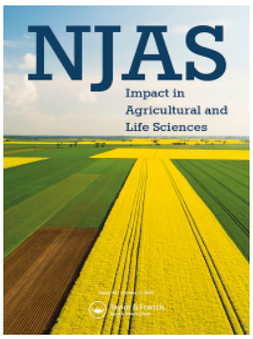

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Facets of value emerging through the operation of short food supply chains

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ABSTRACT

Short food supply chains (SFSCs) are market schemes that allow different types of value to emerge. In this work, we aimed to uncover these facets of value. To do so, we built upon two conceptual models: a Triple Layered Business Model Canvas and an eight-dimensional blueprint developed for our purposes. Then, we conducted two studies using these models as theoretical templates. In Study I, we followed a business model canvas perspective, aiming to portray the components that contribute to the generation of economic, functional, and social value produced in SFSCs. By drawing on a sample of farmers who participate in SFSCs, we developed regression models to uncover the antecedents of value. Our analysis revealed that the effectiveness of performed activities catalyses the economic value of SFSCs. In addition, the social value depends on the capacity of SFSCs to enhance local communities' well-being and provide significant outreach. Finally, environmental value is associated with the distribution of products. In Study II, using data from a pool of experts, we assessed the importance of eight facets of value. Participants appraised economic, social, cultural, and environmental value as more important than the remaining dimensions. Our studies shed light on the dimensions of value created in SFSCs, also confirming the usefulness of business model canvases for understanding value creation processes. However, our work also offers a new framework for conceptualising supply chains' value, distinguishing value into primary (which is produced and remains within SFSCs) and secondary (which extends beyond supply chain limits).

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KEYWORD Short food supply chains; economic value; environmental value; social value; business model canvas; alternative food networks

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1. Introduction

Food supply chain systems – or food supply chains – are networks through which foods are distributed from their producers to end-consumers. Nevertheless, they also involve the exchange of other tangible or intangible assets – including money, knowledge, and influence (Smith, 2008) – shaping complex transactions. Food supply chains have several shapes, depending on their structure, aims, actors involved, and kinds of distributed products. Circular supply chains, green public procurement schemes, and short food supply chains (SFSCs) represent the most common alternatives of mainstream or conventional supply chain systems, also characterised as "long" (due to the long distances between producers and consumers and the high number of actors involved in them) or "industrialised" supply chains (because they are following standardised practices of food production, distribution, and consumption) (Grando et al., 2017). In the present work, we are focusing exclusively on SFSCs because of their potential contribution to local economies (Kiss et al., 2020) and social sustainability (Wang et al., 2022), the increased interest of consumers in such food distribution schemes (Cruz et al., 2021), and their capacity to strengthen the connection between farmers and buyers (Giampietri et al., 2018).

SFSCs are supply systems consisting of only two (a farmer and a consumer) or three actors (when an extra node intervenes between the producer and buyer) (Chiffoleau & Dourian, 2020), with the first case to be the norm (Charatsari et al., 2018). Such systems can take various forms, including farmers' markets, on-farm sales, box delivery schemes, and direct selling to local schools, hospitals, or elderly houses (Charatsari et al., 2020).

However, SFSCs are not just market arrangements but represent value-generating social mechanisms. Literature suggests that what is common in all types of SFSCs is their ability to generate value that has a non-monetary form. Of course, the economic value of SFSCs is what ensures farmers' viability – an attribute that acquires pivotal importance for small-scale farmers (Kalfagianni & Skordili, 2019). Nevertheless, short supply schemes also facilitate the achievement of environmental goals through, for instance, the adoption of environmentally friendly practices by farmers (Mundler & Laughrea, 2016) or the limited carbon emissions for the transportation of products (Bui et al., 2021). Moreover, they serve social and ethical goals, like the reduction of unemployment in rural areas (Falguieres et al., 2015) or the enhancement of food security in the communities within which SFSCs operate (Schmutz et al., 2018). In this vein, SFSCs are value-creating systems that operate parallel to mainstream food distribution channels, offering a valuable alternative to industrial (profit-oriented) markets (Connolly et al., 2022).

Although broad and blooming, the relevant literature has not yet thoroughly examined the dimensions of the value produced through

SFSCs operation. To do so, in the present work, we attempt to identify the facets of value emanating within SFSCs by using two different theoretical models. The first one is the Triple Layered Business Model Canvas, a tool developed by Joyce and Paquin (2016) to portray how organisations create economic, environmental, and social value. Adapting this model to the case of SFSCs, we assess these three facets of value and identify their antecedents. However, value also emerges through relational processes (Marsden et al., 2000), managerial approaches or organisational structures (Chiffoleau et al., 2019; Thomé et al., 2021), ethical practices and modi operandi (Mundler & Jean-Gagnon, 2020), and the enhancement of cultural attributes (Renting et al., 2003). To add these facets of value, we developed a second, eight-dimension conceptual blueprint, inserting managerial, relational, organisational, cultural, and ethical aspects of value produced through the operation of supply chains. Our second model aims to offer an alternative view of value creation, complementing the Triple Layered Business Model Canvas and opening up the opportunity to see the value dimensions through two different angles.

In this vein, our studies attempt to: first, offer a better understanding of the facets of value created within SFSCs, thus helping policy-makers draw plans for enhancing value-creating mechanisms and scholars develop a holistic perspective of how such chains deliver various desirable societal outcomes; second, shed light on the factors that contribute to the value creation process; third, develop a Triple Layered Business Model Canvas for SFSCs, therefore providing a valuable tool for researchers; fourth, add to the relevant literature some new facets of SFSCs value (which can also be used for every type of food supply chain) that have not yet been explored.

After outlining our theoretical constructs, we present two studies designed to uncover the importance of the different value dimensions for the performance of SFSCs. The article ends with a discussion highlighting the lessons learnt and proposing future research directions.

2. Theorising value creation in food supply chains

2.1. A business model canvas perspective

A business model canvas represents the elements through which an organisation aims to create value. Canvases depict the business models used by organisations, foster the understanding of the pros and cons in the way of doing business, and facilitate the analysis of the critical success factors for a business model. However, since organisations cannot deliver value alone, canvases present the interrelations among organisations and, when needed, between organisations and individuals that lead to the co-production of value.

In their seminal article, Osterwalder and Pigneur (2010) constructed a canvas referring to economic value. Using this template (Figure 1), one can argue that SFSCs operate having as the central value proposition the offering of high-quality products that local farmers cultivate and sell. The main activities involved in the system are the production of agrifood products and their selling through specific channels, whereas, in some cases, storage may be necessary. To perform these activities, producers use essential resources – land, labour, and capital – but also intangible assets. Much more than other food supply chain approaches, short chains depend on the development of strong relationships with consumers and the levels of farmers' knowledge (Charatsari et al., 2020). Apart from these resources, farmers create partnerships with actors commonly involved in agricultural production processes, like farm advisors or suppliers of propagational material, pesticides, and fertilisers.

The cost of the activities performed within a short supply chain is related to the production cost and the transportation to the farmers' markets or the delivery of the products in the case of box delivery schemes. The revenues stem from the products sold through only one or a combination of the following channels: farmers' markets, on-farm sales, food box schemes, direct distribution to local retail stores, and farm-owned retail shops (Kneafsey et al., 2013). Apart from individual consumers, SFSCs may target local restaurants (Paciarotti & Torregiani, 2018) and units like school canteens and elderly houses (Yacamán Ochoa et al., 2019). Since these schemes are based on the connection between farmers and customers, the development of relationships with either individual consumers or local stores is a vital attribute of SFSCs (Marsden et al., 2000), while the offering of personalised services is another way used to enhance the economic value (Stanciu, 2013).

