to commitment (Dwyer, Schurr, & Oh, 1987; Gualandris & Kalchschmidt, 2016; Morgan & Hunt, 1994). As related to the proposed model, both trust and commitment are related to a variety of forms of satisfaction – both economic and non-economic (Mpinganjira, Roberts-Lombard, & Svensson, 2017) – which will be discussed in the next subsection.

The second aspect of a company's supply chain collaboration discovered focuses on sustainability capabilities. In fact, this study identifies that, while interacting within the supply chain, the firm develops unique social and environmental sustainability capabilities (Barney, 1991; Hart, 1995; Paulraj, 2011; Porter & Kramer, 2006; Waddock & Graves, 1997). As sustainability initiatives can be both strategic and operational capabilities, such practices can be used to spread throughout the firm's supply networks (Meqdadi, Johnsen, & Johnsen, 2017; Tchokogue et al., 2018). For social-focused capabilities, companies recognize the importance of engaging with the community and implementing socially responsible procurement practices as it impacts performance in a variety of ways, be it increased return on investment, sales, market share, or brand standing (Ben Youssef et al., 2018; Marshall et al., 2019; Pek, Oh, & Rivera, 2018). While environmental-based capabilities can be transferred to horizontal and vertical members of its network (Li et al., 2018), the investments made by the firm itself are based on the decisions made by managers (Azadegan et al., 2018). As such, developing products and implementing environmentally-friendly strategies have the potential to make the firm quite successful, measured by such metrics as profit, return on investment, market share, and sales (Han et al., 2019; Li, Zhou, & Wu, 2017; Noordewier & Lucas, 2020).

The last facet of a firm's supply chain collaboration found emphasizes the channel pressure it exerts or enforces. This is based on the perspective there are three essential pressures

to which companies pay attention: coercive, normative, and mimetic (DiMaggio & Powell, 1983; Shibin et al., 2020). In short, coercive pressure relates to force that can be placed on an organization based on, in this case, connections or supplier or customer demands (Gallego-Álvarez & Pucheta-Martínez, 2020; Zhang, Marquis, & Qiao, 2016). Meanwhile, normative pressure addresses the weight impressed on a company based on the norms of a social group or codes of conduct developed over a period of time (Brockhaus et al., 2019; Geng et al., 2017). Then, mimetic pressure is the influence made on organizations relating to imitating successful companies (York, Vedula, & Lenox, 2018), be they peers (Zou et al., 2018) or competitors (DeBoer, Panwar, & Rivera, 2017).

In all, the three elements of supply chain collaboration (relationship stage, sustainability capabilities, and channel pressure) comprise a critical mediating force between the strategic focus aspect of our model previously discussed and the forthcoming presentation of sustainability performance. More precisely, future studies could assess how these aspects can combine to examine the B2B sustainability phenomenon. As an example, there could be different supply chain collaboration arrangements to achieve superior economic, social, or environmental performance. With regards to environmental performance, specifically utilizing a relationship at the commitment stage and with environmental capabilities may require some combination of exerting either coercive and/or normative channel pressure to have the greatest influence. Taken further, augmenting social performance could be based on maintaining the same relationship stage and levels of channel pressure, but switching to social capabilities. To encourage the implementation of effective mimetic channel pressure, the most useful supply chain collaboration could be a focus on either social or environmental capabilities, depending on the context, and an early relationship stage: awareness, exploration, or expansion. The litmus test

would be the point at which collaboration with supply chain partners is imitated by peers and/or competitors. Therefore, with an analysis of Figure 5 such as this, it can be noticed there are many different research opportunities available beyond those presented here.

5.1.3. Sustainability performance: economic, social, and environmental

The recent B2B sustainability literature continues to indicate there are three aspects to performance: economic, social, and environmental (Chaabane, Ramudhin, & Paquet, 2012; Paulraj, 2011). Economic performance variables found relate to measures such as manufacturing or operational performance, profit, return on investment, market share, and sales (Green et al., 2012; Li, Zhou, & Wu, 2017; Noordewier & Lucas, 2020; Song, Yu, & Zhang, 2017; Vachon & Klassen, 2008). In terms of social performance, there are two facets: one emphasizes quality of life and noise reduction (Chaabane, Ramudhin, & Paquet, 2012) while the other focuses on stakeholder welfare, community health, and employee safety (Paulraj, 2011). Then, environmental performance examines the impact of a firm's activity in terms of its carbon footprint (Benjaafar, Li, & Daskin, 2013; Hua, Cheng, & Wang, 2011), carbon emissions (Adhikary et al., 2020), emission trading (Ma et al., 2018), and emission reduction (Brandenburg, 2017).

5.1.4. The moderating role of non-channel drivers and barriers

The moderating role of non-channel drivers and barriers on either the relationship between (1) strategic focus and supply chain collaboration or (2) supply chain collaboration and sustainability performance is, at least in part, dependent on the level of the two internal firm-level variables included in the conceptual model: top management initiatives and sustainability investments. In other words, their moderating influence should be positive if there is a high degree of top management support and/or considerable sustainability investment (Giunipero,

Hooker, & Denslow, 2012; Sajjad, Eweje, & Tappin, 2020; Walker & Jones, 2012). However, should top management discourage sustainability initiatives or companies take a traditional cost-based accounting-influenced approach, resources provided to sustainability projects will be minimal and unsuccessful (Giunipero, Hooker, & Denslow, 2012; Walker & Jones, 2012). Based on our examination of the B2B sustainability literature, three external, macroenvironmental variables can be incorporated into the framework as moderators and have an impact on the two main relationships presented earlier. However, since these influences concern ambiguity and risk, economic uncertainty (Giunipero, Hooker, & Denslow, 2012), technological uncertainty (Sajjad, Eweje, & Tappin, 2020), and market uncertainty (Hoppmann, Sakhel, & Richert, 2018) an increase in any one of these should have a negative influence on the main relationships in the model.

