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Foreword

Traditionally, Studies in Agricultural Economics publishes a special issue each year on topics of international relevance. This time, three guest editors (Fedele Colantuono, Francesco Contó and Mariantonietta Fiore) have helped to put this special issue together entitled 'Short food supply chains in Europe: Evidence from the SKIN project'.

In the recent years, the concept of SFSC has become very popular in different countries with high potential for development as an alternative model to large-scale distribution. SFSCs are characterised by a direct relationship between producer and consumer, or at most with a single intermediary between the two extremities of the distribution system. This represents an important way to increase trust among actors, to maintain high food quality (short storage time between harvest and sale) and to valorise product origins and history (territory value and rural development). At the same time, SFSCs reduce environmental costs associated with logistics and contribute to food waste reduction since products are more local and consumers are more aware about health quality.

Typical examples of SFSCs include box schemes, farmers' markets, on-farm sales, consumers cooperatives, community gardening and more ICT-based systems as direct internet sales or new apps for mobiles. Different concepts are now related to the trend of SFSC, such as "local consumption", "slow food", "proximity products", "from farm to fork" or "zero kilometre" which improve this distribution system, granting more power to farmers and consumers to better express themselves and their needs. SFSC is playing an important role in the emerging food networks as an alternative to most globalised agri-food models, attracting interest from policy makers and academia.

Policy makers from different countries are regulating this distribution model, at local, regional or national levels, in order to give common definitions and have some norms to align distribution, marketing, public procurement and incentivise SFSC among farmers (business development and entrepreneurship) and citizens (food democracy). On the basis of the fragmented situation observed all around Europe and in order to put together the available information and realities, SFSC has become objective of several projects involving different stakeholders from academia to producers and consumers' representatives.

There exist various European H2020 projects on SFSCs and the aim of this special issue is to provide an overview of new trends and opportunities in SFSCs developed around Europe through some practical cases. Four papers are directly built on the experience of the EU project SKIN (Short supply chain Knowledge and Innovation Network) funded under the program H2020, coordinated by the University of Foggia (Italy) and involving 22 partners in 15 countries. This project was aimed to systematise and bring knowledge to SFSC practitioners, promote collaboration within a demand-driven innovation logic and provide inputs to policymakers. The remaining three papers were also related to other European projects besides SKIN.

The first paper, written by Hyland, Crehan, Colantuono and Macken-Walsh, sets the scene by providing an overview on the significance of SFSCs and the conceptual framework lying behind the SKIN project. The paper first outlines the issues that confront SFSC actors which represent bottlenecks to the adoption of 'Good Practices' and then documents the Good Practices collected as part of the SKIN project as tangible examples of how SFSCs overcome such challenges.

The second paper, written by Stanco, Lerro, Marotta and Nazzaro, investigates consumers' and farmers' characteristics in short food supply chains. The paper attempts to define the farmers and consumers of farmers' markets in terms of both their socio-demographic and their attitudinal characteristics through a sample from Italy. Results show that the majority of consumers purchasing at farmers' markets are women, with an average age of 49 and with a high level of education. They attach great value to the availability of fresh and organic products with a good value for money. Farmers, by contrast, are mainly male, with an average age of 45 years, a high school degree and several years of experience in farming. They value more the creation of a direct and durable relationship with consumers in order to convey information about the quality and authenticity of their products.

The third paper in this issue, written by Delicato, Collison, Myronyuk, Symochko and Boyko, investigates the current research on how consumers select the foods they buy and how they define 'quality'. Results suggest that SFSCs ensure that more of the value of the food is returned to producers and allows consumers to have a more direct connection to where and how their food was produced. SFSCs also tend to exhibit features which consumers increasingly value, whether these be traceability and provenance, organic, familiarity, tradition or a connection to a specific place and culture. These strengths of SFSCs suggest that there is real potential to see major growth in this sector in the coming decade.

The fourth paper, written by Giacomarra, Tulone, Crescimanno and Galati, explores the intention of entrepreneurs operating in the Short Food Supply Chain to adopt electric mobility inside their business. The authors find that entrepreneurs with higher levels of intention to introduce sustainable means of transport, such as electric vehicles, are the most concerned about the environment and the delicate balance of natural ecosystems. Moreover, the more frequently local farmers participate in local markets, the higher is their intention to adopt electric vehicles for their business.

The fifth paper, written by Drejerska, Gołębiewski and Fiore, investigates the role of social media for interactions with customers within the short food supply chain. Results indicate a relatively wide audience for the Facebook pages of farmers/producers (numbers of likes and followers) but interactions with consumers are limited (a low number of comments and sharings). The conclusion is implied that a number of farmers/producers use social media for provid-

ing information but they mostly interact with their costumers offline.

The sixth paper, written by Collison, Collison, Myroniuk, Boyko and Pellegrini, analyses the current SFCs' challenges, with particular attention paid to fresh products, taking into account the evolution of consumers and market trends as well as the transformation of logistics. The analysis is based on evidence and examples from across Europe. Results suggest that new direct delivery food logistics models could help consumers access supplies of fresh products more easily, improve consumer health and reduce the high waste levels and carbon emissions, which are seen in many European fresh product supply chains. Food suppliers would also benefit by securing more of the final consumer value of the food they produce.

The seventh paper, written by Nemes, Csizmadiáné Czuppon, Kujáni, Orbán, Szegedyné Fricz and Lajos, investigated the roles locally produced, processed and marketed food played in rural tourism and local socio-economic development in Hungary. The authors contrast the externally perceived image of a Hungarian region with the realistic impacts of the current development process on the environment and the general wellbeing of local economy and society. The article presents how the elements of touristic attraction are perceived by locals and visitors.

On the whole, we think this issue well reflects the diversity of European research on SFSCs. The various results presented in the papers enrich the existing literature and provide interesting insights for not just for researchers but entrepreneurs and policy makers, paving the way for future research into this topic.

Attila JÁMBOR
Editor-in-Chief

Fedele COLANTUONO
Francesco CONTÓ
Mariantonietta FIORE
Guest Editors

Budapest and Foggia, July 2019

John HYLAND*, Patrick CREHAN, Fedele COLANTUONO*** and Áine MACKEN-WALSH***

The Significance of Short Food Supply Chains: Trends and Bottlenecks from the SKIN Thematic Network

Short Food Supply Chains (SFSCs) are central to the alternative food movement discourse. SFSCs are based upon the interrelations among actors who are directly involved in the production, processing, distribution, and consumption of food products. They depend upon actors mobilising resources of various kinds: skills; knowledge; labour; capital; buildings etc. External factors such as policies and regulations can also encourage the creation of these shorter chains. The development of SFSCs can still be hindered by a range of other factors. Nevertheless, bottlenecks can be overcome via the sharing of information on successful SFSCs through the dissemination of Good Practices between various actors and territories. The Short Supply Chain Knowledge and Innovation (SKIN) project uses the term 'good' rather than 'best' practice to draw attention to the subjective lens through which a practice is ultimately evaluated by an end-user. This paper first outlines the many issues that confront SFSC actors which represent bottlenecks to the adoption of 'Good Practices'. It then documents the Good Practices collected as part of the SKIN project as tangible examples of how SFSCs overcome such challenges. Lessons learnt from project highlights are subsequently assessed in an effort to mitigate and offer solutions to the challenges associated with SFSCs. The paper demonstrates the considerable latent potential inherent to SFSCs. However, in order for the agricultural sector to realise the full promise of short supply chains it must first be conscious of the issues pertinent to their prosperity.

Keywords: short food supply chain, good practice, challenges, trends, barriers, foresight

JEL classifications: Q13, Q18

* Teagasc, Department of Agrifood Business and Spatial Analysis, Rural Economy Development Programme (REDP), Mellows Campus, Athenry, Co. Galway, Ireland. Corresponding author: john.hyland@teagasc.ie.

** CKA, Brussels, Belgium.

*** Department of Economics, University of Foggia, Italy.

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Background and rationale

An Alternative Food Network (AFN) depicts a variety of 'post-productivist' market arrangements that offer an alternative to industrial food systems (Renting *et al.*, 2003). Short Food Supply Chains (SFSCs) are central to the alternative food movement discourse. SFSCs can be defined 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" (EU, 2013). Some 15% of EU farms sell more than half of their produce directly to consumers (IPES, 2019), while only 2% of the total volume of fresh food is sold directly from producers to consumers in Europe (EC, 2015). Evidently, there are a host of challenges and bottlenecks that impede European primary food producers from operating a SFSC. The most prominent bottlenecks can be categorised according to the following themes: societal constraints, deficiencies in skills, a lack of resources, policy issues, and geographical fragmentation (SKIN, 2017a). What follows in the introduction is an account of how each of these themes in turn serves to inhibit SFSCs. Thereafter, in the results section we assess how well these challenges are being overcome and in the discussion, we paint a picture of how, in real terms, these challenges affect SFSCs.

Diverse social processes hinder SFSCs and their wide-ranging socio-economic, ecological and territorial benefits. Societal disparities in the productive and social roles of men and women is one such example and leads to imbalanced power relationships concerning SFSCs (Zirham and Palomba, 2016). In particular, women often lack the resources that are necessary to get involved in SFSCs (Byrne *et al.*, 2014). They are also most affected by the increased time and effort required in preparing meals using ingredients bought locally (Little *et al.*, 2009). Another societal issue is that the established generation of older farmers are uncomfortable engaging directly with consumers as they have adapted to the conventions of industrial agriculture (Balázs, 2012). Whilst younger farmers are more willing to engage in direct sales, they face difficulties in attaining access to land as prices continue to rise in many Member States (Augère-Granier, 2016). Moreover, there is often a failure to pass on traditional know-how as younger people leave family farming (EIP-AGRI, 2015; Kneafsey *et al.*, 2013).

It can be arduous to reduce the dependence on powerful actors in the supply chain and foster a more direct relationship with consumers. Small suppliers often do not have the bargaining power required to challenge supermarkets in commercial negotiations (EIP-AGRI, 2015). This lack of influence is compounded by a reluctance of some SFSCs to sell to supermarkets due to a perceived loss of control or compromise on principles (EIP-AGRI, 2015). Collaboration is an effective method of overcoming many of the power imbalances in the food chain. Nevertheless, farmers often have narrow social networks and are consequently limited in their access to collaborative opportunities (McElwee, 2006). Building sufficient trust between competing producer groups to form networks of farmers large enough to supply significant and consistent volumes of high-quality differentiated food products is consequently challenging (Kvam and Bjørkhaug, 2015).

In order to operate SFSCs producers require certain resources. Farmers may, for example, be time-poor and consequently unable to undertake product development

(EIP-AGRI, 2015). SFSCs also have to contend with limited monetary resources while financial institutions are often reluctant to invest because of a perceived high level of risk (EIP-AGRI, 2015). This impacts SFSCs in a variety of ways; e.g. farmers may lack the financial resources to buy expertise from outside (Galli and Brunori, 2013). In contrast to more powerful actors in the supply chains SFSC producers have little access to the kind of advanced technologies for harvest and post-harvest practices which can result in efficiency gains. For these reasons SFSCs have not had the same capacity to adopt technologies to keep produce fresh from farm to fork (ECLAC-FAO-IICA, 2015).

Shortcomings in farmer skills have a negative impact on SFSCs (SKIN 2017c). Skills deficiencies encompass technical (know-how), psychosocial (skills) or financial (investments) dimensions and their amelioration becomes challenging in the context of SFSCs (Rucabado-Palomar and Cuéllar-Padilla, 2018). In addition to producing foodstuffs, farmers must become accustomed to roles such as marketer, business strategist, distributor, salesman, etc. Direct selling of goods to consumers offers opportunities to educate them regarding various aspects of the produce. Nevertheless, this will only be of benefit if producers are effective communicators (EIP-AGRI, 2015). Farmers operate in a tightly constrained and regulated environment which can act as a bottleneck to entrepreneurial activity and cooperation among actors (McElwee, 2006). Training is often necessary but peer-to-peer exchanges are not facilitated by public policies (IPES, 2019). Furthermore, mainstream agricultural advisory services primarily support industrial (quality) regimes and conventional forms of marketing (Knickel *et al.*, 2008).

Another significant bottleneck to SFSCs is represented by regulatory and contractual issues. Regulation (EU) No 1305/13 on Pillar 2 of the CAP encourages member states to use SFSCs as a means to promote rural development. However, there are numerous policy blind spots that often convey a patchwork of messages (Smith *et al.*, 2016). For instance, Regulation (EC) 854/04 exempts small farmers selling products directly to consumers from the Hazard Analysis and a Critical Control Point (HACCP) system for food safety. Despite this exemption, not all member states have implemented these allowances. Small primary producers also face exclusion from public procurement contracts and other lucrative markets. Similar to HACCP, local authorities and Member States are often unfamiliar with public procurement allowances with regard to the Green Public Procurement scheme (Ferrando and Lombardi, 2019).

Producers are also faced with the difficulty and expense of gaining certification (Smith *et al.*, 2015). Another major disadvantage is the difficulty faced in defining many aspects of labels: for example, how does one define or accredit "local"? Moreover, is there a single definition that would be applicable across member states (Kneafsey *et al.*, 2013)? Furthermore, EU geographical indication schemes are frequently perceived as too burdensome and expensive for small-scale farmers to access (IPES, 2019). SFSCs often have informal agreements between producers and consumers rather than binding contracts which may consequently add to economic uncertainty (Carbone, 2017). Problematic issues also arise in contractual agreements between producers and large retailers as contracts typically include rules of production. A considerable concern is product quality, as are standardisation and consistency (Carbone, 2017). There can also be challenges in participating in public food procurement run by local authorities due to fragmented offers and a general lack of collective approaches, factors which make it difficult to compete in a public tender (EC, 2013).

Fragmentation of social and human capital in rural areas can make it difficult for producers to connect with consumers (Berlina *et al.*, 2017). Rural-urban connections are often poor and require the development of new outlets especially in sub/peri-urban areas (Macken-Walsh, 2017). Likewise, assembling customer orders can be cumbersome and may lead to unreliable distribution when conflated with the logistic challenges which prevail in many rural areas (EIP-AGRI, 2015). Geographical fragmentation further affects SFSCs as some locations are too remote for consumers to travel to; ensuring appropriate transport/distribution infrastructure is therefore essential (EC, 2013). The creation of local employment is also hindered by the low population density of some regions which can cause labour shortages (Wittman *et al.*, 2012).

It is worth noting the role of consumers in the context of SFSC as their attitude towards AFNs directly influences the quality of food products as they perceive it (Carzedda *et al.* 2018). It is therefore essential that producers build trust, commitment and loyalty among consumers (Carzedda *et al.* 2018). However, producers are often disadvantaged if their products are not readily available through multifarious retail points (Heron, 2011). Approximately 75% of Europeans live in cities (Eurostat, 2016); their busy lifestyles and long working hours leave little time for food cultivation and preparation (McMichael, 2012). Supermarket culture therefore dominates consumer behaviour with little consideration shown for locally produced food (EIP-AGRI, 2015). Additionally, much of the alternative food movement's rhetoric reflects the mindset of an affluent and liberal individual which poses a bottleneck to wider engagement (Alkon and McCullen, 2011; Galli and Brunori, 2013).

SKIN

Collectively the issues outlined above highlight the need for measures which empower SFSCs. One such approach is the sharing of information on successful examples which contribute to transferring useful practices between various actors and territories (Karner *et al.*, 2010). The Short Supply Chain Knowledge and Innovation Network (SKIN) is an ambitious EU H2020 project that focuses on the domain of SFSCs and involves 21 partners in 14 countries. SKIN has the ambition of tackling the knowledge fragmentation that separates European farmers, researchers, practitioners and policy makers and citizens related to SFSCs. It aims at stimulating the creation of a collaborative innovation network in different EU agriculture sectors through the improvement of knowledge exchange among farmers, research centres, practitioners and, ultimately, but equally relevant, citizens.

The participative activities and tools developed are explicitly intended to close the research and innovation divide, thus, practitioners' experiences, needs and ideas are fed back to researchers through an intensive dialogue with stakeholders (both web-based and direct, achieved through personal meetings and events organized at regional and national level, but also through international workshops).

The manner in which inclusion takes place can vary significantly depending on structural features of local networks and governance factors (Ramirez *et al.*, 2018). A key element of SKIN is the collection of 'Good Practices' as well as the organization of six different thematic workshops identified as Innovation Challenge Workshops (ICWs). About 50 SFSC stakeholders are invited to each ICW which focuses on a specific topic (Fresh products; Technologies; Regulations; New skills and AKIS; Consumers and Society; Logistic and Industries). SKIN therefore embodies a bottom-up approach where needs are addressed through dialogue and the cooperation of all the actors involved. The Good Practices, available in a public repository (www.shortfoodchain.eu), provide the opportunity to share and disseminate knowledge, experiences and ideas with a view to fostering innovation and overcoming the challenges and bottlenecks outlined above.

Methodology

This study draws on a number of Good Practices drawn from the SKIN project. "Good Practices" refers to strategies, programmes, projects, procedures, management and implementation practices that are:

- Implemented with positive results
- Successful, (innovative), tested and validated: it contributes to the improved performance of an entrepreneurship/farm/organisation and this contribution is recognised
- Transferable: it can be adopted in and adapted to other contexts

The term 'good' rather than 'best' practice was used to draw attention to the subjective lens through which a practice is ultimately evaluated by an end-user (according to perceived relevance, usefulness, and innovativeness, etc.). Hot topics were prescribed as a method of thematically organising Good Practices and refer to key themes applicable to SFSCs. Four modular themes of hot topic were deployed for the exploration of Good Practices; products, institutional/organisational/systems, governance, and sales. Subcategories of hot topics were identified within each of the four themes (Table 1).

The collection of Good Practices relied heavily on researcher experience and observation. Nevertheless, the selection of Good Practices was based upon a particular set of characteristics which were derived from the relevant literature. Characteristics conducive to Good Practice included: multi-actor dynamics; having a multiplier effect; practicality; sustainability; reconnection and relationships; value and values; and proximity. Project partners identified example of Good Practice pertaining to SFSCs primarily from their region and followed the same methodological guidelines for selection. First, a common template for describing the Good Practice cases was developed (SKIN, 2017b). The structure of the template makes the repository of Good Practices easier for end-users to search and also makes thematic trends easy to identify. In the next phase each of the partners carefully selected the possible Good Practice cases using the characteristics outlined. The cases were chosen according to the criterion that each case should delineate a single Good Practice from a SFSC. Information was gathered using a variety of tools such as interviews, observational research, and document analysis gathered through desk research. All the empirical data was gathered, analysed and structured according the specified predefined themes (products, institutional/organisational/systems, governance, and sales).

The study analyses 'trends and patterns' in the Good Practices collected. The repository of Good Practices, which is for the use of end-users, is designed to enable end-users to search for information by a range of search criteria, such as Hot Topics, sector, 'needs' etc. through their own lens. The paper, therefore, does not suggest that trends in the particular collection of SKIN Good Practices are indicative of areas of greater or lesser potential, but rather has sought to present an illustration of the content of a repository, which will be differently interacted with and interpreted by different users.

Results

The results are based upon findings from the collection of Good Practices and analyses thereafter (SKIN, 2017a). It is important to note that the collection of Good Practices is not statistically representative and nor were they intended to be. They were collected to highlight successful 'shining' examples of SFSCs in a European context. In total 105 Good Practices were collected in Phase 1 of the project and are analysed. The Good Practices identified are unlikely to be exhaustive, nor statistically representative of the number or geographical distribution of Good Practices in SFSCs. Nevertheless, they provide a representation of a diversity of SFSC contexts.

Good Practices by Country

The project partners primarily collected Good Practices from SFSCs within their own countries. Nonetheless, there were some instances of Good Practices identified in other nations such as the Ukraine and the USA. There were also examples of SFSCs collected by one project partner in another partner's region; for instance, in Ireland a Spanish SFSC that supplies a national retailer was profiled. In total 10 SFSCs were studied from Austria, 9 from Belgium, 7 from Czech Republic, 5 from Denmark, 6 from France, 9 from Hungary, 10 from Ireland, 8 from Italy, 5 from Poland, 5 from Serbia, 2 from Slovakia, 7 from Spain, 7 from The Netherlands, 9 from the UK, 5 from the Ukraine and 1 from the USA (Figure 1).