Despite its usefulness in offering an image of how organisations can increase their value-generating capacity, Osterwalder and Pigneur's (2010) business model canvas received justified criticism for its overemphasis on the economic dimension of value. To offer a more holistic conceptualisation of value creation, Joyce and Paquin (2016) developed a new canvas, labelled "Triple Layered Business Model Canvas", adding an environmental and a social dimension of value.

The environmental layer (Figure 2) focuses on the functional value, which, in the case of SFSCs, concerns the total amount of products consumed during a specified period. To be produced, the functional value requires some standard materials (seeds, fertilisers, pesticides, water for irrigation, and farm equipment) that have an environmental footprint. The production process, which includes the use of farm machinery and the energy needed, is perhaps the major contributor to this footprint. Supplies include the production of the machinery used to cultivate the land and the electricity (for example, for product storage).

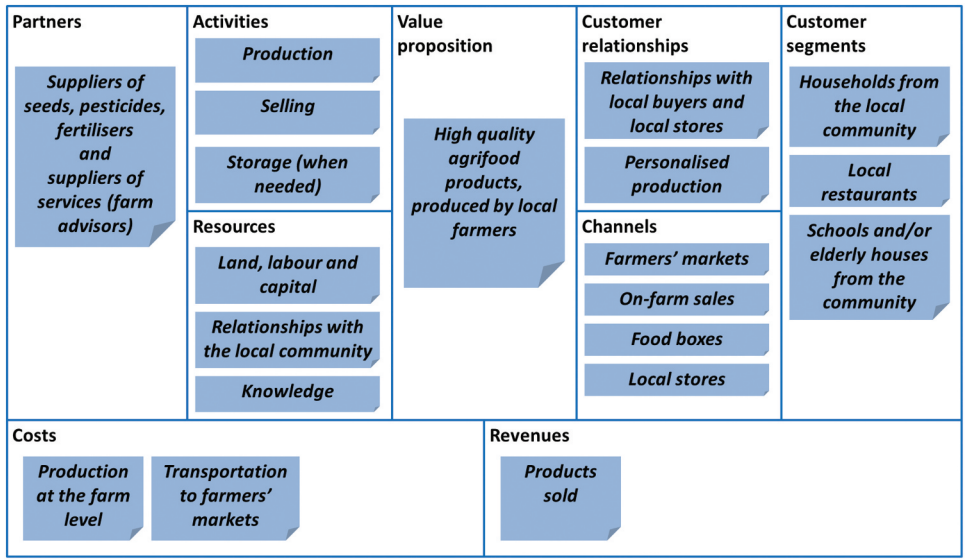

Figure 1. The economic layer of TLBMC for short food supply chains.

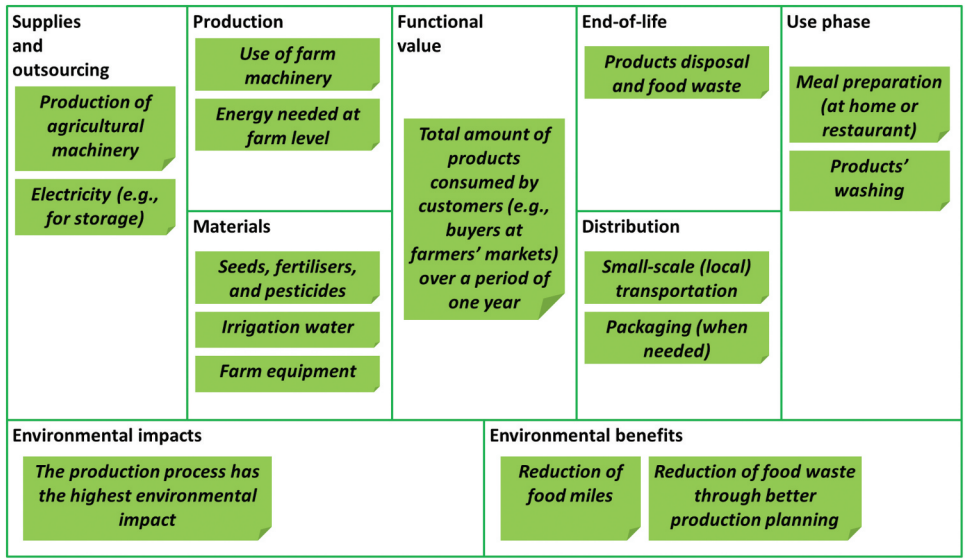

Figure 2. The environmental layer of TLBMC for short food supply chains.

Beyond the farm gate, the distribution component of the TLBMC contains the transportation from the farm to the local markets and the packaging of products (when necessary). Concerning consumption, the preparation of meals and the impacts associated with how buyers treat the products (e.g. the washing of fresh vegetables) may also contribute to the environmental footprint. Finally, the end-of-life category includes the disposal of products and the waste of unconsumed production. Despite the environmental externalities, SFSCs also have a positive impact because of the reduction of food miles (Malak-Rawlikowska et al., 2019) and the ability to better plan the production process. Usually located in a market niche, these systems are built on the relationships developed between farmers and consumers. Hence, it is easier for producers to understand the needs and demands of their customers.

The social layer (Figure 3) refers to the social value produced through short supply chains. Elements unique to their character, like the promotion of "local consumption", the creation of social capital, and social support (Charatsari et al., 2018; Giampietri et al., 2016), form the social value of the system. Developing intra-community relationships, cultivating a sense of community, and building trust between actors participating in that niche (Cruz et al., 2021; Giampietri et al., 2018) are different facets of the contribution that short supply chains have to the development of local communities.

The governance structure is farmer-centric since regime actors are not directly involved in these schemes, whereas there is a seamless flow of information between farmers and buyers (Hooks et al., 2017). Concerning the employee component of the TLBMC, short supply chains offer more opportunities than systems belonging to the agrifood system regime to women farmers (Zirham & Palomba, 2016). Another element of the component is the customer orientation of farmers. The creation of a culture of belongingness, which promotes citizenship behaviour and social support, is a typical attribute of the societal culture. Although, by their very nature, SFSCs have a limited breadth of outreach, the depth of the social impacts is high: local communities absorb the main part of social value. On the other hand, end-users enjoy personalised or extra services, whereas they can also have information on the production methods (Ilbery & Maye, 2005).

However, apart from the numerous social benefits – which include the development of human resources through the enhancement of intra-community collaboration and the independence from dominant regime actors – SFSCs also have negative social impacts. These include the potential opportunistic or lethargic behaviour of some of the involved actors – or the "tragedy of the commons" (De Bernardi et al., 2020) – and the potential underutilisation of local resources (referring to both human and social capital) due to the limited efficacy of the system when compared with that of other, more regime-oriented chains.

