

Article

Multi-Actor Social Networks: A Social Practice Approach to Understanding Food Hubs

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Abstract: Food hubs are collaborative entities that strategically manage the assemblage, delivery, and promotion of food from a range of local food producers. They are essentially multi-actor institutions, involving horizontal collaboration between producers and vertical collaborations up and down the food chain, involving all actors required to bring food products from producers to consumers. Although food hubs offer many advantages to both producers and consumers, they remain a recognisably neglected research topic in Europe. Furthermore, the strategic networks of actors involved in these collaborative entities is often overlooked. Empirically, this study draws from a collection of ‘good practices’ gathered for the Short Supply Chain Knowledge and Innovation Network (SKIN) EU-funded H2020 project. Drawing on a social practice approach and network diagrams, this article explores the good practices of three food hub typologies. This study primarily investigates the context in which food hubs practice multi-actor food provision. We apply social practice as a lens to ‘zoom in’ and explore the shared materials, meanings and skills that aid such systems of provision. Social network diagrams are utilised to ‘zoom out’ to examine and facilitate the detection of key actors involved in food hubs’ strategic networks. This research addresses the lack of academic attention on European food hubs by placing practice as the central unit of focus. Our approach enables better comprehension of what constitutes a short food supply chain (SFSC) when orchestrated within three main typologies of food hubs. The findings are of interest to researchers, policy makers, agricultural development intermediaries, and actors involved in systems of food provision who are interested in understanding and supporting the functioning of SFSCs.

Keywords: short food supply chains; food hubs; alternative food networks; intermediaries; collaboration; multi-actor



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1. Introduction

Throughout the twentieth century, the food system underwent significant modernisation and structural change which consolidated power towards powerful actors such as large processors and retailers [1]. Farmers, i.e., primary producers, consequently have decreasing autonomy coupled with attaining a lower portion of the total added value of their produce [2]. Long and complicated supply chains between primary producers and consumers are therefore considered ‘conventional’ as they represent the dominant production system in the developed world [1].

Short food supply chains (SFSCs) are essential to the ‘alternative’ food movement discourse, which challenges the conventional food system and seeks to pursue more sustainable models of food production, economically, socially and environmentally. Current strategies of the European Commission (EC) and the United Nations Food and Agriculture Organisation (UNFAO) place considerable emphases on the capacity of SFSCs, as systems-based interventions, to support food security and the economic, social and environmental aspects of sustainability [3,4]. The conceptual foundations of SFSCs stem from Marsden et al. [5] and later Renting et al. [6]. SFSCs shift food production from the

conventional paradigm by creating short chains that enable small food producers to capture a higher proportion of value added. Short chains also facilitate more proximate transactions between food producers and consumers, creating environmental benefits and contributing to more resilient local food systems [7].

A commonly used discriminating factor to define SFCS is the sum of intermediaries between producer and consumer. For instance, the European Innovation Partnership for Agriculture and Innovation (EIP-AGRI) states that SFSCs are characterised by a maximum of one intermediary between producer and consumer [8,9]. In a EU context, a SFSC is defined less restrictively within Regulation (EU) No. 1305/2013 (Article 2) as “a supply chain involving a limited number of economic operators, committed to cooperation, local economic development, and close geographical and social relations between producers, processors and consumers” [10]. SFSC relations encourage the dissemination of knowledge, values, and meaning about a product and its provenance [11]. Short chains are therefore assemblages of practices, learnings, habits, and visions that aim to reconfigure the dynamic of the conventional system [12].

1.1. Food Hubs

SFSCs are reliant upon actors mobilising a multitude of resources: knowledge, finance, labour, logistics etc. However, a considerable hurdle to SFSCs are the scale deficiencies experienced by small food producers [13]. Food hubs are increasingly emerging as innovative intermediary institutions, responding to barriers faced by single entity actors. They are defined as “an intermediary organisation or business which works as the supply chain manager and provides a logistical and organisational platform for the aggregation and distribution of source-identified food products from local and regional producers to both wholesale buyers (institutions, food service firms—restaurant, hotel, pubs, etc.—retail outlets) and end consumers (individuals and groups)” [14] (p. 22).

Food hubs, therefore, exemplify partnerships between agri-food sector actors along the supply chain. Hubs consequently serve as a coordinating intermediary between producers and customers and coalesce their common interests where food systems are concerned [15]. The food hub is the activator and animator of what Berti and Mulligan define as its ‘strategic network’ [14]. This strategic network encompasses all the actors involved, from food producers to consumers, who collaborate at different levels. Food hubs, thereby, must take a proactive approach in fostering and nurturing their respective strategic networks.

Cleveland et al. argue that food hubs have the capacity to capture many of the benefits of alternative direct marketing (such as harnessing greater profits) and mainstreaming large-scale distribution systems (such as cost efficiencies and offering greater choice to consumers), while minimising the sustainability disadvantages of each [16]. Food hubs provide some of the following features to food producers: logistics, marketing, adding value to products, producer consultancy services, and innovation brokering [14]. Logistical functions include warehousing and transport, reducing transport costs, especially those associated with the cold chain [17]. Marketing involves seeking markets for producers as well as consumers. Value can be added to produce in a variety of manners such as labelling, washing and bottling [14,17]. In some cases, food hubs act as consultants and innovation brokers by offering training in new practices and technologies and by facilitating connections between actors [14]. By providing such functions, food hubs are able to meet the demands of producers and consumers simultaneously. Nevertheless, food hubs are faced with the challenge of accommodating both the ‘life world rationalities’ of consumers (cultural knowledges, social norms and individual attributes) as well as the ‘system rationalities’ (money, success and prestige attained via the agri-food system), which is of importance to all actors involved in the chain, from producers to consumers [18].

Food hubs can be classified into distinct typologies depending on their functions and scope. Narrow classification assessments define function, purpose, product type, ownership, scale, and legal structure as just some of the many defining features in which hubs can be categorised [19,20]. Broader food hub typologies are based upon operational

models which fall under three groupings: direct-to-consumer models, farm-to-business models, and hybrid models [15,21,22]. Direct-to-consumer models typically depict hubs where products are sourced from producers and sold to consumers who pay in advance; box schemes are a common type of platform in which such sales occur. Farm-to-business models describe food hubs that connect farmers and food producers to larger-scale actor intermediaries such as restaurants, schools, or retailers. These buyer-to-buyer (B2B) operations aggregate products and produce from food producers, prepares them for delivery to larger-scale actors and finally, manages delivery. The hybrid food hub incorporates aspects of both the direct and B2B typologies [15,21,22]. They sell directly to consumers but also develop relationships with other intermediaries to enhance and expand operations [21,22].