Good Practices by Hot Topic

Within these Good Practices, Hot Topics relating to the 'Product' thematic module were most prevalent with 566

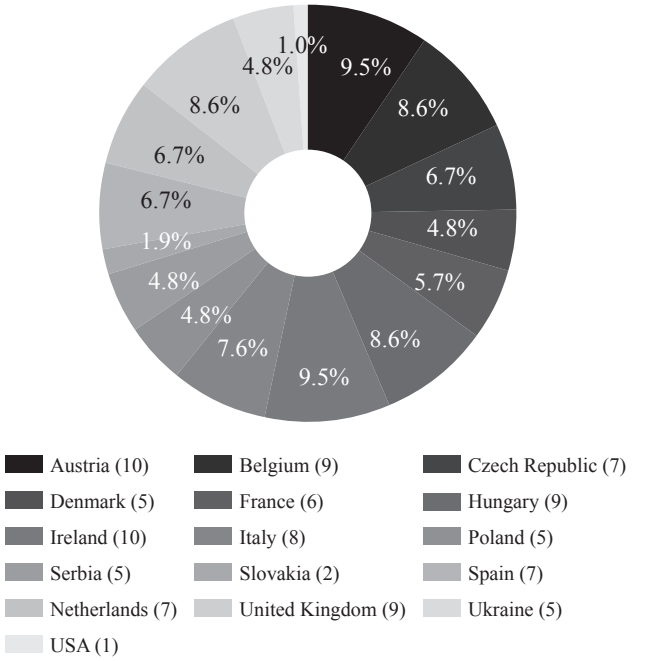

Figure 1: Geographical distribution of Good Practices.
Source: own composition

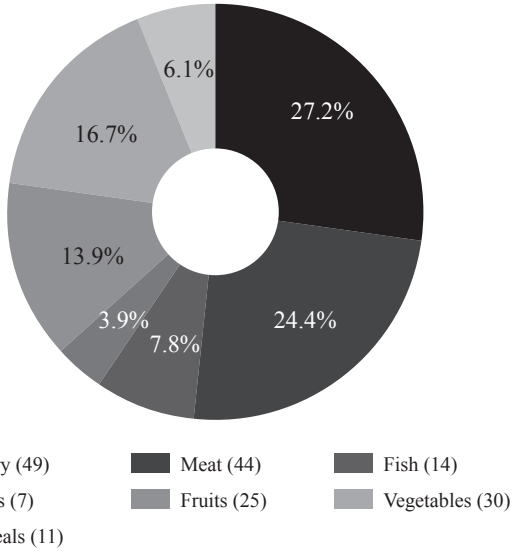

Figure 2: Food products featured in the collection of Good Practices.
Source: own composition

examples, followed by 'Sales', 'Organisational/Institutional/System', and 'Governance' with 243, 180, and 135 respective examples collected. Here, a total 1124 Hot Topics (micro categories) were identified. It is worth noting that Good Practices could relate to more than one Hot Topic, and all Hot Topics to which the Good Practices relate are listed below. Hence, the 105 Good Practices were relevant to 1124 Hot Topics (i.e. an average of approx. 5 Hot Topics were identified as relevant to each Good Practice).

The most represented Hot Topic elicited from the 105 Good Practices collected was 'contractual agreements between producers/between chain partners' with 59 instances documented. 'Ways in which value is added to the products', 'logistics and distribution' and 'reliable distribution' were all also highly represented throughout.

Good Practices: product types

Dairy products were the most frequently represented category of product from the Good Practices studied (Figure 2). The majority of dairy products featured were cheese (27), followed by milk (19). Meat products also frequently featured: mostly beef (22) and pork (17). Conversely, poultry meat infrequently featured but there were seven examples of eggs. Fruit and vegetables featured prevalently; fish featured in 14; and there were 11 cereals represented. Alcoholic beverages included wine (8) and beer (3). Honey and spices (saffron) were less ubiquitous but represented an interesting deviation from the more familiar product types associated with SFSCs. The category of 'other' represents a SFSC that creates syrups, elixirs, tinctures and bitters for beverages and another which produces salt products.

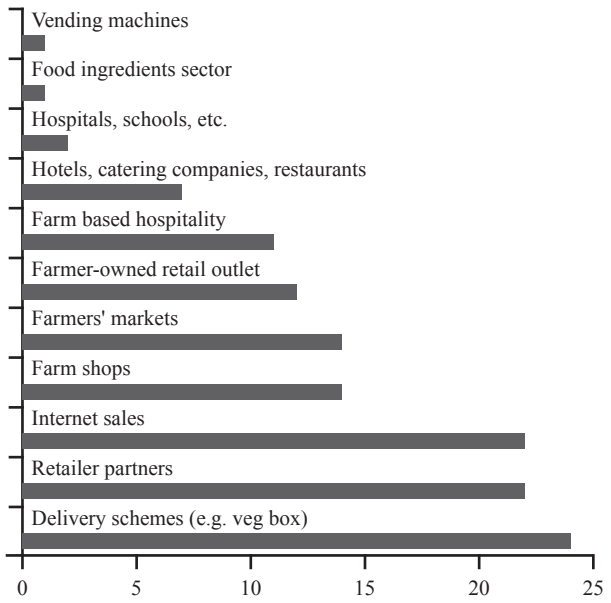

Figure 3: The quantity of Points of Sale (POS) related to the *Good Practices* collected. Red indicates on-farm POS, whereas blue represents off-farm POS.
Source: own composition

Points of sale: trends in Good Practices

All 105 Good Practices involved SFSCs with off-farm sales, though 25 of these include on-farms sales (Figure 3). On-farm sales were comprised almost equally between farm shops/farm collection, and through farm-based hospitality. Of the 25 Good Practices that sold produce on-farm, only 9 had exclusive on-farm points of sale. The most popular method of off-farm sales was delivery schemes, followed closely by internet sales and sales to retailers. Other off-farm sale pathways such as farmers markets and farmer owned

Table 1: Analysis of *Good Practices* according to *Hot Topic.*

Hot Topic Parent Category	*Subcategory of Parent Hot Topic*	*Hot Topic*	No. *Good Practices* relating to *Hot Topic*
Products	Valorisation	Novel approach to product development/multi-actor, co-design approach	33
		Novel product or product range	25
		Ways in which value is added to the products	49
	Branding & Labelling	Innovative way of communication e.g. novel labelling	37
	Quality Value	Gourmet, superior taste, different taste	19
		Nutritional value	19
		Freshness	29
		Healthiness	15
	Social Sustainability	Connection between producers and consumers	45
		Trust, sense of community	22
		Community pride & animation	3
		Community education	17
		Recognition of producers	18
		Consumer empowerment	2
		Well-being	11
		Profiling gender and age data of those involved in food firms/farms/SFSCs	0
	Economic Sustainability	Profitability	12
		Generating local employment	28
		Reduced economic uncertainties	12
		Training and coaching initiatives	9
		Synergies with other sectors e.g. tourism	16
		Markets/events/initiative for multiple producers locally	7
		Preservation and valorisation of small farms	12
	Environmental Sustainability	GHG emissions	21
		Energy use and carbon footprint	22
		Ecological soundness of production methods	42
		Food Miles	23
		Food Waste	18
Organisational/ Institutional/ System	Learning & Empowerment	Learning transfer between actors	17
	Process Innovations	Networking along the supply chain and in the region	23
		Reduction in dependence of powerful actors in the chain	24
		Achievement of efficiencies through collaboration	37
		Logistics and distribution	56
		Management of small product quantities	23
Governance	Internal	Decision-making structures	41
		Contractual agreements between producers/ between chain partners	59
		Group Spirit	24
		Mediator/facilitator	8
	External	Enabling government policies and regulatory frameworks	3
		Use of social and environmental criteria in tenders for public procurement	0
Sales	Variety	Collaborative hubs	26
	Efficiency	Effective ordering systems	25
		Online shop	19
		Reliable distribution	56
		Proximity (spatial)	17
		Proximity (spatially extended)	6
	Connection	Social media	28
		Meet the producer' brokerage events	14
		Collaborative hubs	22
		Reconnection and relationships	30

Source: own composition

retail outlets were also well represented. On the other hand, there were few cases of off-farm sales to hotels/caterers/restaurants and to hospitals or schools. The use of vending machines as an avenue for off-farm sales was an interesting example of an innovative measure to increase food access. Most of the short chains are not involved in cooperation explicitly but there were 19 cases of what could be categorised as collaborative initiatives between producers.

Discussion and Conclusions

Good Practices were disseminated by the SKIN project to create the basis for solidarity and accelerated food system transformations. The SKIN project provided a selection of innovative practices in an effort to share approaches that work so that small food producers can identify what is appropriate for their unique circumstances. SKIN aims to stimulate innovation in the SFSC through the sharing of the Good Practices collected as well as other observations made throughout the lifecycle of the project. The discussion that follows offers overarching insights and trends related to SFSCs from project findings that are applicable to the Good Practices collected.

Conducting on-site visits to Good Practice farms in the context of the SKIN project; it was evident that even prize-winning farms cannot be excellent in everything they do (SKIN 2017c). During visits to SFSCs, the project consortium learned of the difficulties farmers face with regard to the regulation of their activities. Most notably, this was in terms of restrictions on what they can sell in their on-farm shops, the burden of compliance with food hygiene laws and even the number of hours or days on which they could operate the sales and marketing side of their business. The reality for many producers is that if they want to improve their margins by selling direct to consumers, they face a variety of constraints which limit the extent of their ability to sell, and provided added value services such as on-farm restaurants (SKIN 2017c).

Evidently, one of the producers ran an on-farm restaurant, which proved to be very popular in summer-time. It could accommodate over 100 people and occupied a significant area of real estate. Regulations require that the farmer limit its activities to two weeks a year, meaning that it never fully benefits from opportunities to earn extra revenue during holiday periods where people were more able to travel to combine a farm-visit with a restaurant experience. The farmer was obliged to see running the restaurant as a marketing expense, rather than a revenue opportunity.

Over the course of the project lifecycle the SKIN consortium visited a number of on-farm shops. During these excursions it was observed that despite the excellent produce and professional displays, the shops were often hard to reach, open for only a limited number of hours a week, arguably at times that are not very consumer-friendly and offered a limited range of produce. The overall impression is that the sales activity would not be accessible to a significant number of customers, lacked the convenience that the majority of modern consumers require and given the limited range of product available in the shop, provided limited incentive for shoppers take spend extra time and fuel to make the journey out of town to shop on-farm.

Many of the producers visited had professionally made glossy brochures, rudimentary web-sites and arrange of prizes and certificates prominently displayed in the shop. Nevertheless, it was striking that the marketing material was very “old-school” in terms of its imagery. In most cases, it was found to be based on nostalgia dominated by variations on the husband, wife and their children running through a meadow with their dog. There is no doubt that such marketing material will resonate with a certain clientele, but it seems very much out of touch with the wider world of retail and the needs of a modern consumer.

Following-up on the site visits SKIN partners examined the on-line activities of these farms and their efforts advertising or selling online sales. However, these efforts are often ineffective. The producers for the most part said that they achieved very little if any sales on-line and they were unable to say if their web-site has visitors or if people came to their shop based on the web-experience.

Many services already exist to support agricultural producers. Typical farm advisory or extension services focus on providing support in the adoption and improvement of sustainable-efficient production. Many also provide support to farm businesses in dealing with administration related to the CAP payment system. However, the over-riding impression is that there is a deficiency in the range of services supporting the basic business development of small farmers, especially in the area of sales, marketing and distribution.

The above made observations are anecdotal but they are significant in that they are made with respect to farms that are visited on the basis that they represent Good Practice. The reality is that good practice in production does not always go hand in hand with good practice in managing a business that is capable of growth based on good performance in key business functions such as sales, marketing and distribution. Farms that were very successful in sales were also visited during project activities, but they were the exception. The best example observed over the course of the SKIN project was the case of Appelen Roes, a Belgian producer of apples, pears and derived products. This case is featured on the SKIN website. It is notable for detailing the transformation of a traditional producer, selling to intermediaries with low margins, no market power and limited options for growth, into a very successful direct-to-consumer business with three shops, based on a modern and constantly evolving approach to sales and marketing. The manager of Appelen Roes was categorical in his assessment of what it takes to be good in sales and marketing, and pointed out that it requires considerable effort and a set of skills that are very different from those needed to be a good producer. Although the case of Appelen Roes provides proof that it is possible for a producer to considerably increase revenues by selling directly to customers, it calls into question the number of small farms that can reasonably hope to go down this route.

Farms run by open-minded entrepreneurial families with adult children could do this, if some of those involved were to dedicate themselves to developing strong capabilities in modern methods of sales, marketing and distribution. The approach of Appelen Roes for example involves ‘experience

marketing' with on-farm events attracting hundreds of thousands of people every year. It involves a school outreach program that effectively reminds mothers of the merit of fruit in the daily diet of a child. It also makes very good use of social media and maintains a colourful and dynamic web-site that is regularly updated with relevant content.

Not all producers will manage to make this transition, and should they even try, it is not at all obvious where they can go or what they should do, to learn the skills they need to succeed. For the vast majority of producers' other approaches will be required. The SKIN Foresight study provided many clues as to what form these might take (SKIN, 2017c). In particular it drew upon the recent waves of innovation that are disrupting retail, transport and delivery in many parts of the world. These disruptions are being driven by the emergence of new platform-based businesses such as Deliveroo, Uber Eats and Amazon Fresh. The SKIN survey of Good Practice also uncovered cases which appear to expand the options available to farmers interested in direct sales.

These SFSC visits included innovative point-of-sale technologies such as vending machines and kiosks. One of the Kiosks we visited in Austria used the honour system. It was unmanned, product was placed on shelves and priced, and customers could come at any time of the day or night to buy (assuming there was produce available). They were trusted to pay the correct amount and should they need change, they simply wrote this into a book, on the understanding that they would pay the balance at a later date. This worked surprisingly well and provided a sales channel at reasonable cost due to the lack of overhead in terms of labour and technology to run the shop. Another entrepreneur used a similar system, but in their case the product was enclosed in a locked transparent box that would open as soon as the customer paid for the product using an automated payment system. This approach is clearly more expensive due to the cost of technology but the entrepreneur was very encouraged and expected to break even on his investment in less than one year. Simple vending machines, selling products such as fresh milk and bread outside of hours were also observed. In one case the milk vendor targeted the transition to glass, and accommodated people who brought their own bottles. The system filled bottles instead of selling cartons and managed to tap into awareness of a trending topic of plastic pollution and the waste associated with excessive packaging.

It is hard at this stage to gauge the overall success of these systems. Many new ideas enjoy an early boost due to the novelty effect. For new POS systems the big question is how to keep them filled with produce. A consumer might try for novelty and develop the habit of buying those products via that channel, but as soon as they find themselves going to a kiosk with no product available to buy, they will quickly lose their enthusiasm. This is a double failure from the producers' perspective in that they lose out on sales they should have made but missed, and disappoint their customers who might be tempted to bad-mouth them, eroding the good will created by the convenience of a novel off-farm sales channel.

The success of the novel POS, and the extent to which it helps to boost the revenues of producers will depend on how well the work of distribution and logistics is handled. This is not easy for perishable products, but on the other hand lots of progress has been made in the area of home delivery for both groceries and hot meals. The focus of effort for big retailers has been in solving what is known as the 'last mile' problem in delivery. Farmers will also have to solve the 'first mile' distribution problem, how to get small batches of product from a number of farms, to a central depot from which their product can be dispatched to consumers. All kinds of solutions are being tested out right now, including solutions based on the experience of companies such as Amazon, Uber and dedicated meal delivery system such as Deliveroo.

These subjects are far too vast and dynamic to adequately treat in this paper. They will be treated elsewhere. The overall message is one of hope for short food supply chains, in that there are many lessons to be learned from the range of case studies covered in the SKIN project and many to be learned from the ongoing disruption of the retail sector. These point to new and innovative ideas for the systems that may prove decisive in boosting the revenues of producers in short food supply chains.

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References

Alkon, A.H. and McCullen, C.G. (2011): Whiteness and Farmers Markets: Performances, Perpetuations…Contestations? Antipode, **43** (4), 937–959. https://doi.org/10.1111/j.1467-8330.2010.00818.x

Augère-Granier, M.L. (2016): Briefing: Short food supply chains and local food systems in the EU, Brussels: European Parliament.

Balázs, B. (2012): Local Food System Development in Hungary. Int. Jrnl. of Soc. of Agr. & Food, **9** (3), 403–421.

Berlina, A., Tepecik Diş, A. and Jungsberg, L. (2017): Local Food System Transformations: The potential of local food initiatives in the Baltic Sea Region, Stockholm: Nordregio.

Byrne, A., Duvvury, N., Macken-Walsh, Á. and Watson, T. (2014): Finding "Room to Manoeuvre": Gender, Agency and the Family Farm. In Feminisms and Ruralities. Laham: Lexington Books, 119–130.

Carbone, A. (2017): Food supply chains: coordination governance and other shaping forces. Agricultural and Food Economics, **5,** 3–11. https://doi.org/10.1186/s40100-017-0071-3

Carzedda, M., Marangon, F., Nassivera F. and Troiano, S. (2018): Consumer satisfaction in Alternative Food Networks (AFNs): Evidence from Northern Italy. Journal of Rural Studies, **64,** 73–79. https://doi.org/10.1016/j.jrurstud.2018.10.003

EC (2013): Commission Staff Working Document on Various Aspects of Short Food Supply Chains, Brussels: European Commission.

EC (2015): You are part of the food chain: Key facts and figures on the food supply chain in the European Union, EU Agricultural Markets Briefs 4, Brussels: European Commission.

ECLAC-FAO-IICA (2015): Short food supply chain as an alternative for promoting family agriculture, New York: United Nations.

EIP-AGRI (2015): EIP-AGRI Focus Group Innovative Short Food Supply Chain management, Brussels: The agricultural European Innovation Partnership.

EU (2013): Regulation (EU) No 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005, Official Journal of the European Union, No 17, L 347, p 487–548.

EU (2014): Regulation (EU) No. 807/2014: Commission Delegated Regulation (EU) No 807/2014 of 11 March 2014 supplementing Regulation (EU) No 1305/2013 of the European 15 Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and introducing transitional provision. Official Journal of the European Union, L226, p 2.

Eurostat (2016): Urban Europe: Statistics on cities, towns and suburbs (2016 edition), Luxembourg: Publications office of the European Union.

Ferrando, T. and Lombardi, C. (2019): EU Competition Law for the Future of the Food System: Socio-Environmental Sustainability as the Double Bottom-Line. Brussels: Fair Trade Advocacy Office.

Galli, F. and Brunori, G. (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, ISBN 978-88-90896-01-9.

Heron, G. (2011): Exploring Alternative Models of Localisation in Food Supply Chains: A Theory of Constraints Approach. Doctoral thesis. Northumbria University.

IPES (2019): Towards a Common Food Policy for the European Union: The Policy Reform and Realignment that is Required to Build a Sustainable Food Systems in Europe, Brussels: The International Panel of Experts on Sustainable Food Systems.

Karner, S. (eds.) (2010): Local Food Systems in Europe: Case studies from Five Countries and What They Imply for Policy and Practice, project-wide report of 'Facilitating Alternative Agro-Food Networks (FAAN): Stakeholders' Perspectives on Research Needs', funded by the European Union's Framework Programme 7.

Kneafsey, M., Venn, L., Schmutz, U., Balázs, B., Trenchard, L., Eyden-Wood, T., Bos, E., Sutton, G. and Blackett, M. (2013): Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics, Brussels.

Knickel, K., Zerger, C., Jahn, G. and Renting, H. (2008): Limiting and Enabling Factors of Collective Farmers' Marketing Initiatives: Results of a Comparative Analysis of the Situation and Trends in 10 European Countries. Journal of Hunger & Environmental Nutrition, **3** (2–3), 247–269. https://doi.org/10.1080/19320240802244041

Kvam, G.T. and Bjørkhaug, H. (2015): State of the art review (WP2): On healthy growth initiatives in the mid-scale values-based chain of organic food, Trondheim, Norway.

Little, J., Ilbery, B. and Watts, D. (2009): Gender, Consumption and the Relocalisation of Food: A Research Agenda. Sociologia Ruralis, **49** (3), 201–217. https://doi.org/10.1111/j.1467-9523.2009.00492.x

Macken-Walsh, A. (2017): Bridging the 'Urban-Rural Divide' in (eds) Healy, S. and Reynolds, B. (2017): Society Matters, Dublin: Social Justice Ireland.