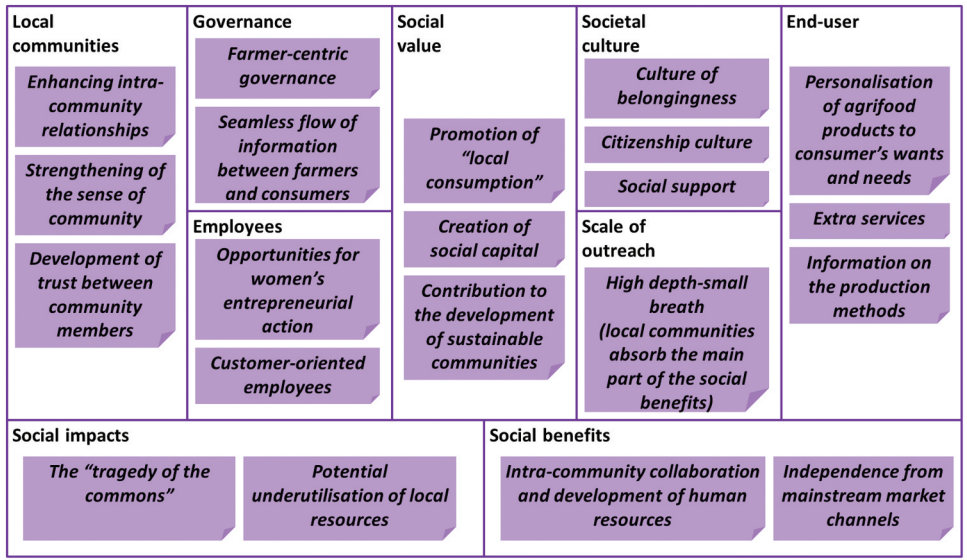

Figure 3. The social layer of TLBMC for short food supply chains.

2.2. An eight-dimension model of value creation in supply chains

Although the TLBMC offers a valuable template for understanding the value creation process, it aims to summarise value into three layers inspired by the Triple Bottom Line perspective (undoubtedly, one of its most remarkable and practical characteristics). However, other attributes – referring to internal forms of value or ethical value – are less represented on the canvas. To add these extra components of value creation, in this section, we outline a novel framework for conceptualising how the operating paradigms used in supply chain systems lead to the production of value. To build our framework, instead of exclusively focusing on SFSCs, we used literature pertaining to different areas (supply chain management, marketing, innovation research, organisational and management science, sociology, and political science), thus attempting to sketch the complete picture of the value generation procedure. Such an approach aimed to identify multifunctional processes that lead to value generation and point out key factors allowing different facets of value to emerge through the operation of supply chains. Our choice to provide a general framework depicting the dimensions of value (without exclusively focusing on SFSCs) was guided by two criteria. First, the literature on the dimensions of value creation in SFSCs is limited. Second, both short and "long" supply chains share some common attributes: they are social structures aiming to produce value and satisfy consumers' needs and wants (Thomé et al., 2021) by leveraging the available resources.

The procedure we followed led us to identify two types of value. The first concerns the value emanating from supply chain systems' operation and spreading across the supply chain. To describe it, we use the term "primary value". That type of value emerges through four dimensions of supply chain operation: the managerial, which refers to attributes associated with management approaches and techniques (Ballou et al., 2000); the relational, which includes factors that define how relations are developed within supply chain systems (Hall et al., 2022; Ramanathan & Gunasekaran, 2014); the economic that comprises variables related to the financial performance of a system (Lichocik & Sadowski, 2013; Rahiminezhad Galankashi & Mokhatab Rafiei, 2022); and the organisational facet, which contains elements referring to the organisational styles and mindsets that prevail in a supply chain system (Hsiao et al., 2008; Kim, 2007). These four dimensions form a basis upon which the attempts to create value are built (Figure 4).

The second type of value is produced and diffused beyond the boundaries of the supply chain. To label it, we used the term "secondary value". The relevant literature lends support to a four-dimensional structure that creates the conditions for the production and dissemination of secondary value: a cultural dimension referring to the cultural principles that guide the operation of a supply chain system (Baz et al., 2022; Stone & Glover, 2017); a social

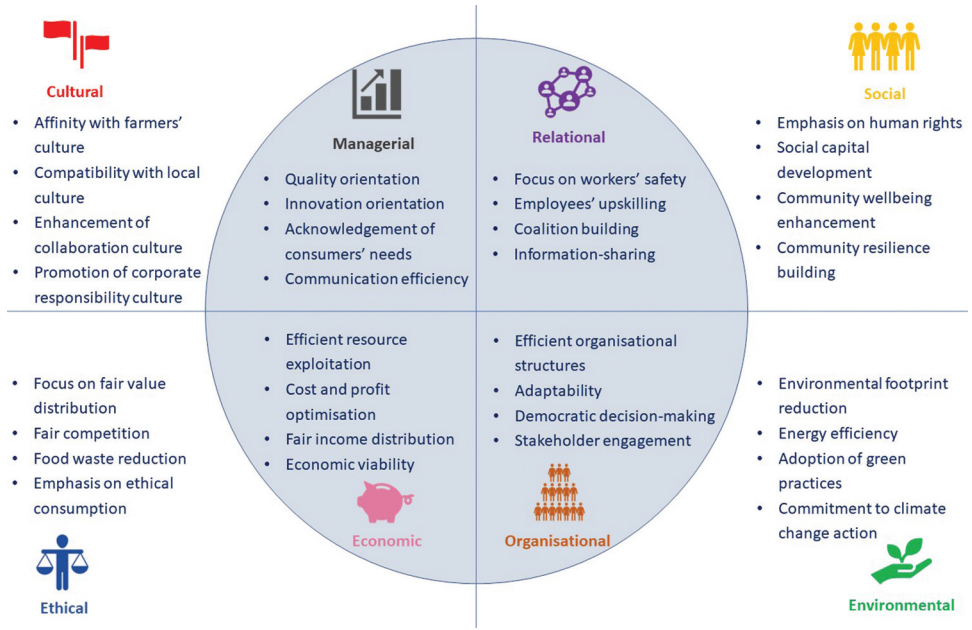

Figure 4. Facets of primary (within the cycle) and secondary value (outside the cycle), and their domains.

dimension, which encompasses social activities and practices that govern the way of doing business within the supply chain (LeBaron & Lister, 2022; Manteghi et al., 2021); the ethical guides and tenets that characterise the operational philosophy of a supply chain (Picasso et al., 2023; Simangunsong et al., 2016); and, finally, the environmental value of supply chains (Marchi et al., 2019; Pederneiras et al., 2022). In the following sections, we present these eight facets of value, detailing the domains that they encompass.

2.2.1. Facets of primary value

Among the four facets of primary value, the first refers to managerial attributes of supply chain systems or their management orientation. To be effective, such a system should emphasise the quality of the products, including both the technical quality, which is a set of characteristics that a product conveys, and the process-related quality, which refers to the approaches, philosophies, and techniques used during production and delivery (Lang & Conroy, 2022; Nilsen-Nygaard et al., 2021). However, product quality is inextricably linked to technological (S. Chen et al., 2020; Rahman et al., 2020) and process innovation (Aguiar et al., 2020; Biénabe et al., 2011). The former type refers to either first-order (those which facilitate the production procedure, like equipment and devices) or second-order technologies (incorporated into the products, like improved crop varieties, smart packaging, etc.), and the latter to novel ways of producing value, such as certification schemes – a strategy used by some SFSCs farmers (González-Azcárate et al., 2022). Hence, a second domain relates to the innovation orientation of a supply chain system.