Food hubs have the capability to increase the ability of food producers to participate in SFSCs while also providing consumers with a greater array of products. However, food hubs have received little attention in academic and policy circles. Berti and Mulligan [14], Manikas et al. [17], and Sgroi and Marino [21] all stress that in a European context more research is necessary on the operations of food hubs to ensure that successful approaches are shared. Indeed, research can enlighten stakeholders of the critical success factors of these collaborative multi-actor organisations [17]. Of the research that has been conducted most concentrates explicitly on the functions of hubs with markedly less focus on their strategic networks [14]. Such research can inform strategies to promote the development and success of such enterprises.

Therefore, the purpose of this study is to exemplify selected ‘good practices’ of the three different models of food hubs based in Western Europe: a direct-to-consumer model, a B2B model, and a hybrid model. This study identifies critical success factors in terms of food provision as well as strategic networks. This research elaborates on findings of empirical investigations conducted within the EU-funded H2020 project, Short Supply Chain Knowledge and Innovation Network (SKIN). The project identified specific ‘good practices’ pertaining to SFSCs. Numerous innovative examples of good practices relating to food hubs were collected during project activities. We use a social practice based approach and social network diagrams to examine food hub good practices regarding food provision.

1.2. Social Practice and Strategic Networks

As the SKIN Thematic Network focused on good practices, it is important that we firstly define what is a practice. A practice is a site of socially organised agency. A practice according to Reckwitz is “a pattern which can be filled out by a multitude of single and often unique actions reproducing the practice” [23] (p. 250). They usually form ‘bundles’ of practices that accompany, assist, or contest one another [24]. Practices are ‘social practices’ when they involve the actions of people conducting activities together [23]. The actors and actions involved often emerge from an existing network of relationships and mutual dependencies [25]. Social practice approaches attempt to understand the processes implicated in how societies prevail and develop or fail to develop, forming an important part of the sustainability literature [26]. A social practice approach subsequently allows for a broad perspective of how food provision is mobilised by actors’ collective actions in SFSCs [27–29], and in turn food hubs.

The ‘three-elements’ approach of Shove et al. depicts how practices are comprised of materials (stuff, technology), meanings (images, symbols), and skills (forms of competence, procedures) [30]. Food hubs, conceptualised as social practices, are not monolithic entities; rather they are sustained by the collaborative engagement of various diverse, actors [23]. A social practice approach is thereby a suitable concept for studying food hub good practice as it is capable of exploring both the social and practice elements of provision [31,32].

While a social practice approach is useful as a lens to illuminate the operations of food hubs, it is criticised for downplaying wider social structures that frame social practices [33–35]. Thereby, somewhat neglecting concepts such as strategic networks. Renting et al. denote that “SFSCs are not the results of some kind of external, elusive ‘free market’. They instead arise from the proactive development of networks by various ac-

tors in the agrofood chain, such as farmers, food processors, wholesalers, retailers and consumers" [6] (p. 399). This study therefore investigates the bundles of practices that constitute food provision via food hubs and the broad arrangements involved, i.e., their strategic networks. A strategic network connects all aspects of the producer-consumer chain and encompasses production, transport, and selling points [14].

Current research regarding food hubs have not sufficiently studied the strategic networks that ground their context [14,17]. Understanding the structures and patterns of how the elements are embedded in everyday food provision practices of SFSC food hubs enables learning of sustainable transition models alternative to conventional food chains [31].

2. Materials and Methods

2.1. Collection of Good Practices

The SKIN consortium involved 21 partners in 15 European countries. The project operated from 2016 to 2019 and was built around a multi-actor team, including sociologists, economists, agricultural consultants, communications professionals, farmers' associations, and digital innovators. The breath of expertise from the range of professions and disciplines was advantageous as the diversity of SKIN partners overcame biases rooted in any one discipline or profession.

SKIN tackled the evident deficiencies in knowledge between farmer, consumers, and other stakeholders in the agri-food chain. The project was a H2020 Thematic Network, i.e., a multi-actor project which collected existing knowledge and good practices on a given theme to make it available in easily understandable formats for end users such as farmers, advisors and others.

Empirically, this research is derived from a selection of good practices relating to food hubs collected for the SKIN project. The gathering and promotion of good practices concerning agriculture is a prevalent strategy in Horizon 2020 projects in an effort to foster innovation. Good practices refer to practices that [36,37]:

- Are conducted with beneficial outcomes;
- Contribute to the enhanced performance of an entity;
- Are easily transferrable from one context to another.

In total, 155 good practices were collected through the lifetime of the project and encompassed all types of SFSCs (not explicitly food hubs). Partners of the project chiefly collected good practices from SFSCs from their respective countries. Nonetheless, good practices were also identified in other nations such as Armenia, Bosnia and Herzegovina, and Bulgaria. The location of all European good practices collected are illustrated in Figure 1. Of the 155 good practices, 18 can be categorised as food hubs. The information gathered for this study represents the state of play of the food hubs at a particular period during the lifetime of the SKIN project (2018).

Documenting good practices pertaining to food hubs serves to emphasise their pedagogical role in fostering innovative practices in a wider European environment. The terminology of 'good' instead of 'best' practice draws consideration to the fact that best practices are not always 'best' in other contexts i.e., they are not universally 'best' [36–38]. A template for detailing good practices was established that incorporated the agricultural EIP-AGRI format for documenting a 'practice abstract'. EIP-AGRI practice abstract templates are widely used by H2020 projects to capture valuable information for end-users in an easily accessible manner. The SKIN template expanded the EIP-AGRI practice abstract template in an effort to explicitly investigate SFSCs. This study follows a research approach of 'zooming in' on characteristics of practices, and 'zooming out' on their embedded context by demonstrating how these practices are dependent in strategic social networks [25,39–41].

