European Management Journal 42 (2024) 633–646

Contents lists available at ScienceDirect

European Management Journal

journal homepage: www.elsevier.com/locate/emj

Sustainability performance measurement in the food supply chain: Trade-offs, institutional pressures, and contextual factors

Verónica León-Bravo *, Federico Caniato

Department of Management, Economics and Industrial Engineering, Politecnico di Milano, Via Lambruschini 4, 20156, Milan, Italy

ARTICLE INFO

Keywords:
Sustainability performance measurement
Sustainability trade-offs
Institutional pressures
Food supply chain
Wine industry
Case study

ABSTRACT

This study investigates the trade-offs that firms face in measuring their sustainability performance at different stages of the food supply chain as a result of institutional pressures. We analyzed eight firms in the Italian organic wine supply chain to map the sustainability performance measurement (SPM) indicators adopted along the environmental, social, and economic dimensions of sustainability. We then examine how SPM is influenced by institutional pressures and the resulting trade-offs in three supply chain stages: winery, distributor, and retailer. Our findings indicate a prevalence of normative pressures from the market and from other stages in the supply chain in terms of SPM prioritization caused by institutional pressures (i.e., isomorphic) and contingent on other factors, such as the firm's size and culture. In particular, SPM trade-offs vary according to the supply chain stage, whereby wineries prioritize the environmental and economic dimensions, distributors—the economic dimension, and retailers—the social dimension. SPM adoption is also motivated by the firm's commitment to the environment and connection with the local region, over and above the perceived institutional pressures.

1. Introduction

The growing attention of managers and researchers to sustainability performance measurement (SPM) in different industries and locations is attributable to the pressures and expectations of markets, consumers, and policymakers for firms to demonstrate and communicate their sustainability (Székely & Knirsch, 2005; Bourlakis et al., 2014; Matopoulos et al., 2007; Nunes et al., 2020; Roy et al., 2018; Sancha et al., 2015). In addition, external institutions, i.e., governments, certification bodies, target markets, buyers, consumers, and other supply chain (SC) actors, require or encourage firms to pursue sustainability and adopt SPM to gain legitimacy in the market and report their sustainability achievements (Kauppi, 2012; León-Bravo, Caniato, & Caridi, 2021).

In the food industry, SPM is increasingly relevant, not only because the implementation of sustainable practices is expected in the current climate scenario but also SPM serves as a tool to communicate, demonstrate, and self-assess firms' progress toward sustainability. Studying SPM in the food industry and in different stages of the SC is timely in practice and in theory to understand the multiple objectives (i.e., environmental, social, and economic) pursued when assessing sustainability. Moreover, the food industry comprises numerous small and micro firms—a complex SC—making sustainability difficult to manage and monitor (Bourlakis et al., 2014; Callado & Jack, 2017; FAO, 2018; León-Bravo, Caniato, & Caridi, 2021, 2022b; Silva et al., 2021). Indeed, these types of firms struggle to assess their environmental, social, and economic goals simultaneously, especially as small and medium enterprises (SMEs) in the food SCs (FSCs) have limited capabilities and resources for SPM and thus need to prioritize one dimension over another according to what they perceive as more urgent or relevant (León-Bravo, Caniato, & Caridi, 2021, 2021b; Nunes et al., 2020).

Firms must manage different institutional (isomorphic) pressures when adopting SPM and pursuing multiple objectives, i.e., coercive, mimetic, and normative (DiMaggio & Powell, 1983; Kauppi, 2012; Kauppi & Hannibal, 2017; Yawar & Kauppi, 2018). The literature investigating different FSC stages identifies different institutional pressures to adopt sustainability practices and assessments. For instance, León-Bravo, Caniato, and Caridi (2021) argue that coercive pressures from regulatory bodies drive FSC firms to implement health and safety practices along the chain, in turn positively affecting the quality of their performance. In addition, normative pressures from the market on food processors drive these firms to adopt a wide range of practices to help them maintain legitimacy and improve their efficiency and flexibility. However, the level of SPM adoption to actually demonstrate and communicate the performance achievements along the FSC, as expected

* Corresponding author.
E-mail addresses: veronica.leon@polimi.it (V. León-Bravo), federico.caniato@polimi.it (F. Caniato).

https://doi.org/10.1016/j.emj.2023.04.004
Received 6 February 2022; Received in revised form 20 February 2023; Accepted 13 April 2023
Available online 17 April 2023

by markets, consumers, and policymakers, was not investigated in their study. Prior studies suggest that SPM should involve all actors in the SC and not only focal firms, adopting a multi-tier or multi-stage perspective (León-Bravo, Caniato, & Caridi, 2021; Tachizawa & Wong, 2014; Tuni et al., 2020) to achieve consistency, alignment, agreement, and ultimately improve overall sustainability.

Numerous indicators and some frameworks have been proposed in the literature to assess sustainability in the food industry (Aramyan et al., 2007; Matopoulous et al., 2007; Bigliardi & Bottani, 2010; Varsei et al., 2014; van der Vorst, 2005), but the rationale for SPM adoption at different stages of the SC remains unclear, especially considering the potentially conflicting sustainability goals (simultaneously addressing environmental, social, and economic objectives), which in turn generate trade-offs that need to be appropriately recognized and managed (Nunes et al., 2020; Callado & Jack, 2017; León-Bravo, Caniato, & Caridi, 2021; Kirwan et al., 2017; Brix-Asala et al., 2016; Van der Byl & Slawinski, 2015). Furthermore, for SMEs in the food industry with limited SPM resources and capabilities, the trade-offs need to be identified and managed according to the firm's priorities.

Nunes et al. (2020, p. 2) define sustainability trade-offs in SCs as "prioritizing one sustainability dimension to the sacrifice of others." This concept is highly relevant for FSC firms, which often face tensions in SPM, not only because of the different pressures perceived (Kauppi & Hannibal, 2017; Meixell & Luoma, 2015) but also because of the potential conflicting sustainability goals, such as improving economic efficiency while reducing their environmental footprint, thus requiring significant investments in new tools or processes. Furthermore, the level of the firm's commitment to sustainability—expressed in the practices and SPM implemented—may be influenced by the firm size and contextual factors, such as cultural elements, e.g., traditional values, corporate mission, attachment to the territory, and solidarity schemes (Basir et al., 2018; León-Bravo, Caniato, & Caridi, 2021; Silva et al., 2021; Zaborek, 2014), which determine the approach to sustainability in the FSC. Indeed, trade-offs imply that some types of performance are considered more important than others, depending on the firm's focus (Lueg & Radlach, 2016). As Da Silveira and Slack (2001, p. 10) posit, the "relative importance of trade-offs will vary between companies" and is "always determined by external factors." In particular, how SPM trade-offs are perceived and managed in the FSC requires further investigation (Brix-Asala et al., 2016) considering the institutional pressures that may engender these trade-offs, especially for SMEs. Building on these arguments, we aim to answer the following question:

How do institutional pressures influence SPM adoption and sustainability trade-offs at different stages of the FSC?

To address this research question, we build on three elements. First, for the current state of SPM adoption in the different SC stages, we map the SPMs implemented. Second, we adopt institutional theory (DiMaggio & Powell, 1983) to identify the isomorphic pressures (Kauppi & Hannibal, 2017; Glover et al., 2014; Sayed et al., 2017; Shnayder et al., 2016; Yawar & Kauppi, 2018) that motivate firms in the FSC to implement SPM. This second element also entails the consideration of contextual firm characteristics as the literature suggests that small and micro enterprises in the food industry perceive particular pressures for sustainability and SPM (León-Bravo, Caniato, & Caridi, 2021; Silva et al., 2021). Finally, we adopt the trade-off conceptualizations of Da Silveira (2005), Da Silveira and Slack (2001), and Nunes et al. (2020), considering that these trade-offs can be managed and are dependent on the country of origin, strategic priorities, capabilities, and the sustainability dimension.

We focused on a specific product SC that involves actors at different SC stages. Specifically, we analyzed eight firms in the organic Italian wine supply chain (WSC): wineries, distributors, and retailers. We selected this sector because of the high commitment to responsible agricultural production and attentiveness to soil health, reinforced by organic certification (Equalitas, 2020; FederBio, 2012). In addition, this sector primarily comprises small and micro firms, a variety of sustainability practices, and some level of SPM.

Therefore, this study contributes to the SPM literature by examining the level of adoption at different stages of a specific FSC, accounting for trade-offs engendered by institutional pressures, highlighting the contextual features shaping SPM adoption in this industry, and offering a set of research propositions.

The remainder of the article is organized as follows. The next section presents the research background on sustainability challenges and performance measurements in the FSC. Thereafter, we consider the concept of trade-offs and institutional theory for sustainability studies. We then describe the study context and methodology. Finally, we present and discuss our findings and draw some conclusions.

2. Research background

2.1. Sustainability challenges and performance measurement in FSCs

As previous studies have highlighted, the sustainability of the FSC needs to be investigated beyond single firms. In particular, León-Bravo, Caniato, and Caridi (2021) examine the sustainability practices implemented at different FSC stages and identify the drivers of sustainability assessment. Other studies address sustainability in multi-tier SCs (Tachizawa & Wong, 2014; Mena et al., 2013; Wilhelm et al., 2016; Tuni et al., 2020), considering the focal firm's perspective, assuming that a certain level of integration or visibility exists, and, hence, the possibility to monitor performance upstream and downstream. In a related research stream, Kirwan et al. (2017) argue that FSC performance and sustainability assessments should consider different sustainability spheres to help identify trade-offs in different SC stages.

Several studies identify the key performance indicators (KPIs) for FSCs to monitor and assess performance in general and sustainability in particular (Table 1) (Aramyan et al., 2007; Bourlakis et al., 2014; Schmutz et al., 2018; León-Bravo, Caniato, & Caridi, 2021; Chee Tahir & Darton, 2010; Kumar et al., 2012). Whether and how firms use these KPIs in FSCs have been studied from different perspectives. For instance, Kirwan et al. (2017) identify the sustainability attributes that should be evaluated in FSCs, whereas León-Bravo, Moretto, and Caniato (2021) provide a sustainability assessment roadmap for FSCs. Similarly, other studies consider whether and how firms adopt one or more KPIs for different sustainability dimensions. Although efforts have been made to develop an SPM system that could cover all the main sustainability factors using a wide range of KPIs, the environmental (Lueg & Radlach, 2016) and financial perspectives are still prioritized in many studies (Tuni et al., 2020). For example, Clift (2004) and Kirwan et al. (2017) show that the measurable items mostly concern the economic and environmental dimensions because of the demands of policymakers or because firms choose indicators in which they excel or can be communicated using numerical data.