Another critical parameter is the degree of consumer orientation that characterises each supply chain system (Melkonyan et al., 2019). From a managerial perspective, tailoring production and supply processes to consumer demands and preferences is a decisive parameter for the success of any system (Sijtsema et al., 2004). To achieve such a purpose, developing functional communication channels that permit the two-wave flow of information between food producers and consumers in SFSCs is necessary (Pato, 2020). The information flow across the supply chain, on the one hand, affects supply chain performance (Ahmed et al., 2023), whereas, on the other hand, it represents a key factor for achieving consumer satisfaction (Singh, 1996).

Beyond these managerial attributes, variables defining the relational practices of supply chain systems form a second value facet. The relational facet of our framework refers to the mode of arranging social relationships within a supply chain – an essential feature of short supply schemes (Arthur et al., 2022). The operational performance of a supply chain system depends on the quality of the workforce used. Two crucial preconditions for ensuring that workers can contribute to the targets set by each SFSC are, first, the designing of an environment that secures workers' health (Diabat et al., 2014; Pinto,

2019) and, second, their upskilling through the offering of education and/or training opportunities (Patrucco et al., 2022; Rajesh, 2022). The outer environment considers the partnerships and alliances built with cooperating companies and actors (Kmetec et al., 2019; Yu et al., 2002), and the information-sharing networks that enhance transparency (Brun et al., 2020) and facilitate co-innovation (Bitzer & Bijman, 2015).

The economic facet of value consists of domains related to the financial sustainability of supply chain systems, which, in the case of SFSCs, is a challenging target (Zhang et al., 2019). The first premise of economic viability is the efficient use of the available resources, including both operand and operant resources, to use the distinction made by Vargo and Lusch (2004). The term "operand" refers to natural resources, buildings, and other assets that are essentially static and require other resources (operant) like knowledge, skills, and technologies to produce some results. When efficiently used, these resources offer economic benefits. That is to say, they reduce production costs and/or increase returns. Hence, they can offer the actors involved in short supply chains a fair income, which sustains the economic viability of the chain (Berti & Mulligan, 2016; Charatsari et al., 2020).

Looking at the organisational side of supply chain systems, one can see four attributes that affect their value-generating ability. Starting with the structure upon which a system is built, effectiveness is a pivotal element that determines the capacity of a social entity to evolve and adapt to internal changes and external pressures. Organisational structure speaks of the relations among positions in an organised social unit, subsystems, processes, responsibilities, individuals, groups, and targets pursued (Ahmady et al., 2016; Scott, 1975). When such relations are formed in a way that facilitates collaboration and permits seamless communication between different sub-units, there is a high potential for better performance (Hao et al., 2012). Efficient structures enhance knowledge-sharing behaviours (Gelard et al., 2013), decision speed (S. T. Chen & Chang, 2012), the cultivation and maintenance of an appropriate organisational culture (Janićijević, 2013), and the promotion of ethical behaviours (Ellman & Pezanis-Christou, 2010). Notably, organisational structures are associated with the second domain: organisational learning (Koohborfardhaghighi & Altmann, 2017), which is the ability of an organised system to change and adapt to new situations by acquiring new knowledge (Crossan et al., 1999). Although this attribute of supply chain systems has received limited attention so far, the survival of any organisation depends on its ability to learn and change when external disturbances jeopardise its existence (Evenseth et al., 2022). Recent research confirms the importance of adaptation strategies for SFSCs (Benedek et al., 2022).

Beyond organisational structuring and learning, the decision-making processes followed within supply chain systems also catalyse their performance. In mainstream supply chains, the concentration of power to middle actors

often leads to a centralised decision-making style (Devin & Richards, 2018). Participatory decision-making approaches, on the other hand, represent strategies used by organisations to facilitate goal attainment (Nwanah Chizoba et al., 2019). Hence, one can expect that participative and democratic decision-making, which are often used in SFSCs (Kurtsal et al., 2020), will positively impact supply chain performance. Nevertheless, to plot the course for inclusive decision-making processes, a critical step is the engagement of societal groups that often exert pressures (Saeed & Kersten, 2019) or co-create sustainable evaluation and verification strategies (Gualandris et al., 2015). Such partnerships generate various benefits, ranging from the flow of knowledge to developing reputational capital and attracting new resources (Selsky & Parker, 2005).

2.2.2. Facets of secondary value

The facets outlined in the previous section represent the inner attributes that affect the performance of a supply chain system. In other words, they concern a system's ability to arrange duties, resources, and procedures, thus ensuring the production of primary value. Nevertheless, supply chains are systems embedded in broader social networks, consisting of actors not directly linked with them, including building blocks (products, services, or – in the more general sense – platforms) (Gawer, 2009) or ecosystems (Ketchen et al., 2014), which also interrelate with the society. The connections between supply chains and their external environment allow a secondary value to emerge. Actors not belonging to a supply chain also absorb value from and co-create value with supply chain systems (Lepak et al., 2007).

The distinction between primary and secondary value (the extensions of value beyond a system) (Lioutas et al., 2019) requires the consideration of dimensions intertwined with societal goals and aspirations. As Sinkovics and Archie-Acheampong (2019) explain, even big supply chain players have begun to pay attention to societal needs. Efforts to sustain the production of cultural (Bayraktar & Cömert, 2018), societal (Barrijal et al., 2021), ethical (Turyakira, 2018), and environmental (Llach et al., 2013) value became more and more evident in current business practices, leading to the reorientation of models and modes of thinking adopted by companies and interfirm networks.

In the present framework, the cultural facet includes four domains. The first one refers to respecting farmers' culture. As research has shown, farm culture is a mix of business and family logic (Knook & Turner, 2020) that heavily affects the organisation of food systems (Ang et al., 2021) and often represents a critical differentiation attribute appreciated by consumers, especially in short food supply schemes (Tang et al., 2019). Nevertheless, to effectively produce the desired outcomes, a supply chain system should also meet another criterion: its operating paradigm must be based on

conditions that meet the local culture (Stone & Glover, 2017). The next domain is related to cultivating a collaborative culture, which facilitates actors' engagement in resource integration, communication, and knowledge co-creation activities (Huang et al., 2020). Supply chains are systems in which opportunistic behaviours and over-control tactics appear, threatening cooperation (Bezuidenhout et al., 2012) and putting obstacles to nurturing a culture that supports collaboration (Barratt, 2004). Finally, the fourth domain concerns the creation and maintenance of a corporate responsibility culture, which describes the commitment of involved nodes to sustainably pursue economic development while, in parallel, respecting local communities (Commission of the European Communities, 2001). Such a culture offers a "cooperative advantage", permitting the formation of sustainable partnerships and trust-based transactions (Strand, 2009).

Viewing supply chain systems through a social responsibility lens, some new concerns emerge. To create social value, a supply chain should operate in a manner that respects human rights and labour (Maloni & Brown, 2006). Beyond individual nodes, supply chains are constellations of actors connected not only through economic transactions but, ideally, via socially laden links. The exchange of social resources through such connections, and the consequent development of social capital, facilitate the diffusion of corporate social standards across the chain (Hiß, 2006), spurring the commitment of actors (and chains as social entities) to socially responsible behaviours (Russo & Perrini, 2010). Another essential domain refers to the enhancement of community well-being. As Hattersley and Dixon (2013) explain, supply chains may negatively impact the well-being of various communities, creating – or sustaining – inequalities and putting at risk the livelihoods of poor groups. As a just and fair supply chain system (Vittersø et al., 2019), SFSCs should take actions to prevent such externalities, emphasising the improvement of other community well-being aspects, like the maintenance of the community's social fabric and the increase in its resilience (Fabinyi & Barclay, 2022).