5.2. Limitations

There are at least two limitations identified related to this study. The first area of concern focuses on the unit of analysis. As this is idiosyncratic of the study's application of bibliometrics, the unit of analysis is the article. In fact, this approach is a classical application for co-citation analysis and incorporates many different facets of the B2B sustainability literature. Stated differently, the concepts of individuals, teams, organizations, and inter-organizational relationships in specific are embedded in the study but they are not teased out as each topic is beyond the scope of this study. One of the primary goals of this study was to examine the nature of the B2B sustainability literature as a whole, provide a related framework on which it is based, and indicate future research opportunities. However, we invite other bibliometricians and researchers in the B2B sustainability domain to examine these topics in more detail to develop and extend the literature even further.

Another limitation is related to the notion that bibliometric studies are historical in nature. As a result, they are not particularly forward-looking. However, this study takes the Kuhnian perspective of theory development which clearly states that past and present research in a given domain provide a reasonable expectation for the near future of a literature area. In fact, this is noted in the study's conceptual model (Figure 5) which is based largely on the MDS results in the 2011-2020 period (Figure 3) and the most influential recently published articles (Table 1). While the approach used here cannot anticipate all possible future opportunities that may occur in B2B sustainability research, some possibilities may be achieved based on the application of the integrative framework presented.

6. Conclusion

In this study, we identify the most important research topics for three time periods spanning five decades in this research area. Also, we discover four trends that persist over the course of the study. Specifically, the themes identified cover stakeholder orientation and corporate social performance, environmentally-focused resources and their influence on competitive supply chains, internal organization and relational contracting, and trust and commitment.

Based on established theory in the literature, the research framework introduced suggests a company's supply chain collaboration as a crucial mediator between its strategic focus and sustainable performance within the context of B2B sustainability. We propose three components of a firm's strategic focus (partnership type, stakeholder orientation, and sector emphasis) that affect its supply chain collaboration. Moreover, a greater in-depth understanding of the company's supply chain collaboration lies in how the simultaneous influence of its relationship stage, sustainability capabilities, and channel pressure can impact different outcomes related to

sustainability performance as measured by a variety of economic, social, and environmental metrics. Going further, in terms of non-channel drivers and barriers, we propose that top management initiatives and sustainability investments are critical internal influences on B2B sustainability undertakings while external macroenvironmental factors include economic, technological, and market uncertainties.

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Appendix 1:
Representative Publications of B2B Sustainability Articles in 2011-2020 Intellectual Structure

Author(s)	Context	Theories Used	Component(s) Addressed	Key Insights
Russo & Fouts, 1997	Empirical study of 243 firms in high- and low-growth industries	Resource based view	Environmental; Economic	Environmental performance has a positive effect on economic performance. This environmental performance-economic performance relationship is stronger in higher-growth industries.
Waddock & Graves, 1997	Empirical study of 469 companies from manufacturing and services industries	Stakeholder theory	Social; Economic	Prior financial performance is positively associated with corporate social performance (CSP). In turn, CSP is positively related to future financial performance.
Carter & Jennings, 2004	Empirical study of 201 U.S. firms in consumer products manufacturing industries	n.a.	Environmental; Social	Purchasing social responsibility (PSR) is a multidimensional, higher-order construct which consists of purchasing activities connected with the environment, diversity, human rights, philanthropy, and safety. Drivers of PSR include a people-oriented organizational culture, top management leadership, and customer pressures for socially responsible products.
Zhu & Sarkis, 2004	Empirical study of 186 respondents from Chinese manufacturing enterprises	n.a.	Environmental; Economic	Green supply chain management (GSCM) practices positively impact environmental and economic performance. Quality management moderates the relationship between GSCM practice and economic performance, while just-in-time practices moderate the GSCM practice-environmental performance link.

Rao & Holt, 2005	Empirical study of 52 ISO14001 certified companies in Southeast Asia	n.a.	Environmental; Economic	Green supply chain management initiatives lead to competitiveness and economic performance.
Zhu, Sarkis, & Geng, 2005	Exploratory study of 314 respondents from Chinese manufacturing organizations	n.a.	Environmental; Economic	As a result of regulatory, competitive, and marketing forces, Chinese enterprises are feeling pressure to adopt green supply chain management (GSCM) practices. However, this has not led to strong implementation of GSCM practices.
Vachon & Klassen, 2008	Empirical study of 84 manufacturers in the North American package printing industry	Natural resource based view	Environmental; Economic	Environmental collaboration between supply chain members is positively associated with manufacturing (quality, delivery, and flexibility) performance and environmental performance.
Walker, Di Sisto, & McBain, 2008	Exploratory research of seven public and private sector organizations	n.a.	Environmental	Organizations have a number of internal and external drivers and barriers to environmental supply chain management practices. External drivers (e.g., regulation, customers, competitors) seem to more strongly influence organizations than internal drivers (i.e., organizational factors).
Pagell & Wu, 2009	Case study research of ten exemplar firms	n.a.	Environmental; Social; Economic	Practices that result in a more sustainable supply chain include organizational commitment to sustainability, focus on supplier continuity, investment in human capital, and best practices in sourcing management.