Furthermore, the indicators listed in Table 1 are proposed for different FSC stages, from farmers to retailers, although concentrated on food processors and retailers.

Prior studies point out that FSCs comprise many small and micro enterprises with specificities and peculiarities that require a sustainability approach beyond the traditional environmental, social, and economic dimensions (León-Bravo, Moretto, & Caniato, 2021, 2022b; Silva et al., 2021). Indeed, small and micro enterprises have specific challenges, such as scarcity of resources or lack of specific knowledge when aiming at sustainability, also influenced by contextual factors (Silva et al., 2021). Some researchers suggest that the involvement of third-party organizations can make a difference in SC integration, productivity enhancement, or sustainability innovation, and such organizations could help improve the sustainability of small and micro enterprises.

Table 1
Overview of KPIs for sustainability suggested in the FSC literature.

Dimension/category		Example or definition of indicator	Reference
Environmental	Energy use	Example: Ratio of the volume of gas used per square meter of facility	Aramyan et al. (2007), Bourlakis et al. (2014), León-Bravo, Caniato, and Caridi (2021), Kumar et al. (2012)
	Water use	Example: Ratio of the volume of water used per square meter of land or production facility	Aramyan et al. (2007), León-Bravo, Caniato, and Caridi (2021), Kumar et al. (2012)
	Pesticides use	Example: Amount and frequency of pesticide use complying with standard regulations	Aramyan et al. (2007)
	Recycling	Example: Percentage of recycled/reused materials	Aramyan et al. (2007), Schmutz et al. (2018)
		Amount of recyclable packaging or recyclable material vis-à-vis the input materials	Schmutz et al. (2018), Kumar et al. (2012)
	Reduction of food waste and losses	Amount of reduction of food waste or harvest losses (e.g., because of marketable yield) at each SC stage	Schmutz et al. (2018), León-Bravo, Caniato, and Caridi (2021), Chee Tahir and Darton (2010), Kumar et al. (2012)
	Eco-efficiency	Improve eco-efficiency of resource use (land/soil, water, nutrients)	Schmutz et al. (2018)
	Protection of biodiversity	Provision of ecological habitats (hedges, trees), cultivate a wider range of crops and livestock, including breeding traditional or rare species	
	Animal protection and welfare	Improve or conserve conditions for livestock	Schmutz et al. (2018), León-Bravo, Caniato, and Caridi (2021)
	Reduction of transportation distance and emissions	Shorter transportation distance ("food miles")	Schmutz et al. (2017), Kumar et al. (2012), León-Bravo, Caniato, and Caridi (2021)
		Logistics optimization: Different modes of transport with fewer emissions and use of road infrastructure (e.g., trains vs. trucks)	
Economic	Production costs	The sum of the total cost of inputs used to produce the output/ services (fixed and variable costs)	Aramyan et al. (2007), Bourlakis et al. (2014), Chee Tahir and Darton (2010)
	Transport cost-efficiency from producer to consumer	Improve the cost-efficiency of transport, e.g., adequate vehicles, capacity utilization, reducing the number of trips and unloaded drives	Schmutz et al. (2018)
	Profit and earnings	Total revenue less expenses	Aramyan et al. (2007), Bourlakis et al. (2014)
		Income and surplus for the actors along the value chain that can be reinvested and supports long-term economic viability along the chain	Schmutz et al. (2018), Chee Tahir and Darton (2010)
	Inventory	Reduce costs of warehousing of products, capital, and storage costs associated with stock management and insurance	Aramyan et al. (2007), Kumar et al. (2012)
	ROI	Ratio of net profit to total assets	Aramyan et al. (2007)
	Viability and competitiveness	Multiplier effects through regional value added, income and employment generated, tax revenues	Schmutz et al. (2018)
Social	*a. Product quality*		
	Product safety and health	Amount of damage, color scale, size, and form scale; Laboratory checks and monitoring processes according to certification schemes; Compliance with legal limits regarding microbiological, chemical, or physical hazards	Aramyan et al. (2007), Schmutz et al. (2018), León-Bravo, Caniato, and Caridi (2021)
		Quality of product packaging	Bourlakis et al. (2014), León-Bravo, Caniato, and Caridi (2021), Kumar et al. (2012)
		Absence of pathogens and pollution in food	Schmutz et al. (2018)
	Sensory properties and shelf-life	Difference in time between harvesting or processing and packaging and the time point at which it becomes unacceptable for consumption	Aramyan et al. (2007), Bourlakis et al. (2014), Schmutz et al. (2018)
	Product reliability and convenience	Number of registered complaints	Aramyan et al. (2007)
	b. Process quality		
	Traceability and transparency	Information availability at each stage of the SC: Use of barcodes, standardization of quality systems, labeling schemes (e.g., regional and fair, PDO, PGI, organic) Transparency of information for	Aramyan et al. (2007), Bourlakis et al. (2014), Schmutz et al. (2018), Gardner et al. (2019), León-Bravo, Caniato, and Caridi (2021), Chee Tahir and Darton (2010)

(*continued on next page*)

Table 1 (*continued*)

Dimension/category		Example or definition of indicator	Reference
		consumers in terms of the way the food is produced and distributed	
	Working conditions	Compliance with standard regulations Generating employment along the FSC: Paid jobs (full- and part-time, including opportunities for self-employment and volunteering)	Aramyan et al. (2007) Schmutz et al. (2018)
	Customer service	Ratio of provision of resources used to increase customer service to increased sales	Aramyan et al. (2007), León-Bravo, Caniato, and Caridi (2021)
	Food security and sovereignty	Availability and accessibility of food: all people at all times have physical, social, and economic access to sufficient food. People also have the right to have "a say" (sovereignty) on how their food is produced and supplied, e.g., how profit, risks, and public research inputs are distributed	Schmutz et al. (2018)
	Food traditions and culture conservation	Increased or decreased preservation of cultural distinctiveness, seasonal variation, and local food traditions (e.g., preparation and cultural role, including religious, ethnic, or spiritual)	Schmutz et al. (2018)

2.2. Trade-offs in sustainable supply chain management (SSCM)

Managers are deemed to understand the concept of trade-offs given the compromises they make on a daily basis (Da Silveira & Slack, 2001). In the literature, discussions regarding the actual existence of trade-offs, the sources of trade-offs, and how managers perceive them are still subject to debate and analysis (Brix-Asala et al., 2016; Da Silveira, 2005; Kirwan et al., 2017; Nunes et al., 2020). Indeed, trade-offs, which are considered as constraints that lead firms to narrow their attention to a smaller set of objectives (Da Silveira, 2005), are said to be dynamic (Skinner, 1992) and cannot be eliminated but can be effectively managed (Da Silveira & Slack, 2001). Da Silveira (2005) proposed a method for improving manufacturing trade-offs: 1) identify the actual trade-offs and rank their priority and 2) define an improvement approach. This method presupposes that a managerial action can shape the trade-off and achieve superior performance. The origin or sources of trade-offs may be similar among firms and can be dependent on the country of origin, firm capabilities, competitive priorities (Da Silveira, 2005; Da Silveira & Slack, 2001), firm size (Basir et al., 2018; Zaborek, 2014), and local factors (Brix-Asala et al., 2016).

The notion of trade-off has also been discussed in SCM, for example, in terms of performance (Jain, 2004; Sabri et al., 2017), risk management (Olson & Swenseth, 2014), and sustainability (Esfahbodi et al., 2016; Nunes et al., 2020; Brix-Asala et al., 2016; Egels-Zandén et al., 2015; Schrettle et al., 2014). These studies primarily focus on identifying the trade-offs, namely, the first step in Da Silveira's (2005) method. However, the literature has thus far not explored the trade-off improvement step, namely finding or proposing approaches to solve the sustainability trade-off and the trade-off management at different SC stages. For instance, Roy et al. (2018) argue that SSCM trade-offs are usually present but are still not fully understood or managed.

Moreover, previous studies consider the identification of trade-offs in general terms (Schrettle et al., 2014) or observe cases in different sectors, from manufacturing (Esfahbodi et al., 2016) and textile (Egels-Zandén et al., 2015) to water supply (Brix-Asala et al., 2016). In particular, Nunes et al. (2020) address sustainability trade-offs in FSCs emphasizing the need to study potential tensions when pursuing multiple sustainability objectives. To our knowledge, this study is the first to investigate the existence of trade-offs in FSCs. Although focused on a developing country case, the framework may apply to other contexts and sectors. Nonetheless, understanding how firms at different FSC stages manage sustainability trade-offs is yet to be investigated.

2.3. SC sustainability and institutional pressures

Understanding the sources of pressure that encourage sustainability implementation and assessment in SCs is key to making progress in sustainability practice (Kauppi & Hannibal, 2017; Schrettle et al., 2014; León-Bravo, Caniato, & Caridi, 2021, 2021b, Nunes et al., 2020; Silva et al., 2021).

DiMaggio and Powell's (1983) institutional theory (IT) is often invoked in sustainability studies (Sarkis et al., 2011; Touboulic & Walker, 2015; Sancha et al., 2015). Three institutional pressures (i.e., coercive, mimetic, and normative) are identified as driving firms to adopt strategies for legitimacy purposes and to respond to uncertainty (DiMaggio & Powell, 1983; Kauppi, 2012). These institutional pressures have also been analyzed in SC sustainability studies. For example, Meixell and Luoma (2015) and Govindan (2018) investigate how pressures from different stakeholders drive awareness and the implementation of sustainability practices. Kauppi and Hannibal (2017) explore institutional pressures for adopting social sustainability assessments as a means of legitimacy. Kauppi (2012) explains that IT also has an economic variant, that is, firms respond to different pressures not only for legitimacy purposes but also to achieve or improve performance outcomes.