The ethical facet of value represents a pivotal attribute of SFSCs (Sellitto et al., 2018). It is related to the power geometries within supply chains. In the relevant literature, it is more than well-documented that some supply chain players concentrate power by establishing monopolistic or monopsonistic practices (Carolan, 2013). Hence, these actors absorb the main volume of the value produced (Clapp & Scrinis, 2017). The degree to which that value is fairly distributed among farmers and consumers determines the ethical performance of supply chains. At the next level, the creation of an institutional environment that paves the way for fair competition across the chain is necessary. Actors participating in supply chains collaborate while simultaneously competing with each other. Since temptations to compete beyond ethical boundaries can always exist (Paine, 1990), some actors use

competitive practices that exclude or harm the majority of entities involved in supply chain networks (Hultén et al., 2010).

Food waste is another domain of food supply chains' ethical value. It is generated in all the stages of the supply chain, depending on the prevailing standards (Göbel et al., 2015), cosmetic specifications (de Hooge et al., 2018), and the efforts taken by supply chain nodes to reduce the problem (Aschemann-Witzel et al., 2017). Different types of supply chains produce varying levels of food waste. For instance, some scholars support that shorter supply conduits contribute to the reduction of wasted food (Kiss et al., 2019). In addition, the structure of a supply chain and its prevailing logic determine the quality and effectiveness of information provided to consumers and their involvement in actions supporting fair and sustainable marketing, thus contributing to the promotion of ethical consumption (Eden et al., 2008; Hoffmann & Hutter, 2012).

Finally, four domains are related to the environmental value of food supply chain systems. The first considers the environmental footprint of supply chains, which presents a high variability in SFSCs (Loiseau et al., 2020). Being based on – and, often, overusing – natural resources and fossil fuels, food supply chains have considerable environmental impacts (Vidergar et al., 2021). The second refers to the efficiency of energy needed to produce and distribute food products (Mangmeechai, 2016), which depends on the climatic conditions prevailing in the production area and the geographical distance between the places of production and consumption (Wakeland et al., 2012). Many supply chains use a variety of green practices, ranging from climate labels to the exploitation of renewable energy, as strategies for reducing their environmental impacts (Kotzab et al., 2011). The degree to which a supply chain system engages in such practices represents the third domain. Lastly, the actions taken to prevent or mitigate climate change, like, for instance, participating in climate change initiatives (Dahlmann & Roehrich, 2019), forming coalitions for that purpose (Cory et al., 2021), and changing practices in response to global warming (Damert & Baumgartner, 2018), is the fourth domain.

3. Study I

3.1. Overview

The first study aimed to uncover the importance of economic, environmental, and social value for SFSCs' performance, using as a template the TLBMC. In addition, we attempted to assess through simultaneous regressions how value – the central element in Joyce and Paquin's (2016) work – is shaped by the other components of each layer. Our choice to do so was motivated by our willingness to understand which elements of each layer relate to value.

The central premise behind the regressions was that, to produce economic value, an SFSC should exploit the resources at hand, create effective partnerships, enact value-creating activities, build customer relationships, efficiently use market channels, target the appropriate customer segments, and have enough revenues and rational costs. In the same vein, the functional value might depend on the environmental burden created during core production (environmental costs associated with supplies and outsourcing, production processes, and materials used) and post-production activities (distribution, end-of-life, use phase), as well as on the environmental impacts and benefits. Finally, for the social layer, the overall social value might be affected by the sum of social impacts and benefits, the capacity of an SFSC to generate value for stakeholders (local communities, employees, end-users), the prevailing governance structures, as well as the outcomes that extend beyond the supply chain (societal culture, scale of outreach).

After developing the layers of a TLBMC for SFSCs, we created instruments to assess the performance of SFSCs in each component. Then, following a cross-sectional research design, we collected data from Greek farmers who sell their products in SFSCs.

3.2. Methods

3.2.1. Measures

To assess the different components presented in each canvas of the TLBMC, we developed a list of relevant items, creating at least two statements per component. As suggested by Halupa (2021), a panel of experts evaluated the content and face validity of these items, excluding those judged as irrelevant (1 item), hardly understandable (4 items), or potentially unrelated to the components of TLBMC (2 items). After this process, we finally arrived at an instrument consisting of 66 statements (Appendix). To measure respondents' perceptions of the economic, environmental, and social performance of SFSCs, we used a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Likert scales are commonly used to quantify perceptions based on ratings of agreement with subjective responses (Joshi et al., 2015; Sullivan, 2009). Hence, they can depict participants' perceptions of the performance of supply chains per component.

After re-coding the reverse-scored items (thus ensuring that, in all cases, higher scores indicate better performance), we conducted a series of principal component analyses to ensure that items load on the components they were initially classified. For all components, the eigenvalues were higher than the baseline level of 1.0, whereas the explained variance was quite satisfactory (ranging from 60.89% to 86.44% of the original variables). For every component, we averaged items to compute a new variable. Table 1 presents the mean scores and standard deviations for all 27 new variables.

Table 1. Dimensions of the TLBCM: Results of principal component analyses, and summary statistics.

Component	No of Items	Eigenvalue	Explained variance (%)	Cronbach's α	Mean score (S. D.)
Economic layer					
Value proposition	2	1.63	82.17	0.78	3.90 (1.21)
Partners	2	1.48	73.78	0.64	3.04 (0.83)
Activities	3	1.72	57.47	0.58	3.14 (0.89)
Resources	3	2.29	76.30	0.84	2.69 (1.37)
Customer relationships	2	1.44	72.11	0.61	3.11 (0.88)
Channels	3	1.74	57.84	0.63	3.07 (0.94)
Customer segments	3	1.84	61.24	0.68	2.77 (0.90)
Costs	2	1.46	73.16	0.63	2.99 (0.77)
Revenues	2	1.40	7.12	0.57	3.14 (0.91)
Environmental layer					
Functional value	2	1.64	82.01	0.78	3.04 (0.95)
Production	2	1.40	7.18	0.57	3.01 (1.00)
Materials	3	1.66	55.32	0.59	2.96 (0.97)
Supplies and outsourcing	2	1.46	73.22	0.63	2.96 (1.01)
End-of-life	2	1.66	82.81	0.79	3.14 (1.10)
Distribution	2	1.69	84.31	0.81	3.29 (1.07)
Use phase	2	1.71	85.72	0.83	3.19 (0.80)
Environmental impacts	2	1.43	71.46	0.60	3.27 (1.04)
Environmental benefits	2	1.70	84.84	0.82	3.11 (1.07)
Social layer					
Social value	4	2.78	69.36	0.85	3.40 (0.95)
Local communities	3	2.34	78.12	0.86	3.51 (0.96)
Governance	2	1.60	79.86	0.75	3.26 (0.99)
Employees	2	1.59	79.62	0.74	3.47 (0.83)
Societal culture	3	2.17	72.21	0.80	3.15 (0.99)
Scale of outreach	2	1.61	8.63	0.76	3.51 (1.00)
End user	3	1.73	57.82	0.63	3.26 (0.72)
Social impacts	2	1.64	82.18	0.87	3.09 (1.12)
Social benefits	3	2.08	67.24	0.74	3.40 (0.88)

3.2.2. Participants

In total, 35 farmers participated in the study.[1] Among them, 29 (82.9%) were men, 22.9% were university graduates, 28.6% had post-secondary education, 40% were secondary school graduates, and 8.6% had completed only primary education. Most respondents (74.3%) belong to the age cohort of 41–60, and 25.7% were between 21 and 40 years old.