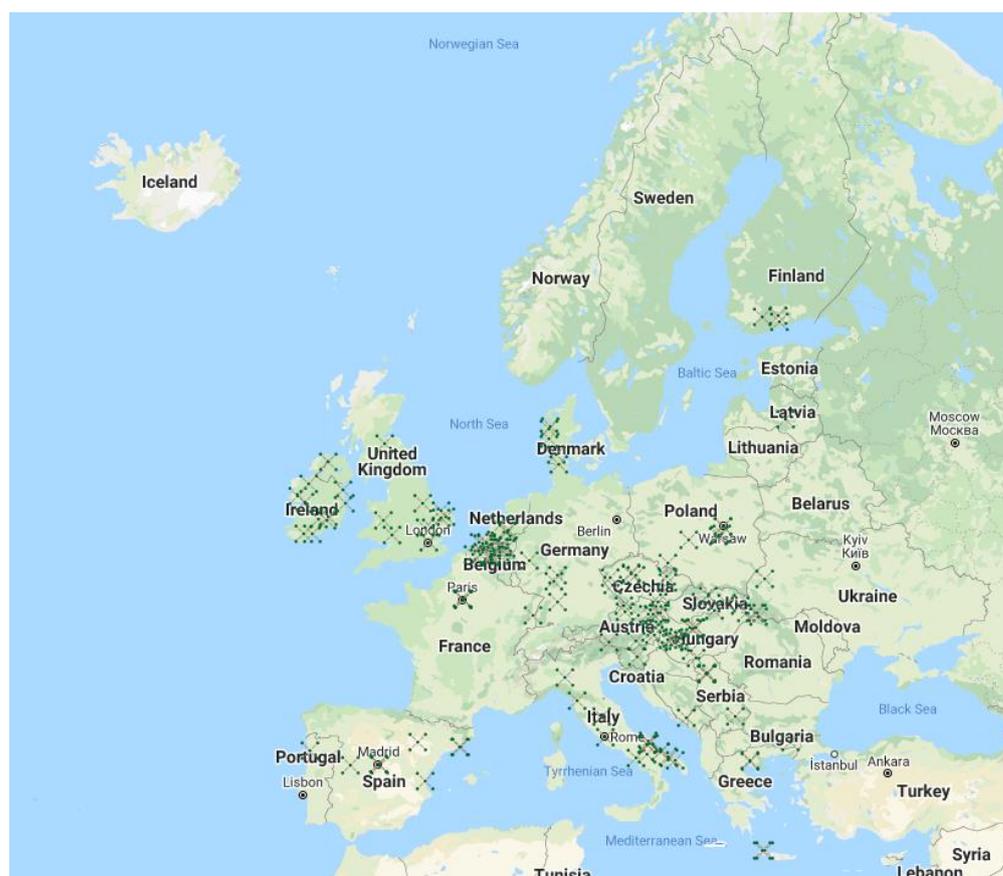


Figure 1. Geographical locations of SFSC good practices collected for the SKIN H2020 Thematic Network.

2.2. Assessing the Elements of Good Practice Using a Social Practice Approach

Meanings, skills, and materials were used as a lens to illuminate social practices employed in food provision, by analysing data collected by the SKIN project. Initially, it was not anticipated that the data collected for SKIN good practices would be subject to social practice assessments. Secondary data, in the form of documentary analysis (e.g., websites, newspaper interviews and reports), served to provide further insights to data gathered by project partners [42]. Secondary data are commonly utilised, often entirely, for analysis of social practices [42–44]. Indeed, it is one of the three methods advocated by Bueger [45].

Figure 2 illustrates schematically how good practices were categorised by the SKIN project. When project partners collected a good practice, they specified in the prescribed template what key themes (known as ‘Hot Topics’, the central column in the diagram) the good practice corresponds to. A good practice could align with any number of key themes. For the purposes of this study, the key themes identified were helpful anchors to identify some of the more prominent bundles of materials, meanings, and skills employed by the food hubs with respect to food provision. All three elements merge to inspire, support, or oppose practices [46]. Practices therefore come into existence when linkages are fostered between the three elements, but they may disappear if the links between the elements are broken [47]. This study investigates the bundles of practices underpinning food provision by the food hubs.

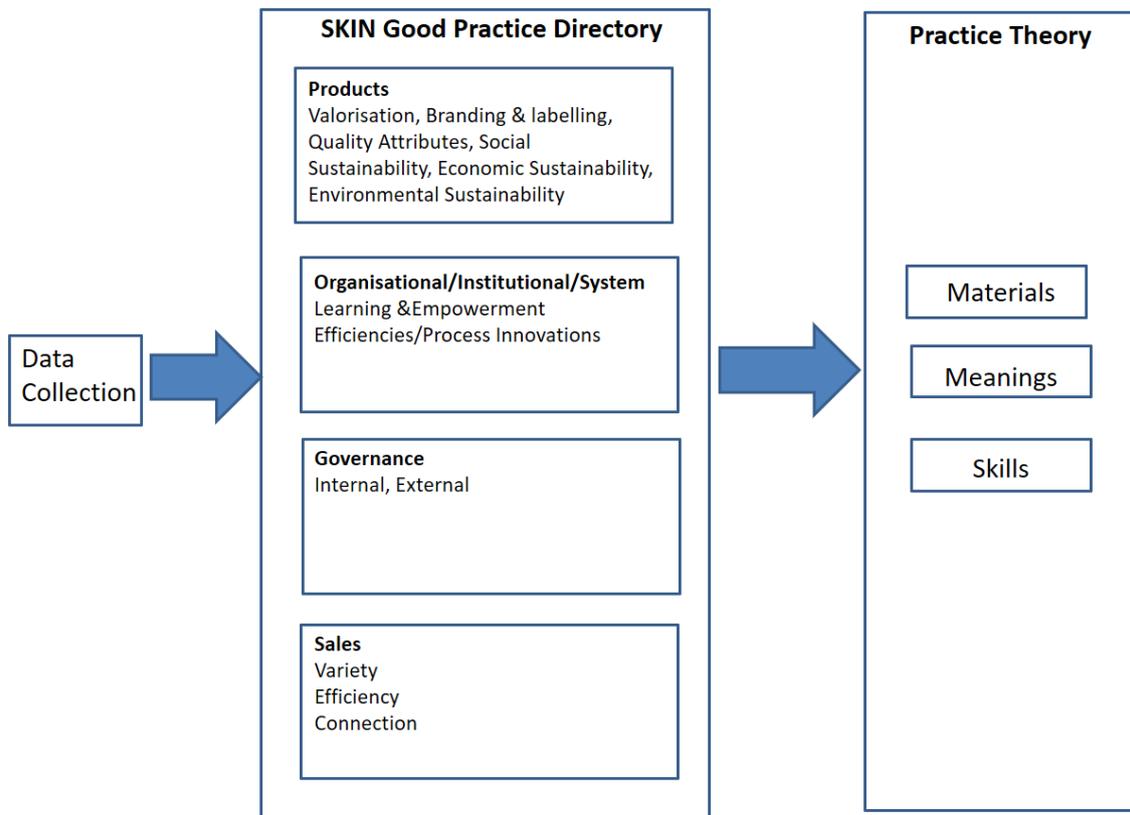


Figure 2. The SKIN Good Practices Directory, used to structure and analyse practice theory.

2.3. Depicting Strategic Networks Using Social Network Diagrams

From a social practice approach perspective, individuals and their social networks help or hinder the formation of practices [48]. Practices are structured by the types of actors who execute them [49]. It is thereby important to consider the relationships which facilitate practices [25].