Appendix 2:
Representative Publications of Most Influential Recently Published B2B Sustainability Articles (2011-2020)

Author(s)	Context	Theories Used	Component(s) Addressed	Key Insights
Brammer & Walker, 2011	Empirical study of 283 organizations from 20 countries	n.a.	Environmental; Social	Environmental aspects are not yet widely implemented in public sustainable procurement (SP). However, social aspects such as sustainable labor and safety practices are widely implemented, in addition to practices favoring small local producers.
Paulraj, 2011	Empirical study of 145 U.S. firms	Resource-based view; Resource advantage theory	Environmental; Social; Economic	Enviropreneurship and strategic purchasing positively influence sustainable supply management, which in turn, lead to sustainable performance.
Hua, Cheng, & Wang, 2011	Study that develops and uses an environmental inventory model under the cap-and-trade system	n.a.	Environmental; Economic	Carbon cap and carbon price affect the retailer's order decisions, carbon footprints, and total cost.
Wu & Pagell, 2011	Grounded case study research involving eight U.S. firms that are exemplars in sustainable supply chain management	n.a.	Environmental; Economic	The firm's environmental posture influences the aspects of the triple-bottom-line that will be prioritized when faced with a strategic trade-off in decision-making. Generally, firms are able to sustain economic performance while striving to reach environmental advancements.
Ageron, Gunasekaran, & Spalanzani, 2012	Empirical study of 178 French firms	n.a.	Environmental; Economic	Enabling conditions and critical success factors for sustainable supply management are presented.

Giunipero, Hooker, & Denslow, 2012	Delphi analysis involving 21 high-level supply managers in U.S.-based firms	n.a.	Environmental; Social; Economic	Purchasing and supply management sustainability efforts are driven by government regulations and top management initiatives. However, they are constrained by investments in sustainability and economic uncertainty.
Green, Zelbst, Meacham, & Bhadauria, 2012	Empirical study of 159 managers from US manufacturing organizations	n.a.	Environmental; Economic	In general, the implementation of green supply chain management practices positively affects environmental performance, which in turn, leads to enhanced economic performance.
Benjaafar, Li, & Daskin, 2013	Study using supply chain planning models based on lot-sizing for single and multiple firms	n.a.	Environmental	Operational decisions on carbon emissions can result in emission reductions without significant increases in cost. In particular, collaboration across the supply chain may mitigate the cost of reducing emissions.
Walker & Jones, 2012	Case study research of seven UK private sector companies	Contingency theory	Environmental; Social	Develops a typology of approaches to sustainable supply chain management (SSCM), based on both internal and external enablers and barriers. The firms were grouped as Internal Focusers, Reserved Players, External Responders, and Agenda Setters.
Genovese et al., 2017	Case study research of different process industries (chemical and food supply chains)	n.a.	Environmental	The implementation of a circular supply chain is beneficial for the environment compared to the traditional linear one, but governmental support is needed to incentivize this development.
Shibin et al., 2020	Empirical study of 205 Indian auto components manufacturing firms	Resource-based view; Institutional	Environmental; Social; Economic	Coercive pressures have a positive effect on top management participation in building supply chain connectivity and information

	theory	sharing systems. These ultimately lead to environmental, social, and economic performance of the supply chain.