Similarly, studies in the food industry have adopted different IT perspectives, for instance, to understand the pressures for sustainability adoption (Glover et al., 2014; León-Bravo, Moretto, & Caniato, 2021; Sayed et al., 2017; Yawar & Kauppi, 2018), sustainable production and consumption (Govindan, 2018), and analyze the dissemination of sustainability practices (Glover et al., 2014). From another perspective, Shnayder et al. (2016) analyze the self-reported motivations for corporate social responsibility, among which corporate values and missions are explained by legislation, social pressures, and normative obligations. Social pressures can be understood as external pressures to conform to a less formal structure than regulations. Normative obligations constitute pressures from industry peers for agreements or reinforcing certain behaviors. Shnayder et al. (2016) argue that these pressures can drive corporate social responsibility. In another type of study, Sayed et al. (2017) analyze institutional pressures, institutional logic, and institutional complexity in three stages of a food catering chain, finding that no unique type of pressure is dominant across these SC tiers and that multiple institutional logics frame firm behaviors. Alternatively, Acosta et al. (2014) investigate the adoption of sustainability in the SC from the supplier perspective, finding three types of supplier responses, e.g., acquiesce, avoidance, and compromise. Furthermore, Yawar and Kauppi (2018) analyze institutional pressures in the context of a developing country, considering how these influence the implementation of social sustainability practices in a dairy SC. The recent study by Baur (2020) analyzes concurrent pressures on farmers to implement better

agricultural practices, finding that simultaneous institutional pressures create conflict among different objectives.

Although we found several applications of IT in sustainability studies in FSCs in the literature, there are also calls to further investigate the varied responses to sustainability when different institutional pressures coexist along the SC (Sarkis et al., 2011), unexplored characteristics regarding sustainability along the SC (Touboulic & Walker, 2015), institutional pressures influencing SPM adoption (Govindan, 2018), and trade-offs in the face of different institutional pressures (Glover et al., 2014; Shnayder et al., 2016; McLoughlin & Meehan, 2021). Moreover, IT has been adopted in the SSCM literature to study FSCs with specific product characteristics (Jacob-John, 2018; Sayed et al., 2017) and how the cultural context determines the SC sustainability approach (León--Bravo, Moretto, & Caniato, 2021; Silva et al., 2021), particularly in the food sector where small firms are predominant or in industries of specific types of products (Jacob-John, 2018; McLoughlin & Meehan, 2021). For instance, Jacob-John (2018) explores the coercive, mimetic, and normative pressures influencing the social responsibility orientation in an organic FSC. In the chocolate industry, León-Bravo et al. (2022b) adopt the institutional logic to analyze the SSCM approach in this context, observing that an economic and a social sustainability logic coexist, leading to trade-offs. The authors argue that the different logics of different actors in the SC create tensions that need to be balanced.

Nonetheless, even if IT has been adopted in sustainability studies in the food industry, especially regarding sustainability implementation, SPM in different SC stages has been overlooked. Indeed, different institutional pressures may drive SPM adoption (Govindan, 2018), and a step forward is needed to understand how these pressures drive SPM implementation when also determined by how firms manage the sustainability trade-offs.

3. Methods

We adopted a multiple case study methodology to investigate a real-life phenomenon (Yin, 2014) that is not only contemporary but lacks empirical research. The multiple case study design is deemed appropriate for developing a theory based on "existing theoretical-based constructs" (Ridder, 2017) and investigating sustainability issues in FCs, as in the case of prior studies (e.g., Cannas et al., 2020; Kannan, 2021; León-Bravo, Caniato, & Caridi, 2021, 2022b; Silva et al., 2021; Yawar & Kauppi, 2018), and particularly in the food industry comprising small and micro enterprises. In addition, given the relevance of SPM implementation in the food industry as a result of multiple pressures deriving from stakeholder expectations, regulations, and consumer requirements, as well as the variety of actors in the FSC, a multiple case study design (considering different roles in the SC) is considered an appropriate research method (Cannas et al., 2020; Kannan, 2021; Tuni et al., 2020; Yin, 2014).

Our unit of analysis is a single firm operating in a particular SC stage. Considering the heterogeneity of the FSC, we focus on a single product type SC but selected firms of different sizes, configurations, and geographic locations in the same country to reduce selection bias.

3.1. The food sector and case selection

The Italian organic WSC is the focus of our study for the following reasons. First, Italy is one of the largest organic wine-producing countries, with approximately 500 million liters in 2016 (FederBio, 2018). Moreover, the literature and press suggest that wineries are ahead of other food processors in adopting environmental practices (Pullman et al., 2010). A reason could be that in the organic wine industry, attention to responsible agriculture, strict control of the use of fertilizers, and soil health are regulated by European organic policies (FederBio, 2012). In addition, the winery regions are often part of economic clusters that include hospitality and tourism, which encourage vineyards to adopt sustainable growing practices (Mueller et al., 2006; Pullman et al., 2010). Consequently, various environmental sustainability practices are expected to be widespread in this SC to respect organic standards and communicate the firms' commitment to sustainability in a wider scope, also considering the social and economic aspects (Equalitas, 2020).

Second, the WSC is complex and fragmented. A few large firms account for a significant percentage of the industry's market share, whereas the remainder are mainly small and micro enterprises. To better describe the WSC in this study, we adapted the classifications of van der Vorst (2005) and Maumbe and Brown (2013) to identify tiers that represent the main value-adding operations in the SC:

- Winery cellars: grape growing and wine processing
- Distributors: bottling, warehousing, and transportation
- Retailers: liquor and specialty stores

Third, for organic FSCs, sustainability, as argued by Jacob-John (2018), might be driven by different institutional pressures because of product type and relationship with the territory. As León-Bravo et al. (2022b) suggest, different sustainability and commercial logics may coexist in FSCs, in turn enhanced by corporate values and mission or product type. Moreover, McLoughlin and Meehan (2021) find that economic logic prevails over social logic in food-specific SCs. These different logics would also influence the SPM approach in FSCs. Specifically, firms in an organic product SC share sustainability implementation values, hence appropriate for our study investigating the common SPMs adopted.

3.2. Data collection and analysis

According to the abovementioned criteria, we selected eight firms across the main WSC stages in different Italian regions (Table 2). The description of the cases, along with their SC configuration, is detailed in the next section.

3.2.1. Cases and SC configuration

First, winery cellars in our study are firms that combine the growing and processing stages, hence considered a single SC stage. Second, the distributors in our cases conduct specific activities that certain wineries have developed for business-to-business (B2B) sales. These distributors have different configurations in the SC. Case 2 and Case 6 are attached to the winery cellar and are exclusively in charge of B2B distribution to hotel, restaurant, and catering (ho.re.ca) customers. Case 5 has distribution as a core activity but is also a winery and a main operator in Italy, distributing numerous wine brands as well as their own. Last, retailers in our cases are wine specialty stores (*enoteca*) with a product portfolio that includes high-quality wines from Italy and around the world. We included this type of retailer as it constitutes a particular sales channel in the industry that strictly requires a specific type of wine with certain characteristics or origin, quality, production process, and labeling related to sustainability. Fig. 1 shows the SC stages of the firms in our study.

3.2.2. Data collection and coding

In line with Ridder (2017), our case study research design is aimed at studying a phenomenon that is partially understood, with a sample of purposefully selected cases and analyses of qualitative data. Data were collected by means of semi-structured interviews with the firm owner or those in charge of sustainability activities, following an interview protocol developed in advance and used as a structured starting point to drive the discussion with interviewees. This protocol was revised and updated as the interviews progressed. The interviews were conducted between February and June 2020 and lasted 45–60 min. Interviewees were owners in most cases, and the data collected included information from official websites and, when available, financial reports, allowing data triangulation, ensuring construct validity, and reducing selection bias (Yin, 2014). We triangulated the data by double-checking the

Table 2
The firms selected for this study.

Company	Italian region	Supply chain stage	Company size (2018)		Data collection	
			Revenue (€)	Number of employees	Interviewee	Length (~min)
1	Sicily	Winery	987.000	2	Company owner	60
2	Tuscany	Winery – Distributor	45.000	1	Company owner	60
3	Apulia	Winery	2.800.000	60	Company owner	60
4	Piedmont	Winery	500.000	4	Company co-owner	50
5	Veneto	Winery– Distributor	9.500.00	15	Logistics manager	60
6	Marche	Winery– Distributor	615.000	N/A	Marketing manager	45
7	Lombardy	Retailer	1.150.000	3	Company co-owner	45
8	Lombardy	Retailer	900.000	4	Company co-owner	45

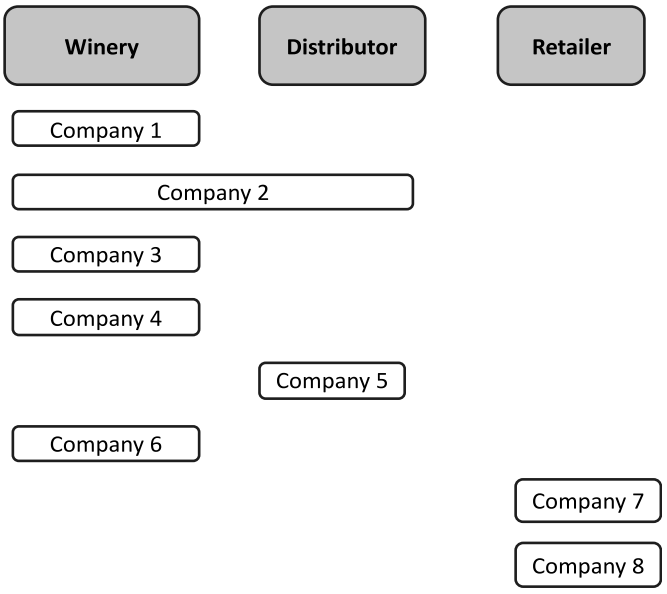

Fig. 1. The firms and SC stages.

information gathered via interviews with secondary sources when available. For instance, when an interviewee stated that a particular indicator was used, e.g., water consumption every 2 months, we asked for the water bill or any other documents showing this indicator. The interviews conducted via video calls allowed the researchers to take notes and look at the documents shown. Unfortunately, this was not always the case, as company representatives hesitated to share specific numbers or documented performance measurement results. Nonetheless, all interviewees were able to explain how they made certain calculations, who was in charge, and where the information came from, but not all were allowed to share specific information considered confidential.

