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Local and Organic Food Distribution Systems: Towards a Future Agenda

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ABSTRACT

There has been an increasing consumer demand for local and organic food as they are considered to be more sustainable, ecological, and healthier. The 'conventional' long food distribution system is not sufficient to fulfill the current needs. Consequently, short distribution systems for local and organic food have been gaining popularity, which is not only sustainable but also contributes to food security and satisfies local consumer demand. One such short distribution systems are Alternative Food Networks (AFNs). The AFNs have emerged as a promising provisioning system for local and organic food that promotes economical, environmental, and social sustainability and respect for farming tradition. However, the AFNs are facing challenges in increasing the distribution of local and organic food in the long term. The purpose of the paper is to make a review of the existing short food distribution systems for local and organic food and also to propose a research agenda. In order to achieve this, a literature review is conducted and different food distribution channels within AFNs are studied. The challenges for each food distribution channel are identified and then compared to 'conventional' distribution systems. The main finding of the study is a framework of the main challenges of short food distribution channels within AFNs. The practical implication is generic criteria to consider while designing a short food distribution system that closely connects consumers and farmers of local and organic food. The policy implication is to create favorable conditions to encourage short food distribution systems in the long term.

Keywords: *food distribution system, alternative food networks, distribution channels, sustainability, localness, local food*.

1. INTRODUCTION

The food industry is central to human beings and heavily impacts the lives of the entire society. Over the years there has been an increasing demand for food sources due to population growth and increasing urbanization. To put things in perspective, at the current rate of population increase, it is estimated that the world population which is currently 7.3 billion is expected to reach 8.5 billion by 2030, and extrapolating the trend will reach 9.7 billion by 2050 and 11.2 billion in 2100 (UN Department of Economics, 2015). Therefore, this will pose a direct threat to the availability of food sources or food security, increasing pressure on the entire food supply chain (FSC). Hunger and malnutrition are still major problems in developing countries, which is a large portion of the world (FAO, 2017). Furthermore, this also places a higher burden on limited natural resources such as fresh water, land, and energy (Dobbs *et al.*, 2011). Besides, climate change is increasingly impacting food production across the globe (Schmidhuber & Tubiello, 2007). Even with this situation, one-third of the food produced on the planet is never consumed, and it became food waste. The main reasons are inadequate logistics and technology, or poor management of food on the part of end-users (Gascón, 2018). Therefore, to avoid these issues and most importantly to ensure food security, the FSC has been one of the important research areas within the broader field of supply chain management (Mahajan *et al.*, 2017). It is possible to affirm that there is growing attention in industry and academia for the food supply chain management (FSCM) *(*Akkerman *et al., 2010;* Jonkman *et al., 2019;* Tsolakis *et al.*, 2014).

The term FSCM appears to be defined by various authors with little consensus (Mahajan *et al.*, 2017). In simple terms, the FSCM is described as all the conventional processes from 'farm to fork' or from 'plough to plate' (Bourlakis & Weightman, 2004). The FSCM is a managed process using a combination of skills and knowledge spanning multi-disciplinary domains coming together in a legal framework of minimum standards and basic rules. They are product specific and have their own characteristics, moreover, they have complex features that pose different challenges in their supply chain (Mahajan *et al.*, 2017). The globalization of the FSC has been able to increase overall production of food in the past decades; however, the food becomes expensive, less fresh, less environmentally friendly and puts increasing pressure on farmers from the retailers (Feldman *et al.*, 2015; Martinez *et al.*, 2010). The hegemonic FSC model is characterized by its organizational complexity and the enormous distances traveled by foods and the agricultural supplies used to produce them (Gascón, 2018). This type of conventional FSC can mass-produce food but is still insufficient to meet the rising demand.

Consumers traditionally have based their food choice on factors such as price and quality. However recently, factors related to perceived public benefits such as sustainability are increasingly influencing the decision to buy food (Gracia *et al.*, 2012; Grunert, 2006). Furthermore, consumers have increased their preferences for local, organic and seasonal food (Feldmann & Hamm, 2015; Gracia *et al.*, 2012; Levidow & Psarikidou, 2011; Yue & Tong, 2009), based on social welfare such as reductions in food miles, improving environmental quality, public health and social efficiency (Berg and Preston, 2017). Therefore, local food is increasingly promoted (Ilbery & Maye, 2005; Horst *et al*., 2016),

Local food encourages large and small-scale farming to turn to direct markets (Brinkley, 2017). Locally produced food reduces transport and provides the opportunity to generate income in the local community (DEFRA, 2002). Despite the short distances involved, farmers generally use complex marketing channels (Engelseth, 2015). Local food is gaining popularity and is expected to change consumers and farmers (Brinkley, 2017), while it can also alleviate fears about food safety (O'Neill, 2014). Therefore, consumer advocates and policymakers are pursuing policies that favor local food production based on motives such as environmental quality, public health, and local economic development (Berg and Preston, 2017). There is a shift from conventional FSC to a more local approach, that is sustainable and reduces the agricultural impact on the environment (Renting *et al.*, 2003). This has given rise to alternative or shorter food supply chains.

The alternative food supply chains, or otherwise known as Alternative Food Networks (AFNs), are defined as a newly emerging network of farmers, consumers, and other actors that use alternative methods of supplying food to the consumer (Murdoch *et al.*, 2000). The term AFN is also used synonymously to Short Food Supply Chain (SFSC). They are a response to the dominant industrial food system that distances and detaches food production from food consumption (Venn *et al.*, 2006). The important advantages of these AFNs that provide local food are high quality (fresh, healthy, nutritious), cheap, safe, sustainable and it supports the local economy (Feldman *et al.*, 2015; Gracia *et al.*, 2012; Martinez *et al.*, 2010). Moreover, AFNs attempt to reconfigure relationships between food producers and consumers (Marsden *et al.*, 2000; Renting *et al.*, 2003; Venn *et al.*, 2006), where the consumers can have face-to-face interactions with the farmers who produce their food leading to transparent and trust-based relationships (Hendrickson & Hefferman, 2002; Levidow & Psarikidou, 2011; Smithers & Johnson, 2004). This leads to social embeddedness what is often seen as an advantage for AFNs or local food systems (Gracia *et al.*, 2012; Hinrichs, 2000). There is sufficient evidence of sustainability impacts of these alternative food supply chains and without these measures, it would be much difficult to achieve the UN goals of sustainability (UNSD, 2016).