Table 1:
Theoretical Perspectives and B2B Sustainability Implications

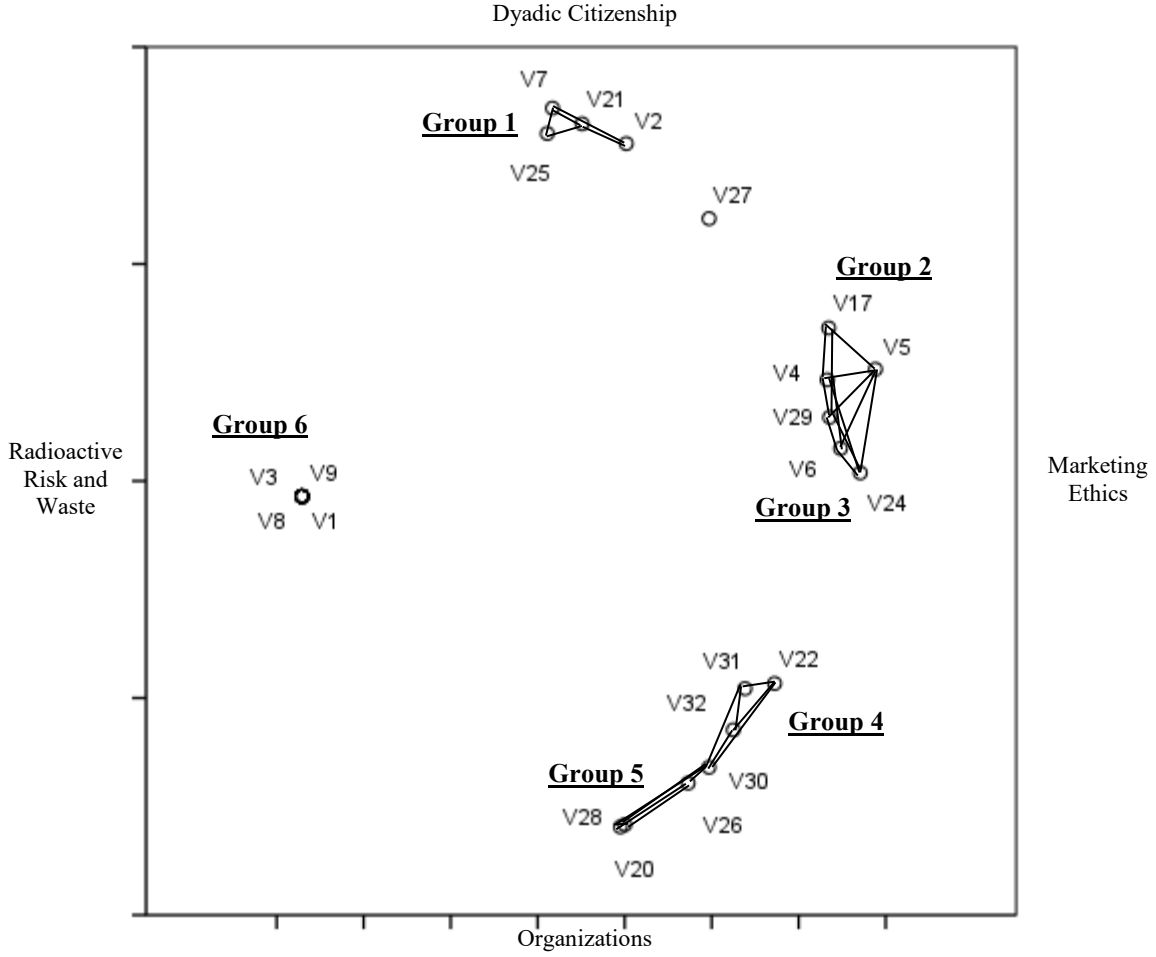
Theoretical Perspective	Central Argument	Key Insights for B2B Sustainability
Institutional theory	Institutional theory contends that institutional pressures (coercive, mimetic, and normative pressures) drive firms to emulate others in their environment in an effort to attain legitimacy (DiMaggio & Powell, 1983).	Institutional pressures drive B2B firms to engage in sustainable practices. For instance, they play a key role in the implementation of green supply chain management (GSCM) practices (Agarwal, Giraud-Carrier, & Li, 2018; Hoejmose, Grosvold, & Millington, 2014), the adoption of green purchasing by multinational corporations' subsidiaries (Hsu et al., 2014), and the execution of CSR initiatives in supply chains in different markets (Jean et al., 2016).
Resource-based view / natural resource-based view	The resource-based view (RBV) of the firm holds that the possession of resources that are valuable, rare, imperfectly imitable, and organizationally embedded leads to a competitive advantage (Barney, 1991). The natural resource-based view (NRBV) argues that the firm's relationship to the natural environment can be a source of competitive advantage (Hart, 1995).	Green resources and capabilities including environmental orientation (e.g., Li et al., 2016), green supply chain capabilities (Li et al., 2016), and green supply chain management practices (Schmidt, Foerstl, & Schaltenbrand, 2017) can create a competitive advantage and result in the superior performance of B2B firms.

Social network theory	Social network theory views firms as operating within networks composed of interconnected relationships, where the structure and patterns of these relationships explain the network firms' outcomes (e.g., Borgatti & Halgin, 2011; Tichy, Tushman, & Fombrun, 1979).	Characteristics of the network – such as buyer-supplier network complexity (Adhikary et al., 2020) and supply chain network density (Vurro, Russo, & Perrini, 2009) – as well as the B2B firms' relationships with others in the network including social reciprocity (Huang & Li, 2017) and firm centrality (Vurro, Russo, & Perrini, 2009) impact the network firms' sustainability practices and environmental performance.
Stakeholder theory	Stakeholder theory proposes that attending and responding to the multiple stakeholders' legitimate interests is key for the effective management of the firm (Donaldson & Preston, 1995; Freeman, 1984).	Corporate social responsibility (CSR), which is viewed as a stakeholder-focused sustainability practice, can enhance B2B firms' performance outcomes including channel sales performance (Luo & Zheng, 2013), customer loyalty (Homburg, Stierl, & Bornemann, 2013), and the financial performance of buyers and suppliers (Yang et al., 2020).
Relationship marketing	Relationship marketing contends that establishing, developing, and maintaining ongoing relationships, where trust and commitment are present, is beneficial for firms (Morgan & Hunt, 1994).	Building and maintaing supplier-buyer relationships is important when developing sustainable supply chains. Specifically, supply chain relationship constructs such as trust (Hoejmose, Brammer, & Millington, 2012), joint action, relationship quality (Sheu, 2015), relationship norms (Bolton & Mattila, 2015), and supply chain collaboration (Theiben, Spinler, & Huchzermeier, 2014) influence sustainability-related outcomes including engagement with GSCM (Hoejmose, Brammer, & Millington, 2012), green channel performance (Sheu, 2015), consumer response to CSR (Bolton & Mattila, 2015), and readiness to engage in collaborative CO_2 reduction management (Theiben, Spinler, & Huchzermeier, 2014).