With the existing theoretical constructs at the base of our data analysis, our coding approach aimed to find the commonalities and differences that reveal patterns and, in turn, allow developing theory (Ridder, 2017) on the SPM topic. Therefore, once the interviews were transcribed and revised, two researchers analyzed the data using a deductive coding approach and previously defined theory. In particular:

- Sustainability practices based on Bolinder et al. (1999) and Gardner et al. (2019).
- Sustainability performance indicators based on Aramyan et al. (2007), Gardner et al. (2019), León-Bravo, Caniato, and Caridi (2021), Bolinder et al. (1999), Chee Tahir and Darton (2010), Kumar et al. (2012). The complete list is detailed in the Appendix.
- Institutional pressures (i.e., coercive, mimetic, normative) based on DiMaggio and Powell (1983), Sarkis et al. (2011), Shnayder et al. (2016), Kauppi and Hannibal (2017), and Meixell & Luoma (2015). Coercive refers to government regulations or organic certification policies, mimetic includes competitor behaviors that stimulate imitation, and normative refers to market and SC partner expectations.
- Contextual factors based on Silva et al. (2021), León-Bravo et al. (2021b, 2022b), Basir et al. (2018), Zaborek (2014), including firm size, corporate mission, commitment to sustainability, relationship with the territory and local community.

Second, the inductive coding process allowed aggregating the first-order codes, thereby generating *in vivo* and constructed codes. For instance, additional indicators emerged during the interviews and were included in the codebook to complement it (see Appendix). In this second phase, the trade-offs—i.e., a definition based on Da Silveira (2005), Da Silveira and Slack (2001), Nunes et al. (2020), and Schrettle et al. (2014)—were identified. Accordingly, the SPM priority level was determined by the ratio of indicators actually used from the global number of indicators in a particular category. For instance, looking at the Appendix, there are five indicators that could be evaluated in the "waste and material management" category. When a firm uses all of these, a higher level of priority is assigned. In contrast, the lowest priority (0) is assigned if no indicator in the category is used. In between, the priorities are assigned proportionally. The different levels of priority allowed identifying trade-offs among the sustainability dimensions.

We analyzed the data in three steps. First, we conducted a within-case analysis of each firm as a stand-alone entity based on the above-mentioned codes to identify the sustainability practices implemented, allowing us to map the indicators used to assess sustainability performance. In particular, we mapped the level of SPM adoption in each case, evidencing the differences and commonalities regarding the type and number of indicators adopted. The within-case analysis also allowed identifying the SPM institutional pressures perceived in each case. Then, we identified the SPM trade-offs and cultural factors influencing the sustainability approach. Second, we conducted a cross-case analysis comparing and aggregating the results of the within-case analysis among all the firms in the same SC stage. In this manner, the within- and cross-case analyses allowed identification of the institutional pressures that influence SPM adoption in different stages of the organic WSC and the related trade-offs. Finally, the cross-stage analysis involved comparison of the results across the SC stages to characterize the sustainability assessment approach in this SC.

4. Findings

4.1. Mapping SPM in the three stages of the Italian organic WSC

Our findings led to the construction of a comprehensive map of SPM implementation over the three WSC stages, including the indicators adopted, the unit of measure, the method of calculation, how the data is collected, and how often and in which stage each indicator is used. An extract of this SPM mapping is presented in Table 3, with indicators in the environmental dimension (related to water management) and social dimension (related to community support). The complete list of

Table 3
Examples of SPM implementation in the WSC.

Sustainability indicators	Unit	Methods of calculation	Data collection	Timeliness	FSC stage[a]	Practices related	Strategic objectives
Water management indicators							
Water footprint	*l/u*	*Liters of water used/ Number of goods produced*	*Counters that measure the total volume of water extracted*	*Every 2–3 months*	*W*	*Installation of filters and meteorological stations; adoption of permaculture systems and drip irrigation; analyses of soil humidity; usage of low-volume atomizers*	*Reduce resource consumption*
Total water consumption	*l*	*The total amount of water used - Amount of water recycled*	*The volume of water recycled is registered by counters and deducted from the total water consumption*	*Every 2–3 months*	*C*		
Water withdrawal	*%*	*(Total water withdrawal/ Total available annual renewable water supply) X 100*	*Analyses of the natural availability of water made by experts*	*Every 6 months*	*W*		
Total water discharge	*l*	*Total amount of water discharged*	*Counters that measure the total volume of water released*	*Every 4–6 months*	*W-D*		
Community support indicators							
Yearly donations to communities	*€*	*Total amount of money invested in projects to help communities*	*Monitoring registers of company's expenditures*	*Every 6 months*	*C*	*Investing in developing countries; philanthropist initiatives; providing monetary and in-kind aid; collaborating with NGOs*	*Improve living conditions of communities*
Yearly non-financial aid provided to communities	*€*	*Total value of the goods provided to communities*	*Monitoring the monetary value of the assets lent or gifted to the communities and local NGOs*	*Every 6 months*	*C*		

[a] FSC stage: W: winery cellar, D: distributor, R: retailer, C: common indicator in all three WSC stages.

indicators used in the different WSC stages is presented in the Appendix.

As shown in this map exemplified in Table 3, all cases in this study are keen to measure their sustainability performance: several indicators are used along different sustainability dimensions in three SC stages (C in the sixth column of the table). For instance, the interviewee in Case 1 explained: *"[SPM] is crucial to enter specific niches where sustainability performance is an important driver."*

However, commitment to SPM in our study context could be highly dependent on organic certification requirements, as Case 2 clearly stated that environmental performance monitoring is key in its operations: *"At the beginning, the focus was only on soil and grape quality, but later, with the introduction of organic production, the environmental targets have naturally increased."*

As mentioned, the final list of indicators is composed of metrics derived from the literature and industry reports. We updated this list as the interviews progressed until obtaining the complete list, shown in the Appendix. Most of the indicators that our sample firms use are similar to those in the literature (Table 2), but many are considered irrelevant or inappropriate by the firms under study. For instance, the literature underlines some environmental aspects to assess in FSCs, such as "eco-efficiency," "protect biodiversity," or "reduction of transportation distance," that are too broad and general for the cases in our study. Similarly, in the social dimension, the literature proposes product quality measures, such as "sensory properties and shelf-life," which is actually taken for granted as a performance indicator in the cases under study but not considered as a particular sustainability indicator. Instead, the firms in our sample work toward community wellbeing. As the interviewee in Case 3 explained, the firm dedicates efforts to ensuring safe working conditions *"[because] the employees are all local people, and although not all of them relatives, they are part of the firm's big family*."

Nonetheless, the indicators adopted in the WSC are listed in the literature (Table 2) and actually split into more detailed measures in each category. For instance, the literature proposes measuring water use in general terms, while the firms in our study adopt four water management indicators: water footprint, water consumption, water withdrawal, and water discharge (Appendix). Similarly, in the social dimension, the literature mentions transparency, security, and community support as broader monitoring areas, and the firms in our study specifically monitor their involvement in the community with indicators such as donations and non-financial aid provided.

Upon analyzing the data, we noted some commonalities in each SC stage. In particular, *winery cellars* are more dedicated to monitoring their environmental sustainability for production efficiency, as these types of indicators (e.g., water consumption, water withdrawal in Table 3) are often associated with a reduction in operating costs. Therefore, several practices are implemented to reduce water consumption (e.g., recycling, drip irrigation, use of meteorological stations, implementation of low-volume atomizers, and soil humidity assessment).

In particular, for Case 4, a new system using low-volume atomizers guarantees better irrigation and reduces water waste, *"beside reducing the quantity of water used, [it] guarantees homogeneous distribution*," thus sharply reducing water consumption.

Wineries also focus on the environmental dimension, as established by organic certification regulations (e.g., periodically assessing soil quality). Moreover, in the environmental dimension, waste is recycled and converted into natural fertilizers. Wineries are investing in renewable energy sources by installing solar panels and photovoltaic systems. Moreover, all these initiatives are regularly monitored with several indicators. Wineries are the actors in the SC that work directly with the soil and natural environment, hence paying more attention to the use and care of natural resources in line with the indicators commonly proposed in the literature, with the difference that the cases in our study also use several energy and waste management indicators.

Distributors apply SPM to all the sustainability dimensions, with a higher focus on cost reduction and responsiveness measures, hence the service level. Cost reduction is assessed by measuring resource consumption, promoting recycling activities, and packaging with a higher utilization rate. Furthermore, distributors evaluate the quantity and type of energy used, especially given that the firms invested in solar or photovoltaic systems that, in the long term, will allow them to be self-sufficient. Along these lines, distributors adopt the environmentally-related indicators proposed in the literature, focusing on emission levels and waste management (see the Appendix). Nonetheless, distributors also assess several social and economic indicators that are common in the other SC stages since these are already measured or linked to the firms' economic efficiency goals.

Last, *retailers* prioritize evaluating customer satisfaction to retain their current and attract new customers. Social sustainability is relevant in terms of SPM implementation as retailers attentively monitor their SC transparency and traceability. Supplier selection and monitoring are key to achieving these objectives, evaluated according to quality and sustainability performance through organic and sustainability-related

certification. It is noteworthy that retailers routinely monitor their recycling activities in large part because it is regulated, as the interviewee in Case 8 explained: *"[the] company is committed to the recycling activity mainly in order to comply with the local laws."*

Contrasting with the literature, the retailers in our study are not particularly concerned about using indicators in the environmental dimension of sustainability unless regulated, as in the case of recycling. They explained that environmental commitment, product quality, traceability, and transparency are the responsibility of the upstream SC stages, and they are thus recipients of what occurs before the product arrives at their facilities. However, they do monitor these activities because, as the interviewee in Case 7 explained, *"customers should always be able to understand where a product comes from and how it has been produced,"* even if the retailers are not in charge of implementing changes or improvements. Moreover, as for wineries and distributors, several indicators in the economic dimension are used regularly, e.g., inventory and transaction costs and market expenditure (Appendix).

4.2. Institutional pressures influencing SPM adoption in the WSC

The SPM mapping and interview data allowed identifying different SPM institutional pressures that firms in this SC perceive along different performance dimensions, as depicted in Fig. 2. We describe the institutional pressures per SC stage for sustainability practice implementation alone (dashed line in Fig. 2) and for sustainability practice and SPM implementation together (solid line in Fig. 2).