Network visualisations were therefore used to facilitate a more engaged interpretation and understanding of relationships [50]. Graphical representations of these strategic networks were used to investigate complex relationships and, in the wider context of the SKIN Thematic Network, to communicate good practices by means of a ‘visual argument’ [51]. It is from this perspective that Birdsell and Groake assert that visual arguments are useful as they “convey information much more directly and effectively (and convincingly) than verbal claims” [52] (p. 108). In most instances, such as in the collection of SKIN good practices, such arguments employ both images (e.g., network diagrams) and narratives to combine the advantages of two compelling mediums of communication.

To assess the multi-actor strategic networks involved in food hubs, a visual network analysis was performed [53,54]. Visual network analysis involves collecting and coding relational data, visualising network diagrams, and interpretation in the form of narrative [55]. Visual network analysis differs from Social Network Analysis as it is not focused on statistical assessments of networks [53]. This study used the approach of Decuyper in using network diagrams as a tool to present (rather than represent) how social practices pertaining to food hubs are relationally composed by a multitude of different actors [55]. Network diagrams were hence an appropriate instrument to divulge and highlight the relational complexities that exist within food hubs. A ‘connectionist’ approach was adopted, which concentrates on the ‘flows’ between actors (rather than a structuralist methodology focused on structural patterns) [56]. Using a connectionist approach, actors are clearly identified along with flows of products and resources [57] (Table 1).

Table 1. Examples of interactions and flows that can be captured using social network diagrams [57,58].

Examples of Interactions	Examples of Flows
Co-ordination (actors undertaking independent actions, but consulting with each other in to avoid conflict or duplication)	Information (discourses and the receipt and delivery of technical information)
Co-operation (common strategic actions taken with regard to shared aspirations)	Financial resources (funding and control and channelling of financial resources)
Conflict (disagreements or confrontations)	Human capital (amalgamation and cooperation of human capacities, and inter-sectoral human endeavours)
Control (supervision and ownership of projects and decision-making in relation to the use of resources)	Tangible resources (receiving, delivering, sharing of resources such as equipment, facilities, transport)
Competition (competing for limited resources)	

Each food hub's strategic network (system of provision) is represented via a sociography, which is a visual representation of the interactions and flows of a food hub. For this study, an ego-centric approach, which focuses on the network that surrounds an actor, was deemed most appropriate. An ego-centric network is defined from the perspective of a focal actor, who is recognised as the 'ego' [59]. Ego-centric networks elicit a greater understanding of the function of a core entity within a network rather than assessing the whole network [60]. Gephi version 0.92 (<https://gephi.org>; last accessed 14 December 2021), a visualisation software for networks, was used to visualise food hubs strategic networks collected by the SKIN consortium. This was advantageous to SKIN as the diagrams could be used by the project to increase end-user engagement as they provided visual context of how the practice manifests itself. Project partners were provided with online training and guidelines for collecting data, enabling them to conduct informative interviews to collect social network data. Considering the end-user learner (farmers, primary producers, food chain actors etc.) suitable network visualisations with appropriate information content were generated [61].

A semantic approach was adopted, where nodes and links represent different the actors and relationships, respectively, of a food hub's strategic network [62]. The significance of a systematic visual presentation led to the decision to have just one researcher responsible for creating the social network diagrams. A visual ontology was created to manage complexity and allow for comparisons across cases. The aim of ontology-based visualisations are to demonstrate the actors involved and their relationships rather than discover the structural properties of the network [62]. The ontology determined the defined colours representing the elements and the manner of their placement in the diagram. This enabled the diagrams to be more interpretable [63]. The diagrams are used to facilitate the detection of actors involved as well as aiding the examination of the material context in which food is sourced and supplied (i.e., systems of provision). The approach allows practice insights to be gleaned using a graphical format that is not overly reductive [64].

2.4. Case Studies

The concept of food hubs was approached with a multiple case study strategy [65]. Multiple cases are sometimes, depending on the aims of a study, regarded as more robust than single case studies as comparisons across cases can foster greater consideration of contexts [66]. A heterogeneity sampling approach was adopted with the view of selecting cases of food hubs differing in terms of typology (i.e., a direct-to-consumer model, a B2B model, and a hybrid model) [67]. Stake's [68] (p. 4) method for selecting cases was followed in that "the first criterion should be to maximise what we can learn". Case study

methodology is defined, relevant to this study, as “an intensive study of one or a small number of business networks, where multiple sources of evidence are used to develop a holistic description of the network and where the network refers to a set of companies (and potentially other organisations) connected to each other for the purpose of doing business” [69] (p. 1286).

A multiple case study approach is consequently adopted to access heterogeneous examples of European food hubs. We apply social practice as a lens to ‘zoom in’ and explore bundles of materials, meanings and skills evident in food provision by the hubs. Furthermore, we use social network diagrams to ‘zoom out’ to examine and facilitate the detection of strategic networks [25].

3. Results

The European countries where the selected SFSCs are located reflect a particular set of socio-economic contexts with potential for difference where norms about what constitutes a food hub are concerned. All three of the food hubs analyses are located in North Western Europe: Belgium, Ireland, and the Netherlands. They each represent a different typology of food hub models and associated constellations of the bundles of practice involved in food provision. In this section we focus on the provision of produce by food hubs and depict the associated materials, meanings, and competencies. In the strategic network diagrams, purple circles denote primary producers who are labelled according to the type of products they produce. The anticlockwise direction of the edges (links/relationships) from producer’s farms to the central node signifies that produce is provided to the food hub (i.e., turkey, beef, lamb, pork, vegetables, fish, etc.). Conversely, the clockwise direction of the edges denotes the flow of products from the food hub to the consumer. This research represents the food hubs as they operated in 2018 when they were studied for the SKIN project (2016–2019).

3.1. A Hybrid Food Hub Model: Larder 360 (Ireland)

Larder 360 is a hub in Ireland that was initially established by a number of farmers keen to increase the availability of their produce. Once the hub had been established they became successful in recruiting other farmers and food producers. The enterprise also offers consumers some products from outside of Ireland through their relationship with a specialist retailer. It represents a hybrid model of food hub as it sources from a number of other intermediaries, such as the Traditional Cheese Company, who supply them with products. The strategic network diagram illustrates the main actors involved in the system of provision, where Larder 360 source produce from local and non-local sources (Figure 3). The main actors involved are two farming enterprises; The Friendly Farmer (a poultry farmer), and Castlemine Farm (a mixed livestock farm) who both established and run the food hub. Complementing meat products are vegetables provided by another independent SFSC, Green Earth Organics, who operate their own box scheme but also supply Larder 360. The cheese distributor, The Traditional Cheese Company, supplies cheese from a number of artisanal Irish cheese makers. Many of the non-SFSC products provided come from a specialist retailer, thereby enabling the food hub to offer an impressive array of produce. Further involved in the multi-actor system are a number of enterprises who have taken part in the “Food Academy”, a national training programme aimed at supporting and nurturing start-up food businesses.