Table 2:
Most Influential Recently Published B2B Sustainability Articles (2011-2020)

Article	Journal	Citations per Year
Benjaafar, Li, & Daskin, 2013	*IEEE Transactions on Automation Science and Engineering*	5.00
Chaabane, Ramudhin, & Paquet, 2012	*International Journal of Production Economics*	4.67
Pagell & Shevchenko, 2014	*Journal of Supply Chain Management*	4.00
Ageron, Gunasekaran, & Spalanzani, 2012	*International Journal of Production Economics*	3.78
Green, Zelbst, Meacham, & Bhadauria, 2012	*Supply Chain Management*	3.78
Walker & Jones, 2012	*Supply Chain Management*	3.78
Geissdoerfer, Savaget, Bocken, & Hultink, 2017	*Journal of Cleaner Production*	3.75
Bektas & Laporte, 2011	*Transportation Research Part B*	3.50
Wang, Lai, & Shi, 2011	*Decision Support Systems*	3.40
Brammer & Walker, 2011	*International Journal of Operations and Production Management*	3.30
Genovese, Acquaye, Figeroa, & Koa, 2017	*Omega*	3.25
Hua, Cheng, & Wang, 2011	*International Journal of Production Economics*	3.10
Wu & Pagell, 2011	*Journal of Operations Management*	3.10
Shibin, Dubey, Gunasekaran, Hazen, Roubaud, Gupta, & Foropon, 2020	*Annals of Operations Research*	3.00
Saberi, Kouhizadeh, Sarkis, & Shen, 2019	*International Journal of Production Research*	3.00
Paulraj, 2011	*Journal of Supply Chain Management*	3.00
Erdogen & Miller-Hooks, 2012	*Transportation Research Part E*	2.89
Jaber, Glock, & El Saadany, 2013	*International Journal of Production Research*	2.88
Giunipero, Hooker, & Denslow, 2012	*Journal of Purchasing and Supply Management*	2.78
Zailani, Jeyaraman, Vengadasan, & Premkumar, 2012	*International Journal of Production Economics*	2.78