3.2.3. Data analysis plan

To analyse data, we used mean scores, standard deviations, and regression analyses. For each layer, we regressed value (value proposition, functional value, social value) onto the remaining dimensions. In doing so, we

[1]Given the non-interventional nature of the study, ethical approval was not required.

attempted to identify the components that shape value. For all analyses p values lower than or equal to 0.05 were considered statistically significant.

4. Results

4.1. Economic layer

For the economic layer (Table 1), the results indicated that SFSCs have a moderate value proposition ($M = 3.90$). The mean score for revenues was 3.14, while costs yielded a slightly lower mean score ($M = 2.99$). The mean scores for the remaining components ranged from 2.69 for the component "resources" to 3.14 for "activities".

To identify the components associated with the value proposition, we developed a linear regression model (Table 2), adding as independent variables all the remaining elements of the canvas. Through this procedure, we discovered that only activities ($\beta = 0.32$, $p = 0.029$) contribute to the model. The beta coefficient for resources was marginally non-significant ($\beta = 0.34$, $p = 0.058$). These findings show that the effectiveness of the activities performed within the framework of SFSCs catalyses the economic value proposition.

4.2. Environmental layer

Looking at the environmental layer, the mean score of functional value was 3.04, indicating a relatively low environmental performance. Notably, environmental impacts ($M = 3.27$) had a higher mean score than environmental benefits ($M = 3.11$). The distribution component received the highest mean score ($M = 3.29$).

The simultaneous regression performed (Table 3) uncovered the pivotal role of distribution for the functional value of SFSCs by showing that this dimension was the only independent variable having a statistically significant association with the response variable ($\beta = 0.51$, $p = 0.050$). The positive sign

Table 2. Standardised β and t coefficients of the regression performed for the economic layer.

	t	β	p
Constant	0.45		.660
Independent variables			
Partners	0.14	0.02	.893
Activities	2.31	0.32	.029
Resources	1.99	0.34	.058
Customer relationships	0.58	0.09	.570
Channels	0.81	0.15	.426
Customer segments	0.75	0.12	.462
Costs	−1.37	−0.18	.182
Revenues	1.20	0.17	.240

$F = 4.98$, $p = 0.001$, $R^2 = 0.61$.

Table 3. Standardised β and t coefficients of the regression performed for the environmental layer.

	t	β	p
Constant	2.15		.041
Independent variables			
Production	−1.73	−0.28	.095
Materials	−0.26	−0.01	.798
Supplies and outsourcing	0.16	0.03	.871
End-of-life	0.23	0.06	.817
Distribution	2.06	0.51	.050
Use phase	−0.99	−0.18	.330
Environmental impacts	1.49	0.25	.147
Environmental benefits	0.21	0.04	.839

$F = 2.36$, $p = 0.047$, $R^2 = 0.42$.

Table 4. Standardised β and t coefficients of the regression performed for the social layer.

	t	β	p
Constant	0.89		.382
Independent variables			
Local communities	2.29	0.34	.031
Governance	−0.73	−0.14	.471
Employees	0.86	0.12	.399
Societal culture	0.88	0.16	.389
Scale of outreach	2.25	0.41	.033
End user	−1.54	−0.21	.135
Social impacts	−1.62	−0.19	.118
Social benefits	1.94	0.28	.064

$F = 7.24$, $p < 0.001$, $R^2 = 0.69$.

of the beta coefficient reveals that improving distribution within SFSCs can enhance the environmental value of the chain.

4.3. Social layer

Social value had a mean score of 3.40. Social benefits also had a moderate mean score ($M = 3.40$), while for social impacts the score was lower ($M = 3.10$). The ability of SFSCs to diffuse value to local communities ($M = 3.51$) and the scale of outreach of their social impacts ($M = 3.51$) yielded the highest mean scores among the nine components.

As in the previous layers, we regressed social value onto the remaining dimensions of the canvas (Table 4). The positive effects of SFSCs on local communities ($\beta = 0.34$, $p = 0.031$) and their scale of outreach ($\beta = 0.41$, $p = 0.033$) were positively associated with the production of social value. Although social benefits were also found to have a relatively high beta coefficient ($\beta = 0.28$), their contribution to the model was not statistically significant ($p = 0.064$).

5. Study II

5.1. Overview

The aim of our second study was to assess the importance of the domains of value incorporated in our eight-dimension model. To do so, we followed an exploratory quantitative approach. We first developed an instrument for evaluating the importance of each domain included in the framework, adapting the facets of value to the specificities of SFSCs. Given that some items required a broad knowledge of issues associated with short supply chains, we invited experts to complete the research instrument.

We recruited participants in two phases. In the first one, we invited experts from two Greek universities to fill out the questionnaire. Before inviting experts, we set up a series of inclusion criteria to ensure sampling quality. Eligible participants were those who had a solid knowledge base and experience in SFSCs, either through their professional involvement (more than five years of relevant work experience) in such chains or through their scientific expertise (a proven background in research on issues associated with SFSCs organisation and operational management, social relationships between farmers and buyers, consumer behaviour, etc.). By leaning upon persons holding these characteristics, we attempted to collect data from a sample that hosts different types of knowledge, thus permitting a broad and deep reflection of the domains under assessment. In addition, such an approach allowed the combination of varying points of view by involving actors with heterogeneous backgrounds. After identifying and inviting participants, we used a survey administration software to create an electronic version of the questionnaire. The link to the instrument was emailed to candidate participants, and 10 of them returned completed questionnaires.

To increase the sample size, in a second phase, we organised a workshop in which we invited experts meeting the inclusion criteria mentioned above. During that workshop, we administered the same questionnaire to participants ($n = 5$) in a paper-and-pencil form.

5.2. Methods

5.2.1. Measure

To measure the importance of the developed domains for the performance of SFSCs, we generated a list of relevant items (one item per domain). Following the recommendations of DeVellis and Thorpe (2021) and Lamm et al. (2020), after developing the instrument, we conducted a consultation session with experts affiliated with two universities and a non-governmental organisation. The consultation process led to four items for each dimension. To assess the items, respondents used a five-point scale anchored by "of no importance" (1) and "of very high importance" (5). The introductory statement was "Below

you can read some items referring to potential attributes of SFSCs. Please rate how important each one of these attributes is for the performance of SFSCs". Moreover, we used three questions concerning participants' gender, area of expertise, and level of education.

5.2.2. Participants

The data collection process led to 15 completed questionnaires.[2] Participants were academics ($n = 5$), PhD researchers ($n = 3$), senior researchers working in research/university institutes ($n = 2$), and experts not belonging to these categories but having work experience SFSCs ($n = 5$). Among respondents, nine were women (60%), whereas all of them stated that they hold a university degree, with 66.7% of the sample being holders of a PhD degree.