Materials: The two farming enterprises who established the hub produce poultry and red meat, respectively. The number of products exceeds 150 and ranges in variety from lamb, pork, and fish to coffee. Larder 360 was developed to operate as an entity that merged the resources of many. Rather than each farmer establishing their own website, the Larder360 online platform enabled local producers to become more visible and accessible. Food produce is delivered to its depot, where Larder 360 assembles the specific consumer food boxes. Consumers use the Larder 360 website to select products they wish to receive. The food hub deliveries are confined to a relatively small area and occur twice a week.

Larder 360 delivers to the workplace as well as the home to offer extra convenience to consumers. Orders are delivered in specialised chilled cooler boxes which ensures produce stays fresh for 24 h. Furthermore, meat orders arrive vacuum packed by suppliers to eliminate spillage and to ensure quality. The specialised cooler boxes are collected from the same location the following week.

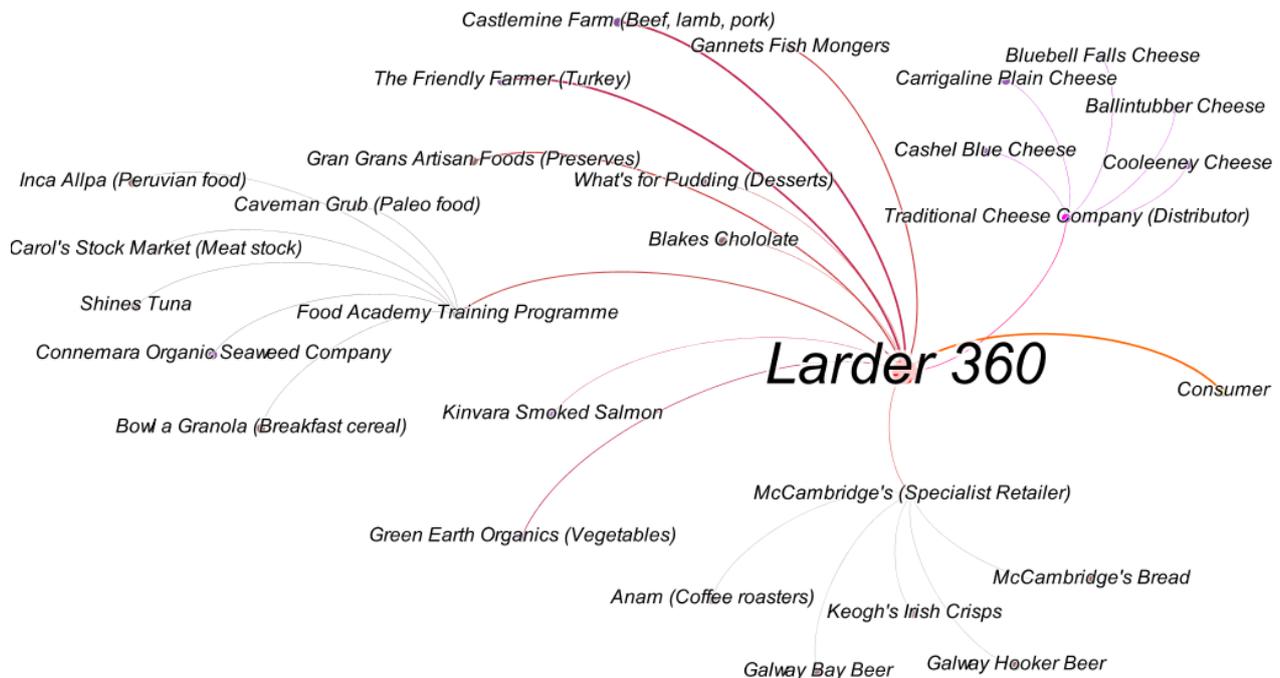


Figure 3. The strategic network of the Larder 360 food hub.

Meanings: The use of the word “larder” conjures an image of tradition and a place of bounty where one can find an array of produce. When coupled with the figure ‘360’ it conveys an all-encompassing and holistic approach to food provision. It is therefore fitting that Larder 360 offers consumers local food along with quality food produce that does not fall under the definition of a short supply chain. This hybrid of short and long chains is advantageous as the consumer can in effect carry out much of their weekly shop via the platform and purchase items such as coffee along with locally sourced turkey, beef and vegetables. The website has an important function not only in terms of orders but also in its marketing ability to convey an engaging narrative of the respective farmers. Images online of the producers, combined with accounts of where items are sourced from, allow consumers to detect the webs of materials and images which act as a bridge between consumers and the chain of provision. Meanings of freshness are evoked through the cooler boxes used to preserve and retain specific qualities.

Skills: Larder 360’s objective is to build a sustainable food platform providing value for both producers and consumers. The food hub ensures efficient and effective logistics to ensure the food consumers receive is fresh. This in turn reduces unnecessary carbon and other transportation emissions; allowing for a more sustainable food system. Larder 360 is conscious of such environmental advantages and considers developing a sustainability index. The objective of the index is to generate verifiable and quantifiable data that increase transparency along its strategic network. They also support local producers with research, innovation and infrastructure. The hub can utilise their sustainability efforts through environmental messaging which adds another layer of meaning along with those already mentioned. Demand forecasting is enabled via the analyses of trends in consumer demand, which are gathered from temporal data.

3.2. A Buyer-to-Buyer (B2B) Food Hub Model: Distrikempen (Belgium)

Figure 4 illustrates the main actors involved in the strategic network of the Distrikempen food hub. A group of farmers from the Kempen region of Belgium sought ways to reduce the time they each spent transporting their fresh products to buyers in the region. The food hub represents a B2B model in that it primarily sells its produce to businesses such as retailers, hotels, catering, specialist stores, and farm shops rather than directly to consumers. The main actors are the producers involved in the partnership, which was initiated by four very different farming enterprises (a goat farm, a dairy farm, an orchard, and a pork farm) before expanding to include many others. Additionally of significance are the advisory and consultancy organisations, Rurant and Innovatiesteunpunt, who provide support and knowledge transfer services. They complement their relationship with the food hub with the independent relationships they have with many of their suppliers. This enables consistent flows of information and advice to both. These advisory actors were crucial in convincing producers to establish the partnership and without their involvement it is unlikely that the food hub would have emerged. Initially, the advisory organisations assisted the hub in terms of business strategy and by conducting a market study. They also developed an effective low cost ICT tool that is utilised by a distributor (Distrego) who transports produce to other intermediary organisations such as retailers and restaurants. The independent distributor represents a key actor as they deliver the food producers products to specific business.