Some researchers show that there are more and more farmers who want to sell their products directly (Levidow & Psarikidou, 2011). The emerging pattern of creation, operation, and evolution of AFNs is one of the key factors of improving the local economy and directly connecting the farmers to the consumers. Such networks are also being classified based on a range of socially constructed food quality criteria (Marsden, 1998). When in competition with conventional food supply chains, the logistics and best practices from the conventional supply chains can be transferred to local food supply chains to improve the efficiency and effectiveness (Mittal *et al.*, 2018). However, the AFNs are facing a challenge to maximize the distribution of local and organic products in the long term (Pardillo-Baez *et al.*, 2019). Furthermore, according to (Siegner *et al.*, 2018), little is understood about where and how farmers distribute their food including modes of transportation delivery (either individually or in aggregate), and to whom (retail, institution, anti-hunger programs). As Manikas *et al*. (2019) remark, additional research is needed to fully explore the exciting possibilities that exist for local food producers in today's food industry. Therefore, the purpose of this paper is to make a review of the existing short food distribution systems for local and organic food and propose a research agenda. The purpose is fulfilled through two research questions: (1) "What are the challenges associated with different channels in the alternative food network?"; and, (2) "How can these challenges be dealt with?". In order to achieve this, a literature review on short food distribution systems is conducted and different food distribution channels within AFNs are studied.

The remainder of the paper is structured as follows. To begin with, a theoretical background of Short Food Supply Chains (SFSCs) and AFNs are presented in Section 2. Thereafter, the methodology of the research is presented in Section 3. After that, the findings from the review are presented in Section 4. Thereafter, the findings are discussed in Section 5, then finally the research is concluded in Section 6 respectively.

2. THEORETICAL BACKGROUND

2.1. Short Food Supply Chain (SFCs)

The concept of SFSCs, according to Galli *et al*. (2013), emerged at the turn of the century in the context of the broader debate on alternative food chains, alternative food networks or sustainable food chains; due to the trend of global value chains dominated by retailers in the agro-food system. SFSCs have been increasingly considered by the

industry, civil society organizations, decision-makers, and policy in government (Galli *et al*., 2013). Renting *et al*. (2003) suggest that the SFSC concept is more specific than AFNs, and, rather, covers the interrelations between actors who are directly involved in the production, processing, distribution, and consumption of new food products. Galli *et al*. (2013) suggest that SFSC is an alternative type of governance and organization of food chains that plays an increasingly important role in food supply networks. They also mentioned that the two basic criteria that define SFSCs are their physical and social proximity; where there are no or very few intermediaries in SFSCs; that make them more flexible and adaptable to new situations and consumer needs (Galli *et al*., 2013). However, in comparison to global food chains, one limitation of SFSC is the limited supply of a varied range of food, mainly due to the natural seasonality of products. But some researchers emphasize the rise in interest from the customer side in seasonal food and continued growth of demand for organic products (Levidow & Psarikidou, 2011), which may reduce the impact of this limitation of SFSC.

The SFSCs in academic literature can be seen as the re-territorialization, re-localization, re-spatialization and re-connection of the supply chains into "short circuits", likewise as AFNs (Allen *et al.,* 2003; Kneafsey *et al.,* 2013; Levidow & Psarikidou, 2011; Manikas *et al.,* 2019). The SFSCs are varied in nature and practice and exist all over the world in a wide variety of forms, in both commercial and non-commercial settings (Galli *et al.,* 2013). The SFSCs offer a more diverse variety of products in some regions although dependent on the season (Galli *et al.,* 2013; Edwards-Jones, 2010). SFSCs give farmers a channel tailored to small quantities and high/special quality, which are nevertheless appreciated on the market.

There are three categories of SFSCs: face-to-face, proximate, and spatially extended (Marsden *et al*., 2000; Renting *et al*., 2003). The first category "face-to-face SFSCs" is based on face-to-face interactions, as a mechanism for aligning producer-consumer networks. Personal interaction and trust are the foundations in this category, and the food is sold directly to the consumer by the producer (Renting *et al*., 2003). The second category "proximate SFSCs" is based on the relation of proximity (region or place). This category requires more complex regulations. The third category "spatially extended SFSCs" based on extended relations in time and space; the products can be sold to costumers outside the region (national markets). This category is still 'short' in despite a long distance is due to the awareness that connects the consumer (Renting *et al*., 2003). The interest in SFSCs and AFNs is growing due to their potential to contribute to more sustainable food systems, rural development, and healthier communities.

2.2. Alternative Food Networks and Distribution Channels

An extensive literature developed on Alternative Food Networks (AFNs) has been a subject of considerable interest in recent decades (Bos & Owen, 2016; Tregear, 2011). AFNs are a comprehensive body of practices related to food provisioning, from different forms of organization in the agri-food system, that promote a sustainable and civil economy, environment, biodiversity and respect for tradition (Timpanaro *et al*., 2018; Tregear, 2011; Barbera & Dagnes., 2016). According to O´Neill (2014) and Renting *et al*. (2003) the alternative and local food systems have been a means of adding value to local economies and capitalizing on consumer demand for local quality food. The AFNs are different from the mainstream food systems, and are characterized by a short production and distribution chain, integrating dimensions of spatial, economic, and social proximity (Barbera & Dagnes, 2016; Tregear, 2011). They are seen as seeds of social change, which allow actors to rework power and knowledge relationships, especially through social and physical proximity between producers and consumers (Allen *et al.,* 2003; Feagan, 2007; Levidow & Psarikidou, 2011). However, Bos & Owen (2016) argue that AFNs are situated alongside and operate within conventional systems and market logic. In line with this, O´Neill (2014) highlighted that alternative and local food systems interact with the conventional food system in complex and multiple ways. Due to this hybridity, AFNs have been unable to coalesce around any consistent, normative content of their own (Bos & Owen, 2016; Renting *et al.,* 2012).

The main aim of AFNs is to be economically viable for farmers and consumers, use ecologically production and distribution practices, and enhance social equity and democracy for all members of the community (Feenstra, 1997; Tregear, 2011). The farmers and consumers take the central role and make the AFNs a self-organized system with very little involvement from institutions (Barbera & Dagnes, 2016). The farmers and consumers are reconnected through a short distance, transparency, and localization of the supply chain (Bos & Owen, 2016). In this context, Dowler *et al*. (2010) define 'reconnection' as bringing together different elements of the food system. The circuits of food production and consumption are organized locally and independently, which makes the AFN associated with a particular region (Dansero & Puttilli, 2014). Venn *et al*. (2006) in their study enumerate four parameters or attributes of AFNs that have been highlighted by research and empirical papers. Those attributes are the attempt to connect consumers, producers, and food in a new economic space which re-embeds food production and consumption; the non-conventional supply distribution detached from industrial supply and demand distribution and corporately controlled; adopted principles of social embeddedness founded on the principles of trust; and based around a notion of quality preserving traditions and heritage.

The AFNs can be presented in different forms such as: farmers' markets, community supported agriculture (CSA), box schemes, farm shops or on farms sales, consumer cooperatives, direct internet sales, community gardening, grow-your-own (GYO), roadside sales, home deliveries, regional hallmarks, certification labels, production codes and others (Adams & Adams, 2011; Barbera & Dagnes, 2016; Bos & Owen, 2016; Galli *et al*., 2013; Jarosz, 2008; Levidow & Psarikidou, 2011; Renting *et al.,* 2003). These forms of AFNs can be grouped into the three categories of SFSCs: face-to-face SFSCs, proximate SFSCs, and spatially extended SFSCs (**Table 1**).