Participants stated varying areas of expertise, directly or indirectly relevant to SFSCs: supply chain management, alternative food networks, agricultural innovation, agricultural extension, digitalisation, food marketing, agrifood economics, and rural sociology.

5.2.3. Data analysis plan

To examine if the items belong to the expected dimensions, we performed a principal component analysis for each quarter of items based on the initial categorisation. The standard criterion for deciding the number of components was to have an eigenvalue greater than 1 (Kaiser, 1960). We also assessed the reliability of each component using Cronbach's alpha. For each set of domains that met the criteria mentioned above (eigenvalue higher than 1, satisfactory reliability coefficient), we calculated a new variable by averaging items' scores. Due to the small sample size, we limited our analysis to descriptive statistics.

6. Results

The analysis revealed that items belong to the expected factors. In all cases, eigenvalues had values higher than one, while no other factors were extracted. Cronbach's alphas for the dimensions of primary value ranged between 0.75 and 0.90 (Table 5). The four dimensions of secondary value (Table 6) had alphas greater than 0.76, indicating good reliability. The proportion of total variance explained by the components ranged from 59.28% to 77.71%.

The results showed that economic value received a higher mean score ($M = 4.23$) than the remaining three facets of primary value. The relational facet yielded a mean score of 3.95, followed by managerial ($M = 3.93$) and organisational components ($M = 3.52$). For the secondary value, the facet referring

[2]Given the non-interventional nature of the study, ethical approval was not required.

Table 5. Principal component analyses coefficients, reliability and descriptive statistics for the dimensions and items referring to primary value of SFSCs.

Domain/items	Eigenvalue	Explained variance	Cronbach's α	Mean score	Standard deviation
Managerial	2.37	59.28%	0.75	3.93	0.76
Prioritises the quality of products				3.93	0.96
Pursues innovation				3.73	1.10
Listens and responds to consumers' needs and wants				4.07	0.88
Uses effective communication channels				4.00	1.07
Relational	3.02	75.40%	0.88	3.95	0.83
Emphasises workers' safety				3.87	0.92
Offers education/training opportunities to employees				3.73	1.16
Develops partnerships and alliances				3.80	0.94
Develops information-sharing networks that promote transparent relations				4.40	0.83
Economic	2.97	74.32%	0.88	4.23	0.63
Uses the available resources in an economically efficient way				4.00	0.85
Operates in a way that minimises costs and maximises profits				4.07	0.80
Offers a fair income to the actors involved				4.40	0.63
Leads to economic viability				4.47	0.64
Organisational	3.11	77.71%	0.90	3.52	1.00
Has an effective organisational structure				3.27	1.16
Is able to change when needed				3.33	1.29
Is built on democratic decision-making processes				3.40	1.12
Engages stakeholders and societal groups				4.07	0.96

Table 6. Principal component analyses coefficients, reliability and descriptive statistics for the dimensions and items referring to secondary value of SFSCs.

Domain/items	Eigenvalue	Explained variance	Cronbach's α	Mean score	Standard deviation
Cultural	2.64	66.03%	0.82	4.03	0.70
Respects farmers' culture(s)				4.47	0.92
Is compatible with the local culture(s)				4.53	0.74
Promotes a culture of collaboration among supply chain nodes				3.67	0.98
Builds and is built on a corporate responsibility culture				3.47	0.83
Social	2.45	61.12%	0.76	4.08	0.71
Respects human rights and workers' health				3.53	1.19
Cultivates social capital among supply chain nodes				3.93	0.96
Promotes community well-being				4.47	0.64
Increases community resilience				4.40	0.83
Ethical	2.52	63.11%	0.80	3.85	0.70
Creates fairly distributed value				4.33	0.62
Is based on fair competitive relations				3.47	1.06
Leads to limited food waste				3.53	0.99
Promotes ethical consumption				4.07	0.80
Environmental	2.64	66.10%	0.82	4.00	0.58
Has a reduced environmental footprint				4.33	0.62
Is energy efficient				3.73	0.70
Uses green practices				4.00	0.85
Contributes to the fight against climate change				3.93	0.70

to social value scored higher than the other components ($M = 4.08$). Nevertheless, two more facets had mean scores equal to or above 4. Those were the cultural ($M = 4.03$) and the environmental component ($M = 4.00$).

Based on these findings, we can divide the facets of value into those of high importance (including components with mean scores equal to or

above 4) and those of inferior importance (with lower mean scores). The first category comprises the economic, social, cultural, and environmental value attributed by respondents to SFSCs. The second consists of the relational, managerial, ethical, and organisational facets of value.

7. Discussion and conclusions

As SFSCs gain momentum worldwide, an important question is how these production and distribution systems produce different types of value, thus approaching their full potential. Value creation is a complex process involving the interplay of actors, resources, activities, contexts, and governance philosophies, to say just a few. In this work, we conducted two studies to portray the types of value emanating within SFSCs.

In our first study, building upon Joyce and Paquin's (2016) TLBMC, we examined how economic, social, and environmental value emerges through the operation of SFSCs. The results indicated a moderate capacity of such supply chains to produce economic and social value, and a relatively low functional value, indicating that wide margins for improving the environmental performance of SFSCs may exist. Albeit flourishing, literature in the field has not yet managed to answer how to make short supply chains more environmentally sustainable.

The regression model for the case of the economic value indicates that the value proposition of SFSCs depends on the effectiveness of operational activities that are carried out within their framework. This observation raises an intriguing question for future researchers: how can we improve the effectiveness of the production activities in SFSCs? Technological innovation can be a solution since it can help producers better organise and monitor the production process (Cricelli et al., 2023). However, the adoption of novel technologies by SFSCs farmers is complicated due to technical and cultural constraints (Lioutas & Charatsari, 2020).

The analysis for the environmental layer proved that the distribution dimension is an essential precursor of short supply chains' functional value, while no other variable contributed to the model. Studies assessing the environmental performance of SFSCs also suggest that, despite being short, these supply chains generate a considerable carbon footprint during the distribution of products (Loiseau et al., 2020; Malak-Rawlikowska et al., 2019). A challenging task for scholars in the field is to uncover ways to minimise the environmental impact of the distribution phase.

In addition, in contributing to the discussion of social value production within SFSCs (Connolly et al., 2022; Rogers & Fraszczak, 2014), the analysis revealed that the social value of such schemes depends on their ability to produce value for local communities and the depth of their outreach. In supporting previous research (Mundler & Laughrea, 2016; Vittersø et al.,

2019), our results suggest that community well-being plays a critical role in the social value produced within SFSCs. Nevertheless, a pivotal question that the present work opens up is how to broaden the outreach of short supply schemes beyond local contexts.

In our second study, using data from supply chain experts, we evaluated the importance of the different facets of value produced through the operation of SFSCs for the performance of these chains. The eight-dimensional conceptual blueprint that we designed was used as a template to operationalise the facets of value. Instead of using only the three value dimensions incorporated into the TLBMC, we added facets referring to managerial, relational, and organisational value (belonging, along with the economic facet, to the value that is generated and remains within SFSCs), as well as the ethical and cultural value (which, as a set with environmental and social value, represent the value that extends the boundaries of SFSCs).