4.2.1. Institutional pressures and SPM for wineries

For wineries, normative pressures are prevalent in the firms' decision to adopt and maintain SPM, although the performance attained varies along different dimensions, thus taking a legitimacy-seeking approach (Kauppi, 2012; León-Bravo, Ciccullo, & Caniato, 2022). First, wineries adopt SPM not only driven by the firm's sustainability strategy and quality guarantees but also by market expectations and higher consumer sensitivity, in line with Székely and Knirsch (2005), Jacob-John (2018) and Glover et al. (2014). As wineries are in the SC stage where most of the value added is in wine production, firms with a strong sustainability culture and strategy aim to demonstrate and communicate their achievements to be recognized as legitimate by the market (León-Bravo, Ciccullo, & Caniato, 2022), and SPM is a good starting point to do so. This type of internal motivation also responds to external expectations from the consumer market, and wineries strive to meet these expectations by adopting SPM to signal to consumers a high-quality product

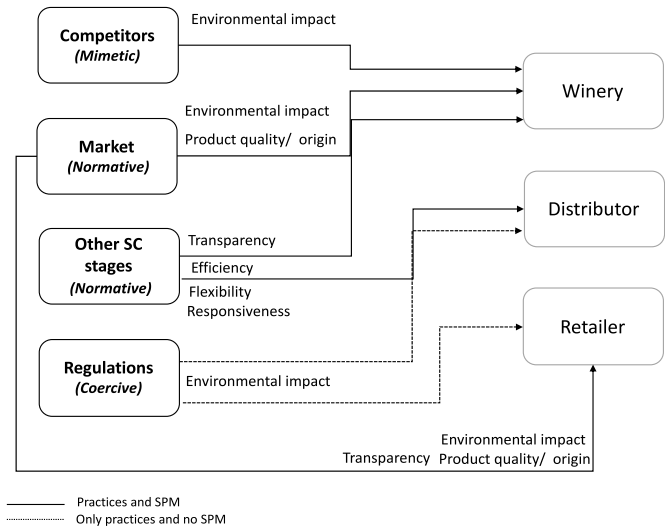

Fig. 2. Institutional pressures for SPM in the WSC.

from a specific origin. As the interviewee in Case 1 stated, "*[SPM] is crucial to enter specific niches where sustainability performance is an important driver*."

Other *normative pressures* for *wineries* come from distributors and retailers requesting more sustainable products that in turn improve their image and reputation. In this sense, the wineries underlined that they keep track of their environmental performance due to the responsibility they feel toward nature and the local environment, for instance, "*Preserving the natural beauty that surrounds the company*" (Case 1).

Furthermore, the wineries also explained SPM as a practice that is widely accepted and expected, thus validating the normative institutions (Kauppi, 2012) and hence their need to manage and balance expectations from the other WSC stages (*normative pressure*) in terms of performance related to efficiency and transparency.

A particular example is Case 3, the only winery in our study explaining that competitors investing in and communicating their environmental sustainability initiatives exert pressure on the firms to do the same (*mimetic pressure*).

4.2.2. Institutional pressures and SPM for distributors

For distributors, SPM adoption is driven mainly by internal motivations, such as their mission and vision, and by the expectations of other SC stages for increased efficiency, flexibility, and responsiveness. Hence, the case of distributors is an example of firms adopting SPM due to institutional pressures from a combined social and economic perspective (Kauppi, 2012). On the one hand, distributors may experience normative pressure from market expectations, and on the other hand, an outcome-based desire for isomorphism when looking at efficiency objectives. Indeed, we observed *normative pressure* exerted on distributors adopting several indicators, mainly in the environmental sustainability dimension (see the example in Table 3). Moreover, distributors explained that they are compelled by the other SC stages to assess their operations to improve the service level without compromising product quality. Specifically, retailers expect higher responsiveness and efficiency from distributors while maintaining quality and price at acceptable levels. In addition, distributors comply with stricter government regulations to reduce their negative environmental impact (*coercive pressure*) by implementing the required practices but not necessarily adopting any specific measure.

4.2.3. Institutional pressures and SPM for retailers

Last, retailers in our study are subject to intense market pressure to demonstrate high product quality, origin, characteristics, and sustainability commitment to consumers (Székely & Knirsch, 2005). As in the case of wineries, retailers also respond to normative pressures and seek legitimacy when implementing sustainability practices (León-Bravo, Ciccullo, & Caniato, 2022) and SPM. Indeed, these companies adopt SPM mainly to respond to consumer expectations (*normative pressure*), as explained by the social IT variant of Kauppi (2012). Case 7 provides an example of this approach, referring to the transparency and traceability initiatives implemented in the social sustainability dimension, "*Customers should always be able to understand where a product comes from and how it has been produced.*"

To achieve this, retailers carefully trace and monitor their suppliers, requiring information on second-tier suppliers and certification documentation. Suppliers are periodically audited, and on-site visits are also conducted.

On the other hand, due to the low perceived impact of retailer activities on the environmental dimension, they rely on the upper SC stages to comply and communicate their environmental performance. Hence, retailers increase the normative pressures upstream, as described previously.

Instead, regarding regulations, local policies for waste disposal and recycling are put into practice by retailers for compliance reasons but without assessing this practice. In this case, the coercive pressure of regulations pushes retailers to implement sustainable practices but not

SPM.

Summarizing, Table 4 provides some examples from the primary data identifying the prevalent institutional pressures for sustainability practices and SPM perceived in each WSC stage according to each sustainability dimension.

4.3. Trade-offs for SPM in the Italian organic WSC

Building on Da Silveira's (2005) definitions, trade-offs exist when managers need to rank the decision variables (in this study, the number of SPM indicators used) according to their objectives (in this study, complying with institutional pressures or following the firm's mission). We intend to investigate which sustainability dimension takes precedence in SPM, considering the number of indicators per dimension as the intensity of adoption (Kauppi, 2012). With a scale for ranking SPM priorities from 0 to 5, Table 5 shows the level of importance firms attribute to a particular sustainability dimension and SPM category.

The categories of indicators (rows) in Table 5 derive from either the literature (see Table 2) or from our mapping in the previous research phases (see Table 3 and the Appendix). The rows indicate the variety of measures adopted within the general category, extending the literature on the intensity of assessments in different sustainability dimensions and performance categories along the SC stages.

Delving into each SC stage, we observe that winery cellars perceive greater difficulty in keeping track of all indicators and focus mainly on the environmental dimension; as the interviewee in Case 2 explained, "*Concentrating on the positive environmental impact of the operations is already a huge effort*" and "*in this period, the focus is entirely on the environmental dimension*."

Nonetheless, wineries repeatedly underlined the importance of their connection with the territory and closely monitoring soil health, water management, and energy consumption. For example, the interviewee in Case 4 stated, "*The new system using low-volume atomizers guarantees better irrigation, reducing water waste, and homogeneous distribution, sharply reducing consumption.*"

This better use of resources translates into higher efficiency (economic sustainability), which is beneficial to accessing the market and responding to retailers' expectations of lower prices. However, wineries also noted that further SPM efforts are out of reach because "*Being more sustainable and minimizing the environmental and social impact leads to higher costs that need to be covered somehow*" (Case 3).

Alongside the costs of SPM, the effort and priority of the sustainability practice determine whether SPM is worth implementing. The interviewee in Case 6 explained, "*[SPM for social practices is] considered of secondary importance*," and the firm prefers to adopt an indicator that is useful for both economic and environmental sustainability, such as resource consumption, which leads to higher efficiency and lower costs.

For distributors (gray shaded columns in Table 5), the priority is applying SPM related to economic sustainability in terms of efficiency, responsiveness, and flexibility. Environmental and social sustainability are less evaluated, with some focus on selecting higher utilization packaging, employee wellbeing, transparency, and the development of philanthropic activities. These practices are only monitored through the amount of resources used, evidenced in the financial reports, and the technology implemented for traceability. For distributors, economic sustainability is more important due to the efficiencies that need to be achieved to satisfy customer needs.

Last, SPM in the retailer stage (Cases 7 and 8) is applied less than in the other two WSC stages. As a result, environmental sustainability is hardly measured due to limited concern for these issues, thus focusing on complying with recycling regulations. As the interviewee in Case 7 stated, "*Being the last stage of the chain, the environmental impact is very limited.*"

Instead, retailers pay greater attention to the social dimension along the SC, first quality and second transparency, monitoring certification, and specific reports from suppliers. The Case 8 interviewee explained,

Table 4
Institutional pressures perceived in the WSC.

SC stage	Sustainability dimension	Stakeholders - institutional pressure	Quotes and examples from the cases
Winery	General SPM application	Market pressure - normative	"[SPM] is crucial to enter specific niches where sustainability performance is an important driver" (Case 1)
Winery	Social - product quality	From other actors in the SC - normative	Not measured because this stage [distributor] "does not have a relevant impact on the sensorial characteristics of the products; it is the winery's responsibility" (Case 5)
Winery	Environmental - soil quality, emissions	Intrinsic to firm culture	"Preserving the natural beauty surrounding the company" (Case 1)
Winery	Social - transparency	From other actors in the SC - normative	"[Lately, there is a] need to increase SC transparency and product traceability because distributors and retailers aim to trace back the products to the early activities; this is another source of pressure" (Case 3)
Winery	Environmental	Competitors - mimetic	Competitors investing and communicating their environmental sustainability initiatives exert pressure on the firm to do the same (Case 3)
Distributor	Economic	Economic priority	"Without economic sustainability, it wouldn't be possible to pursue the environmental and social ones" (Case 5)
Distributor	Environmental-waste, emissions Social - working conditions	Government - coercive	Case 5: "[One of the] main drivers pushing the company toward higher levels of sustainability is governmental pressure, increasingly setting stricter regulations in terms of waste management, emissions generated, and working conditions"
Distributor	Economic-responsiveness	From other actors in the SC - normative	Case 5: Delivery time and the percentage of orders delivered on time reflect the firm's level of responsiveness, considered an important economic performance indicator. Retailers and wineries ask for higher responsiveness and efficiency (not damaging the product quality or increasing the final price) Case 6: Another pressure from resellers concerns efficiency since they are constantly looking for a trade-off between product quality and the cost of procurement
Retailer	Social - transparency	Market pressure - normative	Case 7: "Customers should always be able to understand where a

(*continued on next page*)

Table 4 (*continued*)

SC stage	Sustainability dimension	Stakeholders - institutional pressure	Quotes and examples from the cases
			product comes from and how it has been produced"
Retailer	General SPM application	Government - coercive	Case 8: Government regulation is another driver that motivates some of the practices implemented
Retailer	Social - transparency	Market pressure - normative	"When two products have a similar quality, the supplier with the highest sustainability performance is selected" (Case 7) Case 7: Suppliers are required to disclose all the information about the origin of the input materials they are using as well as their environmental and social impact

"*when two products have similar quality, the supplier with the highest sustainability performance is selected.*"

This evidence from the cases allowed us to observe that firms prioritize one or more sustainability dimensions and inevitably face a trade-off that needs to be managed. For instance, SPM in the environmental dimension is prioritized by winery cellars to the detriment of the social dimension, whereas for distributors, the highest SPM priority is the economic dimension without entirely dismissing the assessment of environmental or social sustainability, but attributed lower priority.