McElwee, G. (2006): Farms as entrepreneurs: Developing competitive skills. Journal of Developmental Entrepreneurship, **11** (3), 187–206. https://doi.org/10.1142/S1084946706000398

McMichael, P. (2012): Depeasantization. The Wiley-Blackwell Encyclopedia of Globalization, https://doi.org/10.1002/9780470670590.wbeog140

Ramirez, M., Bernal, P., Clarke, I. and Hernandez, I. (2018): The role of social networks in the inclusion of small-scale producers in agrifood developing clusters. Food Policy, **77,** 59-70. https://doi.org/10.1016/j.foodpol.2018.04.005

Renting, H., Marsden, T.K. and Banks, J. (2003): Understanding alternative food networks: exploring the role of short food supply chains in rural development. Environment and Planning A: Economy and Space. **35** (3), 393–411. https://doi.org/10.1068/a3510

Rucabado-Palomar, T. and Cuéllar-Padilla, M. (2018): Short food supply chains for local food: a difficult path. Renewable Agriculture and Food Systems, 1–10. https://doi.org/10.1017/S174217051800039X

SKIN, (2016): SKIN Grant Agreement. Document developed in the framework of the H2020 project SKIN (GA No. 728055).

SKIN (2017a): D3.3 SFSCs trends, patterns, problems and bottlenecks. Document developed in the framework of the H2020 project SKIN (GA No. 728055).

SKIN (2017b): D2.1 Handbook for the acquisition of information and data on Good Practices and structure of the repository of information for the best practices. Document developed in the framework of the H2020 project SKIN (GA No. 728055).

SKIN (2017c): D3.4 The SKIN Foresight Report on the future of Short Food Supply Chains. Document developed in the framework of the H2020 project SKIN (GA No. 728055).

Smith, J., Lang, T., Vorley, B. and Barling, D. (2016): Addressing Policy Challenges for More Sustainable Local–Global Food Chains: Policy Frameworks and Possible Food "Futures." Sustainability, **8** (4), 299. https://doi.org/10.3390/su8040299

Wittman, H., Beckie, M. and 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), 36–61. https://doi.org/10.1111/j.1549-0831.2011.00068.x

Zirham, M. and Palomba, R. (2016): Female agriculture in the short food supply chain: a new path towards the sustainability empowerment. Agriculture and Agricultural Science Procedia, **8,** 372–377. https://doi.org/10.1016/j.aaspro.2016.02.032

Marcello STANCO*, Marco LERRO*, Giuseppe MAROTTA* and Concetta NAZZARO*

Consumers' and farmers' characteristics in short food supply chains: an exploratory analysis

A "farmers' market" identifies a common area where farmers meet periodically to sell food products which do not need to be processed before consumption. Farmers' markets have recently experienced steady growth mainly due to increasing demand for traditional foods and rising consumers' interest towards locally produced food products. It is also the case that they provide transparency along the supply chain and decrease information asymmetries. This study attempts to define the farmers and consumers of farmers' markets in terms of both their socio-demographic and their attitudinal characteristics. Data gathering was performed carrying out face-to-face interviews with sixty farmers and consumers. The study findings show that the majority of consumers purchasing at farmers' markets are women, with an average age of 49 and with a high level of education. They attach great value to the availability of fresh and organic products with a good value for money. Farmers, by contrast, are mainly male, with an average age of 45 years, a high school degree and several years of experience in farming. They value more the creation of a direct and durable relationship with consumers in order to convey information about the quality and authenticity of their products. The study offers useful implications to policy makers on how to encourage the creation of farmers' markets as well as spread the shared value created among farmers and consumers.

Keywords: Farmers' market, Food related lifestyle, Edinburgh Farming Attitudes Scale, Consumers, Farmers
JEL classifications: Q13, Q18

* Department of Law, Economics, Management and Quantitative Methods, University of Sannio, Benevento, Italy. Corresponding author: mstanco@unisannio.it.
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Introduction

Market globalisation, the spread of sustainable production models and the availability of technologies for the production of renewable energy from biomass have together opened up new scenarios for agriculture and rural areas. In this context, opportunities and threats are opposed and the prevalence of sustainable production models is due to i) the level of resilience of rural areas, and ii) the actions that the economic and institutional actors are able to put into place to address the current changes.

In Italian rural areas, growth and development appear to go hand-in-hand with greater risks, as compared to the rest of the European Union. This is because the global dynamics impact on a set of historical structural limits such as the reduced company size, the ageing of employees, organisational weakness and technological delay. Further risk factors for the economic-social balance of Italian farms are price volatility, growing power asymmetry in the agri-food supply chains in favour of large-scale retailers, competition over land use, and the widespread incidence of food scandals and frauds. These issues are undermining the ability of farms to stay on the market and/or their ability to seize the opportunities connected to citizen-consumers turning to agriculture and rural areas in new ways.

Health, climate change and the environment, the degradation of the landscape, the loss of biodiversity and natural resources, and finally, the loss of culture and rural traditions, together are increasingly directing attention to the ways in which agriculture and rural areas may play a crucial role in terms of value creation and sustainable development. The increasing interest of citizen-consumers towards these issues has led them to adopt more responsible food behaviour. This situation is significantly different to the last decades of the last century, because *"the attention for the social quality of good and/or service becomes a determining factor in buying choice, i.e. when considerations about social and ethical costs associated with the good and/or the service in the short and mid-long terms prevail in determining the decision to purchase"* (Nazzaro *et al.*, 2017, 338–339).

Today's citizen-consumer assumes a lifestyle oriented towards sustainability and environmentally friendly choices. Moreover, they favour brands and products characterized by ethical and social attributes as well as providing information regarding both the origin of the raw material and how distant the place of production is. Recently, this new purchasing and consumption behaviour has led to a reinterpretation of the concept of product quality that assumes a new meaning that also takes into account the social cost of production and the ethical dimension of enterprises (Marotta *et al.*, 2017).

To create an institutional framework that allows agriculture and rural areas to address the needs of society as they arise, the EU has profoundly reformed the Common Agricultural Policy (CAP), redesigning objectives and instruments, which foreshadow a "European Agricultural Model" strongly focused on multi-functionality and diversification of farms' (Marotta and Nazzaro, 2011). Under this model, the economic and social dimensions of farms express their ability to produce both foods for the market and "public goods" for citizens.

To this extent, farms have become economic-social actors that look to the competitive market together with a complex set of intangible factors highly valued by citizen-consumers such as health and well-being, the appropriate use of natural resources and environmental protection, biodiversity, climate change, and the promotion of traditions and rural cultures (Marotta and Nazzaro, 2011). Accordingly, the paths of farms' modernisation and resilient adaptation (to external stimuli but without losing the identifying characteristics) have to consider also adopting a production, commercial and organizational strategy that capable of transforming the production of "public goods" (multi-functionality) economically.

The current way to market products – which is based on a direct relationship between farmers and citizen-consumers, both in the company, in local markets, and through the new forms of collective purchase (ethical purchasing groups and other forms) – has facilitated a reduction in the distance between places of production and consumption. Moreover, it also ensures greater added value to the farms and a fairer and more convenient price to the citizen-consumers, whose informed and responsible purchasing behaviors have allowed them to experience rural life and benefit from "public goods" (localized positive externalities) along with the products and services offered. Therefore, the multi-functional farm assumes a strategic role in strengthening the link between products and traditions, configuring an offer of goods (materials) and values (immaterial) (Marotta and Nazzaro, 2011, 2012; Nazzaro *et al.*, 2017).

This paper aims to analyse short food supply chains, in particular farmers' markets, as a model enabling the establishment of a relationship of trust, both direct and authentic. Specifically, the study attempts to investigate the socio-demographic and attitudinal characteristics of farmers and consumers of farmers' markets.

The paper is structured as follow. The next section highlights the background of the study exploring the relevant literature on the topic. The methodology implemented in the study is drawn in the "Methodology" section, while the findings of the analysis are presented and fully discussed in the "Results and discussion" section. Finally, the conclusions and implication of the study are summarised in the last section of the paper.

Background and rationale

Over the last few years, the short food supply chain (SFSC) has attracted the interest of many scholars. They refer to the SFSC as a set of relationships established between different actors involved in the production, processing, distribution and consumption of food products. Accordingly, the short food supply chain is characterised by the presence of few or no intermediaries.

Recently, the SFSC is gaining momentum, becoming an increasingly important organisational strategy as opposed to the traditional (i.e. long) and globalised food supply chain. Indeed, it represents a more sustainable alternative in terms of socio-economic and environmental benefits, generating ethical impacts on human health and society at large (Ilbery and Maye; 2005). Furthermore, previous studies (Marsden *et al.*, 2000; Renting *et al.*, 2003; Hallett, 2012) have highlighted the ability to re-socialise and re-localise production spaces as primary characteristics of the SFSC, which encourage the creation of closer and more authentic relationship between producers and consumers (Nazzaro *et al.*, 2017).

The farmers' market is one of the most common models of farming in the SFSC. It identifies a common area where farmers meet periodically to sell food products (e.g. fruit and vegetables) which do not need to be processed before consumption (Martinez *et al.*, 2010). Since the farmers' market minimises the number of people involved in the supply chain, farmers become the main player in the chain, establishing a direct relationship with consumers (Giuca, 2012).

Over the last decade, in Europe, farmers' markets have seen a steady growth mainly due to the increasing demand for traditional foods and the rising consumers' interest towards local food products (Vecchio, 2009). Further, they provide transparency along the chain and decrease information asymmetries (Feldmann and Hamm, 2015; La Trobe and Acott, 2000).

Farmers' markets are not suitable for all farms, but they represent a proper channel either for marketing organic products or for traditional local foods produced by small family farms aiming at boosting their business (Kirwan, 2004; Murdoch, 2000; Aguglia 2009). The main driver encouraging small family farms to enter into the SFSC resides in the likelihood to benefit of higher income than traditional supply chain (Brown and Miller, 2008). Indeed, farmers are able to decide by themselves what production to engage in, and how to carry it out (Hinrichs 2000). Moreover, they are not affected by the dynamics of traditional markets, being able to set the prices and markup of their products freely (Cicatiello and Franco, 2008).

The economic benefits arising from farmers' markets are for consumers, too. Indeed, since the products are purchased directly by farmers, thereby minimising the number of people involved in the supply chain, they are cheaper than retailers (Cassani, 2012; Marotta *et al.*, 2013; Nazzaro *et al.*, 2017). The motivations of consumers to purchase local foods are manifold: i) they have a lower impact on the environment compared to food products from foreign countries; ii) they are considered safer, fresher and taster than those purchased via conventional retail channels (Zepeda and Deal, 2009; Archer *et al.*, 2003; Teng *et al.*, 2004). The direct relationship between farmers and consumers enables the farmers to convey the attributes and characteristics of foods products as well as their connection with the production area (Marsden *et al.*, 2000), a feature which is synonymous with quality for consumers (Lyon *et al.*, 2009).

According to Carpio and Isengildina-Massa (2009), consumers also show a greater willingness to pay for products purchased at farmers' markets. This premium price may result even greater than the one showed for organic or GMO-free products (Loureiro & Hine; 2002). However, other studies have revealed that only a small proportion of consumers is willing to pay a premium price for local products. This premium price may be due to the importance that consumers assign to the "local" attribute. Indeed, Weatherell *et al.* (2003) revealed that when making their purchasing decisions, consumers consider mostly attributes such as appearance, freshness, taste and availability than the local origin of the products.

Previous scholars have attempted to identify the socio-demographic characteristics of the consumers of the farmers' market. Although, Zepeda and Li (2006) did not reveal a clear relationship between socio-demographic characteristics and purchasing habits, other scholars, instead, have found it significant. Scholars agree that consumers are mainly women, married, well-educated and with higher income (Wolf *et al.*, 2005; Varner and Otto, 2008; Onianwa *et al.*,

2005; Pascucci *et al.*, 2011; Feldmann and Hamm, 2015). Illichmann and Abdulai (2013) detected a higher willingness to pay in men than women for organic and locally produced foods, while Henseleit *et al.* (2007) revealed that the consumers of the farmers' market are older than those making purchases in a grocery store. The greater presence of elderly consumers in farmers' markets may be due to by the stronger bond that these consumers have with their traditions which may encourage the consumption of locally produced foods (Henseleit *et al.*, 2007).

The effects of residential area type on consumer purchasing habits are contrasting. On the one hand, Chambers *et al.* (2007) did not identify any differences in the behaviour of consumers living in urban or rural areas. On the other hand, scholars have revealed a greater willingness to purchase at farmers' markets on the part of consumers living in rural areas (Stanton *et al.*, 2012; Mirosa and Lawson, 2012; Varner and Otto, 2008). The reasons for this may lie in their greater sensitivity and awareness about the socio-economic issues affecting the local food systems. Indeed, consumers living in rural areas are more likely to interact with farmers, becoming aware of the potential issues occurring at all stages of food production. These consumers place great attention to the issues affecting society in their purchasing choices; thus, they are more likely to purchase local foods (Weatherell *et al.*, 2003).

Methodology

Data gathering was carried out by interviewing both farmers and consumers of farmers' markets. The interviews were carried out in South of Italy in two different provinces of Campania region, namely Benevento and Avellino. Two interviewers were involved in the process, which took approximately three months (from May to July 2018). They were trained to interview farmers early in the morning when they have more time to devote to the questionnaire, while consumers were approached after making purchases before leaving the farmers' market. Participants were introduced to the study by reading a short text stating that the questionnaire was anonymous - to avoid social desirability bias - and that there were no right or wrong answers but what mattered was just their opinion. Since the aim of the study was to carry out an exploratory analysis, overall 60 farmers and consumers took part in the study.

The study aimed at investigating consumers' and farmers' characteristics as well as attitudes towards farmers' market; thus, two different structured questionnaires were administered. The questionnaires were pre-tested with a small group of participants belonging to the same population target, to detect potential misinterpretation of the questions. No adjustment in the adopted wording was required after the pilot test.

Both questionnaires administered consisted of three sections. The consumers' questionnaire addressed in the first section: i) the frequency of consumers' purchases from the farmers' market and directly from producers on a five points semantic scale for frequency (1 = rarely, 2 = once a month, 3 = two times a month, 4 = three times a month, 5 = five times a month); ii) whether they have previously purchased foods certified with different sustainability certifications (i.e. Carbon footprint, Fair trade, Organic); iii) the degree of importance of four sustainability aspects when making their purchasing decisions. Specifically, participants were asked to express their perceived degree of importance towards environmental protection, local community support, labour rights, and fair remuneration for local producers, on a seven-point semantic scale ranging from 1 (not at all important) to 7 (extremely important). The second section assessed consumers' attitudes towards farmers' markets by implementing the Food-Related Lifestyle (FRL) scale first implemented by Brunsø and Grunert (1995) and subsequently applied by many other scholars (e.g. Hoek *et al.*, 2004; O'Sullivan et al., 2005; Cembalo *et al.*, 2015). FRLs is based on means-end chain theory. It assumes that individual's behaviour is related to personal abstract values which help to explain real food behaviour (Cembalo *et al.*, 2015). The study implemented an adapted version of FRLs consisting of 30 items which underpin 10 dimensions of individual preferences (i.e. price/quality relationship, organic product, convenience, the price criterion, interest in cooking, freshness, health, importance of product information, novelty, and specialty shops). Respondents had to rate their level of agreement with each item on a seven-points Likert scale, where 1 signifies "totally disagree" and 7 "totally agree". The 10 dimensions are then generated as being the mean of each group of three questions by adding up the scores assigned to each item. Accordingly, the price/quality relation dimension is described by "It is important for me to know that I get quality for all my money"; organic product by "I make a point of using natural or ecological food products"; convenience by "On weekdays, we use a lot of ready-to-eat foods in our household"; the price criterion by "I notice when products I buy regularly change in price"; interest in cooking by "I like to have ample time in the kitchen"; freshness by "I prefer fresh products to processed food products"; health by "I try to avoid food products with additives"; importance of product information by "To me product information is of high importance. I need to know what the product contains"; novelty by "I love to try recipes from foreign countries"; specialty shops by "I like buying food products in specialty stores where I can get expert advice". The last section of the questionnaire detected consumers' socio-demographic characteristics (i.e. age, gender, household's size, education, occupation, family monthly income).

As for farmers, the first section of the questionnaire collected farms' characteristics (e.g. used agricultural area, number of employees, turnover, percentage of turnover coming from direct selling, the adoption of production process with low environmental impact, the production of alternative energy). The second one detected farmers' attitude towards agriculture by implementing a modified version of the Edinburgh Farming Attitudes Scale (EFAS) (Migliore *et al.*, 2014). Respondents were asked to express their level of agreement with 33 items on a seven-points Likert scale with endpoints ranging from 1 (strongly disagree) to 7 (strongly agree). The items capture seven attitudes of farmers, namely: 1) Embeddedness (eleven items), 2) Financial risk (three items), 3) Policy and legislation (four items), 4) Openness in farming (three items), 5) Achievement in farm-

Table 1: Consumers descriptive statistics (N = 60).

Variable name	Description	Mean	Frequency	Standard deviation	Min	Max
Gender	Female		63.33%			
	Male		36.67%			
Age	Respondent's age	49.20		14.83	20	75
Household	Household size	3.70		0.88	1	6
Education level	Education level classes					
	Primary school		1.67%			
	Secondary school		18.33%			
	High school		55.00%			
	University degree		25.00%			
	Above university degree		0.00%			
Occupation	Occupation status					
	Employed		33.33%			
	Self-employed		18.33%			
	Student		10.00%			
	Housewife/husband		20.00%			
	Retired		18.33%			
	Unemployed		0.00%			
Family income	Family monthly income					
	Below €2.500		70.00%			
	Between €2.500-4.500		23.33%			
	Above €4.500		6.67%			

Source: own composition

ing (three items), 6) Pessimism about farming (four items), 7) Success in farming (five items). Embeddedness describes the relationship between farmers and consumers to improve their offer, i.e. "Talking directly with consumers helps me to improve my offer", as well as farmers' attitude toward the environment, i.e. "It is important to reduce nitrogen application by using nonchemical methods". Financial risk summarises farmers' attitudes to take financial risk and contract a debt to successfully work in agriculture, i.e. "To farm successfully one must be in debt"; while policy and legislation shows farmers' concerns about a clear agricultural policy, i.e. "There is no clear overall strategy in agricultural policy". Openness in farming and achievement in farming consists both of three items capturing openness towards innovation, i.e. "It is important to read about new farming practices" and goal realisation in farming, i.e. "Farm production is the thing to take most pride in". Pessimism about farming emphasises a negative perspective about the future in farming, i.e. "Other employment would be better than farming". Lastly, the dimension success in farming underlines the attitude of farmers towards success by running their business efficiently and planning production carefully, i.e. "A farm is a business to be run efficiently". The third section of the questionnaire collected farmers' characteristics (i.e. age, gender, education, years of activity in farming).

Results and discussion

The descriptive statistics of consumers interviewed are shown in Table 1. The sample of consumers is overrepresented by women (63% of the sample) in an age between 20 and 75 years (mean age 49.20, ±14.83). Respondents interviewed are well educated with the majority holding a high school degree (55% of the sample) while a quarter have a university degree (25%). Further, one out of three of consumers is employed (33% of the sample) and live in families consisting of three members (±0.88) and with an average monthly income less than €2.500 (70% of the sample). Previous scholars' work supports the profile elicited by the study which identifies a consumer that is mainly female, married and with a high educational level (Wolf *et al.*, 2005; Feldmann and Hamm, 2015).

Since the study aims to explore the characteristics of consumers of farmers' market, the questionnaire addressed also their purchasing habits (Table 2). The majority of respondents are regular consumers purchasing at farmers' market on a weekly basis (41% of the sample stated that they purchase at a farmers' market 4 times a month). While consumers were shown to favour a direct relationship with farmers, they seem to be unwilling to go directly to the farmers for their purchase of food products. Indeed, more than half of respondents interviewed stated that they purchase rarely (51% of the sample) through direct selling. Moreover, consumers at farmers' markets have often previously purchased certified organic foods (83%) and attach great importance to all social dimensions investigated when making their purchasing decisions: environmental protection (mean 6.16, ±0.97), local community support (mean 6.30, ±0.90), labour rights (mean 6.65, ±0.51), and fair remuneration of local producers (mean 6.68, ±0.50). The high scores attached highlight that consumers perceive sustainability as a multidimensional concept in which all the different dimensions are perceived as important and have to be pursued simultaneously.