The data provided good support for the existence of the eight dimensions depicted in our framework. Our analysis points out the magnitude of economic value, supporting Malak-Rawlikowska et al. (2019) and Mancini et al. (2019) and stressing that the efficient use and fair distribution of economic resources generate value for SFSCs. Moreover, the results demonstrated the high importance of social (Connolly et al., 2022; Partalidou, 2013; Schmutz et al., 2018) and environmental (Bui et al., 2021; Giampietri et al., 2018) value for the performance of SFSCs. By producing positive societal and environmental outcomes, these food distribution schemes gain consumers' acceptance (Kallas et al., 2019), thus sustaining their existence.

However, it is worth mentioning that cultural value also holds a high position in the hierarchy of dimensions. Notably, the cultural dimension of value is underrepresented in SFSCs-related research, in spite of the connection between culture and the "alternativeness" of such supply chains (Schmutz et al., 2018; Sellitto et al., 2018; Tanasă, 2014). Our findings call for further research on how the cultural value of SFSCs – as expressed through the compatibility of these chains with local and farmers' cultural backgrounds, or their ability to instil a collaboration and responsibility-promoting culture – interplays with the other facets of value, sustaining the capacity of SFSCs to produce positive outcomes.

At that point, we should mention some limitations to our work. First, both studies – especially Study II – relied on data from small samples. That limitation did not allow the employment of inferential statistics in Study II, thus not permitting us to test for statistically significant differences between the facets of value. Moreover, replications are needed to confirm the results of the regressions performed in the framework of Study I in larger samples. Nevertheless, it should be mentioned that the sample size used in that study (35 farmers) exceeds the minimum recommended size of 25 observations for regression analyses (Jenkins et al., 2020) and offers adequate

statistical power (based on Statistical Power Calculator – Soper, 2016). Second, the reliability coefficients for some of the TLBMC components (Study I) received relatively low – yet still acceptable (Taber, 2018) – values. That can be attributed to the limited number of items used for these components. Third, the geographical coverage of the studies was limited since we focused on Greek SFSCs. Studies in other countries can add to the knowledge produced through the present work.

However, despite these limitations, our work makes several contributions to the study of SFSCs. From a practical point of view, it confirms the prominence of economic, social, and environmental value for short supply schemes. However, it also reveals the importance of cultural value for their performance. Moreover, our results underline the need to enhance the environmental performance of SFSCs, by paying particular attention to the environmental burden produced during the distribution of products. Concerning economic value, a priority for both researchers and policymakers should be to seek ways to improve the effectiveness of production activities. Additionally, our work lends support to the literature emphasising the role of local communities in the success of SFSCs, indicating that the ability of such schemes to generate advantages for local communities catalyses their value-generating capacity.

From a theoretical standpoint, our article sketches a new conceptual framework for rating the importance of different primary and secondary value dimensions. The research community can exploit it to depict the facets of value emanating through the operation of varying supply chains, ranging from local and shorter supply chains to global food supply chain systems. For instance, recent work suggests that social value in longer (Hoang et al., 2023) or circular food supply chains (Lavelli, 2021) may have different precursors than those identified in our studies. Examining the dimensions of value and their antecedents for "conventional" or "alternative" supply chains was beyond the scope of our studies. Other studies might focus on such supply chain systems, using our conceptual and methodological approaches as a foundation. Moreover, a promising avenue for future research could be to link our framework to the concept of value chains since they share some common theoretical premises (de Vries et al., 2023; Nyokabi et al., 2023).

Another contribution of our work lies in using the business model canvas to illuminate how value is produced. To the best of our knowledge, this is the first attempt to quantify the components of the TLBMC model and identify the antecedents of value propositions, functional value, and social value. In our view, this approach affords new paths for understanding the dynamics of agrifood supply chains, and, therefore, it can be helpful for researchers. Constructing canvases for other facets (e.g. cultural value) can open up opportunities for better conceptualising the value creation process within SFSCs. The TLBMC could also be a valuable tool for understanding how value

is created in other types of supply chains. We leave these tasks to other scholars. In the present work, we attempted to bridge a gap in the literature by uncovering how SFSCs generate different facets of value. We hope that the reflections presented in our article will serve as a theoretical and empirical basis for guiding future research in this area.

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Appendix

Table A1. Components of the TLBMC and relevant items.

Component	Items
Economic layer	
Value proposition	*are able to offer high quality agrifood products, produced by local farmers; attract consumer interest*
Partners	*are based on functional collaborations between farmers and suppliers of seeds, pesticides, fertilisers; are based on functional collaborations between farmers and suppliers of services (e.g. farm advisors)*
Activities	*are characterised by high production effectiveness; use effective selling strategies; use effective storage practices*
Resources	*are based on the effective use of land, labour, and capital; are based on robust relationships between farmers and local communities; exploit authentic farmers' knowledge*
Customer relationships	*are characterised by strong relationships between farmers and local buyers/local stores; offer personalised production when requested*
Customer segments	*target effectively households from the local community; target effectively local restaurants; target effectively schools or elderly houses*
Channels	*distribute effectively products through farmers markets; distribute effectively products through on-farm sales; distribute effectively products through food boxes*
Costs	*have low production cost at the farm level; have a low transportation cost for the products delivery to farmers' markets; have high costs due to the compliance with rigorous quality standards*†*
Revenues	*offer high revenues to producers; permit farmers to sell high quantities of products*
Environmental layer	
Functional value	*have a low environmental footprint per unit of product sold in farmers' markets; have a low environmental footprint per unit of product sold through channels like local stores or on-farm sales*
Production	*have a low environmental burden due to farm machinery used; are based on efficient energy use at the farm level*
Materials	*use agricultural supplies (seeds, fertilisers and pesticides) that do not harm the environment; use irrigation water prudently; make limited use of farm equipment*
Supplies and outsourcing	*use farm machinery that requires high amounts of energy to be produced*; use low amounts of electricity (e.g. for product storage)*
End-of-life	*produce no environmental impacts due to products disposal; contribute to the reduction of food waste*
Distribution	*are based on small-scale (local) transportation that does not harm the environment; use environmentally friendly or no packaging*
Use phase	*require high amounts of energy for meal preparation (home- or restaurant-cooking)*; consume high amounts of water for products washing**
Environmental impacts	*have high environmental impact due to the production process*; have low environmental impact due to the distribution philosophy used*
Environmental benefits	*reduce the food miles (the distance between producers and consumers), with positive environmental effects; reduce food waste through better production planning*
Social layer	
Social value	*promote local consumption; create social capital; contribute to the development of sustainable communities; help preserving local traditions and cultures*
Local communities	*enhance intra-community relationships; strengthen the sense of community in farmers and consumers; facilitate the development of trust between community members*
Governance	*are based on farmer-centric governance schemes; permit the seamless flow of information between farmers and consumers*

(*Continued*)

Table A1. (Continued).

Component	Items
Employees	*offer opportunities for women's entrepreneurial action; occupy customer-oriented employees*
Societal culture	*promote a culture of belongingness; promote citizenship culture; promote social support*
Scale of outreach	*offer important benefits to local communities; offer many benefits to local communities*
End user	*offer agrifood products personalised to consumers' wants and needs; offer extra services to consumers; provide consumers with information on the production methods*
Social impacts	*cannot prevent opportunistic behaviours*; cannot fully utilise local resources**
Social benefits	*promote intra-community collaboration; facilitate the development of human resources within the community; offer farmers independence from mainstream market channels*

Items endorse the statement "sort food supply chains in my region . . . ". Negatively worded items are marked with an asterisk. An item (marked with †) was eliminated during the analysis.