Figure 1:
B2B Sustainability Intellectual Structure, 1971-2000

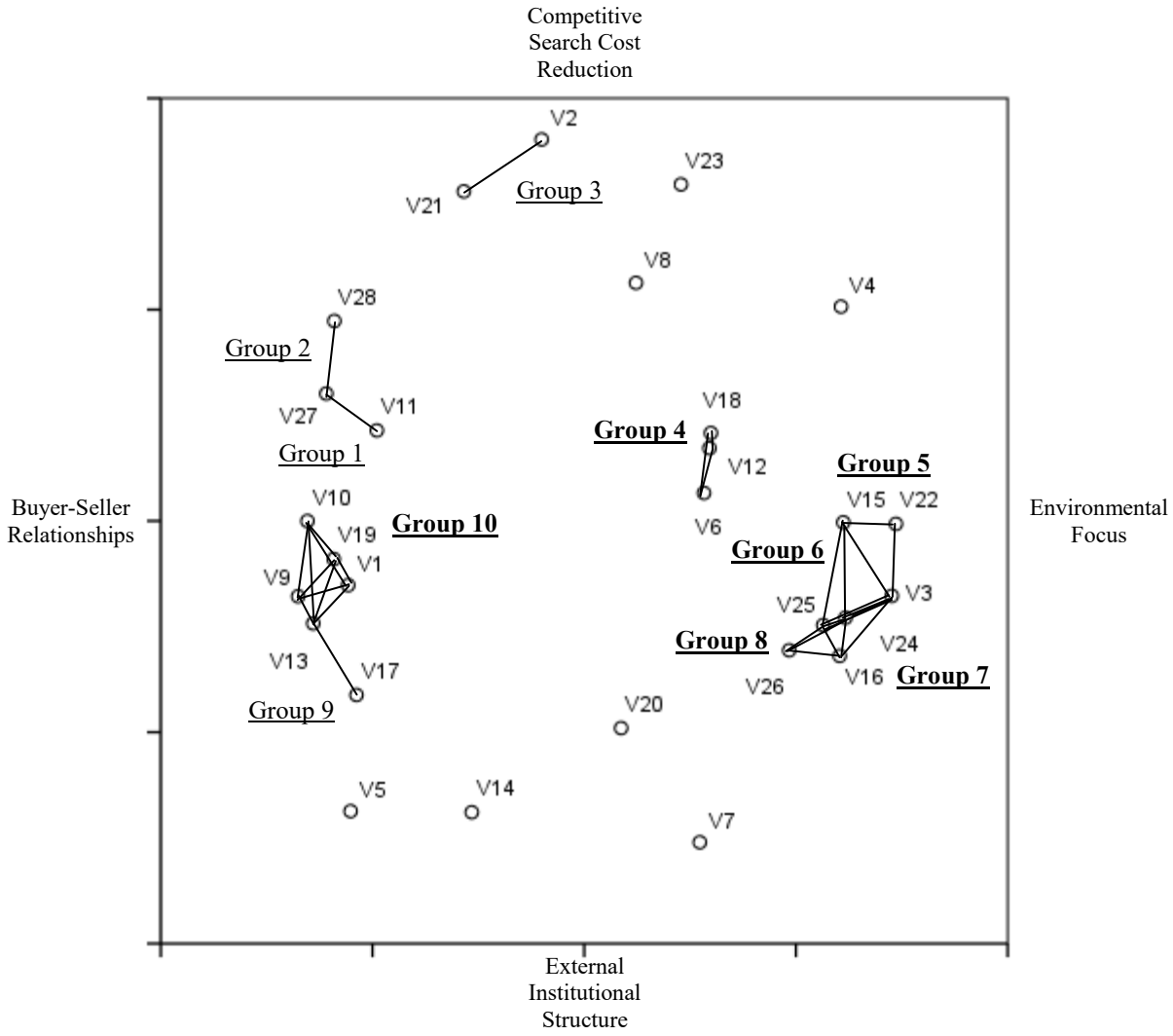


Notes: Stress value: 0.05477; standardized Euclidean distance ≤ 0.25; **bolded** research group names indicate research cliques.

V1 = Bertram-Howery et al. (1990); V2 = Blau (1964); V3 = Federal Register (1985); V4 = Ferrell and Gresham (1985); V5 = Ferrell, Gresham, and Fraedich (1989); V6 = Ferrell and Weaver (1978); V7 = Graen and Scandura (1987); V8 = Helton (1993a); V9 = Helton (1993c); V10 = Helton (1993b); V11 = Helton (1994); V12 = Helton et al. (1991); V13 = Helton et al. (1995); V14 = Helton, Garner, Marietta, Rudeen, and Swift (1993); V15 = Helton and Iuzzolino (1993); V16 = Helton and Shiver (1996); V17 = Hunt and Vitell (1986); V18 = Kaplan and Garrick (1981); V19 = Lappin, Hunter, Garber, and Davies (1989); V20 = Lawrence and Lorsch (1967); V21 = Liden and Graen (1980); V22 = March and Simon (1958); V23 = Marietta et al. (1989); V24 = Murphy and Laczniak (1981); V25 = Organ (1988); V26 = Pfeffer and Salancik (1978); V27 = Thibaut and Kelley (1959); V28 = Thompson (1967); V29 = Trevino (1986); V30 = Williamson (1975); V31 = Williamson (1985); V32 = Williamson (1991).

Group 1 (V2, V7, V21, & V25): Organizational Citizenship and Vertical Dyadic Exchange and Power; Group 2 (V4, V5, V17, & V29): Marketing and Ethical Decisions; Group 3 (V4, V5, V6, V24, & V29): Marketing Ethics, Beliefs, and Decisions; Group 4 (V22, V30, V31, & V32): Comparative Economic and Internal Organizations and Relational Contracting; Group 5 (V20, V26, V28, & V30): Internal Organization, Differentiation and Integration Management, and Organizational Resource Dependence; Group 6 (V1, V3, V8, & V9): Radioactive Isolation, Management, Disposal, and Risk [not shown: V10, V11, V12, V13, V14, V15, V16, V18, V19, & V23].