To assess consumers' attitudes towards farmers' markets, the FRL scale was implemented in the study. Respondents performed an adapted version of FRLs consisting of 30 items outlining 10 lifestyle dimensions. The latter were generated as the mean of groups of three questions by adding up the scores assigned to each item[1]. Since the medium scores can range from 3 to 21, scores ranging between 3 and 9 show a lack of consumer congruence with the FRL dimension,

[1] For the reversed items, the values were generated by subtracting the score from number 8.

Table 2: Consumers' purchasing habits.

Variable name	Description	Mean	Frequency	Standard deviation	Min	Max
Farmers' market	Frequency of purchase at farmers' market					
	4 times a month		41.67%			
	3 times a month		16.67%			
	2 times a month		18.33%			
	Once a month		10.00%			
	Rarely		13.33%			
Direct selling	Frequency of purchase through direct selling					
	4 times a month		8.33%			
	3 times a month		13.33%			
	2 times a month		20.00%			
	Once a month		6.67%			
	Rarely		51.67%			
Certified products	Previous purchase of certified products					
	Carbon footprint		0.00%			
	Fair trade		3.33%			
	Organic		83.33%			
Sustainablity	Importance of different sustainability aspects					
	Environmental protection	6.16		0.97	3	7
	Local community support	6.30		0.90	3	7
	Labour rights	6.65		0.51	5	7
	Fair remuneration of local producers	6.68		0.50	5	7

Source: own composition

whereas those in the range 10-12 exhibit disinterest towards the dimension, and scores in the range 13-21 exhibit congruence with the dimension. Accordingly, as shown in table 3, consumers at farmers' markets lack congruence with the convenience (mean score 7.13, ±4.78) and novelty (mean score 9.40, ±4.68) dimensions, and are disinterested towards the interest in cooking (mean score 12.06, ±4.83) and specialty shop (mean score 12.67, ±3.06) dimensions. To this extent, the convenience dimension is related to the consumption of ready-to-eat foods, while novelty relates to consumers' openness to trying new foods or foods from other countries. Consumers' lack of support for these dimensions is in accordance with the ideology of farmers' markets which are built on traditional, fresh and unprocessed foods. By contrast, consumers show congruence with FRL dimensions such as the price/quality relationship (mean score 17.18, ±3.14), organic product (mean score 16.18, ±3.98), the price criterion (mean score 14.01, ±5.31), freshness (mean score 19.33, ±2.54), health (mean score 18.50, ±2.91) and, the importance of product information (mean score 16.50, ±4.01). These dimensions show that consumers of farmers' market are more inclined to purchase natural (without additives) and fresh foods, which are mostly organic, and provide good value for money. These results are in accordance with previous studies that identify product quality and taste, food safety, good value for money, freshness and, environmental protection as factors to purchase at farmers' market (Conner *et al.*, 2010; Pascucci *et al.*, 2011; Feldmann and Hamm, 2015).

As for farmers and farms' characteristics (Table 4), the sample is composed mainly of males (63% of the sample) with an average age of 45 years (±10.52) and more than twenty years of activity in farming (mean year 21.91, ±11.49). Farmers hold mostly a high school diploma (50% of the sample) or a secondary school diploma (41% of the sample). The average size of farm surface is 19 hectares (±38.11), while the majority of respondents have a turnover of up to €70.000 (50% of the sample), this coming predominantly from direct selling for roughly half of the sample (45% of the sample has more than 60% of its turnover from direct selling). The sample is equally distributed among those adopting organic (43% of the sample) or integrated (45% of the sample) production techniques for pest management. Lastly, more than a third of the sample has a plant for clean energy production such as a solar photovoltaic system (35% of the sample) or a biomass plant (5% of the sample).

Table 3: Attitudes of farmers' market consumers.

Food related lifestyles dimension	Mean	Standard deviation	Min	Max
Price/quality relationship	17.18	3.14	9	21
Organic product	16.18	3.98	5	21
Convenience	7.13	4.78	3	25
The price criterion	14.01	5.31	3	21
Interest in cooking	12.06	4.83	3	21
Freshness	19.33	2.54	11	21
Health	18.50	2.91	10	21
Importance of product information	16.50	4.01	6	21
Novelty	9.40	4.68	3	20
Specialty shop	12.67	3.06	3	21

Source: own composition

Farmers' attitude towards agriculture was detected implementing the EFAS which consists of 33 items outlining seven attitudes of farmers. The attitude metrics have been generated as the mean of the scores attached to the items associated with each EFAS dimension (i.e. embeddedness, financial risks, policy and legislation, openness in farming, achievement in farming, pessimism about farming, success in farming). Farmers participating in farmers' markets show positive attitudes in terms of success in farming (mean score 6.87, ±0.37), openness in farming (mean score 6.53, ±0.75) and embeddedness (mean score 5.89, ±0.54) (Table 5). More significantly, farmers attach great importance to having a direct relationship with consumers in order to convey the quality and authenticity of food products as well as to estab-

Table 4: Farmers and farms descriptive statistics (*N = 60*).

Variable name	Description	Mean	Frequency	Standard deviation	Min	Max
Gender	Female		36.67%			
	Male		63.33%			
Age	Respondent's age	45.45		10.52	24	65
Education level	Education level classes					
	Primary school		3.33%			
	Secondary school		41.67%			
	High school		50.00%			
	University degree		5.00%			
Years of activity	Years of experience in farm activities	21.91		11.49	2	50
Farm	Farm surface (hectares)	19.73		38.11	3	300
Turnover	Farm turnover classes					
	Below €70.000		50.00%			
	Between €70.001-90.000		18.33%			
	Between €90.001-110.000		20.00%			
	Between 110.001-130.000		6.67%			
	Above 130.000		5.00%			
Turnover direct selling	Percentage of turnover from direct selling					
	Less than 20%		13.33%			
	From 21% to 40%		21.67%			
	From 41% to 60%		20.00%			
	From 61% to 80%		23.33%			
	From 81% to 100%		21.67%			
Environmentally friendly techniques	Adoption of environmentally friendly techniques*					
	Biodynamic agriculture		1.67%			
	Organic agriculture		43.33%			
	Integrated agriculture		45.00%			
Use of alternative energy	Use of alternative energy**					
	Biomass plant		5.00%			
	Solar photovoltaic system		35.00%			
	Small scale wind turbine		0.00%			

* 10% stated that they have adopted conventional production process.
** 60% farms do not have an alternative energy plant.
Source: own composition

lish a steady connection capable of internalising consumers' beliefs about the environment and food safety. Moreover, farmers are conscious that to be successful in agriculture, having a careful plan of business activities together with a product offer of high quality is of crucial importance. Lastly, the findings reveal a clear openness of farmers towards new techniques. By contrast, low level of pessimism are observed among farmers (mean score 2.82, ±1.22). These attitudes are representative of farmers selling produce in farmers' markets. Farmers, in fact, seek to establish long-term relationship with consumers and focus on product quality.

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Table 5: Farmers' attitude towards agriculture.

EFAS	Mean	Standard deviation	Min	Max
Embeddedness	5.89	0.54	4.45	7.00
Financial risks	3.73	1.39	1.00	7.00
Policy and legislation	4.89	1.67	2.00	7.00
Openness in farming	6.53	0.75	3.00	7.00
Achievement in farming	5.31	0.98	2.00	7.00
Pessimism about farming	2.82	1.22	1.00	6.50
Success in farming	6.87	0.37	4.60	7.00

Source: own composition

quality and authenticity of food products as well as to establish a steady connection capable of internalising consumers' beliefs about the environment and food safety. Moreover, farmers are conscious that to be successful in agriculture, having a careful plan of business activities together with a product offer of high quality is of crucial importance. Lastly, the findings reveal a clear openness of farmers towards new techniques. By contrast, low level of pessimism are observed among farmers (mean score 2.82, ±1.22). These attitudes are representative of farmers selling produce in farmers' markets. Farmers, in fact, seek to establish long-term relationship with consumers and focus on product quality.

Conclusions

The short food supply chain represents a strategy for sharing value creation between farmers and citizen-consumers through which the former (i.e. farmers) establish a direct relationship with citizen-consumers, as well as take advantage from a higher remuneration from the products sold. In their turn, consumers, have their concerns regarding product quality, environmental protection and food safety met. The study focused on a specific model of short food supply chain (i.e. farmers' market), and attempted to define farmers and citizen-consumers in terms of both socio-demographic and attitudinal characteristics.

As for citizen-consumers, the study findings show that the majority of those purchasing at farmers' market are women, with an average age of 49 and with a high level of education. The success of farmers' market is due to the availability of fresh and organic products with a good value for money. Farmers participating at farmers' market are mainly male, with an average age of 45 years, a high school degree and several years of experience in farming. The farmers attach great importance to the creation of a direct and durable relationship with citizen-consumers in order to convey information about the quality and authenticity of their products. Further, they are open to the adoption of new production techniques in farming.

The study findings are powerful drivers for the promotion of the short food supply chain. Indeed, the socio-demographic and attitudinal characteristics of farmers and consumers involved in the farmers' market play a crucial role in the process of valorisation of short food supply chain. Accordingly, the results can be useful for policy makers in order to plan and implement policies supporting the short food supply chain successfully.

Although the study offers useful suggestions, a few limitations arise mainly due to the exploratory nature of the manuscript. More specifically, the study limitations apply to the representativeness of the sample, the psychographic scales implemented and the analysis carried out. Accordingly, future research should extend the analysis to a representative sample of farmers and citizen-consumers of farmers' markets, and in addition, it should implement psychographic scales enabling scholars to better define their characteristics. Lastly, any new analysis should apply statistical analysis in order to be able to assess the involvement of farmers and citizen-consumers in farmers' markets as well as their attitudes.

References

Aguglia, L. (2009): La filiera corta: una opportunità per agricoltori e consumatori. Agriregionieuropa, **5** (17).

Archer, G.P., Sanchez, J.G., Vignali, G. and Chaillot, A. (2003): Latent consumers' attitude to farmers' markets in North West England, British Food Journal, **105** (8), 487–497. https://doi.org/10.1108/00070700310497264

Brown, C. and Miller, S. (2008): The Impacts of Local Markets: A Review of Research on Farmers Markets and Community Supported Agriculture (CSA). American Journal of Agricultural Economics, **90** (5), 1296–1301. https://doi.org/10.1111/j.1467–8276.2008.01220.x

Brunsø, K. and Grunert, K.G. (1995): Development and testing of a cross-culturally valid instrument: Food-related lifestyle. Advances in Consumer Research, **22,** 475–480.

Carpio, C. E. and Isengildina-Massa, O. (2009): Consumer willingness to pay for locally grown products: the case of South Carolina. Agribusiness, **25** (3), 412–426. https://doi.org/10.1002/agr.20210

Cassani, G. (2012): Il risparmio nei farmers' market italiani, un approfondimento sui prodotti ortofrutticoli. Rivista di Economia Agraria, **2**, 37–60. https://doi.org/10.3280/REA2012-002002

Cembalo, L., Lombardi, A., Pascucci, S., Dentoni, D., Migliore, G., Verneau, F. and Schifani, G. (2015): Rationally local: Consumer participation in alternative food chains. Agribusiness, **31** (3), 330–352. https://doi.org/10.1002/agr.v31.3

Chambers, S., Lobb, A., Butler, L., Harvey, K. and Traill, W.B. (2007): Local, national and imported foods: a qualitative study. Appetite, **49** (1), 208–213. https://doi.org/10.1016/j.appet.2007.02.003

Cicatiello, C. and Franco, S. (2008). La vendita diretta: produttori, consumatori e collettività. AGRIREGIONIEUROPA, **4** (14), 44–46.

Feldmann, C. and Hamm, U. (2015): Consumers' perceptions and preferences for local food: A review. Food Quality and Preference, **40,** 152–164. https://doi.org/10.1016/j.foodqual.2014.09.014

Giuca, S. (2012): Conoscere la filiera corta, 11–29. In B. Venuto (eds.), Agricoltori e filiera corta. Profili giuridici e dinamiche socio-economiche. Roma, Italy: INEA.

Hallett, L.F. (2012): Problematizing Local Consumption: Is Local Food better simply because it's Local? American International Journal of Contemporary Research, **2** (4), 18–29.

Henseleit, M., Kubitzki, S. and Teuber, R. (2007): Determinants of consumer preferences for regional food. Contributed Paper prepared for presentation at the 105th EAAE Seminar 'International Marketing and International Trade of Quality Food Products', Bologna, Italy, March 8-10, 2007.

Hinrichs, C.C. (2000): Embeddedness and local food systems: notes on two types of direct agricultural market. Journal of Rural Studies, **16** (3), 295–303. https://doi.org/10.1016/S0743-0167(99)00063-7

Hoek, A.C., Luning, P.A., Stafleu, A. and de Graaf, C. (2004): Food-related lifestyle and health attitudes of Dutch vegetarians, nonvegetarian consumers of meat substitutes, and meat consumers. Appetite, **42,** 265–72. https://doi.org/10.1016/j.appet.2003.12.003

Ilbery, B. and Maye, D. (2005): Food supply chains and sustainability: evidence from specialist food producers in the Scottish/English borders. Land Use Policy, **22** (4), 331–344. https://doi.org/10.1016/j.landusepol.2004.06.002

Illichmann, R. and Abdulai, A. (2013): Analysis of consumer preferences and willingness-to-pay for organic food products in Germany. Selected Paper prepared for presentation at the Agricultural & Applied Economics Association's 2013 AAEA & CAES Joint Annual Meeting, Washington, DC, August 4-6, 2013.

Kirwan, J. (2004): Alternative Strategies in the UK Agro-Food System: Interrogating the Alterity of Farmers' Market. Sociologia Ruralis, **44** (4), 395–415. https://doi.org/10.1111/j.1467-9523.2004.00283.x

La Trobe, H.L. and Acott, T.G. (2000): Localising the global food system. International Journal of Sustainable Development & World Ecology, **7** (4), 309–320. https://doi.org/10.1080/13504500009470050

Louriero M.L. and Hine, S. (2002): Discovering Niche Markets: a Comparison of Consumer Willingness to Pay for Local (Colorado Grown), Organic and GMO-Free Products. Journal of Agricultural and Applied Economics, **34** (3), 477–487. https://doi.org/10.1017/S1074070800009251

Lyon, P., Collie, V., Kvarnbrink, E.B. and Colquhoun, A. (2009): Shopping at the farmers' market: consumers and their perspectives. Journal of Foodservice, **20** (1), 21–30. https://doi.org/10.1111/j.1748-0159.2008.00119.x

Marotta G., Nazzaro C. and Simeone, M. (2013): Capitale umano e capitale sociale nell'agricoltura multifunzionale: un'analisi delle esperienze di filiera corta nella Campania interna. Economia Agro-Alimentare, **3,** 149–173. https://doi.org/10.3280/ECAG2013-003009

Marotta, G. and Nazzaro, C. (2011): Verso un nuovo paradigma per la creazione di valore nell'impresa agricola multifunzionale. Il caso della filiera zootecnica. Economia agro-alimentare. Economia Agro-Alimentare, **1–2**, 1–36. https://doi.org/10.3280/ECAG2011-001011

Marotta, G. and Nazzaro, C. (2012): Responsabilità sociale e creazione di valore nell'impresa agroalimentare: nuove frontiere di ricerca. Economia Agro-Alimentare, **1,** 13–54. https://doi.org/10.3280/ECAG2012-001002

Marotta, G., Nazzaro, C. and Stanco, M. (2017): How the social responsibility creates value: models of innovation in Italian pasta industry. International Journal of Globalisation and Small Business, **9** (2-3), 144–167. https://doi.org/10.1504/IJGSB.2017.088923

Marsden, T., Banks, J. and Bristow, G. (2000): Food Supply Chain Approaches: Exploring their Role in Rural Development. Sociologia Ruralis, **40** (4), 424–438. https://doi.org/10.1111/1467-9523.00158

Martinez, S., Hand, M., Da Pra, M., Pollack, S., Ralston, K., Smith, T., Vogel, S., Clark, S., Lohr, L., Low, S. and Newman, C. (2010): Local Food Systems: Concepts, Impacts, and Issues. U.S. Department of Agriculture, Economic Research Service, ERR No. 97.

Migliore, G., Caracciolo, F., Lombardi, A., Schifani, G. and Cembalo, L. (2014): Farmers' participation in civic agriculture: the effect of social embeddedness. Culture, Agriculture, Food and Environment, **36** (2), 105–117. https://doi.org/10.1111/cuag.12038

Mirosa, M. and Lawson, R. (2012): Revealing the lifestyles of local food consumers. British Food Journal, **114** (6), 816–825. https://doi.org/10.1108/00070701211234345

Murdoch, J. (2000): Networks – a new paradigm of rural development? Journal of Rural Studies, **16** (4), 407–419. https://doi.org/10.1016/S0743-0167(00)00022-X

Nazzaro, C., Marotta, G. and Stanco, M. (2017): Short food supply chains and shared value on the multifunctional farm: an analysis of determinants. 337–355. IN Gaetano, M., Karantininis, K., Pascucci, S., Dries, L. and Codron, J.M. (2017): It's a jungle out there – the strange animals of economic organization in agri-food value chains. Wageningen Academic Publishers

Onianwa, O.O., Wheelock, G. and Mojica, M.N. (2005): An analysis of the determinants of farmer-to-consumer direct-market shoppers. Journal of Food Distribution Research, **36** (1), 1–5.

O'Sullivan, C., Scholderer, J. and Cowan, C. (2005): Measurement equivalence of the food related lifestyle instrument (FRL) in Ireland and Great Britain. Food Quality and Preference, **16** (1), 1–12. https://doi.org/10.1016/j.foodqual.2003.12.002

Pascucci, S., Cicatiello, C., Franco, S., Pancino, B., Marinov, D. and Davide, M. (2011): Back to the future? Understanding change in food habits of farmers' market customers. International Food and Agribusiness Management Review, **14** (4), 105–126.

Renting, H., Marsden, T.K. and Banks, J. (2003): Understanding alternative food networks: exploring the role of short food supply chains in rural development. Environment and Planning – Part A, **35** (3), 393–411. https://doi.org/10.1068/a3510

Stanton, J.L., Wiley, J.B. and Wirth, F.F. (2012): Who are the locavores?, Journal of Consumer Marketing, **29** (4), 248–261. https://doi.org/10.1108/07363761211237326

Teng, D., Wilcock, A. and Aung, M. (2004): Cheese quality at farmers markets: observation of vendor practices and survey of consumer perceptions. Food Control, **15** (7), 579–587. https://doi.org/10.1016/j.foodcont.2003.09.005

Varner, T. and Otto, D. (2008): Factors affecting sales at farmers' markets: an Iowa study. Applied Economic Perspectives and Policy, **30** (1), 176–189. https://doi.org/10.1111/j.1467-9353.2007.00398.x

Vecchio, R. (2009): European and United States farmers' markets: Similarities, differences and potential developments. Paper prepared for presentation at the 113th EAAE Seminar "A resilient European food industry and food chain in a challenging world", Chania, Crete, Greece, September 3 - 6, 2009

Weatherell, C., Tregear, A. and Allinson, J. (2003): In search of the concerned consumer: UK public perceptions of food, farming and buying local. Journal of rural studies, **19** (2), 233–244. https://doi.org/10.1016/S0743-0167(02)00083-9

Wolf, M.M., Spittler, A. and Ahern, J. (2005): A profile of farmers' market consumers and the perceived advantages of produce sold at farmers' markets. Journal of Food Distribution Research, **36** (1), 192–201.

Zepeda, L. and Deal, D. (2009): Organic and local food consumer behaviour: Alphabet theory. International Journal of Consumer Studies, **33** (6), 697–705. https://doi.org/10.1111/j.1470-6431.2009.00814.x

Zepeda, L. and Li, J. (2006): Who buys local food?, Journal of Food Distribution Research, **37** (3), 1–11.