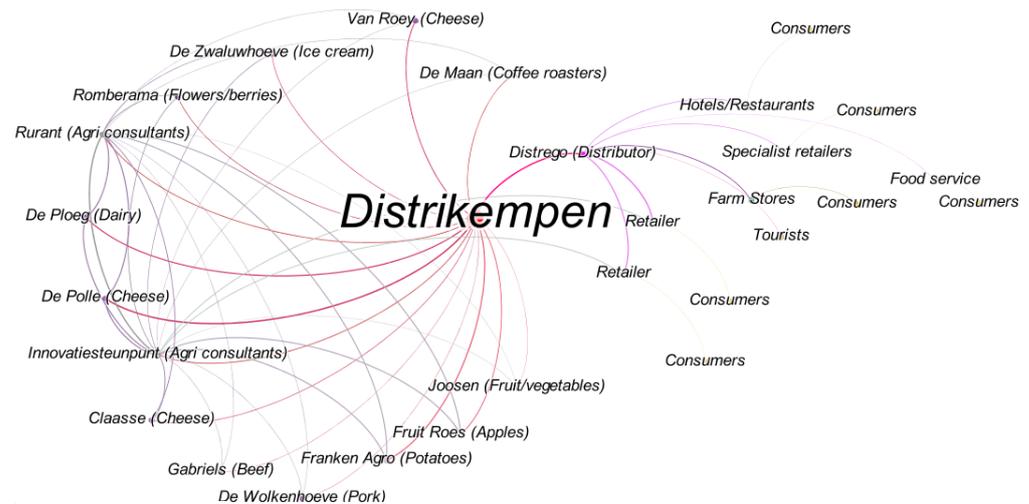


Figure 4. The strategic network of the Distrikempen food hub.

Materials: Produce available from the food hub includes cheese, pork, beef, potatoes, berries, and ice-cream. These products are delivered by the distributor to hotels, restaurants, farm shops, and to various pick-up-points. The ICT platform is used to manage logistics and coordinates the supply of produce from producers. Orders are assembled twice weekly and then sent to producers who prepare the orders in reusable boxes. The food hub does not have a warehouse, instead a refrigerated van is used to keep products fresh and deliver them in an appropriate condition to their clients. Producers are responsible for packing and labelling.

Meanings: Among the most striking characteristics of meaning is the variety of value orientations. The most prominent images integrated by the food hub is that of 'local' as the name of the enterprise incorporates both a variant of district ('Distri') as well as the name of the Kempen region itself. The food hub conveys an image of quality steeped in the value of locality that represents food culture that is of the region. Quality is implied most notably via the Kempen label for regional goods and services from the region. All individual producers are nevertheless able to use their own labelling and packaging style. Abstract discourses of solidarity are conveyed through cooperative approaches of the producers themselves in

jointly selling produce. Meaning is expressed to producers through efficiency gains that save members money and time and reduce waste, as deliveries are outsourced and sold in advance. Furthermore, the owners of the distribution company come from a farming background and are acutely aware of the importance of local food provision.

Skills: Administrative requirements are centralised by the food hub. Distrego (the distributor) frees the farmers of Distrikempen from the administrative work usually associated with distribution, such as sending price lists, taking orders, promotion, and invoicing. A tailor-made computer programme supports the hub in its daily operations. For instance, at the beginning of each week, the ICT platform is synchronised and revised with information regarding prices, products, and the quantities attainable. An updated catalogue of produce and newsletter is subsequently administered to customers. Orders are then collected from all customers and the consolidated information sent to producers. Next, orders are prepared by the producers and subsequently collected and distributed to regional customers over the course of two days. The distributor not only drops off deliveries but also collects products from primary producers in the same transport route. Logistics are overseen by the distributor, on a fixed cost percentage. Expert advice is also available in the form of agricultural advisors who provide consultation when required.

3.3. A Direct-to-Consumer Food Hub Model: Boerschappen (The Netherlands)

Boerschappen is a food hub that originated from group of like-minded individuals who wanted to source food directly from Brabant farmers. The company works with a network of farmers to put together meal boxes from local products. Customers can collect the boxes themselves at one of the many collection points. The hub coordinates supplies from a number of different farms and delivers them to consumers who have ordered online (Figure 5). The strategic network diagram offers insight to how a concise network of actors can facilitate a SFSC through a food hub. Nevertheless, actors such as IT specialists, software developers, and branding experts also contribute to the operations and success of the hub. The strategic network diagram provides added context to how these auxiliary actors help build the hub into a marketable and useable platform.

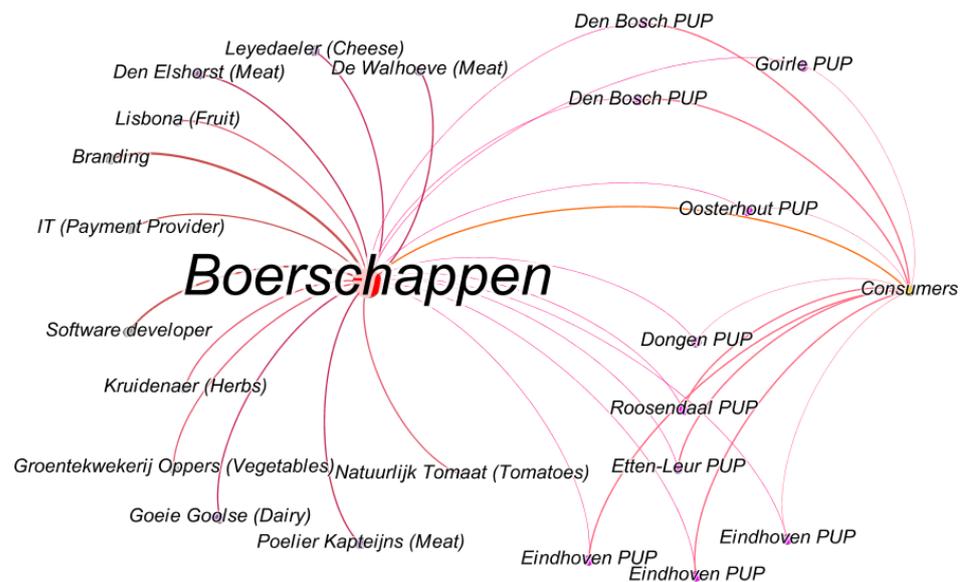


Figure 5. The strategic network of the Boerschappen food hub. PUP refers to pick-up point.