Table 1 Forms of Alternative Food Networks (AFNs) by categories of SFSCs (adapted from Galli *et al*., 2013; Renting *et al*., 2003)

Face to Face	Proximate	Extended
Farm shops	Farm shop groups	Certification labels
Farmers markets	Regional hallmarks	Production codes
Roadside sales	Consumer cooperatives	Reputation effects
Pick your own	Community supported agriculture (CSA)	
Box schemes	Thematic routes (articulation in space)	
Home deliveries	Special events, fairs (articulation in time)	
Mail order	Local shops, restaurants, tourist enterprises dedicated retailers (ex, whole food, specialty, or dietetic shops)	
E-commerce / direct internet sales	Catering for institutions (canteens, schools)	
Farm to work (training component)	Sales to emigrants	
Mobile urban farm	Community supported fishery	
Consumers as producers	A combination of consumer coops and CSA	
Solidarity-based purchasing groups	On farm vending machines	
Direct sales by farmers	Alternative grocery (e.g., health food) stores	
Consumer cooperatives		
Community gardening		
Grow-Your-Own (GYO)		
Solidarity-based purchasing groups		
On-farm direct sales by farmers		
Off-farm direct sales by farmers		
Traditional local markets		
Fair trade groups		
Wild food foraging		

Hempel and Hamm (2016) indicate that in the farmers' markets the food is sold mainly locally, while Levidow and Psarikidou (2011) affirm that the farmers' markets and on-farm shops complement each other, due to attracting similar consumers who recognize quality from familiar and trusted suppliers. Brinkley (2017) argues that farmers' markets are the most common practices for wholesale distribution and direct distribution to consumers. Farmers' markets aim to bring producers and consumers together under direct marketing schemes (Brown, 2001; Kirwan, 2006; Fendrychová & Jehliˇcka, 2018).

Another way to bring food to the markets is through agro-food hubs (Manikas *et al*., 2019). These agro-food hubs are defined as an alternative sustainable channel of distribution and value creation that facilitates the synergies among agricultural SMEs; moreover, there is little systematic research exists regarding alternative channels of distribution for farm SMEs (Manikas *et al.*, 2019).

Other ways to bring local and organic food to the market is through box schemes, community supported agriculture and solidarity-based purchasing groups (Barbera & Dagnes, 2016; Brown *et al*., 2009). These are labelled as innovative practices (Barbera & Dagnes, 2016). More traditional practices that exist are on and off-farm direct sales by farmers and traditional local markets. According to Manikas *et al.* (2019), smallholders and family farming is a key element of the European model of agriculture; and there is a significant need to create viable economic alternatives to the existing agricultural system dominated by SMEs. AFNs many times are integrated by farm SMEs and represent a way to bring locally produced food to the market.

The distribution channel acts as a circuit through which the products travel from producer to consumer, and they are different for the different forms of AFNs. Hence, the corresponding food distribution systems, which make the products and services available to the consumer may vary according to the food distribution channel of the form of AFN. For example, when considering AFNs forms categorized as "face-to-face", the distribution channel is direct; for the "proximity", the distribution channel can be a short or retailer channel; and for "extended", the distribution channel is usually a large or wholesaler channel. However, Heffeman (1998), Howard (2009) and Brinkley (2017) consider that only a few global corporations control distribution, connecting consumers to producers. Nie and Zhang (2017) affirm that traditional opinions suggest that a direct channel is better than an indirect channel for manufacturers to sell their products. Some limitations appear in direct channels, such as facing contradictory policies, which espouse benefits of local food but relegate all responsibility to market actors; but at the same time as a benefit, farmers can gain premium prices and closer relations to consumers (Levidow & Psarikidou, 2011).

3. METHODOLOGY

The methodology used in the research is a literature review. According to Snyder (2019), the literature review is considered as a research method. The literature review has been developed by using a seven-step model of the comprehensive literature review (CLR) to incorporate rigour, validity and reliability. The seven-step model offers a tool that can be used to inform the various components of the primary research study (Onwuegbuzie & Frels, 2016). For this literature review, the three phases of the seven-step

model have been utilized (exploration, interpretation, and communication). The steps followed in the exploration phase are: 1. Exploring beliefs and topics; 2. Initiating the search; 3. Storing and organizing information; 4. Selecting/deselecting information; 5. Expanding the search to include more media, observations, documents, experts, secondary data or sources. The step followed in the interpretation phase is: 6. Analyzing and synthesizing information. Finally, the step followed in the communication phase is: 7. Presenting the CLR report.

Some adaptations have been included because the paper is an ongoing research and, in the future, more data will be collected. Therefore a cyclical process will be followed, with the intention of continuous improvement of the results. The methodology process and the status for each step are shown in the figure below (**Figure 1**).

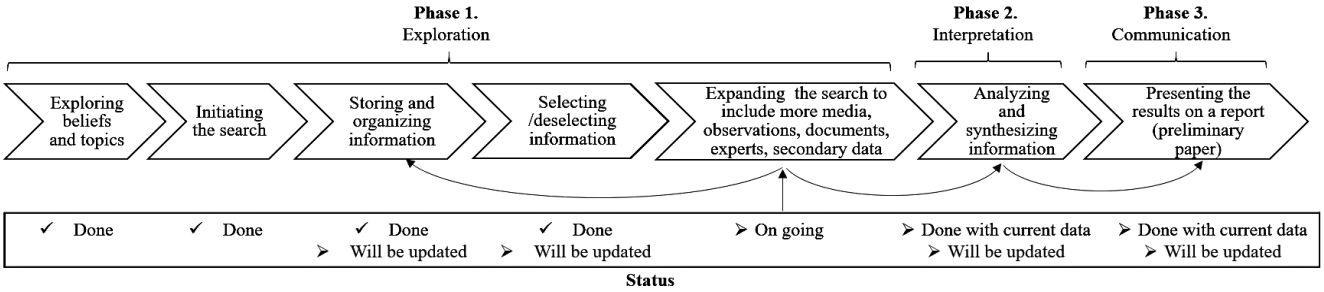

Figure 1 Methodology process and status of the current research

4. FINDINGS

When studying the literature, some demands for the AFNs can be identified: environmental, social, economic and health and well-being. Some of the AFNs like farmer markets (Freedman *et al*., 2011; Ruelas *et al.*, 2012) and grow-your-own (Corrigan, 2011; Kortwright & Wakefield, 2011) have shown some increase aspects of access to healthy food, but in general, the evidence of effects on access to healthy food is limited to its quantity and quality. However, the AFNs have increased the knowledge about food amongst consumers and leads to the adoption of a healthier diet (Galli *et al.*, 2013). Freidberg & Goldstein, (2011), pointed out that researches should focus not only on the quality of food but also on building alternative food supply networks. The distribution channels of AFNs represent a way to bring food to the markets, but there are challenges associated with it. The challenges that were identified (23 in total) as a result of the review, appear listed in **Table 2**.