Figure 2:
B2B Sustainability Intellectual Structure, 2001-2010

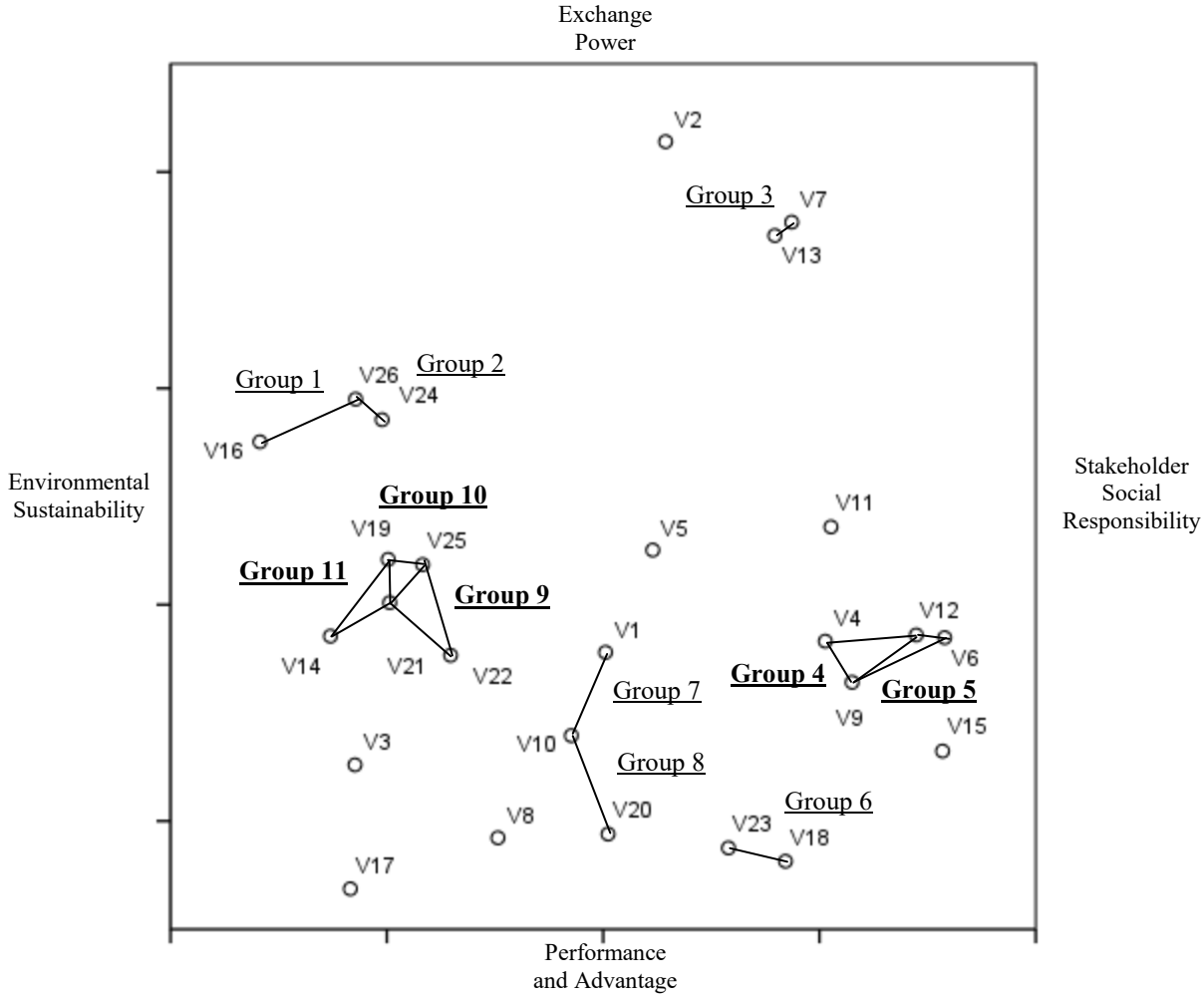


Notes: Stress value = 0.06301; standardized Euclidean distance ≤ 0.25; **bolded** research group names indicate research cliques.

V1 = Anderson and Narus (1990); V2 = Bakos (1997); V3 = Bansal and Roth (2000); V4 = Barney (1991); V5 = Blau (1964); V6 = Clarkson (1995); V7 = DiMaggio and Powell (1983); V8 = Donaldson and Preston (1995); V9 = Doney and Cannon (1997); V10 = Dwyer, Schurr, and Oh (1987); V11 = Dyer and Singh (1998); V12 = Freeman (1984); V13 = Ganesan (1994); V14 = Granovetter (1985); V15 = Hart (1995); V16 = Henriques and Sadorsky (1999); V17 = Mayer, Davis, and Schoorman (1995); V18 = Mitchell, Agle, and Wood (1997); V19 = Morgan and Hunt (1994); V20 = Pfeffer and Salancik (1978); V21 = Porter (1980); V22 = Porter and van der Linde (1995a); V23 = Rawls (1971); V24 = Russo and Fouts (1997); V25 = Sharma and Vredenburg (1998); V26 = Shrivastava (1995); V27 = Williamson (1975); V28 = Williamson (1985).

Group 1 (V11 & V27): Internal Organization, Cooperative Strategy, and Interorganizational Competitive Advantage; Group 2 (V27 & V28): Internal Organization and Relational Contracting; Group 3 (V2 & V21): Search Cost Reduction and Competitive Strategy; Group 4 (V6, V12, & V18): Stakeholder Orientation and Corporate Social Performance; Group 5 (V3, V15, & V22): Environmental Resources, Responsiveness, and Competitiveness; Group 6 (V3, V15, V16, V24, & V25): Environmental Resources, Responsiveness, Commitment, Strategy, and Capabilities, Managerial Perceptions, and Stakeholders; Group 7 (V3, V16, V24, & V25): Environmental Responsiveness, Commitment, Strategy, and Capabilities, Managerial Perceptions, and Stakeholders; Group 8 (V16, V24, V25, & V26): Environmental Commitment, Strategy, Management, and Stakeholders; Group 9 (V13 & V17): Buyer-Seller Trust and Long-Term Orientation; Group 10 (V1, V9, V10, V13, & V19): Buyer-Seller Trust and Commitment and Long-Term Relationships.