Materials: The food hub involves a bundle of practices that enables the provision of food. For instance, the vegetable farmer grows more than 50 different outdoor vegetables which is an advantage to the food hub as it increases the variety of produce that it can offer to consumers. Beef, chicken, fish, apples, pears, tomatoes, herbs and cheese are all produced by other actors in the network. Consumers can choose from a number of different boxes;

a harvest box (fresh vegetables and fruit from Brabant), a complete box (fresh vegetables and fruit, fresh fish, dairy products and good-quality meat), catch box (meat, fish, dairy), vegan box, and a fruit box. Boxes do not contain prepared meals but provide a limited number of good quality and very fresh products as ingredients for different meals, often with recipes. Deliveries occur four times a week and consumers can purchase produce directly at the hubs facility in Breda. They also have a number of diverse locations where consumers can collect their orders: three locations in Eindhoven, two in Den Bosch, and locations in Etten-Leur, Roosendaal, Dongen, Oosterhout and Goirle. Consumers can also collect their orders themselves from the Boerschappen site. To do so, they scan a QR code on their phone before proceeding to collect their groceries themselves.

Meanings: Collective management in the Netherlands is known by in Dutch as *marken*, *maalschappen*, *holtelingen*, *gemeenten*, *buurschappen* or *boerschappen*. *Boerschappen* is therefore an appropriate name for the food hub. Furthermore, *Boerschappen* is located on the site of a former confectionary factory and thus represents a distinct transition in food culture. The food hub differs from many SFSC box schemes as it focuses on components of meals and thereby offers the consumer the opportunity to enjoy SFSC produce in a manner that is engaging, experiential and experimental. It combines interesting meals (each week offers different products) with little choice, so that logistics are limited. The implicit, under-the-surface meanings tied up with *Boerschappen* are not explicitly communicated around the box scheme. Instead, the implicit meaning centres on people experiencing feelings of surprise when consumers receive their orders and view them as a form of liberation that stimulates creativity rather than being restrictive. A weekly newsletter is administered with recipes that consumers can make using the contents of their food box. Other implicit meanings are crafted via their flexibility concerning deliveries. Consumers can cancel without implications and if a customer is unexpectedly unable to take a delivery then their account is credited or an alternative delivery point assigned. Pick-up points are chosen to be convivial and trendy as well as convenient.

Skills: In the morning, *Boerschappen* drivers visit the farmers and suppliers to pick up their products. The drivers arrive at the depot around midday where the food boxes are assembled before deliveries are carried out in the afternoon. Freshness is an important aspect of the food hub with only an eight hour time period from farm to plate. The hub places particular emphasis on lowering food waste and, where possible, tries to eliminate it. Surplus food that is not ordered via the box scheme is sold in their store. Furthermore, products that are not sold in store are given to a local woman who uses the ingredients to cook with. In return, she provides employees with a free meal every three months. The food hub is proactive with regard to hygiene requirements and developed a hygiene protocol with an independent food hygiene organisation. *Boerschappen* is recognised by SBB (Stichting Samenwerking Beroepsonderwijs Bedrijfsleven) as a training company. SBB is an organisation that provides secondary pupils education and on-job training. Students aged between 12 and 16 can attain internships where they learn about logistics, sales, retail, etc. With regard to marketing, they strategically focus on people in their thirties who have disposable income who are motivated to eat locally and healthily.

4. Discussion

There is an enhanced appreciation of transitions from the hegemonic conventional agricultural paradigm towards alternative models of food production and consumption that are more sustainable, economically, socially and environmental [70]. Iveson suggests to look for departures from the traditional system that provide compelling alternatives; “theorising nascent formations in order to make their practices and promises visible” [71] (pp. 436–437). This enables an audience to envisage new business trajectory and inspires the development of new models as alternatives to ‘business as usual’, such as SFSCs [72]. Innovation of sustainable production–consumption systems extends beyond conventional technological innovation, often embracing collective rather than individual action as a powerful force for change [12]. In this context, SFSC food hubs can be viewed as multi-

actor innovations that promote a transition to more sustainable consumption-production patterns [73].

The key objective of the study presented in this paper is to investigate the bundles of practices involved in how food hubs source and supply produce; and how different actors collectively aid their success (their strategic networks). This study draws on social practice theory and social network approaches as a novel theoretical lens to understand food provision by SFSC food hubs via a SFSC. From the investigation of three case studies, it has been possible to identify the materials, meanings, and skills underpinning the social practices of food hubs; and the social networks that frame these social practices perform the practice of food provision within their strategic networks.

From a European perspective, there has been a distinct dearth of attention from academia with regard to food hubs [14,17,21]. This study outlines how food hubs have particular practice portfolios (materials, meanings, skills). A heterogeneous product range (materials) was typical for each of the food hubs investigated. Their associated products possess unique narratives that communicate provenance (meanings). By allocating meanings, they are enabled to add value to producer's products. Along with this added value, the food hubs seek to bring a 'shared value' to primary producers as there are mutual benefits from collaboration [14]. For instance, Distrikempen was created as a means to reduce the time farmers in Kempen spent transporting their produce to consumers in the region. Value-based supply chain theory underlies the collaborative process of value creation involving diverse supply chain actors bringing new competencies to bear on the achievement of communal objectives (skills) [74].

Mapping of actors in one form or another has been utilised by numerous studies as an effective means to interpret the relational and cooperative systems involved in SFSCs [11,75–81]. Networks visualisations are especially useful as they contribute in providing a compelling multi-perspective account of a particular practice under investigation [55]. Indeed, social network diagrams serve to focus attention on multi-actor networks that can be critical to organisational effectiveness [82].

The strategic network diagrams of the three different food hub models offer a visual argument on how food hubs involve a multitude of different actors. The functions of the hubs differ according to the objectives of the hubs, but are similar in how they meet the challenge of enabling systems of local food provision. All three food hubs have a diverse set of actors who supply the enterprises with diverse and quality produce. This enables the food hubs to attract consumers by providing them with a 'one-stop-shop' where they can purchase a substantial diversity of their weekly grocery needs. However, the diagrams also highlighted other actors who typically receive less attention in the literature on SFSCs, such as IT specialists, agricultural advisors, and independent distributors. These auxiliary actors have a significant role in operationalising the practices involved.

Each of the food hubs actively manages the material aspects of practice such as assemblage, logistics, and promotion of produce. Nevertheless, there are some salient differences in how they do so. For instance, DistriKempen is exclusively a Buyer-to-Buyer model. In contrast, Boerschappen and Larder 360 are more focused towards buyer-to-consumer systems of provision. The food hubs also differ somewhat in terms of their genesis and who are their core actors. LeBlanc et al. distinguish between two types of food hubs; hubs with high farmer involvement and hubs with moderate farmer involvement [83]. Larder 360 and DistriKempen are both led by farmers, whereas Boerschappen is an example of a food hub not established by food producers. DistriKempen has the greatest variety of supporting partners in their strategic network who offer advice on an array of topics ranging from agricultural production, entrepreneurship, logistics and cooperation.