Table 2 Challenges in the AFNs' distribution channels

No.	Challenges	Source
1.	Meeting the rising demand for food in quantity.	Accorsi *et al.*, 2016
2.	Meeting the increasing demand for organic, welfare-friendly and locally produced food.	Bosona *et al.*, 2011; Kroma, 2006; Marsden & Smith, 2005; Gracia *et al.*, 2012; Levidow & Psarikidou, 2011
3.	Meeting the rising demand for high quality, transparency in food production and traceability of seasonal or locally produced food	Bosona *et al.*, 2011; Hempel & Hamm, 2016; Levidow & Psarikidou, 2011
4.	Maximizing the distribution of local and organic products in the long term.	Figueroa-Rodríguez *et al.*, 2019, Wittman *et al.*, 2012
5.	Optimization in route distance and delivery time for producers	Bosona *et al.*, 2011
6.	Keeping the availability of products.	Berg & Preston, 2017; Figueroa-Rodríguez *et al.*, 2019, Wittman *et al.*, 2012
7.	Supply that allows a variety of products.	Figueroa-Rodríguez *et al.*, 2019, Wittman *et al.*, 2012
8.	Limited growing season and unpredictable weather patterns	Wittman *et al.*, 2012
9.	Guaranteeing optimal pricing of local and organic food products by creating viable economic alternatives, which mean fair compensation for farmers and attractive prices for consumers	Barbera & Dagnes, 2015; Berg & Preston, 2017; Figueroa-Rodríguez *et al.*, 2019, Wittman *et al.*, 2012
10.	Finding solutions for logistic cost as a bottleneck for small and local food producers; decrease distribution and additional investments cost as a key factor for economic success	Bosona *et al.*, 2011; Galli *et al.*, 2013
11.	Accessibility in terms of location	Wittman *et al.*, 2012
12.	Accessibility in terms of hours and days of operation	Berg & Preston, 2017; Figueroa-Rodríguez *et al.*, 2019; Gumirakiza *et al.*, 2014; Hofmann *et al.*, 2009, Wittman *et al.*, 2012

Table 2 Challenges in the AFNs' distribution channels (cont')

No.	Challenges	Source
13.	Reducing distance and time for the customer access to the market	Figueroa-Rodríguez *et al.*, 2019; Gumirakiza *et al.*, 2014; Hofmann *et al.*, 2009
14.	Controlling the distribution connecting consumers to producers.	Martinez *et al.*, 2010
15.	Ensuring good communication practices among actors to solve specific difficulties in complying with regulations	Galli *et al.*, 2013
16.	Availability of infrastructure, capacity, equipment, acceptable inspection status, and human/financial capital on the distribution channel to meet demand requirements for local and organic food (availability of strong local food chains)	Martinez *et al.*, 2010; Levidow & Psarikidou, 2011
17.	Impacts of different governance systems, including the role of local authorities and policies	Galli *et al.*, 2013; Levidow & Psarikidou, 2011
18.	Closely connections and transparent and trust-based relationships between consumers and farmers of local and organic food	Barbera & Dagnes, 2016; Hendrickson & Hefferman, 2002; Levidow & Psarikidou, 2011; Smithers & Johnson, 2004
19.	Transferring logistics and best practices from the conventional supply chains to improve efficiency and effectiveness.	Mittal *et al.*, 2018
20.	Competition from the conventional food system	Wittman *et al.*, 2012
21.	Bringing positive contribution to the ecosystem, biodiversity and landscape, local employment, fair trade and social justice in sustainable food production, distribution and consumption	Bosona *et al.*, 2011; Coley *et al.*, 2009; Jarosz, 2008; O´Neill, 2014.
22.	Farmers distributing their products to those in need while maintaining their operations	Biewener, 2016; Daftary-Steel *et al.*, 2015; Siegner *et al.*, 2018
23.	Finding the intermediaries able to cope with alternative forms of production, and reconnecting producers of local and organic food with more consumers.	Levidow & Psarikidou, 2011; Venn *et al.*, 2006

In order to comprehend the above listed challenges, they have been grouped into seven categories corresponding to wider operations strategy: efficiency, sustainability, quality, flexibility, communication, technology, and innovation. Efficiency challenges are those that have implications on fulfilling demands with optimum resources. Sustainability challenges have implications on being economic, social, and environmentally sustainable. Quality challenges have implications for providing high-quality products and/or services. Flexibility challenges have implications on adjusting according to consumer's requirements and needs. Communication challenges have implications for transferring information and/or knowledge between actors of distribution channels. Technology challenges have implications for using existing or new technology. Innovation challenges have implications for introducing updated and novel products and/or services. **Table 3** shows the classification for each challenge. Each challenge can also be classified into more than one category. The challenges 2, 3, 4, 6, 18, 19 and 23 have implications in highest number of categories. The category with most challenges is efficiency (19), followed by sustainability (12), followed by flexibility and innovation (11 each).

Table 3 Classification of the challenges for the AFNs distribution channels

Classification	Challenges																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Efficiency	X	X		X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X
Sustainability	X	X		X	X	X	X	X					X		X		X	X			X	X	
Quality		X	X											X									
Flexibility						X	X	X			X	X	X					X	X	X		X	X
Communication			X											X	X		X	X					X
Technology			X	X						X						X			X				
Innovation		X	X	X	X	X			X	X								X	X	X			X

In order to deal with the challenges, an analysis of the impact of the challenges is needed. The challenges can have different impacts depending on the types of AFNs´ distribution channels. Each challenge is assigned an impact level for the corresponding form of AFN: face-to-face, proximate, and extended. The impacts have been assigned into three levels: low level, medium level and high level. If the impact of a challenge is low level, then it means that less work is required from the actors of the distribution channel. Meanwhile, if the impact of challenge is high level, then it

measn that more work from the actors of the distribution channels is required to deal with it. A graph is plotted to visualize the impact level of the challenge for the corresponding form of AFN (**Figure 2**).