Claudia DELICATO*, Martin COLLISON, Iryna MYRONYUK***, Tayisiya SYMOCHKO*** and Nadiya BOYKO*****

Is Local Better? Consumer Value in Food Purchasing and the Role of Short Food Supply Chains

This paper investigates the current research on how consumers select the foods they buy and how they define 'quality'. Consumer decisions are complex and whilst a few consumers prioritise local above all other factors when selecting food, for most local is simply one of multiple factors which influence the food choices they make. Short Food Chains are not necessarily local but are based on supply chains with fewer steps in the chain from producer to consumer. Short Food Chains ensure that more of the value of the food is returned to producers and allows consumers to have a more direct connection to where and how their food was produced. Short Food Chains tend to exhibit features which consumers increasingly value, whether these be traceability and provenance, organic, familiarity, tradition or a connection to a specific place and culture. These strengths of Short Food Chains suggest that there is real potential to see major growth in this sector in the coming decade. As Kotler observed, you have to sell to the pocket, the heart and the soul and, in the food sector, embracing Short Food Chains can help producers to do this.

Keywords: SFSCs, consumer behaviour and beliefs, value assessment, quality
JEL classifications: Q13, Q18

* University of Foggia, Department of Economics, Foggia (FG), Italy. Corresponding author: claudia.delicato@unifg.it.
** Collison and Associates Limited, Norfolk, United Kingdom.
*** Uzhhorod National University, Uzhhorod, Ukraine.
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Introduction

Value assessment is a very complex mechanism impacting consumers' behaviour towards all goods and services, and is particularly challenging for 'high involvement' products such as food and drink where the product can be linked to culture, social status, and ethical and environmental concerns. To most people, food is much more than simple sustenance and the wider factors which they consider when making purchasing decisions are complex and constantly evolving.

The way Short Food Supply Chains (SFSCs) can respond to this complexity is the topic of this paper. Numerous studies have tried to create a cohesive single framework for the issues which determine how consumers view the quality of food and thus make purchasing decisions. Studies investigating the process of evaluation that consumers undertake when faced with a food product, affecting their purchase and their relationship to the product have been studied for decades (Cardello, 1995), but constant evolutions in culture, lifestyles and the food chain mean that a single accepted definition is still elusive.

It is nonetheless true that to understand what makes 'quality' products and 'value for money' in the eyes of consumers, is to understand the needs they satisfy. Some trends have been captured in several studies addressing this issue, usually focusing on particular regions, types of product, or different types of consumers. This is also justified by the fact that different types of consumers have different needs: young people often prefer different foods to adults; women might prioritise some products men don't; and to add some more layers of understanding to this narrative, consumers choosing to purchase foods in local markets possess distinctive needs compared to those preferring large retail outlets, also and possibly depending on availability and financial possibilities (D'Antuono and Bignami, 2012; Aprile *et al.*, 2016). In relation to this point, this paper will focus on findings and observations advanced for and in the SKIN project, which revolves around the role of Short Food Supply Chains (SFSCs) and its potential for producers and consumers. The latter are of interest in this paper, and it will try to understand consumers' motivations in choosing foods, drawing on the needs they satisfy. The paper will end with recommendations for the "local" suppliers, both farmers and primary food producers, to develop short food chains which return a higher value to their businesses.

Definitions of SFSCs

Short Food Supply Chains embrace a wide range of concepts, now briefly presented here. A general definition is provided from the EIP AGRI (2015) which defines Short Food Chains (SFCs) as those systems aiming at creating value by reducing the number of steps in the food chain from producer to consumer. According to the European rural development regulation (1305/2013), a 'short supply chain' means a supply chain involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers, processors and consumers. It is important to note that this regulation recognises the importance of social relationships between people involved in the food chain and this point is also very important for understanding how collaborative SFSCs operate.

A Commission delegated regulation (11.03.2014) stipulates that support for the establishment and development of short supply chains shall cover only supply chains involving no more than one intermediary between farmer and consumer (Article 11). This definition can be quite constrain-

ing and is still subject to debate, as for example where the farmer sells to a cooperative who then deals directly with a retailer or restaurant on behalf of a group of farmers, or where a local food processor uses all local ingredients to make a regional speciality sold through a retailer, but most consumers still implicitly see these as short as opposed to long supply chains. In practice, some SFSCs have more than one step in the chain, but normally no more than two and must demonstrate that there is full traceability for the consumer and that the supply chain adds value to the farmer or primary food producer.

Over the last few years, more specific variations over the concept of SFSC have been emerging, addressing the different hues they gathered or specialised into with time: for example, Local Food Systems usually address "traditional" members of SFSCs, operating in rural areas not too far from the city; Hyper-Local Food Systems relate to urban farming where products have been produced in the same site used to sell them; lastly, Ultra-Local Food Systems can be described as when producers grow the food they market directly themselves (Crehan, 2018).

Some local food systems have been developed in opposition to or with the explicit intention of replacing the mainstream supply chain. Thus, tending to address and resolve perceived issues and problems with the mainstream food chain, to address concerns about how the mainstream supply chains function and the values, or lack of values, which underpin them. For example, the food products offered in these systems are often organic, or traditional to a territory (Sage, 2003).

The main focus within SFSCs is the relation within its actors, rather than the products generated. Nonetheless, foods in SFSCs will acquire and carry the knowledge, values and meaning, related to the provenance, the manners of production, or the modalities of consumption (as well as all the loci of those) and that information represents the values for the actors involved in the food chain. (Ilbery & Maye, 2005).

Nonetheless, one should avoid estimating the value of SFSCs just on their local placement and action: as Murdoch *et al.* (2000) have noted, there is a risk of "fetishising" the localness. Also, the challenges arising from regional and local promotion are an issue, as their large-scale marketing is contradictory (Brown and Geldard, 2008). Also, among the main barriers to the entrance of local food to the market are definitely the limited amount of research, and the lack of education and training of local farmers and producers so as to meet the required food safety regulations (Martinez *et al.*, 2010).

This paper digs further into the problems related to consumers' value attachment of SFSCs products. Hence, the next paragraphs will try to identify the values on which consumers focus when selecting foods and how Short Food Supply Chains can respond to these values.

Methodology

This paper is the result of a literature review and the work of the Short Food Chain Knowledge and Innovation Network (SKIN) project, which runs from 2016-'19 to collate, communicate and disseminate good practices to develop short food chains. The SKIN project has defined SFCs as those food chains where: the consumer and farmer or primary food producer are in closer contact; and the supply chain has fewer steps so more value is returned to the farmer or primary producer. This is consistent with the EU definition.

Since 2016 the project has collected over 160 good practices and examples of innovation in the food chain, which adhere to these two principles from across the member states in the SKIN consortium. The collection of these good practices did not have the intention of being statistically representative of the distribution of the good examples within the European territory, but rather highlights some excellence and leading examples among the operational work of SFSCs and aims to inspire others to follow suit. Practices have been collected from project partners in the researchers' own countries as well as elsewhere in Europe and worldwide, collectively providing a robust overview of the possibilities and actions through which a farmer, a consumer, or other stakeholders can engage in SFSCs.

Good practices have been categorised according to some fixed parameters such as production and country: nonetheless, the Irish partner Teagasc has created a framework of "Hot Topics" under which to categorise the practices (see Table 1 of Hyland *et al.* in this volume). In addition, the project has run six 2-day Innovation Challenge Workshops ICWs) which have brought together farmers, food producers, food distributors and consumers with the SKIN consortium members and policy makers. In total these ICWs have involved hundreds of stakeholders to debate the issues which are important in the development of SFSCs.

This paper draws on this evidence which has been collected by collating case studies from the food chain across Europe and integrating these results with the outputs of the Innovation Challenge Workshops held in Belgium, Netherlands, Hungary, Poland, Ireland, Paris and Rome. The project has also collated examples of technical and business process changes which promote innovation in the food chain.

The context of SFSCs

As noted by Sage (2003), Short Food Supply Chains have been finding popular recognition and popularity in several places in the United States and Western Europe, where traditional large retail distribution has long played a significant role. One might reflect on the following: the food and drink industry is the leading employer in European manufacturing with 4.51 million staff (15% of manufacturing employment), is the largest manufacturing sector by value (15.2% of manufacturing turnover: €1.115 trillion in 2015) and has 294,000 companies with SMEs representing 48.1% of turnover. The industry accounted for 13.8% of household expenditure in 2016 (Data & Trends, 2018).

Globally the world is seeing increased demand for food, with reports suggesting this will continue until at least 2050. The reasons for increased demand have been observed especially by the Foresight Report (Beddington, 2011) which predicted that global food demand would rise by 50% by 2030 and 60-100% or more by 2050 (compared to 2010).

The global food retail and food service sector is growing rapidly. The share of consumer expenditure spent on food service varies substantially between rich countries (where it is now similar to food retail) and poor countries where the food service sector is still very small. It is fair to say that food service globally grows as wealth rises. The total food market is worth over $8 trillion (Plunkett Research 2018), nearly five times the value of the global automotive market - circa $1.8 trillion in 2017 (Statista, 2019).

Many predictions now suggest the sector will continue to grow until at least 2100 as globally we: eliminate hunger; population growth continues; there are continued increases in wealth, leading to shifting preferences in our diets. This will change both the products consumed and the degree of added value which consumers pay for (e.g. processed foods, catering services).

Current consumers food trends and concerns

Evidence from consumer surveys show that the factors which consumers consider when buying food are changing, but also show significant variation across Europe in important respects which are at the heart of the SFSC debate. This variation in attitudes to food purchasing has also been found during the meetings and workshops held by the SKIN partnership, with significant debate between partners and stakeholders about which factors are the most important when making purchasing decisions.

On some issues there is a relatively large degree of consensus across Europe, for example on the importance of food quality labels at least 63% of consumers say this is important in every country, ranging from 63% in the Czech Republic to 94% in Cyprus (Eurobarometer 2018).

However, the same Eurobarometer report shows that on other factors there is less agreement, for example: in terms of 'respect for tradition and know how' in how food is produced, this is an important issue for 93% of inhabitants in Cyprus and 90% in Greece, but as low as 48% in the Netherlands. Even more extreme are the differences on 'coming from a known geographic area' which is seen as important to 90% of Italian and 89% of Greek consumers, but only 35% of those who live in the Netherlands.

This diversity of opinions about which factors are important when consumers are making food choices has been a constant theme in the meetings and workshops run by the SKIN project. There are, however, a number of common issues which have been raised by the good practices collected and the participants at SKIN workshops.

For each factor the degree of importance, or how developed this trend is in each country, tends to be a result of local culture, tradition and wider societal factors such as family and economic structures and how open or closed the economy is. This ranges from the very international supply chain stance taken by Dutch consumers in a country whose whole economy is focused on trade and who on most measures are the least concerned about traditional values but the first to embrace new supply chain models, to the much greater focus on local food supplies found in the Mediterranean countries.

Most consumers across Europe have busier lives than previous generations as modern lifestyles involve more opportunities for recreation, travel and work outside their immediate community and traditional family structures and roles are changing, meaning that new ways to buy food which are more efficient in terms of their use of time are important to many consumers. The importance of time use efficiency has been shown in the growth of convenience food purchases since at least the 1960s and more recently through the increase in online sales. For example, Ecommerce in the EU increased by 15% to €530 billion in 2016 and was expected to grow by 14% in 2017 (Ecommerce Report, 2017). However, in the food chain new online buying and delivery models, better aligned to modern consumer lifestyles, are constrained by digital business models which don't always allow food to be purchased and delivered at a time and place which the consumer chooses. Many foods also require refrigeration at the point of delivery which makes it hard to deliver to consumers if they are not at home.

The proportion of consumers shopping online in 2016 was highest in the UK (87%), Denmark (84%) and Germany (82%). Statista (2018) states that 7.5% of total global online grocery sales were in the UK and 5.6% in France, but only 0.5% in the similar sized Italian market, which suggests that parts of Europe have substantial potential for growth in this marketing channel. Growth in 2016 was fastest in Central and Eastern Europe with sales in Romania increasing by 38% and by 35% in Slovakia (Ecommerce Europe 2017). The SKIN ICW in Budapest in September 2018 considered these issues and found wide variation between countries in the attitudes towards online sales, with in general the Northern EU states already having high levels of online purchasing and very rapid increases being seen in Eastern Europe, whilst the Mediterranean states had much less developed online markets.

In the UK the Food Standards Agency (FSA, 2018) tracks consumer attitudes to food with a bi-annual survey. They ask both unprompted questions, i.e. consumers volunteer the issues which are of concern to them, as well as answering which issues on a prepopulated list concern them. In relation to unprompted concerns since 2010 this survey has found that consumer interest in food miles is essentially static with all 16 waves of the survey showing that between 2-5% of consumers were concerned by food miles, 3% in May 2018. There is therefore no clear trend in the demand for lower food miles or local food and so we can conclude that food miles, i.e. proximity of the production to the point of consumption, have not increased as a purchasing factor for UK consumers.

Animal welfare is one area in which UK consumers have become more interested. From 2010-'11 to 2017-'18, concerns about animal welfare in the food chain rose from 5% to 10%. The reasons for this change are complex, but media stories and high-profile prosecutions due to poor animal husbandry are believed to be part of the reason. Recently the rapid growth in veganism is part of a similar trend in consumer concerns, with many reports from a range of markets including the US, UK, Portugal showing veganism rising by 400-600% in the last decade (Food Revolution Network, 2018). Whilst still only 1-6% of consumers in most developed countries identify as Vegan, the market is expected to continue to grow.

Diet and health are also growing concerns across many EU countries, having been exemplified by government and marketing campaigns (Story *et al.*, 2008; Mensink *et al.*, 2012; Hieke *et al.*, 2016). Trends towards healthier food purchasing attitudes amongst consumers have been observed widely in the EU, even if the correlation between health and diet is complicated by the significant role that other factors play in health risks, such as serious illness or environmental pollution (EUFIC, 2006). Moreover, diet is starting to be recognised as a personal choice and way in which consumers can embrace a modern lifestyle, with the consumption of local food often playing a key role.

Understanding the importance of the microbiome can represent a great opportunity for SFSCs as they could take the lead in promoting personal health. New emerging approaches based on understanding the microbiome can investigate the role that food origin has on its nutritional value and unique composition since different foods affect different people in different ways (Boyko *et al.*, 2014*)*.

This is likely to lead to new trends in food consumption for local food based on evidence of the impact these foods have on personal health. The development of personalised diets will potentially use IT tools accessible to large sections of society.

In the UK the FSA (2018) reports that concerns about fat and salt levels in food have risen from an average of 7.5% in 2010-'11 (waves 1 and 2) to 9.5% in 2017-'18 (waves 15 and 16). Concerns about sugar have risen even faster, from an average of 6.5% in 2010-'11 to 14.5% in 2017-'18 (having peaked at 18% in May 2016).

Clearly concerns about sugar have become much more important, arguably due to campaigns in the media and the introduction by the UK government of a Soft Drinks Industry Levy (HM Treasury 2016), colloquially known as the 'Sugar Tax', which was announced by the UK government in 2016. The clear alignment between the peak in interest in this topic in summer 2016 coincides with media interest and the announcement of the 'Sugar Tax' by government. The UK government is increasingly focusing on the impact that dietary choices have and in January 2019 launched a consultation on restricting the promotion of foods high in fat, salt and sugar (Department for Health and Social Care 2019).

In the US, the obesity epidemic now affects 34.9% of the adult population. The UK has seen only very minor progress in the 5 a day campaign with only 30% of adults achieving the recommended 5 a day portions of fruit and vegetables in 2012, despite the programme having been started in 2002. The government has instead begun to focus on manufacturers to adopt healthy food, with some successes, notably in the agreement to reduce salt in food (Food Standards Agency, 2015). Obesity and its comorbidities are not simply linked to over-nutrition, i.e. high calorific intake (Witkos *et al.*, 2008), but most importantly coincide with a condition of malnutrition in general. As observed by Stuckler *et al.*, (2012) poor diets are those giving too much of energy-dense as well as nutrient-poor foods.

Whilst SFSCs in themselves do not directly guarantee that consumers will adopt healthier diets, by reconnecting consumers with the source of their food, consumers are taking a much closer interest in the food choices they are making. The evidence is in fact that the more industrialized our societies become, the greater are the possibilities for citizens to live in "food deserts", i.e. geographical locations where choice for healthier foods "is either non-existent or too expensive" (Reynolds, 2005). The positive outcomes of healthy patterns of eating from SFSC is expressed through community supported agriculture (CSA) and similar local schemes, as seen in the SKIN ICW in Paris in spring 2019, as they show consumers starting to opt for healthier food choices.

Specialist foods with added value e.g. sports food, age related foods (for the old and young) are growing in importance with Kerry Group in Ireland investing €100m in an R&D Centre near Dublin alongside the Irish government and other commercial partners to create Food for Health Ireland (Starling Shane, 2015). Across the world policy is increasingly focused on educating consumers on the benefits of a healthy, normally plant based, diet with restricted meat and dairy. Choosing fruit and vegetables in season can also be healthier than buying them throughout the year. Consumers themselves can also promote health through a diverse diet, thereby increasing the demand for local products. Individual farmers can, in turn, adapt plants which are suited to specific soil and climate conditions to withstand diseases and pests and provide consumers with high-quality products, which can potentially be produced with less inputs (Norberg-Hodge *et al.*, 2002).

As a result, to this increasing concern, the food industry is now embracing changes in this area, with many companies from both the food and medical sector embracing investments in health food. Reports suggest the global health food market could reach £220 billion by 2017 or circa 5% of the global food market (Leaver, 2014). The more specialist nutraceuticals market (foods with specific health promoting characteristics) is estimated to be growing at 7% per annum to reach €35 billion by 2020 (NUTRA, 2015).

A contrasting trend is the coexistent increasing tendency for convenience foods and eating out (Markman, 2018). These trends are potentially correlated, as eating out does not require cooking and food preparation, factors that might encourage especially younger generations to embrace both trends. The growth of new types of packaged foods, such as fruit pots and other similar convenience products, shows that busy lifestyles encourage consumers to outsource what many see as the drudgery of food preparation. Eating out is not only convenient, but also underlines that a great component of the new food culture is in the constant need for novelty, whether this includes healthier, vegetarian, free from, exotic, traditional, food. It has been discussed recently, that millennials are a "Foodie" generation (Pinsker, 2015) and whilst convenience and eating out on the go has been growing for many years amongst other consumer groups, Robinson (2015) even identified that 'Foodies' are also now interested in convenience. Eating out is also a key component of culture and a core part of leisure and tourism and the food service industry has continued to expand as consumers travel more.

Concerns about food waste have also seen a steady upward trajectory, with the early 2000s before the global economic slowdown showing very low rates of concern amongst most consumers. However, following the global

economic downturn interest in food waste increased, anecdotally at this time mainly due to concerns about the costs of food waste when family budgets were under pressure. More recently, food waste has continued to become a more important issue for consumers due to concerns about the impact of food waste on the environment, with food waste being reported as a concern by 12% of UK consumers in May 2018 compared to only 3% in 2008 (FSA, 2018). In response in December 2018 the UK produced a new Waste and Resources Strategy (DEFRA, 2018), which identifies issues in the food chain, including plastics, as a key target for action. In this case it was arguably public opinion which led to government action, with the Blue Planet programme (BBC, 2017) on plastic waste in the oceans, first shown in November 2017, identified by most commentators as a key turning point in the debate on food waste. SFSCs can make less use of packaging and food waste also related to the packaging addressed before (Maye and Kirwan, 2010; Goodman et al., 2012; Lamine et al., 2012). In the SKIN project 1 good practice in every 10 contributes to mitigating its environmental footprint by reducing or directly working on food waste. For example, "Hut und Stiel" in Vienna makes use of spent coffee grounds for its mushroom production.

Concerns for food waste also reflect a broader environmental debate for which SFSCs can impact positively. Traditional food chains for example contribute to higher demands for water and energy, the first projected to rise by 30% by 2030, and energy by 45% by 2030 (Foresight, 2011). The food chain currently uses 70% of global fresh water abstraction and by 2035 47% of the global population will live in water stressed locations. The food chain is responsible for about a third of global greenhouse gas emissions, from agriculture (15.2% including energy use), through the conversion of land to farming (12.2%) (World Greenhouse Gas Emissions, 2005), the food industry (1%) and further emissions associated with food transportation and distribution. Conversion of land to food production is also responsible for over half the loss of biodiversity we are seeing globally (WWF, 2018). Nearly half the loss of mammals, birds and reptiles (45-49%) is due to habitat loss due to conversion of land to other uses, with agriculture the largest user of land created by clearing native forest and natural land.