5. Discussion

5.1. Additional factors influencing SPM in the Italian organic WSC

The data analyzed allowed identifying some additional factors that encouraged firms in this study to adopt sustainability practices and SPM. On the one hand, firm culture or the owner's intrinsic beliefs drive sustainability adoption (as also argued in Meixell & Luoma, 2015) and assessment. Furthermore, firm size, culture, and attachment to the territory also influence SPM implementation, as some interviewees explained.

Cultural elements and corporate mission: "*[We perform] careful monitoring to preserve the natural beauty that surrounds the company*" (Case 1). "*[We focus on] ensuring safe working conditions because the employees are all local people who, although not all of them relatives are part of the company's big family*" (Case 3). "*Helping local communities is not done for improving our image, but because we are part of the community*" (Case 1).

Firm size: "*Being a small company, [our] negative [environmental] impact is irrelevant*" (Case 2). "*[Emission generation] is an activity that concerns mainly the distribution stage, not us, they are larger [companies]*" (Case 4).

5.2. Explaining the reasons and consequences of heterogeneous SPM implementation

The SPM map (Table 3 and the Appendix) reveals that although the firms in our sample use some common indicators, evident attention is paid to a particular sustainability dimension in each SC stage, each with a specific approach to SPM implementation, prioritizing (evidenced by the number of indicators used, Table 5) one sustainability dimension over others. Although a heterogeneous approach toward SPM in SC should not be a matter of concern per se, the reasons and the aftereffects of these approaches in a certified SC where a similar commitment to sustainability is expected need to be analyzed to derive sustainability improvement opportunities.

Grounded in IT, understanding the pressures motivating firms in different SC stages to deploy sustainability initiatives and performance measurements is the main aim of our study. Our findings provide insights into the institutional pressures perceived in different SC stages (Fig. 2). Unlike prior studies (e.g., Sancha et al., 2015; Yawar & Kauppi, 2018), normative pressures from the market and other actors in the SC are prevalent in this chain, along with the responsibility-centric approach in an organic product SC (Jacob-John, 2018). In our study, this is the case of wineries, which is the stage most committed to the territory and to quality, hence prioritizing environmental responsibility practices and assessments. Instead, although the prevalent pressures are normative for distributors and retailers, the SPM objective differs: efficiency for the former and traceability for the latter. This reveals that similar types of institutional pressures in a particular SC trigger different responses in sustainability implementation and SPM adoption. Hence, institutional pressures can explain, at least in part, SPM behavior in the WSC. We thus propose:

P1. *In an organic product SC, normative pressures for SPM adoption are prevalent in the three main SC stages.*
P1.1. *In the downstream distribution and retail stages, a combination of normative and coercive pressures for SPM adoption is prevalent.*
P1.2. *In the upstream stage, where the production and processing activities are performed, a combination of normative and mimetic pressures for SPM adoption is prevalent.*

Table 5
Prioritization of SPM application in the cases under study.

Sustainability indicators*	Winery	Winery – Distrib.	Winery	Winery	Winery – Distrib.	Winery – Distrib.	Retailer	Retailer
	Case 1	Case 2 **	Case 3	Case 4	Case 5 **	Case 6 **	Case 7	Case 8
Environmental dimension								
Water management	3	2	4	3	3	3	3	2
Soil quality	5	5	5	5	n/a	5	0	0
Energy management	3	3	3	3	3	3	2	2
Emission level	0	0	0	0	0	0	0	0
Waste and material management	3	0	4	4	4	4	3	3
Social dimension								
Working environment	4	2	3	3	4	3	4	4
Community support	0	0	5	0	3	0	0	0
Transparency	2	0	3	1	5	1	5	5
Product quality	4	4	5	5	0	4	5	5
Economic dimension								
Efficiency, flexibility, responsiveness	5	4	5	4	4	4	5	3
Market	4	3	5	4	5	3	4	5

Our study reveals the firms' prioritization and/or ranking of sustainability dimensions despite the shared values in this SC (Jacob-John, 2018) and the level of sustainability commitment (Meixell & Luoma, 2015). Results show that SPM is implemented with a hierarchy of priorities in each SC stage. Firms adopt the sustainability dimensions that are more manageable and where the implementation costs are affordable, hence selecting a limited number of indicators and in turn facing different trade-offs.

The potential trade-offs and dilemmas that firms in different SC tiers face when implementing sustainability have been acknowledged in prior studies in an institutional logic (e.g., McLoughlin & Meehan, 2021) and in SPM studies (Nunes et al., 2020; Tuni et al., 2020; Kirwan et al., 2017; Lueg & Radlach, 2016), illustrating a "hierarchization between sustainability dimensions" (Nunes et al., 2020, p. 16). Indeed, our findings extend this literature by observing what we call the "environmental trade-off" at wineries. This could be defined as the prioritization of the environmental dimensions to the detriment of other sustainability dimensions, as Lueg and Radlach (2016) also find in their study. However, in our cases, the firms underlined having a "second in rank priority," namely, the economic dimension, implying the need to meet their economic objectives that allow them to afford sustainability investments, similar to what McLoughlin and Meehan (2021) found in their study. Moreover, we established a different ranking in the distributor and retailer stages, with their priorities being the economic dimension and social dimension, respectively. This finding is in line with the findings of McLoughlin and Meehan (2021), who acknowledge the existence of a trade-off between the economic and social logics that need to be balanced to limit tensions in the network. These findings also align with the findings of Kirwan et al. (2017), who argue that FSC firms are selective in which sustainability measures they adopt, preferring areas where they excel, or, as in our cases, when the relevance to their operations and reputation is higher. For instance, the retailers' priority is the consumer; thus, efforts are directed at enhancing customer service and demonstrating product origin and quality rather than addressing environmental aspects, leaving them as a responsibility at other SC stages. Therefore:

P2. *Normative pressures lead the value adding stage (wineries) in the SC to prioritize the environmental and economic dimensions—an environmental-economic SPM trade-off.*
P2.1. *Normative pressures lead to prioritizing the economic dimension for distributors—an economic SPM trade-off.*
P2.2. *Normative pressures lead to prioritizing the social dimension for retailers—a social SPM trade-off.*
P2.3. *Coercive and mimetic pressures do not contribute to SPM trade-offs in an organic product SC.*

Roy et al. (2018) explain that contingencies affect SSCM, particularly SPM, and present other influencing factors in addition to institutional pressures—affordability, firm strategy and priorities, SC stage, firm size, and cultural elements. Indeed, Silva et al. (2021) argue that firm size and its role in regional development influence the firm's approach to sustainability and areas of priority. Similarly, León-Bravo et al. (2021b, 2022b), Basir et al. (2018), and Zaborek (2014) study of FSCs mainly comprising small and micro firms found that the drivers or motivations for sustainability are closely related to the local context. In our study, we observed that the small and micro enterprises in the organic WSC implement sustainability practices and commit to SPM according to their capabilities and their perception of the potential contribution to the territory, in turn facing different institutional pressures and trade-offs. Nonetheless, our results contrast with Shnayder et al. (2016), who argue that sustainability reporting is unlikely to be motivated by firm values and only explained by external pressures. Conversely, we observed that sustainability implementation and the use of SPM are indeed driven by the corporate mission (as argued in Meixell & Luoma, 2015) and the sustainability strategy as the primary motivators explaining their commitment to the territory. Thus:

P3. *SPM in small and micro enterprises in organic food SCs is contingent on firm size.*
P4. *SPM in small and micro enterprises in organic FSCs is contingent on contextual factors, such as firm culture and attachment to the territory.*

6. Conclusions

Our investigation extends the literature by analyzing the SPM implemented at three SC stages, the institutional pressures that trigger SPM adoption in the different FSC stages, and the SPM trade-offs that firms face in different SC stages. Our study focused on the Italian organic WSC and analyzed eight cases at three different SC stages.

Mapping SPM allowed us to identify the pressures for SPM implementation and the trade-offs that firms in this sector face. The SPM map (example in Table 3 and the Appendix) illustrates the sustainability indicators by SC stage, the sustainability objectives pursued, the practices implemented, the frequency of measurement, and the calculation method. We then identified and analyzed the institutional pressures that affect SPM implementation, finding a prevalence of normative pressures from the market and at other stages of the SC. Firms at the three WSC stages establish their priorities by applying SPM according to the institutional pressures perceived, contingent on firm size and local and cultural elements. We ranked the firms' priorities in this SC along three sustainability dimensions (environmental, social, and economic), identifying their trade-offs at each stage. In particular, we found that wineries prioritized the environmental and economic dimensions, while distributors and retailers prioritized the economic and social dimensions, respectively (see Table 5).

Our study contributes to theory and practice in several ways. First, we map SPM implementation at multiple stages of a specific FSC, identifying the institutional pressures for SPM adoption, and the corresponding trade-offs generated. In particular, the sustainability trade-offs highlight the contextual features shaping decision-making in a particular food sector. Also, managers in the organic wine industry might benefit from understanding which institutional pressures influence the adoption of SPM and the trade-offs behind adopting SPM at multiple SC stages.