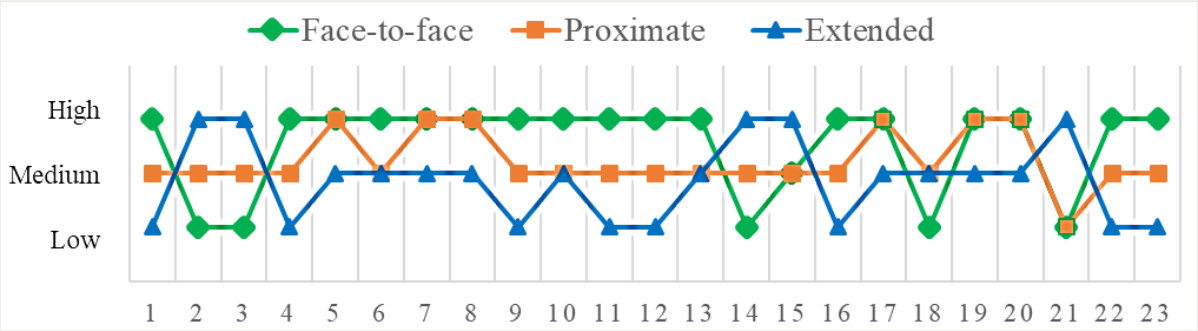

Figure 2 Challenges impact level on form of AFNs

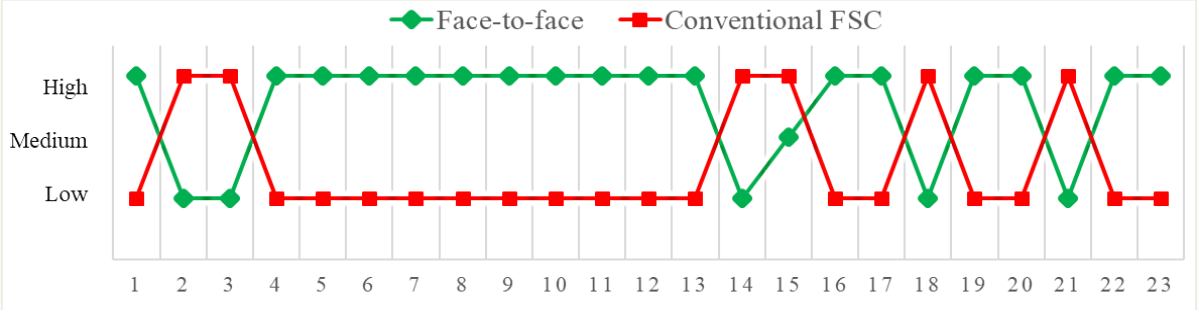

Figure 3 Challenges impact level on face to face and conventional FSC distribution channels

It is possible to affirm that the higher impact of challenges is mostly presented on the face-to-face form for AFNs. For a conventional distribution channel for FSC, the behavior of the curve will be opposite to that of the face-to-face distribution channels as shown in **Figure 3**.

The challenges´ impact level on the conventional FSC distribution channels is usually low when compared with the challenges´ impact level on the face-to-face distribution channels. The main reason is that conventional FSC distribution channels have better capabilities to deal with the challenges, and therefore its impact is lower. On the other hand, the face-to-face distribution channels do not have all conditions and therefore the impact level of the challenge is high. This suggests that more resources are needed for the face-to-face distribution channel. For a few of the challenges, the impact is low for face-to-face distribution channels. The main reason for this is their ability to operate with local and organic food closely connected to consumers, which is more complex for the conventional FSC distribution channels.

5. DISCUSSION

The results suggest that there is a higher level of impact of challenges on the face-to-face forms of distribution channels for AFNs. Seventeen challenges were identified which has a higher impact on face-to-face distribution channels as compared to six challenges on conventional ones. The challenges have also impact across several categories. From the seven challenges with implications in more categories, the higher impact is found in four of them (4, 6, 19, 23) for the face-to-face distribution channels and in three of them (2, 3 ,18) for the conventional distribution channels. The higher impact challenges with implications in more categories for the face-to-face distribution channels are the ones that imply that more work is required from the actors of the distribution channels in order to deal with them. These challenges are the distribution of local and organic products in the long term (4); keeping the availability of products (6); transferring logistics and best practices from the conventional supply chains to improve the efficiency and effectiveness (19); and finding the intermediaries able to cope with alternative forms of production, and reconnecting producers of local and organic food with more consumers (23).

On conducting this review, it is possible to affirm that very little scholarly data exists on distribution channels for the accessibility of local and organic food. Therefore, more work is also needed from the academic side in order to support and lead the actors of the distribution channels. Even when the challenges have been identified, more research is needed to validate them, and find the requirements for the distribution channels that may bring local and organic food according to consumers' and farmers' desires (Pardillo-Baez *et al.*, 2019).

A research agenda is proposed, which address the directions for future research and their priorities. Twenty-seven directions have been proposed based on the studies from the literature review (**Table 4**), and five based on the own considerations of the authors (**Table 5**). The directions for future research have been evaluated according to two criteria; the level of importance and the term (the time period of study). The level of importance is classified as high (1), medium (2), or low (3) depending on the authors' assessment. The term is classified as long (1), medium (2), or short (3), depending on the time needed to work with the task, which is related to the task´s complexity. The priority is calculated as a product of the level of importance and term. The priority can get values from 1 to 9, while smaller values will indicate higher priorities from the authors' perspective.

Table 4 Research agenda base on researchers' criteria

No.	Directions for Future Research	References	Level of Importance			Term (Time to Work With)			Priority
			High (1)	Medium (2)	Low (3)	Long (1)	Medium (2)	Short (3)	
1.	Broadening the conceptualization of AFNs and typology of different alliances of local food systems	Figueroa-Rodriguez *et al.*, 2019; O'Neill, 2014; Venn *et al.*, 2006; Brinkley, 2017; Levidow & Psarikidou, 2011	1				2		2
2.	A continued review focusing only on the latest contributions under a systemic view in order to increase our contemporary knowledge of AFNs and to update the existent challenges for their distribution channels.	Figueroa-Rodriguez *et al.*, 2019	1				2		2
3.	Widening the ecosystem boundaries and including other flows, such as the production and supply of packaging materials and modeling the disposal of food waste.	Accorsi *et al.*, 2016	1				2		2
4.	Consider a what-if multi-scenario analysis to identify the right balance of small and global intensive agro-food systems and assess the factors, affecting the economic and environmental sustainability of food supply chains.	Accorsi *et al.*, 2016	1				2		2
5.	Using case studies of larger sizes	Jonkman *et al.*, 2019; Renting *et al.*, 2003; Venn *et al.*, 2006	1			1			1
6.	Present Supply Chain design models tailored to applications in the context of Agro-food supply chain	Jonkman *et al.*, 2019		2			2		4
7.	Tools across disciplines in order to design cost-effective agro-food supply chains that proactively consider environmental externalities (weather and soil conditions)	Accorsi *et al.*, 2016; Renting *et al.*, 2003	1				2		2
8.	Integrated optimization of distribution channel for highly perishable local foods and face-to face AFNs	Jonkman *et al.*, 2019; Bosona *et al.*, 2011	1				2		2
9.	Generic method for perfomance measurement of Agro-food hubs and evaluation of success/failure	Manikas *et al.*, 2019		2			2		4
10.	How AFNS can co-exist with the conventional system and collborate with each other	Barbara & Dagnes, 2016; Levidow & Psarikidou, 2011; Figueroa-Rodriguez *et al.*, 2019; O'Neill, 2014; Venn *et al.*, 2006	1			1			1
11.	How different AFNS can collaborate with each other to overcome their challenges	Barbara & Dagnes, 2016	1				2		2
12.	Study the role of social media on consumers sustainable behaviour and its impact on AFNs	Bos & Owen, 2016		2			2		4