A key challenge for SFSCs is that local production or shorter chains do not guarantee that environmental impacts are reduced and, in some cases SFSCs may increase environmental impact if they lead to less optimal production processes or more emissions in the supply chain. Logistics in particular for established 'longer' supply chains (in terms of distance) tend to have a low environmental footprint for greenhouse gases (GHGs) per kilo of food, because transport tends to utilise large vehicles which are very efficient per kilo of food transported. Even allowing for much longer distances, this imposes a lower GHG footprint than hundreds of consumers driving out from a town to purchase food direct from a farm. This is because each consumer will only buy at most a few kilos of product and so thousands of car journeys are undertaken compared to the food which can be transported by one lorry.

Further work is needed to model the GHGs associated with different distribution systems and, until this is undertaken, SFSCs have to be very careful about the unsubstantiated claims many make about their lower environmental impact. The SKIN ICWs looked at this issue and whilst many SFSCs actors claimed they had a lower environmental impact, none had the data to back up this claim.

The range of factors which impact on consumer food choices is now clearly very large and continuing to grow as new issues, such as food waste and plastics, come into sharp focus for consumers. It is against this complexity that food producers have to market their products. Therefore, a clear challenge for SFC producers is how they can use the core values of SFCs and the characteristics of their products to respond to and attract consumers to their products when these consumers make such complex and multi-factor choices when choosing food.

Building value in SFSCs

Whether local or a short food chain is "better" is a very contentious issue in the food chain. For hundreds of years, the trend has been for supply chains to lengthen both physically and in terms of their complexity, adding more stages between the farm and the consumer. Entrepreneurs in the process increased the value in the food chain through processing, distribution, storage and marketing to meet the needs of an increasingly urban population (Norberg-Hodge *et al.*, 2002)

The trend towards longer supply chains was largely due to improved transportation and thus the ability, based on the principles of comparative advantage, for different regions and countries to focus on the food and drink products to which they were most suited due to their soils, topography and climate e.g. olives in Italy, Champagne in France, beef in Ireland and lamb in Wales. This increased production efficiency, but had the result that supply chains lengthened, became more complex and consumers lost their connection with producers (Renting *et al.*, 2003).It is true nonetheless that SFSCs have been gaining increased popularity because of both consumers and producers' interests in the last few years. The former begun to wish to reconnect with the source of their food and started opting to purchase through shorter supply chains; whilst, farmers and primary food producers have recognised that they could increase their share of the final consumer value if they reduced the number of steps in the food chain (EIP Agri, 2015).

The observation on the trends for the food industry as discussed above need to be aligned with the rising attention given to SFSCs. A Special Eurobarometer published by the European Commission's in 2018 has brought to light that 31% of respondents value as "very important" the fact that the food products respect local tradition and "know-how"; the same percentage values similarly the fact that foods come from a geographical area known to them. Despite these traits not solely being the preserve of SFSCs' products, they are often associated closely with those product characteristics (Kneafsey *et al.*, 2015).

As observed by Sage (2003) significant work of SFSCs relate to the provenance, traceability and safety attributed to the final products resulting from SFC producers. Rent-

ing *et al.* (2003) have developed the values that foods under SFSCs gain in two dimensions: the first linked with the place of production, under which food products gain regional or artisanal characteristics such as Protected Denomination of Origin (PDO), Protected Geographical Indication (PGI), fair trade, traditional foods. Another dimension is linked with the production process that gives the product its special status such as organic, natural, free-range, GMO free, etc. denominations. Renting *et al.* (2003) acknowledge that in the lenses of SFSC, consumers usually attribute both geographic and production characteristics to the foods purchased, thus looking for hybrids which can deliver both.

Positive impacts of SFSCs are not only manifested in the final products, but also throughout their operation and existence. Short Food Supply Chains increase the interaction and connection between producers and consumers, reinforcing the notions of social capital. They amplify the sense of community, and deepen knowledge and behavioural change (Kneafsey *et al.*, 2015). As a result, values such as trust become a strong component of these food systems, as identifiable producers and consumers become main actors in the chain (Sage, 2003). This in turn fosters the sense of political and market governance significance expressed by SFSCs (Whatmore *et al.*, 2003).

The SKIN project visited Appelen Roes during its ICW on Fresh Products in Belgium and the Netherlands in April 2018. This business has developed a very strong local community connection, including hosting 30,000 visitors per year including many school groups, since it moved over to direct sales to consumers in 2004. A producer of apples and cherries, it has an on site farm shop, two further collaborative shops in local towns and processes its fruit intro juice. The owners reported that a key factor in their success was the trust which they have built up with consumers who can visit the farm and see exactly how the fruit is produced. SFSCs are also seen as a key enabler of rural economic growth in many regions and for this reason have featured strongly in the Local Development Strategies adopted by many LEADER local action groups.

Food trends and SFSCs: a point in between

From the analysis reported above, it appears clear that SFSCs do deliver qualities and values appreciated by consumers; but also, that the food industry is a demanding, fast changing environment and such localised, alternative food systems must be able to keep up with the wider innovations and changes consumers are looking for in order to grow or even to continue to thrive.

The good practices collected throughout the SKIN project display both the necessity for consumer to turn to SFSCs and the needs satisfied by those. Examples range because of countries and types of food products dealt with: nonetheless, they give a further insight on the different adaptation to and from the local needs for the use of Short Food Supply Chains.

It emerges that SFCSs gained success because of the experience of the local food market, rather than the sole characteristics of the food itself, as noted by Smithers *et al.* (2008). Hence, SFSCs are able to "marketise" themselves, and increase in popularity not only because of products' characteristics. However, recognizing such popularity as a trend underlines the fragility of such food systems once more popular systems are preferred by consumers. This fragility is particularly acute when major changes are taking place in how consumers buy food, e.g. online purchases and eating out, because these changes are driven by larger societal changes to which SFSCs producers will have to respond if they wish to remain relevant.

For example, a further key challenge for the local food chain which may restrict its ability to become the majority of the market might be represented from the values it embeds. The long-term trend to more specialised regional food production has been driven, as noted above, by both a desire to concentrate specific products in the areas most suited to them e.g. dairy in Ireland and Vineyards in Italy, and the availability of fast efficient distribution systems. But if technology allows consumers to get to know these products and demand for these products increases elsewhere in the world, SFSCs might fail if this reduces the environmental benefits of specialisation and they become seen as less optimal food choices.

An interesting example of the tensions in relation to 'local' food as key issue in SFSCs was presented by a specialist cheese business in Galway on the West coast of Ireland which the SKIN project visited in spring 2017. This business, Sheridan's Cheesemongers, specialises in supplying cheese from its region and complements the cheese with its own cheese biscuits. Whilst they are promoted as a local and regional specialist food company, with their own shop and distribution networks in the West of Ireland, they stated that their single largest market was in London in the UK. This encapsulates the tension in 'local food', on the one hand they are branded as a specialist local food company, but this branding also makes them a very attractive source of premium food to markets much further away, in this case in another country.

In conclusion, the issues which motivate consumer food choices are constantly changing. Promoting local food on its own is not enough to grow the market, because whilst "local" is an important factor for some consumers, other factors which affect consumers' purchasing decisions have been increasing in importance more rapidly.

SFSC and specifically local food producers throughout Europe therefore also have to consider these other factors to ensure their food products remain relevant to consumers. Despite the fact that the tendency for consumers to be interested in purchasing local production is increasing, factors such as health, concerns about waste and a desire for convenience are arguably even more important for most consumers.

SFSCs also still need to overcome some big problems, notably around: capacity and infrastructure; lack of access to local producers; logistics and information, to make it easy for more consumers to buy from them. Many consumers, in spite of their tendency to agree with all the values which SFSCs promote, continue to choose supermarkets instead of buying local products due to the influence of other factors which affect their food choices such as time and accessibility.

Another problem is the lack of knowledge which many farmers and primary food producers have about business strategy, consumers, market trends and distribution methods. Unless these factors which restrain the deployment of SFSCs and local products are addressed, SFSCs are unlikely to fulfil the potential which their ability to simultaneously appeal to the pocket, the heart and the soul allows. This would be a missed opportunity for SFSCs and this paper concludes that SFC producers should think broadly about, and base their marketing on, how their food and drink products can meet the full range of factors which consumers consider when buying food, rather than just focusing on their location as though this is the only factor which is important to consumers.

Conclusions

This paper has provided an overview of the current food scenario in relation to Short Food Supply Chains, and the process undertaken by the consumers to relate their values to SFSCs' products, actors, and activities. It concludes that SFSCs need to remain flexible and responsive to new food and consumers trends, and ensure they have the capability of marketing themselves effectively in changing contexts.

Another key message from the good practices and visits to producers undertaken by the SKIN project is that consumer expectations vary across Europe and between different communities. An approach which works in one location is not always easy to transfer to other areas.

SFSC actors also need to focus on factors which they can prove, e.g. food provenance, but need to be more cautious on other issues such as environmental impact where the evidence is much more nuanced and mixed. As Philip Kotler observed in many of his books, you have to sell to the pocket, the heart and the soul and, in the food sector, embracing Short Food Chains can help producers to do this, but consumers will only continue to buy from SFSCs if these supply chains deliver value.

The evidence from the SKIN project is that the best SFSC actors are very clear about their value proposition and do not try to claim that they are better than the alternative mainstream food chain in every way, because this is not true or able to be proven. Instead they tend to focus on their clear point of difference, which is normally the enhanced provenance and traceability they can provide, in turn improving trust in their food. At present this factor of provenance, traceability and trust is in the ascendency in the mix of factors which consumers consider when choosing food and this suggests that SFSCs can continue to grow their market share.

The SKIN project ending in September 2019, will provide further considerations for SFSCs on how to reach more consumers (or not lose any) while having fewer steps in the chain from producer to consumer, in many cases remaining local, traditional, and most importantly, of value.

Conflict of interests

The authors have no conflicts of interest to declare.

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References

Aprile, M.C., Caputo V., Nayga Jr, R.M. (2016): Consumers' Preferences and Attitudes Toward Local Food Products. Journal of Food Products Marketing, **22** (1), 19–42, https://doi.org/10.1080/10454446.2014.949990

Beddington, S.J. (2011): Future of Food and Farming: Challenges and choices for global sustainability. Final Project Report. The Government Office for Science, London, United Kingdom.

Boyko, N., Bati V., Petrov V., Markush N., Levchuk O., Sarvash O., Khablo T. (2014): Personalized Nutrition, Microbiota/Inflammation Balance in Successful "Biotics" Implementation for the Prevention and Control of Diet-related Diseases. International Scientific Conference on Probiotics and Prebiotics IPC2014, Budapest, Hungary, 24th-26th June 2014.

BBC (2017): Blue Planet 2: How plastic is slowly killing our sea creatures, fish and birds. Retrieved from BBC website http://www.bbc.co.uk/newsbeat/article/42030979/blue-planet-2-how-plastic-is-slowly-killing-our-sea-creatures-fish-and-birds

Brown, H. and Geldard, J. (2008): Supplying Local Food to Mainstream Customers. Market Drayton, Westley Consulting.

Cardello, A.V. (1995): Food quality: Relativity, context and consumer expectations. Food Quality and Preference, **6** (3), 163–170. https://doi.org/10.1016/0950-3293(94)00039-X

Centre for Disease Control and Prevention (2014): Overweight and Obesity Facts. Retrieved from Centers for Disease Control and Prevention website https://www.cdc.gov/healthyschools/obesity/facts.htm

Crehan, P. (2018): Foresight scenarios on unlocking the bottlenecks (M18) as an input to community animation. Short Supply Chain Knowledge Innovation Network (SKIN), Deliverable No D3.4.

D'Antuono, L.F. and Bignami, C. (2012): Perception of typical Ukrainian foods among an Italian population, Food Quality and Preference, **25** (1), 1–8. https://doi.org/10.1016/j.foodqual.2011.12.003

Data & Trends (2018): EU Food & Drinks Industry. Food Drink Europe. Retrieved from https://www.fooddrinkeurope.eu/uploads/publications_documents/FoodDrinkEurope_Data_and_Trends_2018_FINAL.pdf

DEFRA (2018): Resources and waste strategy: at a glance. Retrieved from UK Government website https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england/resources-and-waste-strategy-at-a-glance

Department of Health and Social Care (2019): Restricting promotions of food and drink that is high in fat, sugar and salt. Retrieved from UK Government website https://www.gov.uk/government/consultations/restricting-promotions-of-food-and-drink-that-is-high-in-fat-sugar-and-salt

EIP AGRI (2015): EIP-AGRI Focus Group - Innovative Short Food Supply Chain management. Retrieved from https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_fg_innovative_food_supply_chain_management_final_report_2015_en.pdf

EUFIC (2006): Food safety: perception of risk amongst European consumers. EUFIC. Retrieved from https://www.eufic.org/en/food-today/article/food-safety-perception-of-risk-amongst-european-consumers

Eurobarometer (2018): Europeans, Agriculture and the CAP, Eurobarometer Special Report 473, December 2017

European Commission (2018): Europeans, Agriculture, and the CAP. Brussels, Belgium.

European Parliament and of the Council (2013): On support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No. 1698/2005. Official Journal of the European Union, L 347/487

European Ecommerce Report (2017): Ecommerce Foundation, Retrieved from https://www.ecommercefoundation.org/free-reports

Food Revolution Network (2018): Why the Global Rise in Vegan and Plant-Based Eating Isn't a Fad. Food Revolution Network. Retrieved from https://foodrevolution.org/blog/vegan-statistics-global/

Food Standards Agency (2018): Biannual Public Attitudes Tracker, Wave 16 (and time series data from earlier waves) https://www.gov.uk/government/statistics/fsa-bi-annual-public-attitudes-tracker-results-for-may-2018

Foresight (2011): The Future of Food and Farming. Final Project Report. The Government Office for Science, London. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/288329/11-546-future-of-food-and-farming-report.pdf

Goodman, D., DuPuis, E.M. and Goodman, M.K. (2012): Alternative food networks: knowledge, practice, and politics, Routledge.

Hieke, S., Kuljanic, N., Fernandez, L., Lähteenmäki, L., Stancu, V., Raats, M. M., Egan, B., Brown, K., Trijp, H., Kleef, E., Herpen, E., Gröppel-Klein, A., Leick, S., Pfeifer, K., Verbeke, W., Hoefkens, C., Smed, S., Jansen, L., Laser-Reuterswärd, A., Korošec, Živa, Pravst, I., Kušar, A., Klopčič, M., Pohar, J., Gracia, A., Magistris, T., & Grunert, K. G. (2016): Country Differences in the History of Use of Health Claims and Symbols. European Journal of Nutrition & Food Safety, **6** (3), 148–168. https://doi.org/10.9734/EJNFS/2016/20758

HM Treasury, HM Revenue & Customs, and Department of Health and Social Care (2016): Soft Drinks Industry Levy: 12 things you should know. Retrieved from UK Government website https://www.gov.uk/government/news/soft-drinks-industry-levy-12-things-you-should-know

Ilbery, B. and Maye, D. (2005): Food supply chains and sustainability: evidence from specialist food producers in the Scottish/English borders. Land Use Policy, **22** (4), 331–344. https://doi.org/10.1016/j.landusepol.2004.06.002

Kneafsey, M., Venn, L., Schmutz, U., Balázs, B., Trenchard, L., Eyden-Wood, T., Bos, E., Sutton, G. and Blackett, M. (2013): Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics, Brussels.

Lamine, C., Renting, H., Rossi, A., Wiskerke, J.S.C. and Brunori, G. (2012): Agri-Food systems and territorial development: innovations, new dynamics and changing governance mechanisms. In: Darnhofer I., Gibbon D., Dedieu B. (eds) Farming Systems Research into the 21st Century: The New Dynamic. Springer, Dordrecht

Leaver, H. (2014): Companies growing fat as you slim: The growth of the weight loss market. Metro, Retrieved from https://metro.co.uk/2014/01/30/companies-growing-fat-as-you-slim-the-growth-of-the-weight-loss-market-4282903/

Markman, J. (2018): Fest on Millennials' Love of Restaurants. Forbes, Retrieved from https://www.forbes.com/sites/jonmarkman/2018/07/30/feast-on-millennials-love-of-restaurants/#4f896ea368f9

Marsden, T, Flynn, A. and Harrison, M. (2000): Consuming Interests: The Social Provision of Food. London: UCL Press

Martinez, S., Hand, M., Da Pra, M., Pollack, S., Ralston, K., Smith, T., Vogel, S., Clarke, Sh., Lohr, L., Low, S., Newman, C. (2010): Local food systems: concepts, impacts, and issues, MPRA Paper 24313, University Library of Munich, Germany.

Maye, D. and Kirwan, J. (2010): Alternative food networks. Sociopedia.

Mensink, F., Schwinghammer, S.A. and Smeets, A. (2012): The Healthy School Canteen programme: A promising intervention to make the school food environment healthier. Journal of Environmental and Public Health, Article ID 415746. https://doi.org/10.1155/2012/415746

Murdoch, J., Marsden, T. and Banks, J. (2000): Quality, Nature & Embeddedness: Some Theoretical Considerations in the Context of the Food Sector. Economic Geography, **76** (2), 107–125. https://doi.org/10.1111/j.1944-8287.2000.tb00136.x

NUTRA (2015): In the year 2020: Global nutraceuticals market to be worth €35billion. NUTRA Ingredients, Retrieved from https://www.nutraingredients.com/Article/2015/08/10/In-the-year-2020-Global-nutraceuticals-market-to-be-worth-35bn-7-annual-growth-forecast

Norberg-Hodge, H., Merrifield, T. and Gorelick, S. (2002): Bringing the Food Economy Home: Local Alternatives to GlobalAgribusiness. Boulder, Colorado: Kumarian Press.

Pinsker, J. (2015): Why Are Millennials So Obsessed With Food? The Atlantic. Retrieved from https://www.theatlantic.com/business/archive/2015/08/millennial-foodies/401105/

Plunkett Research Ltd. (2018): Global Food Industry Statistics and Market Size Overview, Business and Industry Statistics. https://www.plunkettresearch.com/statistics/Industry-Statistics-Global-Food-Industry-Statistics-and-Market-Size-Overview/

Renting, H., Marsden, T. and Banks, J. (2003): Understanding Alternative Food Networks: Exploring the Role of Short Food Supply Chains in Rural Development. Environment and Planning A, **35,** 393–411. https://doi.org/10.1068/a3510

Reynolds, J. (2005): Are you living in a food desert? The Ecologist. Retrieved from https://www.theecologist.org/archive_detail.asp?content_id=558

Robinson, N. (2015): Top Five Food and Beverage Trends for 2015. NUTRA ingredients. Retrieved from https://www.nutraingredients.com/Article/2014/11/20/Top-food-trends-for-2015

Sage, C. (2003): Quality in Alternative Food Network: Conventions, Regulations and Governance. Paper presented at Policies, Governance and Innovation for Rural Areas (21-23 November). Università della Calabria, Arcavada di Rende. https://doi.org/10.1.1.196.5195

Smithers, J., Lamarche, J. and Joseph, A.E. (2008): Unpacking the terms of engagement with local food at the Farmers' Market: insights from Ontario. Journal of Rural Studies, **24** (3): 337–350. https://doi.org/10.1016/j.jrurstud.2007.12.009

Starling, S. (2015): Europe Needs Innovation: Kerry. Retrieved from https://www.nutraingredients.com/Article/2015/11/25/Europe-needs-innovation-Kerry

Statista, (2018): Share of global online grocery sales based on value in leading European Union (EU) countries in 2017. Statista. https://www.statista.com/statistics/614717/online-grocery-shopping-in-the-european-union-eu/

Statista (2019): Revenue of the leading automotive manufacturers worldwide in FY 2017. Statista. Retrieved from https://www.statista.com/statistics/232958/revenue-of-the-leading-car-manufacturers-worldwide/

Story, M., Kaphingst, K.M., Robinson-O'Brien, R. and Glanz, K. (2008): Creating Healthy Food and Eating Environments: Policy and Environmental Approaches. Annual Review of Public Health, **29** (1), 253–272. https://doi.org/10.1146/annurev.publhealth.29.020907.090926

Stuckler, D., McKee, M., Ebrahim, S. and Basu, S. (2012): Manufacturing Epidemics: The Role of Global Producers in Increased Consumption of Unhealthy Commodities Including Processed Foods, Alcohol, and Tobacco. PLoS Medicine; **9** (6): e1001235. https://doi.org/10.1371/journal.pmed.1001235

Public Health England (2014): National Diet and Nutrition Survey. Retrieved from the UK Government website https://www.gov.uk/government/collections/national-diet-and-nutrition-survey

Whatmore, S., Stassart, P. and Renting, H. (2003): Guest Editorial: What's alternative about alternative food networks? Environment & Planning A, **35** (3), 389–391. https://doi.org/10.1068/a3621

Witkos, M., Uttaburanont, M., Lang, C.D. and Arora, R. (2008): Costs of and Reasons for Obesity. Journal of the Cardiometabolic Syndrome, **3** (3), 173–176. https://doi.org/10.1111/j.1559-4572.2008.00012.x

World Greenhouse Gas Emissions (2005): World Resources Institute. Retrieved from https://www.wri.org/resources/charts-graphs/world-greenhouse-gas-emissions-2005

WWF (2018): Living Planet Report - 2018: Aiming Higher. WWF, Gland, Switzerland.