In particular, we extend the SPM literature threefold by considering the specificities of different SC stages regarding SPM (León-Bravo, Caniato, & Caridi, 2021), how firms struggle to transform sustainability awareness into actions (Schrettle et al., 2014), and the practical challenges of selecting and implementing performance metrics (Callado & Jack, 2017). First, we identify the institutional pressures influencing SPM adoption by SC stage in an organic product SC and the high significance of normative pressures for different sustainability objectives by SC stage. This is a relevant contribution because institutional pressures have been analyzed mainly to understand the adoption of sustainability practices, not SPM, thereby demonstrating the actual practices adopted to achieve legitimacy (Kauppi, 2012; León-Bravo, Ciccullo, & Caniato, 2022). Second, the level of SPM adoption in the WSC illustrates the hierarchization of SPM by SC stage and consequently the SPM investments of firms in the WSC to achieve their sustainability goals. This is also relevant given that focusing on a single sustainability dimension is often considered a limitation in the literature, and our analysis of three sustainability dimensions allows observing the trade-offs that prevail. Moreover, our findings reveal that firm size and local contextual factors determine the SPM approach in this sector. This highlights the need for further research in other industrial sectors and geographic locations. Third, the differences across the SC stages in terms of measurement, institutional pressures, and sustainability priorities underline another major issue, namely the misalignment among the actors that could hamper the effectiveness of efforts dedicated to sustainability implementation and measurement. Given that sustainability needs to be developed in the entire SC, this lack of alignment and

coordination could be a major barrier and, thus, an opportunity for future research.

Our findings are also relevant for practitioners whereby the SPM map as a management tool allows properly assessing a firm's sustainability, an SC stage, or several stages, covering three sustainability dimensions, and providing a set of practices and indicators. In addition, acknowledging the institutional pressures that influence SPM in different stages of the SC (Fig. 2) can help understand the motivations of other actors in the SC and align their expectations and priorities. Finally, the trade-offs we identified can help decision-making in firms seeking to widen their SPM implementation.

Our research has some limitations. Focusing on a specific food industry sector and product type determines the level of SPM implementation and prioritization. In addition, given the structure of the WSC in Italy, the growing and processing stages in this study are combined in winery cellars, as these two activities are often managed by the same organization, which may differ in other SCs. Therefore, future studies in this area could validate and extend our findings. Moreover, the influencing factors we identified (corporate mission, cultural factors) may be context-specific, and thus, investigations of how they influence sustainability adoption in other regions or sectors are needed (León-Bravo & Jaramillo-Villacrés, 2021). Similarly, further research could dive deeper into other elements, such as the institutional logics (McLoughlin & Meehan, 2021; León-Bravo et al., 2022b), their effect on SPM, and managing trade-offs. In this regard, some of the sustainability practices and indicators that emerged in our data may also be product-specific. Therefore, studies in a food sector in which firms are less integrated may highlight differences in SPM in each SC stage, and analyzing firms operating in different countries would allow for mitigating potential selection bias.

Appendix

List of sustainability indicators implemented in three Italian organic WSC stages.

	Sustainability indicators	Frequency	FSC stage*	Practices
Environmental	**Water management indicators**			
	Water footprint	Every 2–3 months	W	Implementation of filters; installation of meteorological
	Total water consumption	Every 2–3 months	C	stations; adoption of permaculture systems and drip
	Water withdrawal to availability	Every 6 months	W	irrigation; analyses on soil humidity; usage of low-volume
	Total water discharge	Every 4–6 months	W–D	atomizers
	Soil quality indicators			
	Soil organic matter:			Implementation of multiannual crop rotation and tillage
	1. Whole soil C	Every 1–2 years	W	practices; use of soil amendments; reduce use of fertilizers
	2. Microbial biomass-C (MB-C)		W	and pesticides; eliminate contaminants and pollutants;
	3. Acid-hydrolyzable carbohydrates (AHC)		W	usage of green manure
	4. Light fraction-C (LF-C)		W	
	5. Macro-organic matter C (MOM-C)		W	
	6. Whole soil N		W	
	7. Light fraction-N (LF-N)		W	
	8. Macro-organic matter N (MOM-N)		W	
	9. Bulk density		W	
	10. MB-C/Whole soil C		W	
	Energy management indicators			
	Total energy consumption:			Installation of solar panels or photovoltaic systems; use of
	1. Total energy consumption from non-renewable sources of energy	Every 1–2 months	C	natural lighting; implementation of CFL or LED lighting
	2. Total energy consumption from renewable sources of energy		C	
	3. Heating consumption		W	
	4. Cooling consumption		W	
	5. Steam consumption		W	
	Energy intensity ratio	Every 6 months	W	
	Emission level indicators			
	Total greenhouse gas (GHG) emissions	N/A	W–D	Adoption of electric vehicles; increase use of manual work
	GHG emissions intensity ratio		W–D	
	Other emissions:			
	1. Emissions of nitrogen oxides (NOx)	N/A	W–D	
	2. Emissions of sulfur oxides (SOx)		W–D	
	3. Emissions of persistent organic pollutant (POP)		W–D	
	4. Emissions of volatile organic compounds (VOC)		W–D	
	5. Emissions of hazardous air pollutants (HAP)		W–D	
	6. Emissions of particulate matter (PM)		W–D	
	Wastes and materials management indicators			
	Mass balance	Every 6 months	W–D	Increase waste reuse; transformation of organic waste into
	Waste diversion rate	Every 6 months	W–D	fertilizers; increase recycling
	Total non-renewable material used for packaging	Every time a new supplier	C	Increase use of recycled materials for packaging
	Total renewable material used for packaging	is selected or when the	C	
	Share of recycled input material used for packaging	inputs are changed	C	
Social	**Working environment indicators**			
	Average sustainability training hours per employee	Every year	C	Provide sustainability training to employees
	Number of work-related injuries per year	Every year	C	Promote a safe and secure working environment
	Rate of fatalities as a result of work-related injuries		C	
	Ratio of remuneration of women to men	Every year	C	Increase diversity and ensure gender equality

(continued on next page)

(*continued*)

	Sustainability indicators	Frequency	FSC stage*	Practices
	Rate of employee turnover		C	
	Percentage of employees per gender:	–	C	
	Percentage of employees per age:	–	C	
	Community support indicators			
	Investments for improving education and living conditions:	–	–	Invest in developing countries; promote philanthropic initiatives; provide monetary and in-kind aid to communities; collaborate with NGOs
	1. Money yearly provided to communities	Every 6 months	C	
	2. Non-financial aids yearly provided to communities	Every 6 months	C	
	Transparency indicators			
	Transparency:			Disclosure of information about partners' sustainability performance; require customers and suppliers to disclosure information; introduction of traceability systems
	1. Percentage of actors in the SC for whom it is possible to assess the role, connection and location of facilities	Every 6 months	C	
	2. Percentage of actors in the SC for whom it is possible to assess purchasing practices and investment decisions		C	
	3. Percentage of actors in the SC for whom it is possible to assess risks, social and environmental impact		C	
	4. Percentage of actors in the SC for whom it is possible to assess policies and commitments to increase sustainability of their operations		C	
	5. Percentage of actors in the SC for whom it is possible to assess production, sales, purchasing and investment decisions		C	
	6. Percentage of actors in the SC for whom it is possible to assess the effectiveness of the practices implemented to reduce the negative environmental and social impact		C	
	Percentage of partners and suppliers screened using environmental and social criteria	Every year	C	Selection, monitoring and control of partners and suppliers; promote sustainable procurement practices
	Percentage of partners and suppliers identified as having negative environmental and social impact		C	
	Product quality indicators			
	Number of incidents of non-compliance concerning product information	Every 6 months	C	Ensure compliance of products composition with products description
	Number of incidents of non-compliance concerning marketing communications		C	Promote reliable marketing campaigns that are in line with the real product quality
Economic	**Efficiency indicators**			
	Operating costs	Every 3–6 months	C	Increase control over internal costs
	Inventory costs		C	
	Transaction costs		C	
	Scrap rate	Every week	W	Increase internal quality
	Growth	Every month	C	Promote-long term cost reduction
	R&D expenditures	Every 3–6 months	W–D	
	Market indicators			
	Marketing expenditures	Every 3–6 months	C	Improve image and reputation
	Market share		C	
	Consumers' satisfaction		C	

* W- winery cellar; D – distributor; R – retailer; C - common indicator in all three WSC stages.

References

Acosta, P., Acquier, A., & Delbard, O. (2014). Just do it? The adoption of sustainable supply chain management programs from a supplier perspective. *Supply Chain Forum: International Journal, 15*(1), 76–91.

Aramyan, L. H., Lansink, A. G. O., Van Der Vorst, J. G., & Van Kooten, O. (2007). Performance measurement in agri-food supply chains: A case study. *Supply Chain Management: International Journal, 12*(4), 304–315.

Basir, N. S. A., Chik, C., Bachok, S., Baba, N., Hamid, R., & Salleh, M. (2018). Motivational factors for halal certification adoption among small and micro enterprises in Malaysia. *International Journal of Supply Chain Management, 7*, 391–396.

Baur, P. (2020). When farmers are pulled in too many directions: Comparing institutional drivers of food safety and environmental sustainability in California agriculture. *Agriculture and Human Values, 37*(4), 1175–1194.

Bigliardi, B., & Bottani, E. (2010). Performance measurement in the food supply chain: A balanced scorecard approach. *Facilities, 28*(5/6), 249–260.

Bolinder, M. A., Angers, D. A., Gregorich, E. G., & Carter, M. R. (1999). The response of soil quality indicators to conservation management. *Canadian Journal of Soil Science, 79*(1), 37–45.

Bourlakis, M., Maglaras, G., Gallear, D., & Fotopoulos, C. (2014). Examining sustainability performance in the supply chain: The case of the Greek dairy sector. *Industrial Marketing Management, 43*(1), 56–66.

Brix-Asala, C., Hahn, R., & Seuring, S. (2016). Reverse logistics and informal valorisation at the base of the pyramid: A case study on sustainability synergies and trade-offs. *European Management Journal, 34*(4), 414–423.

Callado, A. A. C., & Jack, L. (2017). Relations between usage patterns of performance indicators and the role of individual firms in fresh fruit agri-food supply chains. *Journal of Applied Accounting Research, 18*(3), 375–398.

Cannas, V. G., Ciccullo, F., Pero, M., & Cigolini, R. (2020). Sustainable innovation in the dairy supply chain: Enabling factors for intermodal transportation. *International Journal of Production Research, 58*(24), 7314–7333.

Chee Tahir, A., & Darton, R. C. (2010). The process analysis method of selecting indicators to quantify the sustainability performance of a business operation. *Journal of Cleaner Production, 18*, 1598–1607.

Clift, R. (2004). Metrics for supply chain sustainability. In S. K. Sikdar, P. Glavic, & R. Jain (Eds.), *Technological choices for sustainability* (pp. 239–253). Springer Science & Business Media. P.

Da Silveira, G. J. (2005). Improving trade-offs in manufacturing: Method and illustration. *International Journal of Production Economics, 95*(1), 27–38.