Table 4 Research agenda base on researchers' criteria (cont')

No.	Directions for Future Research	References	Level of Importance			Term (Time to Work With)			Priority
			High (1)	Medium (2)	Low (3)	Long (1)	Medium (2)	Short (3)	
13.	Study the motivations of consumers for shopping at farmers' markets.	Figueroa-Rodriguez *et al.*, 2019; Howard, 2009		2			2		4
14.	Study how citizens participate in sustainable and participatory food practices in different geographical localities? Understanding consumer's perception of local food	Bos & Owen, 2016; Bosona *et al.*, 2011; Brown *et al.*, 2009; Gracia *et al.*, 2012		2			2		4
15.	Study how make consumers taking responsibility for food choices that enhance sustainability within food markets?	Levidow & Psarikidou, 2011			3		2		6
16.	Exploring new theoretical considerations to explain how social relationships impact local food networks.	Brinkley, 2017		2			2		4
17.	Include in the study of AFNs the need of intermediaries and their classification.	Levidow & Psarikidou, 2011; Figueroa-Rodriguez *et al.*, 2019; O'Neill, 2014	1			1			1
18.	Study the role of policy makers and the policies that standarize, facilitates and promote the development of food supply on the region; and make them clear and aligned for AFNs. Public policies leading to connect local farmers with alternative food networks	Levidow & Psarikidou, 2011; Brinkley, 2017; Figueroa-Rodriguez *et al.*, 2019; O'Neill, 2014; Howard, 2009		2		1			2
19.	Consider the support for producer cooperation (collaborative working), co-operative ventures to reduce product miles and increase availability and productivity of local products	Levidow & Psarikidou, 2011	1				2		2
20.	Impact of local food on rural-urban interactions	Bosona *et al.*, 2011		2			2		4
21.	Identifying gaps in local food networks	Brinkley, 2017	1					3	3
22.	How to deal with unequal power distribution between differnet actors in the agro-food system	Gascon, 2018			3		2		6
23.	Study the institutional characteristics of the market such as opening hours, parking, product availability and pricing that have obvious relevance for consumers and to proposals for expanding local food availability	Berg & Preston, 2017	1				2		2
24.	Study characteristics of AFNs in different regions	O'Neill, 2014		2			2		4
25.	Study the distribution and accesibility of "urban" produced food	Siegner *et al.*, 2018	1				2		2

Table 4 Research agenda base on researchers' criteria (cont')

No.	Directions for Future Research	References	Level of Importance			Term (Time to Work With)			Priority
			High (1)	Medium (2)	Low (3)	Long (1)	Medium (2)	Short (3)	
26.	Study the distribution flows of local produced foods across a city	Siegner *et al.*, 2018	1			1			1
27.	Study the distribution channels for face-to-face AFNs, characterize and compare them. Identify similarities and differences. How to work with them and make them more efficient and sustainable?	Venn *et al.*, 2006	1			1			1

Table 5 Research agenda base on own authors' criteria

No.	Directions for future research	Level of importance			Term (time to work with)			Priority
		High (1)	Medium (2)	Low (3)	Long (1)	Medium (2)	Short (3)	
1.	Validate the impact of the challenges on the distribution channels for AFNs		2			2		4
2.	Identify the requirements or characteristics of the distribution channels of the AFNs.	1			1			1
3.	Identify the advantages and disadvantages of each distribution channel on face-to-face AFNs forms.	1				2		2
4.	Study the capacity of different places to develop a local food distribution system	1				2		2
5.	Design the distribution system that closely connects consumers and farmers of local and organic food, answering their requirements and allowing efficient and sustainable development.	1			1			1

As it was previously indicated, the face-to-face distribution channels are facing the higher impact of the challenges despite having conditions to provide local and organic food to consumers. Even though in total 32 directions for future research were identified, the suggestion is to focus on the seven directions with higher priority for future research. These directions are: using case studies of larger sizes; study how different AFNs can co-exist with the conventional system and collaborate; study the possible intermediaries able to cope with AFNs and classified them; study the distribution flows of locally produced foods across a city; study the distribution channels for face-to-face AFNs identifying similarities and differences and finding how to make them more efficient and sustainable; identify requirements and characteristics of the distribution channels of the AFNs; and designing the distribution system for local and organic food that closely connects consumers and farmers, answering their requirements and allowing efficient and sustainable development.

6. CONCLUSION

A review of the existing short food distribution systems for local and organic food has been conducted and a research agenda has been proposed. In total, 23 challenges were identified for the local food distribution channel, and the level of impact for each challenge has been estimated on each group of the AFNs category. A classification of the challenges was done taking into account their implications they may have in efficiency, sustainability, quality, flexibility, communication, technology, and innovation. As a result of this classification, it is possible to affirm that the major implications are in the efficiency with 19 challenges, followed by sustainability with 12 and flexibility and innovation with 11 challenges each one.

After evaluating the impact of the challenges in high, medium, low, it is possible to affirm that the higher impact of challenges is mostly presented on the face-to-face form for AFNs. The opposite situation is faced by conventional distribution channels, which have better capabilities to deal with the challenges, and then the impact is low. To deal with challenges actors need to work more with efficiency, sustainability, flexibility, and innovation.

A general research agenda is suggested with 32 proposed directions for future researches, 27 based on literature review and 5 based on the author´s criteria. Moreover, seven of these directions were identified with a high priority it is suggested to focus on them for closer future research. But the main conclusion is that more research is needed on the field of distribution channels for AFNs especially on the direct or face-to-face forms of distribution channels.

REFERENCES

Accorsi, R., Cholette, S., Manzini, R., Pini, C., Penazzi, S., (2016). The land-network problem: ecosystem carbon balance in planning sustainable agro-food supply chains. *Journal of Cleaner Production* 112, pp. 158 – 171.

Adams, D. C., & Adams, A. E. (2011). De-placing local at the farmers' market: consumer conceptions of local foods. *Journal of Rural Social Sciences* 26 (2), pp. 74 – 100.

Akkerman, R., Farahani, P., & Grunow, M., (2010). Quality, safetyare and sustainability in food distribution: A review of quantitative operations management approaches and challenges. *OR Spectrum* 32 (4), pp. 863 – 904.

Allen, P.; FitzSimmons, M.; Goodman, M.; Warner, K., (2003) Shifting plates in the agrifood landscape: The tectonics of alternative agrifood initiatives in California. *Journal of Rural Studies* 19, pp. 61 – 75.

Barbera, F., Dagnes, J., (2016). Building Alternatives from the Bottom-up: The Case of Alternative Food Networks. *Agriculture and Agricultural Science Procedia* 8, pp. 324 – 331.