Marcella GIACOMARRA*, Antonio TULONE*, Maria CRESCIMANNO* and Antonino GALATI*

Electric mobility in the Sicilian short food supply chain

This paper is the first study to explore the intention of entrepreneurs operating in the Short Food Supply Chain to adopt electric mobility inside their business. For this purpose, a case study approach was chosen, employing a questionnaire based on the Theory of Planned Behaviour and the New Ecological Paradigm to investigate the determinants affecting this intentional behaviour. The empirical analysis has been carried out in the city of Palermo (Italy), involving 42 entrepreneurs who participate in farmer's markets. Results show that entrepreneurs with higher levels of intention to introduce sustainable means of transport, such as electric vehicles, are the most concerned about the environment and the delicate balance of natural ecosystems. Moreover, the more frequently local farmers participate in local markets, the higher is their intention to adopt electric vehicles for their business. The preliminary results here discussed enrich the existing literature and provide interesting insights for Short Food Supply Chain entrepreneurs and policy makers, paving the way for future research into this topic.

Keywords: local food supply chain; electric vehicles; farmer's market; theory of planned behaviour; new ecological paradigm
JEL classifications: Q13, Q18

* Department of Agricultural, Food and Forest Sciences, University of Palermo, Viale delle Scienze, Building 4, Palermo 90128, Italy. Corresponding author: antonio.tulone@unipa.it.

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Introduction

Over the last few years, the Short Food Supply Chain (SFSC), a term coined by Marsden *et al.* (2002) and legally defined by EU Regulation 1305/13, has received considerable attention from academics as a direct consequence of the increasing interest of consumers towards this alternative sale channel, which is able to offer greater guarantees in terms of food safety and the healthiness of products (Migliore *et al.*, 2015). There is a widespread belief that the SFSC is able to make the agricultural sector more sustainable.

However, the environmental dimension of the sustainable character of the SFSC has recently raised some doubts regarding its contribution to reducing greenhouse gas emissions during the transportation phase (Schmitt *et al.*, 2017). Indeed, if on the one hand, as compared to the Mass Food Supply Chain, the reduction in travelled km of food products contributes to making the chain more sustainable, on the other hand, the extent to which farmers' frequent participation in local or regional markets is making an effective contribution of CO_2 reduction at an overall local level has increasingly become a matter for reflection among academics. Some scholars are attempting to investigate this environmental impact by theoretically referring to the food miles concept, initially linked to the overall food supply chain (Paxton, 1994), thus from the cultivation phase final distribution, a concept more recently linked much more explicitly to carbon accounting and the climate change debate (Schmitt *et al.*, 2017; Galati *et al.*, 2016; Kissinger, 2012; Coley *et al.*, 2011; Kemp *et al.*, 2010; Smith and Smith, 2000). This, of course, plays its part in the recent scientific debates on climate change with particular attention on the transport system impact both of goods and people. In this domain, starting with the EU Directive 2014/94/EU on alternative fuels, in 2016 the EU Commission set a new target for road transport according to which within 2050 a reduction of 60% of CO_2 emissions can be achieved. A challenge that is aimed to ensure overall sustainability but at the same time responding to the transport forecasts according to which within 2050 transport will increase by 42%. Accordingly, if the transport growth cannot be stopped one can instead reduce the related CO_2 emissions, by changing/converting the transport means power systems to greener ones. In this context, a more promising option is the Electric Vehicle (EV) (both hybrid and 100% versions currently available in the market), and towards which the main National, Regional and Local policies around Europe are investing (from public transport means to private and commercial final use).

In line with these recent trends, this study explores the intention of entrepreneurs operating in the SFSC to introduce EVs inside their business, with a view of overall sustainability. In particular, in order to understand which factors affect this behaviour a case study approach has been chosen (Yin, 1984), applying a conceptual framework based on the Theory of Planned Behaviour (TPB) and the New Ecological Paradigm (NEP). The firms selected represent the universe of those participating in the farmer's markets of the city of Palermo, in Sicily (Italy). To the best of our knowledge, the present exploratory study, is the first one aimed at investigating the behaviour of entrepreneurs operating in the SFSC against the opportunities to introduce an EV for the freight transports to reach farmer's market.

Short Food Supply Chain

At the base of the SFSC there is the creation of a trust relationship between producers and consumers, usually identifiable in a face-to-face interaction, thus allowing a direct relationship that in the global FSC is totally absent. According to the definition of short food supply chains developed by Marsden *et al.* (2002), SFSCs have the capacity to "re-socialise" or "re-spatialise" food, thus allowing consumers to make value-judgements about foods. Authors make clear that "it is not the number of times a product is handled or the distance over which it is ultimately transported which is necessarily critical, but the fact that the product reaches the con-

sumer embedded with information", enabling the consumer to confidently make connections and associations with the place/space of production, "and potentially the values of the people involved and the production methods employed" (Marsden *et al.*, 2002).

The scientific literature has subsequently shed light upon further factors and implications attributable to the SFSC and directly linked to sustainability goals (economic, social and environmental impacts). As for the SFSC's economic impact, authors concur in attributing rural development and economic regeneration to these models (DuPuis and Goodman, 2005; Renting *et al.*, 2003), as well as noting that they stimulate local employment opportunities (Roininen *et al.*, 2006), with multiplier effects (Henneberry *et al.*, 2009), and increased income for producers (Pearson *et al.*, 2011; Feagan and Morris, 2009). In social terms, several investigations have showed the ethical dimension as characterising the SFSC. In this sense, Ilbery and Kneafsey (1998) found that producers often act as "profit sufficers" rather than "profit maximisers", putting at the top of producer's intention their contribution to the well-being of the community, rather than aspiring to capital maximisation (Jarosz, 2008).

As for the environmental impacts evaluation linked to SFSC, several contrasting opinions are currently under discussion at the scientific level. Indeed, if on the one hand scholars highlight the positive impacts of SFSC in terms of food miles and carbon footprint reduction (Van Hauwermeiren *et al.*, 2007), other authors support a thesis according to which when in the SFSC local products are stored and purchased out of season, these products may have a greater carbon footprint than non-local goods (Edwards-Jones, 2010; Cowell and Parkinson, 2003). In this regard, the food mile literature opens interesting debates. Originally conceptualised in the nineties (Paxton, 1994), this concept was first linked to the overall food production process (from the cultivation phase to distribution). More recently, however, food miles have been linked much more explicitly, and in some cases solely, to carbon accounting and the climate change debate (Schmitt *et al.*, 2017; Kissinger, 2012; Coley *et al.*, 2011; Kemp *et al.*, 2010; Smith and Smith, 2000). This change has led to a shift in the focus of the food miles argument away from sustainable agriculture production systems *per se* to food distribution and retailing and, in particular, to the GHG linked to transport. In this regard, Coley *et al.* (2011), looking at the carbon emissions of several delivery systems as compared to direct sales for vegetable box schemes, found that customers who have to drive more than 6.7 km in a round trip to buy their organic vegetables have higher levels of emissions when compared to the emissions involved in the system used by the large distributors. Ideas regarding the environmental benefits of local food in terms of the reduction in food miles and GHGs need to be rethought and better reformulated, as stressed by Schmitt *et al.* (2017), which support the argument that despite this, locally processed food products can be defined as more sustainable, not because of their having a lower carbon footprint, but rather in respect of localness criteria (e.g. identity, know-how, size and governance) instead of distance concerns. Given the relevance of consumer's role in contributing to the spreading of more sustainable food purchasing practices, a need for further work on improving overall awareness about that is also suggested by Kemp *et al.* (2010), whose results suggest that the "food miles" argument has not had great influence on the behaviour of supermarket shoppers.

Electric vehicles adoption

The substantial emission reductions necessary to achieve climate change reduction targets require, among others, a decarbonization of transport. EVs are seen as a viable and very promising alternative, especially if electricity is generated in a clean manner (Egbue *et al.*, 2017). To date, no scholars have ever attempted to assess the propensity of entrepreneurs operating in the SFSC in introducing EVs into their business activities. The majority of works carried out in this last decade, in fact, has been addressed to assess the main drivers for the uptake of EV, mainly referring to private traditional car owners and early adopters, with the aim to investigate customer behaviours, intentions and preferences about support schemes (Santos and Davies, 2019; Ramos-Real *et al.*, 2018; Quak *et al.*, 2016; Rezvani *et al.*, 2015; Bunce *et al.*, 2014; Plötz *et al.*, 2014). Santos and Davies (2019), resuming the opinions of 189 respondents, represented by stakeholders and experts, found that 75% of respondents, state that the development of charging infrastructure is on the top of the priorities for a mass EVs deployment, followed by purchase subsidies (68%), pilot/trial/demonstrations (66%) and tax incentives (65%). Moreover, other scholars focused the attention on highlighting social, economic and demographic characteristics of customers (Rezvani *et al.*, 2015; Plötz *et al.*, 2014), also attempting analysis on using electrically powered vehicles in urban freight transport from a carrier's perspective (Quak *et al.*, 2016).

As Ramos-Real *et al.* (2018) suggest, geographic dimension of the area concerned by EVs introduction is also a relevant factor, together with the necessity that end users effectively know technical data on EVs so as to be able to do an aware choice. Authors, studying the feasibility of EVs introduction in the Canary Islands, underline how the small size of one's territory dictates driver mobility routines, as the short average travel distance reduces the effects of range anxiety. Furthermore, authors underline that willingness to pay for an EV purchase is positively correlated with some factors, among others, education attainment and strong environmental concern (Ramos-Real *et al.*, 2018). As for range anxiety limit, which is defined as being one of the main problems facing drivers interested in buying EVs, a recent study carried out in UK found that the initial range anxiety would fade over time due to knowledge and confidence developed through driving for an extensive period of time (Bunce *et al.*, 2014). Nevertheless, scholars point out how other technical shortcomings should be appropriately considered to allow for an effective spread of the use of the technology, since range anxiety represents a strong limitation in the adoption of EV most particularly where longer distances need to be travelled, but also that EVs' high purchase costs add a further obstacle to a wider and profitable diffusion (Morganti and Browne, 2018).

Conceptual framework

With the aim to investigate the propensity of entrepreneurs operating in the SFSC to introduce EVs inside their business, we started from the consideration that the intention to adopt a specific behaviour depends on farmers' attitudes towards a given behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). However, in those cases where a link with sustainability considerations exists, other authors add the role played by environmental concerns (Dunlap *et al.*, 2000). Therefore, the case study proposed here has been explored by employing a conceptual framework based on the Theory of Planned Behaviour and the New Ecological Paradigm.

Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) (Ajzen, 1991), an extension of the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980), is based on the premise that individuals make logical and reasoned decisions to engage in specific behaviours, by evaluating the information available to them.

According to the TPB model, an individual's intention to perform a behaviour is a function of that individual's attitude toward the behaviour, social norms and perceived behavioural control. Attitude towards the behaviour (ATT) is conceived by Ajzen and Fishbein (1980) as an "individual's positive or negative evaluation of the performance of a particular behaviour". A person, who believes that valuable positive outcomes would result from performing the behaviour, will have a positive attitude toward it. According to the TPB model, it must be said that the more favourable attitude toward a behaviour, the more possibility that the individual will perform that certain behaviour (Ajzen, 1991). The second dimension, named Social Norm (SN) is a social pressure exerted on an individual to engage in a particular behaviour (Ajzen and Fishbein, 1980). Indeed, individuals intend to perform a behaviour when they feel that the people who are important for them confirm that behaviour (Shin and Hancer, 2016). Perceived Behavioural Control (PBC) consists in the ease or difficulty of a particular behavioural performance as it is perceived by individuals (Ajzen, 1991). This component emphasises the extent to which that an individual perceives a behaviour to be under his/her volitional control (Fielding *et al.*, 2005). Behavioural control is related to beliefs about the presence of factors that may further or hinder the performance of behaviour (Ajzen, 2002; Ajzen and Madden, 1986). The above mentioned dimensions, affect the Intention (INT) which is an "individual readiness to perform a given behaviour" and is recognised as the motivation which is necessary for engagement in a particular behaviour. The intention is the most substantial predictor of behaviour and is assumed to be an immediate antecedent of this (Ajzen, 2002).

A review of literature shows that the TPB has long been successfully used to investigate a wide variety of farmers' intentions such as: adoption of innovations and technologies (Adnan *et al.*, 2019), sustainable practices (Zeweld *et al.*, 2017; Menozzi *et al.*, 2015; Fielding *et al.*, 2008), adaptation to climate change (Arunrat *et al.*, 2017; Dang *et al.*, 2014), engagement in pro-environmental activities (Van Dijk *et al.*, 2016). Despite the general usefulness of the TPB to identify and understand different behaviours of farmers, some scholars have attempted to enhance the predictive power of the TPB model, by including additional constructs Rezaei *et al.*, (2018), who extend the TPB model by including the two constructs of moral norms and knowledge, have recognized an increased robustness and explanatory power of the proposed framework in predicting farmer's intentions towards engaging in farm food safety enhancements. Positive remarks relating to the robustness of an extended TPB have been also expressed by Giampietri *et al.* (2018). Authors, adding the trust construct to the original TPB, agree on the greater performance of the model in predicting interviewees' intention to purchase food in SFSCs. Employing different constructs allowed Menozzi *et al.* (2015) to better investigate consumers' intentions to purchase traceable chicken and honey in France and Italy. Adding new variables (e.g. habits, trust, past behaviour and socio-demographics) to the original TPB has demonstrated how an extended TPB model can be of relevant importance in better predicting behaviours in two different countries. Adnan *et al.* (2019) concluded their work highlighting that if paddy farmers have more concern towards the environment, they will be more attracted towards adopting sustainable agricultural practices. Results have been achieved thanks to the employment, also in this case, of an extended TPB model, which includes new variables linked to external and economic factors.

To date, far too little attention has been paid to extending the TPB model by incorporating additional constructs mainly pertaining to the environmental sphere, with a particular reference on NEP. To this we add that, despite the growing literature on farmer's behaviours through the application of TPB, no studies have paid attention to the behaviours of entrepreneurs operating in the SFSC as regards their intention to utilise electric mobility for managing freight transport.

New Ecological Paradigm

In investigating the environmental attitude of an individual, the field of environmental psychology can be of relevant support. This last term refers to a specific tendency expressed by evaluating a particular object related to the environment with some degree of favour or disfavour (Kaiser *et al.*, 2011). The New Ecological Paradigm (NEP) scale (Dunlap *et al.*, 2000), is considered as the most widely used environmental attitude instrument today. Originally proposed in 1978 by Dunlap and Van Liere (1978), this theory has been revised in 2000 (Dunlap *et al.*, 2000). The NEP scale consists of 15 Likert-scale items, which are intended to measure five core components of individuals' environmental concern: (1) limits to economic growth, (2) anti-anthropocentrism; (3) the fragility of nature's balance; (4) human exceptionalism; and (5) the possibility of potentially catastrophic environmental changes or eco-crises affecting people (Dunlap *et al.*, 2000).

The NEP has been used in previous studies to investigate consumer attitudes about the risks of genetically modified food (Hall and Moran, 2006), to stress how environmental

concern affects marine species conservation (Pienaar *et al.*, 2015), to study pro-environmental orientation differences between people living in city areas and rural districts (Berenguer *et al.*, 2005).

For what in our knowledge, this is the first time that the NEP scale is used to assess the environmental orientations of entrepreneurs operating in the SFSC.

Methodology

In order to explore the intention of entrepreneurs operating in the Short Food Supply Chain to adopt the electric mobility inside their business a case study approach was chosen (Yin, 1984). According to Yin (1984:23) the case study research method is "an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used". Yin (1984) recognizes three categories of case study approaches, namely exploratory, descriptive and explanatory. Exploratory case studies, the type we selected, set out to explore any phenomenon in the data which serves as a point of interest to the researcher. In the exploratory case study, general questions and small scale data collection are necessary to open up the door for further examination of the phenomenon observed. Unlike in experiments, the contextual conditions are not delineated and/or controlled, but part of the investigation. Typical for case study research is non-random sampling; there is no sample that represents a larger population. Contrary to quantitative logic, the case is chosen, because the case is of interest.

The present case study is part of an European project, titled EnerNETMob, and co-funded by the INTERREG Mediterranean Programme 2014/2020. Within this scope, the research group has been charged with understanding the contexts and political background, as well as opinions and intentions specifically held by farmers operating in the local SFSC. The decision to consider the SFSC rather than other segments is linked to the intrinsic propensity of this business model to adopt more sustainable practices in almost all its production and distribution phases as the extant literature, previously presented, has widely showed.

To investigate the entrepreneurial propensity to introduce EVs inside their business, firstly authors worked on the political and legal background characterising the Sicilian Region, with a specific focus on the main Provinces (in terms of economic activities and populations). Regional laws, decrees, Regional Action Plans and other relevant documents have been thus studied so as to better understand the context inside which explore farmers' intentions. After identifying and contacting the main farmers' associations managing SFSC markets, an introductory presentation to the associations' managers was arranged with the aim of collecting their general opinions on our area of research as well as other technical information relating to associated farmers, their production methods, and the frequency of their participation in local markets. An empirical analysis was carried out in the city of Palermo (Sicily, Italy) during March 2019, involving local farmers' associations managing farmer's markets in the homonym Province, among which Coldiretti group, currently leading the label "Campagna Amica", the Association "PianetaMercati", the Association "Fattorie Sociali" and the Association "Contadini in Villa". The city of Palermo was chosen for two reasons. It was selected first of all for reasons relating to the project scope, and secondly because, in recent years, the farmer's markets there hosted have achieved a great degree of diffusion and broad acceptance on the part of consumers (Garrone, 2017; Pianeta Mercati, 2019). In terms of actors, or more specifically SFSC farmers, according to data provided by Spesa dal Contadino (2019), there are 119 farms participating in the Sicilian farmer's markets, and the majority of these (59 farms) operate in the city of Palermo and its Province. At first, face-to-face interviews were conducted with the main representatives of the Sicilian agricultural associations, such as the President of Fattorie Sociali, the Vice President of the Italian Association of Organic Agriculture in Sicily, and members of Coldiretti Sicily management's board.

After the first exploratory phase, a questionnaire for SFSC' farmers was developed and organised in four sections. In the first section, main data on firm characteristics was collected, covering information such as principal production, headquarters, and production methods. The second section collected socio-demographic characteristics of respondents, including specifications about eventual sons/grandchild in their family nucleus and membership to environmental associations. The third section contained specific questions aimed at gathering knowledge about the transport system characteristics of each sampled firms as well as questions attempting to quantify yearly distances travelled to reach selling points. The behaviours towards the EV introduction into their business has been measured through section four, which included a set of questions based on the TPB, appropriately modified according to the research field. The last section, the fifth, has been devoted to acquire data on individuals' environmental concern using questions based on the NEP scale. Questions pertaining to section 4 and 5 included a five-point Likert scale. As for the TPB, the questionnaire items were defined, taking into account Ajzen's conceptual and methodological considerations for constructing a TPB questionnaire (Ajzen, 1991) and the previous works carried out in similar field where a 5-point response format has been used (Giampieri *et al.*, 2018; Rezaei *et al.*, 2018; Adnan *et al.*, 2019; Arunrat *et al.*, 2017). Meanwhile, for the NEP scale, the selection of a five-point Likert scale has been decided upon following the results of a meta-analysis on works employing NEP scales, executed by Hawcroft and Milfont (2010), who highlighted that all studies, like the Dunlap *et al.* (2000) one, used a Likert scale and that 83.45% of the sample employed one with five-point response format. As a consequence, respondents were asked to specify their opinion respecting each item, using a five-point Likert-type scale from 1 to 5 as follows: 1=strongly disagree; 2=disagree; 3=neither agree nor disagree; 4=agree; and 5=strongly agree.