Welch and Yates denote how different types of collaborates enact practices in distinct manners [84]. Evidently, Larder 360, a hybrid model of food hub, provides the greater amount of product variety; this is achieved via cooperation with other intermediaries that supply them with local, artisanal, and non-local foods. Larder 360 and Boerschappen both have a website where consumers can order food boxes. Conversely, this is not the case

for DistriKempen as it not as essential for their business model as they are more retailer and hotel focused. Larder360 and Boerschappen both have depots where the produce is stocked, whereas DistriKempen provides a 'pick and drive' system where a delivery van picks up produce to and from its points of sale. However, Larder 360 and Boerschappen offer box schemes and require a facility to sort and assemble produce.

Bassi et al. found that functional connections between rural actors can be realised by integrating both their antagonistic and shared approaches, which, when addressed, can satisfy consumer demand for local goods [85]. The provision of an appropriate quantity and consistency of products whilst maintaining quality for differentiated consumer groups was evident from the hubs studied in this paper. Their delivery efficiency provided a competitive advantage that they utilised to improve consumer accessibility and convenience. New and diverse skills, provided by the hub, such as the use of ICT is incorporated to forecast sales (Larder 360) and use of tailor-made computer programmes useful (DistriKempen). Efforts made by Larder 360 to generate a sustainability index displays how skills can be continuously cultivated.

The meanings associated with the three different hub models were quite similar in that they all focused on the idea of the local and use this extensively in their respective narratives. DistriKempen and Larder 360 allow customers the option to tailor their boxes to their wishes. Conversely, the lack of choice that faces consumers of Boerschappen is in stark contrast to the dominant discourse that choice is a consumer necessity. By promoting a specific meaning, consumers are often content when their choices are constrained if the offer is aligned with their core values and guiding principles. Boerschappen offer consumers weekly recipes for each order that can empower consumers to develop their cooking skills (through recipes) as well as their food preferences.

The certification of Boerschappen as a training entity exhibits how food hubs are operating to share new knowledge to a wide and captive audience. The food hub provides recognised training to students where they can learn about various facets of short supply chains. Students therefore come to find meaning in what it means to operate SFSCs and the practices that one must perform. Their identities change as they learn about the role the food hubs have in the provision of local food [86]. Similar processes of learning occur across the food chain, from producers to consumers.

In order for society to move away from conventional food systems, there is a need to consider 'good' practices and the elements required for them to prosper [46]. The strategic networks of food hubs can contribute to alternative food systems in many ways [87]. Direct societal change can be borne from fostering coalitions between diverse actors, such as in DistriKempen where advisors and consultants worked with other chain actors and acted as regime change catalysts [88]. Alternative networks of actors can indirectly facilitate change by demonstrating their capability to stimulate innovations by conventional actors [73]. Additionally, they can serve as 'norm entrepreneurs' by transforming social norms (and social practices) [87]. Food hubs henceforth can bring about social change and transformation through social networking. The social practice approach identifies particular bundles of practices that are crucial for dissemination through networks. The social practices identified are characteristic of group activity and act as conceptual schemata for change and transition, of interest to policy-makers and development actors who seek to widen the SFSC model. The cases presented in this paper are engaging to diverse actors as they are tangible examples of a variety of emergent relationships, networks and shared practices.

In their role as proponents of alternative practice, food hubs can be conceptualised as social movements connected to a wider effort to offer an alternative to conventional supply chains. The good practices provide real-world exemplars of SFSCs that enhance the resilience of local food systems [89]. Indeed, learning about different approaches is essential for stimulating innovation, by altering conventional discourses [46]. It is imperative that interventions are considerate of the social processes they seek to shape [90]. Therefore, understanding how new social practices can become embedded in existing practices is a challenge. Policies and funding for programmes which bolster engagement between local

and regional food systems and good practices originating elsewhere are worthwhile in this context [89].

Crivits and Paredis suggest that the combinative strength of practices can be fostered through agency, socio-cultural and material-functional dimensions [91]. From a material-functional perspective, the meaning of artefacts and infrastructures can be reconfigured; for instance, enabling a depot to become a community focal point. The socio-cultural dimension of practice, conversely, could include the acceptance of instability, irregularity, or lack of choice. Understanding social practices thereby offers insights into the possibilities and realities of implementing an innovation [31]. The sustainable transitions required in the food system unfold through the reconfiguration of networks of actors, institutions (standards of good practice), and material artefacts [92].

This research addresses the lack of academic attention bestowed to European food hubs by placing practice as the central unit of focus. It is somewhat limited in terms of its scope, as only one case study was studied for each food hub model. Future research could focus in greater depth on more cases within specific model typology to support findings. Furthermore, research detailing statistical Social Network Analysis of food hubs would add greatly to the discourse. Nonetheless, the social practice approach adopted enabled insights to what constitutes SFSC food provision when provided by food hubs. The manner in which food hubs practice food provision determines how food producers are able to trade their products and the means in which consumers enact SFSCs. This study draws attention to the strategic networks and contextual characteristics of different models of food hubs. It shows the usefulness of investigating alternative food systems when aiming to inspire systematic change. The findings highlight how the materials (products, packaging, etc.), image meanings (conventions around local food), and competences (the performance of food provision) along with coherent strategic networks all contribute towards the success of different SFSC food hub models.

5. Conclusions

This study primarily investigates the bundles of practices involved in how food is sourced and supplied via food hubs; and the strategic networks involved (i.e., systems of provision). We apply a social practice approach as a lens to 'zoom in' and explore the materials, meanings and skills that aid such systems of provision. Furthermore, we use strategic network diagrams to 'zoom out' to facilitate the detection of key actors, their relationships, and collaborations involved in the multi-actor system. This study found that key actors, materials, imagery and skills of food hubs underpin their practices. Food hubs are characterised by these elements, which may continuously evolve. Understanding the detailed bundling of practices provides potentially significant opportunities for intervention in creating new SFSC food hubs. The provision of food from different producers steers the arrangement of different practices and elements. When associations are strong between the materials, skills and meanings, they are stable and embedded. For instance, the meaning of local is embedded in the practices involved in SFSCs and in many regards this influences other practices. For instance, food hubs may prefer to source exclusively at a local scale, which can impact on consumer choice. Therefore, the comparative significance of the elements is established in the interaction between elements within distinct practices. This study serves to identify practices are favourable to the success of food hubs. Good practices provide real-world exemplars of SFSCs that enhance the resilience of local food systems. Understanding the elements that give rise and sustain food hubs is paramount for discovering measures to encourage initiatives towards alternative food systems.

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