Berg, N., Preston, K.L., (2017). Willingness to pay for local food?: Consumer preferences and shopping behavior at Otago

Farmers Market. *Transportation Research Part A* 103, pp. 343 – 361.

Biewener, C., (2016). Paid Work, Unpaid Work, and Economic Viability in Alternative Food Initiatives: Reflections from Three Boston Urban Agriculture Endeavors. *J. Agric. Food Syst. Community Dev*. 6, pp. 35 – 53.

Bos, E., Owen, L., (2016). Virtual reconnection: The online spaces of alternative food networks in England. *Journal of Rural Studies* 45, pp. 1 – 14.

Bosona, T., Gebresenbet, G., Nordmark, I., Ljungberg, D., (2011). Box-Scheme Based Delivery System of Locally Produced Organic Food: Evaluation of Logistics Performance. *Journal of Service Science and Management* 4, pp. 357-367

Bourlakis, M. A., & Weightman, P. W. (Eds.). (2004). *Food supply chain management*. Blackwell Publishing Ltd., Oxford, UK

Brinkley, C., (2017). Visualizing the social and geographical embeddedness of local food systems. *Journal of Rural Studies* 54, pp. 314 – 325.

Brown, A., (2001). Counting farmers markets. *Geographical Review* 91 (4), pp. 665 – 674.

Brown, E., Dury, S., Holdsworth, M., (2009). Motivations of consumers that use local, organic fruit and vegetable box schemes in Central England and Southern France, *Appetite* 53, pp. 183 – 188.

Coley, D., Howard, M., Winter, M., (2009). Local Food, Food Miles and Carbon Emissions: A Comparison of Farm Shop and Mass Distribution Approaches. *Food Policy* 34 (2), pp. 150 – 155.

Corrigan, M. P., (2011). Growing what you eat: developing community gardens in Baltimore, Maryland. *Applied Geography* 31 (4), pp. 1232 – 1241.

Daftary-Steel, S.; Herrera, H.; Porter, C., (2015). The Unattainable Trifecta of Urban Agriculture. *Journal of Agric. Food Syst. Community Dev.* 6, pp. 19 – 32.

Dansero E., Puttilli, M., (2014). Multiple territorialities of alternative food networks: six cases from Piedmont, Italy. Local Environment. *International Journal of Justice and Sustainability* 19, pp. 626 – 643.

Department for Environment, Food and Rural Affairs (DEFRA). (2002). *The strategy for sustainable food and farming, facing the future*. London: DEFRA.

Dowler, E., Kneafsey, M., Cox, R., (2010). "Doing food differently": reconnecting biological and social relationships through care for food. *The Sociological Review* 57 (2), pp. 200 – 221.

Edwards-Jones G (2010) Does eating local food reduce the environmental impact of food production and enhance consumer health*? Proceedings of the Nutrition Society* 69 (4), pp. 582 – 591.

Engelseth, Per, (2015), Customer-Responsive Supply of Local Foods. *Operations and Supply Chain Management* 8 (3), pp. 111 – 119.

FAO, 2019. *The State of Food Security and Nutrition in the World 2019*. *Safeguarding against economic slowdowns and downturns*. Rome, FAO.

Feagan R., (2007), The place of food: Mapping out the 'local' in local food systems. *Progress in Human Geography* 31, pp. 23 – 42.

Feenstra, G., (1997). Local food systems and sustainable communities. *American Journal of Alternative Agriculture* 12 (1), pp. 28 – 36.

Feldmann, C.; Hamm, U., (2015). Consumers' Perceptions and Preferences for Local Food: A Review. *Food Qual. Preference* 40, pp. 152 – 164.

Fendrychová, L., Jehliˇcka, P., (2018) Revealing the hidden geography of alternative food networks: The travelling concept of farmers' markets. *Geoforum* 95, pp. 1 – 10.

Figueroa-Rodríguez, K. A., Álvarez-Ávila, M. C, Hernández Castillo, F., Schwentesius Rindermann, R., Figueroa-Sandoval, B., (2019). Farmers' Market Actors, Dynamics, and Attributes: A Bibliometric Study. *Sustainability* 11 (745), pp. 1 – 15.

Freedman, D. A., Bell, B. A., Collins, L. V., (2011). The Veggie Project: a case study of a multi-component farmers' market intervention. *Journal of Primary Prevention* 32 (3-4), pp. 213 – 224.

Freidberg, S., Goldstein, L., (2011). Alternative food in the global south: Reflections on a direct marketing initiative in Kenya. *Journal of rural studies* 27 (1), pp. 24 – 34.

Galli, F., Brunori, G. (eds.), (2013). Short Food Supply Chains as drivers of sustainable development. Evidence Document. *Document developed in the framework of the FP7 project FOODLINKS (GA No. 265287)*. Laboratorio di studi rurali Sismondi, pp. 1- 92.

Gascón, J., (2018). Food waste: a political ecology approach. *Journal of Political Ecology* 25, pp. 587 – 601.

Gracia, A., Magistris, T., Nayga, R. M. Jr., (2012). Importance of social influence in consumers´ willingness to pay for local food: Are there gender differences? *Agribusiness, An International Journal* 28 (3), pp. 361 – 371.

Grunert, K.G. (2006). How changes in consumer behaviour and retailing affect competence requirements for food producers and processors. *Economía Agraria y de los Recursos Naturales* 6 (11), pp. 3 – 22.

Gumirakiza, J.D.; Curtis, K.R.; Bosworth, R., (2014). Who attends farmers' markets and why? Understanding consumers and their motivations. *Int. Food Agribus. Manag. Rev.* 17, pp. 65 – 82.

Hempel, C., Hamm, U., (2016). How important is local food to organic-minded consumers? *Appetite* 96, pp. 309 – 318.

Hendrickson, M.K., Heffernan,W.D., (2002). Opening Spaces through Relocalization: Locating Potential Resistance in the Weaknesses of the Global Food System. Social Rural 42, pp. 347 – 369.

Hinrichs C.C., (2000). Embeddedness and local food systems: Notes on two types of direct agricultural market. *Journal of Rural Studies* 16, pp. 295 – 303.

Hofmann, C.; Dennis, J.H.; Marshall, M., (2009). Factors influencing the growth of farmers' markets in Indiana. *HortScience* 44, pp. 712 – 716.

Horst, M., Ringstrom, E., Tyman, S., Ward, M., Werner, V., Born, B., (2016). Toward a more expansive understanding of food hubs. Journal of Agric. Food Syst. Community Dev. 2 (1), pp. 209 – 225.

Howard, P.H., (2009). Consolidation in the North American organic food processing sector, 1997 to 2007. *International Journal of Sociology of Agriculture and Food* 16 (1), pp. 13 – 30.

Ilbery, B., Maye, D., (2005). Alternative (shorter) food supply chains and specialist livestock products in the Scottish - English borders. *Environ. Plan. A* 37, pp. 823 – 844.