Figure 3:
B2B Sustainability Intellectual Structure, 2011-2020

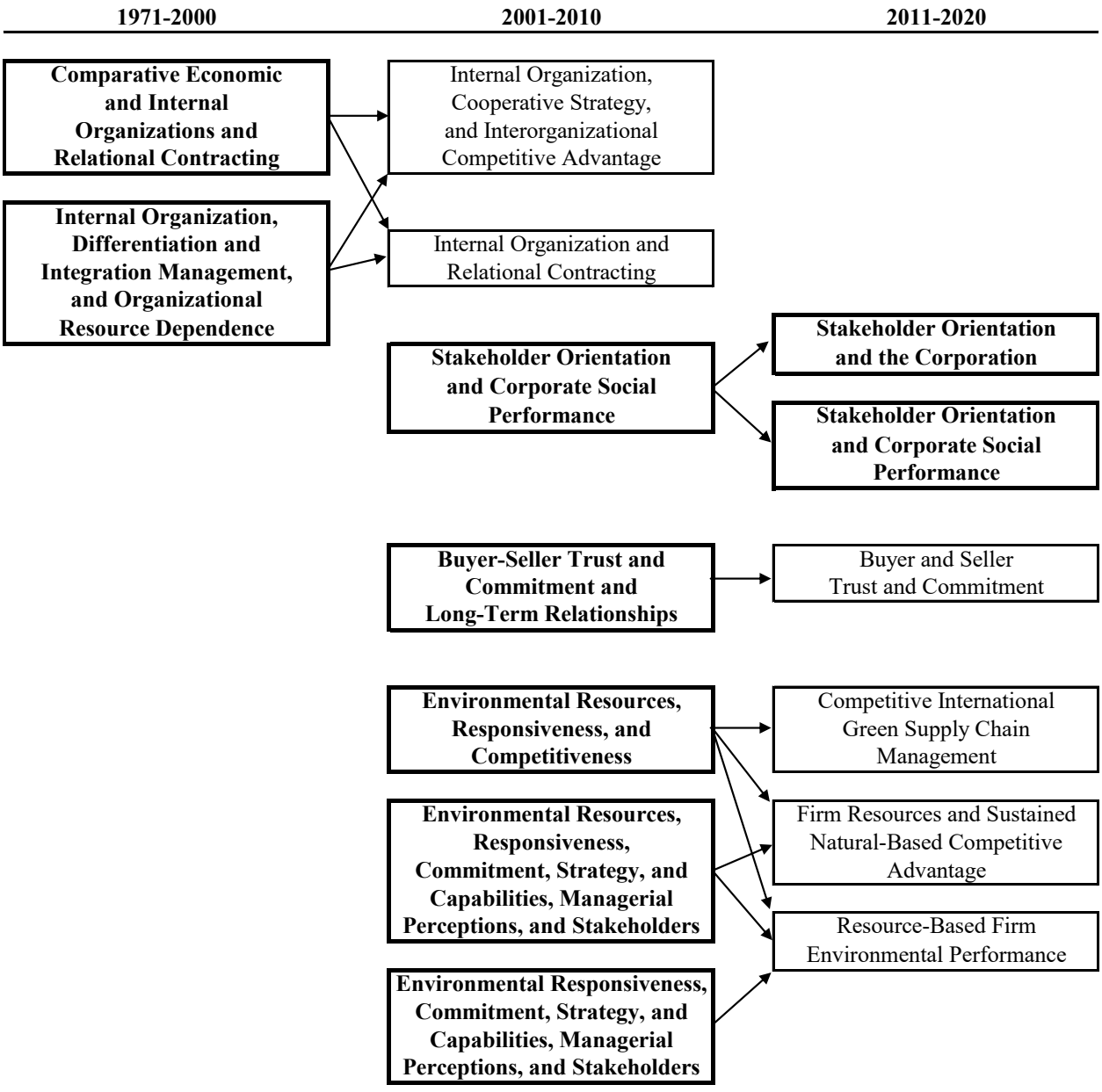


Notes: Stress value = 0.05734; standardized Euclidean distance ≤ 0.25; **bolded** research group names indicate research cliques.

V1 = Barney (1991); V2 = Blau (1964); V3 = Carter and Jennings (2004); V4 = Clarkson (1995); V5 = DiMaggio and Powell (1983); V6 = Donaldson and Preston (1995); V7 = Dwyer, Schurr, and Oh (1987); V8 = Dyer and Singh (1998); V9 = Freeman (1984); V10 = Hart (1995); V11 = McWilliams and Siegel (2001); V12 = Mitchell, Agle, and Wood (1997); V13 = Morgan and Hunt (1994); V14 = Pagell and Wu (2009); V15 = Pfeffer and Salancik (1978); V16 = Porter and van der Linde (1995a); V17 = Porter and van der Linde (1995b); V18 = Porter and Kramer (2006); V19 = Rao and Holt (2005); V20 = Russo and Fouts (1997); V21 = Vachon, Halley, and Beaulieu (2006); V22 = Vachon and Klassen (2008); V23 = Waddock and Graves (1997); V24 = Walker, Di Sisto, and McBain (2008); V25 = Zhu and Sarkis (2004); V26 = Zhu, Sarkis, and Geng (2005).

Group 1 (V16 & V26): Competitive International Green Supply Chain Management; Group 2 (V24 & V26): Public and Private Environmental Supply Chain Management; Group 3 (V7 & V13): Buyer and Seller Trust and Commitment; Group 4 (V4, V9, & V12): Stakeholder Orientation and Corporate Social Performance; Group 5 (V6, V9, & V12): Stakeholder Orientation and the Corporation; Group 6 (V18 & V23): Corporate Strategy, Social Responsibility, and Competitive Financial Performance; Group 7 (V1 & V10): Firm Resources and Sustained Natural-Based Competitive Advantage; Group 8 (V10 & V20): Resource-Based Firm Environmental Performance; Group 9 (V21, V22, & V25): Competitive International Green Supply Chain Collaboration and Manufacturing Performance; Group 10 (V19, V21, & V25): Competitive International Green Supply Chain Collaboration and Profitability; Group 11 (V14, V19, & V21): Supply Chain Collaboration, Sustainability, and Profitability.

Figure 4:
B2B Sustainability Longitudinal Development



Note: **bolded** research group names indicate research cliques.

Figure 5:
Integrative Conceptual Framework for Future B2B Sustainability Research