Da Silveira, G., & Slack, N. (2001). Exploring the trade-off concept. *International Journal of Operations & Production Management, 21*(7), 949–964.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*(2), 147–160.

Egels-Zandén, N., Hulthén, K., & Wulff, G. (2015). Trade-offs in supply chain transparency: The case of nudie jeans Co. *Journal of Cleaner Production, 107*, 95–104.

Equalitas. (2020). *3E equalitas. Sustainability*. Retrieved from https://www.equalitas.it en/sustainability/.

Esfahbodi, A., Zhang, Y., & Watson, G. (2016). Sustainable supply chain management in emerging economies: Trade-offs between environmental and cost performance. *International Journal of Production Economics, 181*, 350–366.

FAO. (2018). *Transforming food and agriculture to achieve the SDGs- 20 interconnected actions to guide decision-makers*. Retrieved from http://www.fao.org/3/I9900EN/i99 00en.pdf.

FederBio. (2012). *Regolamento UE 203/2012 sul vino biologico: Una sintesi*. Retrieved from https://feder.bio/wp-content/uploads/2017/07/Il_vino_biologico_regolamento_federbio.pdf.
FederBio. (2018). *Vinitaly 2018: Il trionfo del vino biologico italiano*. Retrieved from https://feder.bio/vinitaly-2018-trionfo-del-vino-biologico-italiano/.
Gardner, T. A., Benzie, M., Börner, J., Dawkins, E., Fick, S., Garrett, R., & Wolvekamp, P. (2019). Transparency and sustainability in global commodity supply chains. *World Development, 121*, 163–177.
Glover, J. L., Champion, D., Daniels, K. J., & Dainty, A. J. (2014). An institutional theory perspective on sustainable practices across the dairy supply chain. *International Journal of Production Economics, 152*, 102–111.
Govindan, K. (2018). Sustainable consumption and production in the food supply chain: A conceptual framework. *International Journal of Production Economics, 195*, 419–431.
Jacob-John, J. (2018). Adherence to responsibility in organic dry food supply chains. *European Business Review, 30*(1), 26–37.
Jain, S. (2004). Supply chain management tradeoffs analysis. In *Proceedings of the 2004 winter simulation conference, 2* pp. 1358–1364). IEEE.
Kannan, D. (2021). Sustainable procurement drivers for extended multi-tier context: A multi-theoretical perspective in the Danish supply chain. *Transportation Research Part E: Logistics and Transportation Review, 146*, Article 102092.
Kauppi, K. (2012). Extending the use of institutional theory in operations and supply chain management research: Review and research suggestions. *International Journal of Operations & Production Management, 33*(10), 1318–1345.
Kauppi, K., & Hannibal, C. (2017). Institutional pressures and sustainability assessment in supply chains. *Supply Chain Management: International Journal, 22*(5), 458–472.
Kirwan, J., Maye, D., & Brunori, G. (2017). Acknowledging complexity in food supply chains when assessing their performance and sustainability. *Journal of Rural Studies, 52*, 21–32.
Kumar, S., Teichman, S., & Timpernagel, T. (2012). A green supply chain is a requirement for profitability. *International Journal of Production Research, 50*(5), 1278–1296.
León-Bravo, V., Caniato, F., & Caridi, M. (2021a). Sustainability assessment in the food supply chain: Study of a certified product in Italy. *Production Planning & Control, 32*(7), 567–584.
León-Bravo, V., Ciccullo, F., & Caniato, F. (2022a). Traceability for sustainability: Seeking legitimacy in the coffee supply chain. *British Food Journal, 124*(8), 2566–2590.
León-Bravo, V., & Jaramillo-Villacrés, M. (2021). Sustainability of chocolate production in Ecuador: Drivers, barriers, and local factors. *Latin American Business Review, 22*(4), 323–357.
León-Bravo, V., Moretto, A., & Caniato, F. (2021b). A roadmap for sustainability assessment in the food supply chain. *British Food Journal, 123*(13), 199–220.
León-Bravo, V., Villacrés, M. J., & Silva, M. E. (2022b). Analysing competing logics towards sustainable supplier management. *Supply Chain Management: International Journal, 27*(7), 49–63.
Lueg, R., & Radlach, R. (2016). Managing sustainable development with management control systems: A literature review. *European Management Journal, 34*(2), 158–171.
Matopoulos, A., Vlachopoulou, M., Manthou, V., & Manos, B. (2007). A conceptual framework for supply chain collaboration: Empirical evidence from the agri-food industry. *Supply Chain Management: International Journal, 12*(3), 177–186.
Maumbe, B. M., & Brown, C. (2013). Entrepreneurial and buyer-driven local wine supply chains: Case study of acres of land winery in Kentucky. *The International Food and Agribusiness Management Review, 16*(1), 137–159.
McLoughlin, K., & Meehan, J. (2021). The institutional logic of the sustainable organisation: The case of a chocolate supply network. *International Journal of Operations & Production Management, 41*(3), 251–274.
Meixell, M. J., & Luoma, P. (2015). Stakeholder pressure in sustainable supply chain management. *International Journal of Physical Distribution & Logistics Management, 45*(1/2), 69–89.
Mena, C., Humphries, A., & Choi, T. Y. (2013). Toward a theory of multi-tier supply chain management. *Journal of Supply Chain Management, 49*(2), 58–77.
Mueller, R. A. E., Sumner, D., & Lapsley, J. (2006). Clusters of grapes and wine. In *Third international wine business research conference, Montpellier, France*, 2006. Retrieved from http://academyofwinebusiness.com/wp-content/uploads/2010/05/Muller-R.pdf.
Nunes, M. F., Park, C. L., & Paiva, E. L. (2020). Can we have it all? Sustainability trade-offs and cross-insurance mechanisms in supply chains. *International Journal of Operations & Production Management, 40*(9), 1339–1366.
Olson, D. L., & Swenseth, S. R. (2014). Trade-offs in supply chain system risk mitigation. *Systems Research and Behavioral Science, 31*(4), 565–579.
Pullman, M. E., Maloni, M. J., & Dillard, J. (2010). Sustainability practices in food supply chains: How is wine different? *Journal of Wine Research, 21*(1), 35–56.
Ridder, H. G. (2017). The theory contribution of case study research designs. *Business Research, 10*(2), 281–305.
Roy, V., Schoenherr, T., & Charan, P. (2018). The thematic landscape of literature in sustainable supply chain management (SSCM). *International Journal of Operations & Production Management, 38*(4), 1091–1124.
Sabri, Y., Micheli, G. J., & Nuur, C. (2017). How do different supply chain configuration settings impact on performance trade-offs? *International Journal of Logistics Systems and Management, 26*(1), 34–56.
Sancha, C., Longoni, A., & Giménez, C. (2015). Sustainable supplier development practices: Drivers and enablers in a global context. *Journal of Purchasing and Supply Management, 21*(2), 95–102.
Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics, 130*(1), 1–15.
Sayed, M., Hendry, L. C., & Bell, M. Z. (2017). Institutional complexity and sustainable supply chain management practices. *Supply Chain Management: International Journal, 22*(6), 542–563.
Schmutz, U., Kneafsey, M., Kay, C. S., Doernberg, A., & Zasada, I. (2018). Sustainability impact assessments of different urban short food supply chains: Examples from London, UK. *Renewable Agriculture and Food Systems, 33*(6), 518–529.
Schrettle, S., Hinz, A., Scherrer-Rathje, M., & Friedli, T. (2014). Turning sustainability into action: Explaining firms' sustainability efforts and their impact on firm performance. *International Journal of Production Economics, 147*, 73–84.
Shnayder, L., Van Rijnsoever, F. J., & Hekkert, M. P. (2016). Motivations for corporate social responsibility in the packaged food industry: An institutional and stakeholder management perspective. *Journal of Cleaner Production, 122*, 212–227.
Silva, M. E., Silvestre, B. S., Ponte, R. C. D. V., & Cabral, J. E. O. (2021). Managing micro and small enterprise supply chains: A multi-level approach to sustainability, resilience and regional development. *Journal of Cleaner Production, 311*, Article 127567.
Skinner, W. (1992). Missing the links in manufacturing strategy. In C. A. Voss (Ed.), *Manufacturing strategy – process and content* (pp. 13–25). London: Chapman & Hall.
Székely, F., & Knirsch, M. (2005). Responsible leadership and corporate social responsibility: Metrics for sustainable performance. *European Management Journal, 23*(6), 628–647.
Tachizawa, E. M., & Wong, C. Y. (2014). Towards a theory of multi-tier sustainable supply chains: A systematic literature review. *Supply Chain Management: International Journal, 19*, 643–653.
Touboulic, A., & Walker, H. (2015). Theories in sustainable supply chain management: A structured literature review. *International Journal of Physical Distribution & Logistics Management, 45*, 16–42.
Tuni, A., Rentizelas, A., & Chinese, D. (2020). An integrative approach to assess environmental and economic sustainability in multi-tier supply chains. *Production Planning & Control, 31*(11–12), 861–882.
Van der Byl, C. A., & Slawinski, N. (2015). Embracing tensions in corporate sustainability: A review of research from win-wins and trade-offs to paradoxes and beyond. *Organization & Environment, 28*(1), 54–79.
Varsei, M., Soosay, C., Fahimnia, B., & Sarkis, J. (2014). Framing sustainability performance of supply chains with multidimensional indicators. *Supply Chain Management: International Journal, 19*(3), 242–257.
van der Vorst, J. G. (2005). Performance measurement in agrifood supply chain networks: An overview. *Quantifying the Agri-Food Supply Chain, 15*, 13–24.
Wilhelm, M., Blome, C., Wieck, E., & Xiao, C. Y. (2016). Implementing sustainability in multi-tier supply chains: Strategies and contingencies in managing sub-suppliers. *International Journal of Production Economics, 182*, 196–212.
Yawar, S. A., & Kauppi, K. (2018). Understanding the adoption of socially responsible supplier development practices using institutional theory: Dairy supply chains in India. *Journal of Purchasing and Supply Management, 24*(2), 164–176.
Yin, R. K. (2014). *Case study research: Design and methods*. SAGE Publications.
Zaborek, P. (2014). CSR and financial performance: The case of Polish small and medium manufacturers. *International Journal of Management and Economics, 43*(1), 53–73.