Jonkman, J., Barbosa-Póvoa, A. P., & Bloemhof, J. M., (2019). Integrating harvesting decisions in the design of agro-food supply chains. *European Journal of Operational Research* 276, pp. 247 – 258.

Jarosz, L., (2008). The city in the country: growing alternative food networks in metropolitan areas. *Journal of Rural Studies* 24, pp. 231 – 244.

Kirwan, J., (2006). The interpersonal world of direct marketing: examining conventions of quality at UK Farmers' Markets. *Journal of Rural Studies* 22 (3), pp. 301 – 312.

Kneafsey, A.M.; Venn, L.; Schmutz, U.; Balázs, B.; Trenchard, L.; Eyden-Wood, T.; Sutton, G.; Blackett, M.; Santini, E.F.; Gomez, S. (2013), Short Food Supply Chains and Local Food Systems in the EU. A State of Play of Their Socio-Economic Characteristics, *EUR—Scientific and Technical Research Series*; Publications Office of the European Union: Luxembourg.

Kortwright, R., Wakefield, S., (2011). Edible backyards: a qualitative study of household food growing and its

contributions to food security. *Agriculture and Human Values* 28(1), 39 – 53.

Kroma, M. M., (2006). Organic Farmer Networks: Facilitating Learning and Innovation for Sustainable Agriculture. *Journal of Sustainable Agriculture* 28 (4), pp. 5 – 28.

Levidow, L., Psarikidou, K., (2011). Food relocalization for environmental sustainability in Cumbria, *Sustainability* 3, pp. 692 – 719.

Mahajan, R., Garg, S., & Sharma, P. B. (2017). Processed food supply chain: a framework for literature review. *Journal of Advances in Management Research*, *14*(1), pp. 91-109.

Manikas, I., Malindretos, G., Moschuris, S., (2019). A Community-Based Agro-Food Hub Model for Sustainable Farming. *Sustainability* 11 (1017), pp. 1-17.

Marsden T. K., (1998). New rural territories: regulating the differentiated rural spaces. *Journal of Rural Studies* 14(1), pp. 107.

Marsden, T. K., Banks, J., Bristow, G., (2000). Food supply chain approaches: exploring their role in rural development. *Sociologia Ruralis* 40, pp. 424 – 438.

Marsden, T., Smith, E., (2005). Ecological Entrepreneurship: Sustainable Development in Local Communities through Quality Food Production and Local Branding. *Geoforum* 36 (4), pp. 440 – 451.

Martinez, S., Hand, M., Da Pra, M., Pollack, S., Ralston, K., Smith, T., Vogel, S., Clark, S., Lohr, L., Low, S., (2010). Local Food Systems: Concepts, Impacts, and Issues. Economic Research Report 97; United States Department of Agriculture (USDA): Washington, DC, USA.

Mittal, A., Krejci, C., & Craven, T. (2018). Logistics best practices for regional food systems: A review. *Sustainability*, *10*(1), pp. 168.

Murdoch, J., Marsden, T., Banks, J., 2000. Quality, nature and embeddedness: some theoretical considerations in the context of the food sector. *Economic Geography* 72 (6), pp. 107–125.

Nie, J.., Zhang, J., (2017). Distribution channel selection considering advertising productiveness. *Journal of Management Mathematics* 28, pp. 437 – 450.

O´Neill, K. J. (2014). Situating the 'alternative' within the 'conventional' e local food experiences from the East Riding of Yorkshire, UK. *Journal of Rural Studies* 35, pp. 112 – 122.

Onwuegbuzie, A. J., Frels, R., (2016). *Seven Steps to a Comprehensive Literature Review. A Multimodal and Cultural Approach*, 1st Edition, SAGE Publications Ltd, UK.

Pardillo Baez, Y., Sequeira, M., Hilletofth, P., & Andersson, R. (2019). Local Distribution of Organic Food: A Review and Research Agenda. *In Proceedings of the 9th International Conference on Operations and Supply Chain Management (OSCM)*, Ho Chi Minh City, Vietnam.

Renting, H., Marsden, T. K., Banks, J., (2003). Understanding alternative food networks: exploring the role of short food supply chains in rural development. *Environment and Planning A* 35 (3), pp. 393 – 411.

Renting, H., Schermer, M., Rossi, A., (2012). Building food democracy: exploring civic food networks and newly emerging forms of food citizenship. *International Journal of Sociology of Agriculture and Food* 19, pp. 289 – 307.

Ruelas, V., Iverson, E., Kiekel, P., Peters, A., (2012). The role of farmers' markets in two low income, urban communities. *Journal of Community Health* 37 (3), pp. 554 – 562.

Schmidhuber, J., & Tubiello, F. N. (2007). Global food security under climate change. *Proceedings of the National Academy of Sciences* 104 (50), pp. 19703 – 19708.

Siegner, A., Sowerwine, J., Acey, C., (2018). Does Urban Agriculture Improve Food Security? Examining the Nexus of Food Access and Distribution of Urban Produced Foods in the United States: A Systematic Review. *Sustainability* 10 (2988), pp. 1 – 27.

Smithers, J., Johnson, P., (2004). The Dynamics of Family Farming in North Huron County, Ontario. *Part I. Development Trajectories. Can. Geogr*. 48, pp. 191 – 208.

Snyder, H., (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research* 104, pp. 333 – 339.

Timpanaro, G., Foti, V. T., Scuderi, A., Schippa, G., & Branca, F., (2018). New food supply chain systems based on a proximity model: the case of an alternative food network in the Catania urban area. *Acta Horticulturae* 1215, pp. 213 – 218.

Tregear, A., (2011). Progressing knowledge in alternative and local food networks: Critical reflections and a research agenda. *Journal of Rural Studies* 27, pp. 419 – 430.

Tsolakis, N. K., Keramydas, C. A., Toka, A. K., Aidonis, D. A., & Iakovou, E. T., (2014). Agrifood supply chain management: A comprehensive hierarchical decision- making framework and a critical taxonomy. *Biosystems Engineering* 120 (0), pp. 47 – 64.

UN Department of Economics and Social Affairs, 2015. World population projected to reach 9.7 billion by 2050, New York, USA.

UNSD, 2016. "Sustainable Development Goals Report", retrieved from https://unstats.un.org/sdgs/report/2016/.

Venn, L.; Kneafsey, M.; Holloway, L.; Cox, R.; Dowler, E.; Tuomainen, H., (2006). Researching European 'alternative' food networks: some methodological considerations. *Area* 38 (3), pp. 248 – 258.

Wittman, H., Beckie, M., Hergesheimer, C., (2012). Linking local food systems and the social economy? Future roles for farmers' markets in Alberta and British Columbia. *Rural Sociology* 77 (1), pp. 36 – 61.

Yue, C., Tong, C., (2009). Organic or local? Investigating consumer preference for fresh produce using a choice experiment with real economic incentives. *HortScience* 44 (2), pp. 366 – 371.

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