Giving the innovative nature of the research question and hence of the sample to be involved in order to gain initial primary data regarding this particular SFSC issue, following Yin (1984), we involved in our case study's survey the overall world of the SFSC farmers of Palermo. Indeed, in

the overall Province 59 farmers were regularly registered in farmers' associations managing local markets and participated in one or more of the numerous local markets. Out of a total of 59 questionnaires administered to farmers for compilation, 42 were considered correctly completed and then used for the analysis. Questionnaires were administered directly *in loco*, with researchers visiting farmers' markets. All the farms have headquarters in rural areas, around 20-100 km distant from Palermo city.

Results

The results presented here are the findings of a cross-validatory triangulation of data generated by the different sources employed during the case study analysis, namely documentation analysis, interviews with relevant stakeholders operating in the Sicilian SFSC and an empirical survey conducted among the entrepreneurs active in the farmer's markets of the Province of Palermo.

For those representatives of the Sicilian agricultural associations interviewed in the first phase of the analysis, an overall agreement was found in the form of a general awareness that in the food transport sector things should also move towards more sustainable options. Even if EVs are recognized as one of the most promising cleaner modes of transport, some concerns arise at first regarding the actual high costs of vehicles, which in turn could represent a major burden for SFSC entrepreneurs over a brief period. Moreover, interviewees showed an overall optimism towards progress being made in regional infrastructural development currently. In this regard, where plans for the deployment of charging points are concerned, interviewees suggest great attention also needs to be paid to the positioning of these points outside urban areas, in particular on provincial roads, which are the routes SFSC farmers usually take to reach distribution points. Concerning the battery's limit for an average journey, interviewees did not consider this aspect to be a great concern, thereby highlighting that a good number of SFSC farmers usually travel distances inside the optimal range covered by the current batteries available on the market. Nevertheless, they expect that the more public infrastructures are reinforced (through the increase in the number of charging points), as well as being planned according to the real needs of operators, the more this limit will be overcome, above all by those entrepreneurs who travel more km than the average.

These first results, achieved through interviews with stakeholders, allowed us to better integrate the questionnaire subsequently employed with SFSC entrepreneurs and thanks to which relevant results have been achieved. In particular, analysis of the questionnaires reveals at first an overall farmers' propensity towards shifting from carbon transport systems to electrical ones as evidenced, in Figure 1, by the greater number of interviewees who are convinced they will introduce electric mobility in the future for the distribution of agro-food products (3.52). The intention to introduce electric mobility in the short chain appear mainly linked to the shared opinion among the interviewees that this choice could contribute, on the one hand, to reducing CO_2 emissions (4.19) and, on the other hand, to improve the image of the company on the market (3.79). Respondents believe that the strong orientation towards sustainable choices will also concern the introduction of EVs (3.33), and this is in line with the awareness that corporate choices are shared by people (3.07). However, what emerges from the study is a lower awareness, among the interviewees, of the ability to control this new transport system, as emerges from the scores obtained, which are all around the average. Furthermore, results show that, on average, firm's internal resources are not sufficient for an efficient management of this alternative transport system if implemented (2.48).

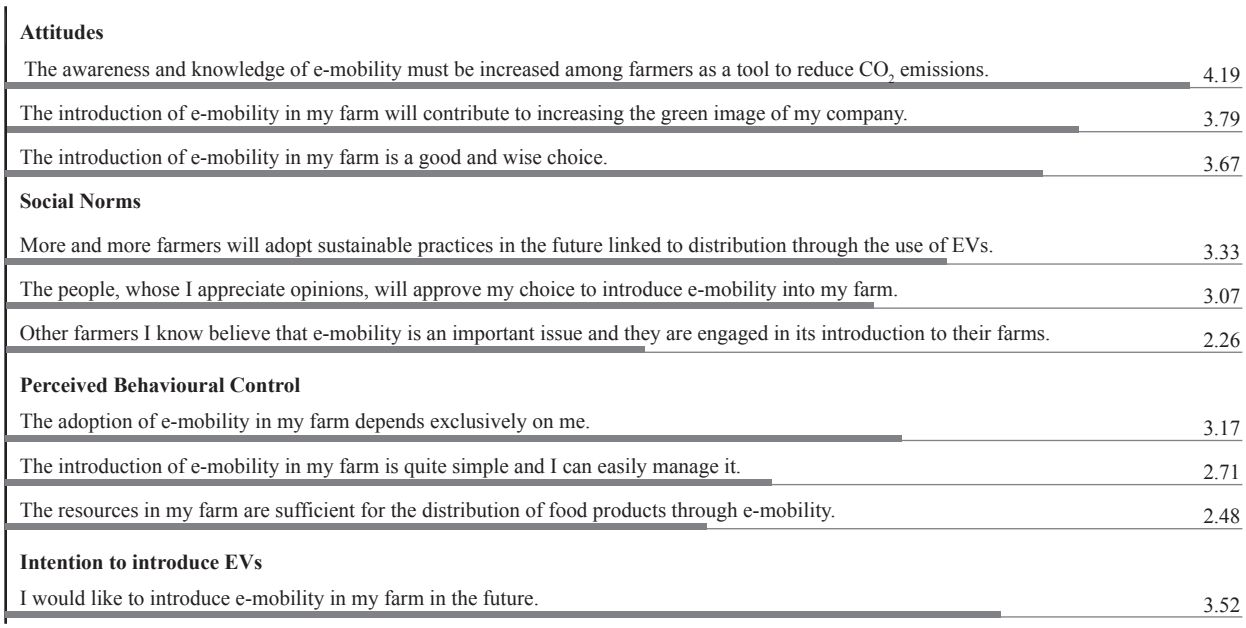

Figure 1: Drivers about the introduction of electric mobility in the farm based on the TPB (range 1 to 5).
Source: own composition

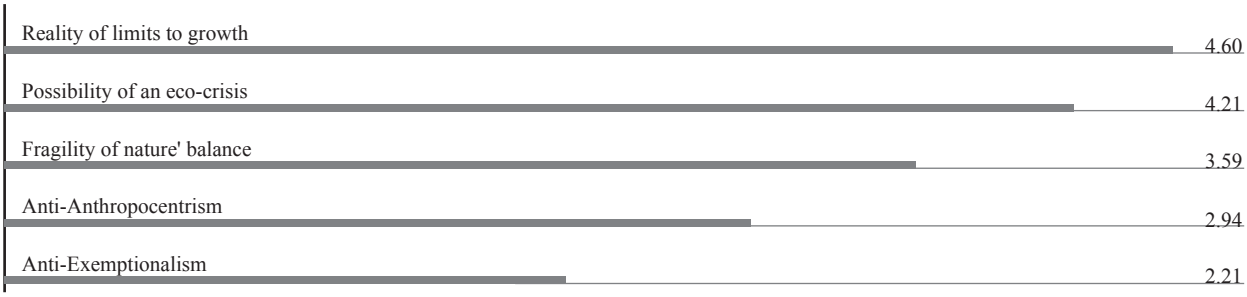

Figure 2: Ecological visions according to the New Ecological Paradigm Scale (range 1 to 5).
Source: own composition.

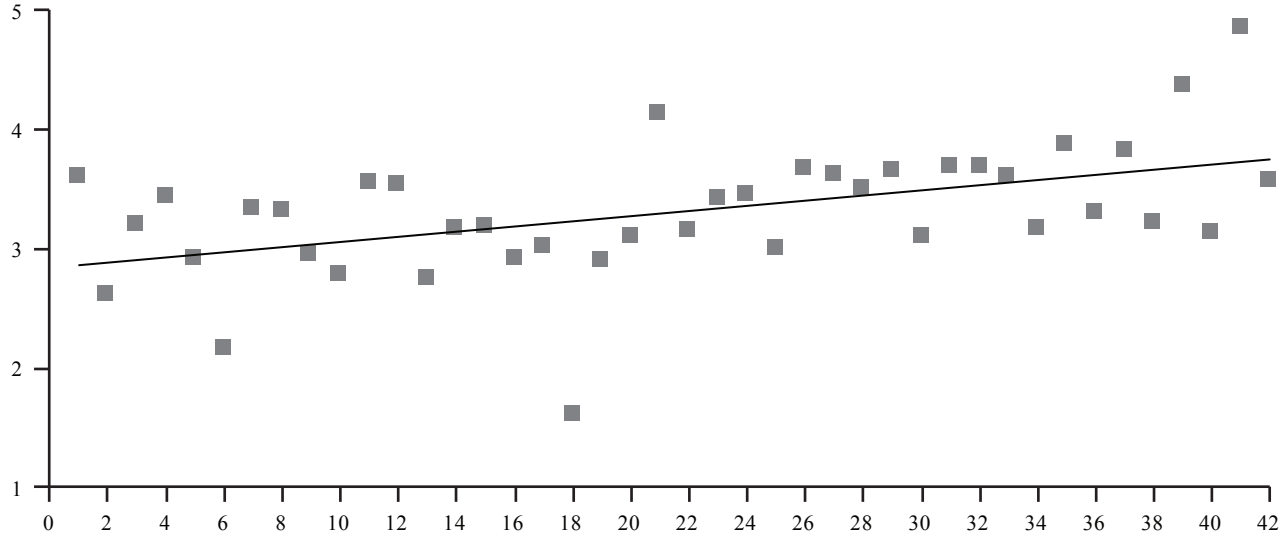

Figure 3: Trend of propensity to introduce EVs considering the factors of the TPB and NEP.
Source: own composition.

Empirical evidences demonstrate that the environmental proactive behaviour of entrepreneurs, associated to the introduction of EVs, is related to the different facets of the possible ecological concerns about the nature, as reported in Figure 2, according to which respondents agree on average on the five NEP ecological visions. In particular, based on mean responses to each of the ecological visions considered, it seems that respondents tend towards a good enough pro-ecological worldview, proved by the positive agreement for "Possibility of an eco-crisis" (4.21 out of five) and "Fragility of nature' balance" (3.59 out of five). In this way, results highlight a great awareness among respondents of the importance of protecting natural resources, which are exploited by human beings, causing disastrous consequences. An opinion further confirmed by the strong awareness of the fact that humans are seriously abusing the environment. Furthermore, the presence of an overall pro-ecological opinion among respondents is also showed by the shared disagreement about "Anti-anthropocentrism" (2.94) and "Rejection of exceptionalism" (2.21).

In order to better understand the behaviour of entrepreneurs participating in the SFSC and their propensity to introduce the electric mobility, respondents were ordered based on their intention to introduce EVs in their business, from the lesser to the most inclined. This propensity was therefore related to the average value derived from the TPB and NEP factors. Results highlight that individuals with a high propensity to move the carbon transport system to the electrical one show a more positive attitude towards that behaviour, completed by positive scores in the effects from social norms, and a better Perceived Behavioural Control. Furthermore, they also show particular concern about the scarcity of resources, the possible ecological catastrophes that can derive from an inappropriate exploitation of the environment and its resources, and the delicate balance of nature.

In addition, an interesting fact arising from the study is that entrepreneurs that show a greater willingness to introduce electric mobility in the SFCS are the same who more frequently participate in the farmers' markets, since their corporate headquarters is located near these markets.

This study also wanted to highlight the potential measures desirable for farmers to encourage the spread of electric mobility. Findings suggest that measures aimed at covering direct costs related to electric mobility (non-repayable grants, incentives for the relief of the insurance premium, and eco-incentives for the purchase of EVs) are the most preferred by entrepreneurs. Conversely, support tools targeted at achieving a reduction in the costs associated with EV use are less appreciated by interviewees.

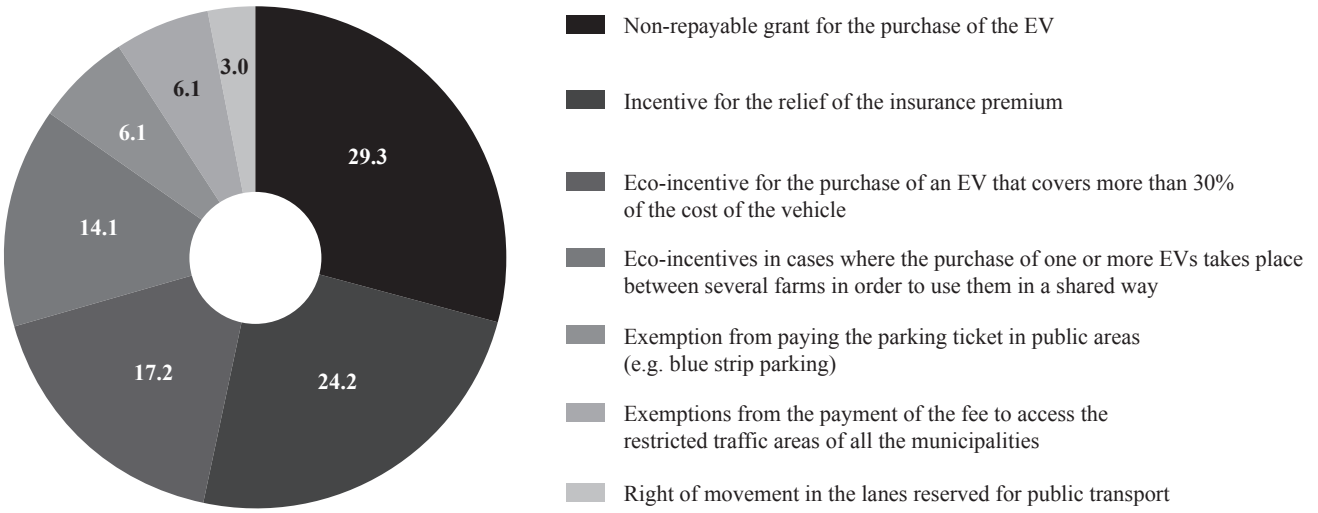

Figure 4: Approval ratings about support measures to encourage the spread of electric mobility.
Source: own composition.

Discussion

The present case study presents preliminary results on the behaviour of farmers operating in the SFSC against the opportunity to introduce EVs for the freight transports to reach local farmers' markets. This exploratory analysis is part of the activities provided by the EnerNETMob project, and addressed to the spread of the EV in EU bigger cities of Mediterranean area. Results, on the one hand represent important insights for the pilot action anticipated by the project and which include the positioning of EVs charging points in strategic points of the cities concerned, among them the Sicilian main ones, while on the other hand they may stimulate future research into this topic, supporting scholars in investigating in significant detail the SFSC's farmer behaviour toward the transition of a more sustainable transport system.

The study of the official documents currently in force in Italy and Sicily allowed us to understand, at first, the legislative and political context on which the case study rests. Data collected gave us a picture of a country in which EV policies and above all infrastructural investments have been launched and widely supported by a public-private partnership created for this purpose. With particular attention to Sicily, the infrastructural EV charging system is ready to function as proved by the national infrastructure plan for the recharge of vehicles powered by electricity (PNIRE), approved by the Government in 2014. Following the PNIRE input, the Sicilian Regional Authority, in 2017 approved the Regional Plan for Infrastructure and Mobility (PIIM), which includes detailed measures for ensuring the spread of electric mobility all across the island.

The main interesting and noteworthy findings of the present work, due to their managerial and political implications, originate from the profiling of interviewees we did according to the high or low levels of intention displayed. High social norms scores are present in the group with higher intention towards introducing an EV in their business, suggest how being in the presence of people with higher environmental concern, as well as the social context they belong to play a relevant role in pushing entrepreneurs towards more and more sustainable practices. This result indicates that cultural and social contexts are relevant factors when a farmer intends to opt for a radical transformation in their business. These cultural aspects should in turn be taken into careful account when investigating a change of this type. The higher value of PBC in this group, compared to the score of the overall sample, suggests how social norms and environmental awareness make the vital difference in relation to the possibility of introducing greener modes of transport. A similar correlation as well as importance to cultural and social contexts has been found by Giampieri *et al.* (2018) where, analysing through TPB the intention of consumers to buying in SFSC, found that the more consumers' attitudes are positive toward SFSC and the more the people who are important for them approve the behaviour, the more the PBC increases.

However, the entrepreneurs operating in the SFSC who are most concerned about the environment and the delicate balance of natural ecosystems are those who have the highest intention to reduce their environmental impact through sustainable means of transport, such as electrically powered vehicles. This evidence is also supported by the literature on EVs, according to which Ramos-Real *et al.* (2018) found that early adopters are, among other features, the one with high levels of environmental concern. To this we add that by taking into account the social and geographical context from which this group belong to, i.e. rural areas, our findings are in line with Berenguer *et al.* (2015) who, applying the NEP scale, found that people living in the rural context display more attitudes of environmental responsibility and greater consistency on expressing behavioural intentions compatible with the protection of the environment compared to people living in city areas.

The greater propensity to introduce EVs of entrepreneurs who more frequently participate in the farmers' markets located closest to the company's headquarters is probably

linked to what in the literature on EV is called "range anxiety", according to which the more the distance to be travelled the more the reticence to purchase an EV, as a consequence of fears (not technically founded) linked to the battery charge life and the few charging points available along the route (Ramos-Real *et al.*, 2018; Bunce *et al.*, 2014). Moreover, this correlation could also indicate that those farmers more oriented and culturally convinced to take part in SFSC are also the more aware of the need to adopt further sustainability measures to improve their overall business, both from an ethical and consumer's acceptance point of view, confirming the priority of SFSC farmers to act as "profit sufficers" rather than "profit maximisers" as suggested by Ilbery and Kneafsey (1998) and Jarosz (2008). Finally, this result opens up new interesting debates in the literature on SFSCs and the Food Miles concept, in that seeing local farmers operating in closest local markets as important actors can really support a shift from arguments focusing solely on production methods to ones which also include transport and distribution lines. Limitations recently suggested by Kemp *et al.* (2010) and Schmitt *et al.* (2017) indicate that measurements of CO_2 emissions and the environmental impacts of SFSCs should be reformulated and deepened, so as to prompt reflection about improving efficiency.

Giving the high current market entry costs for EVs, support measures are seen as a necessity. In this regard, our results show a great preference for measures mainly oriented at covering direct costs related to the purchasing of EVs. Indeed, despite the development of charging infrastructure being on the top of the list of priorities for amass EV deployment, as demonstrated by the last Regulations and Action Plans approved in Italy and, in turn, in Sicily, the most important support measure necessary is the one linked to purchase subsidies, as also emphasized by Santos and Davis (2019). In this regard, Morganti and Browne (2018) add that the implementation of public incentives could favour the uptake of EVs by entrepreneurs, with positive effects on air quality in urban environments and greater acceptance by operators.

Conclusions

This is a preliminary analysis, the aim of which was to investigate the behaviour of local producers operating in the SFSC of the Province of Palermo, in relation to the opportunity to introduce an EV for the purpose of freight transportation to local farmers' markets. The case study explored this topic by employing the universal sample of SFSC farmers regularly registered in one of the four recognised farmer's associations managing local markets in that area. The final sample was made up of 42 farmers out of 59. Results are interesting and original primarily because they contribute to enrich the literature on the pro-environmental behaviour linked to the debate currently open worldwide on how ensuring an effective de-carbonisation of the transport system. This is a matter that, although it already involves all dimensions of civil and economic daily life, calls for more stringent and urgent measures especially in relation to the food industry.

In light of this, the study has interesting theoretical, managerial and political implications. In particular, the case study reveals that farmers who mostly participate in the farmers' markets and travel the shortest distances are more willing to introduce EVs for the distribution of their products. The same behaviour is found in farms whose managers and owners show high interest towards the shift from carbon transport systems to electrical ones, and which are more sensitive to ecological and environmental sustainability issues. The results emphasize how ethical factors, represented here by high environmental concerns, as well as awareness about the most known limits of EV in ensuring autonomy over longer distances, are the main factors that should be taken into account by policy-makers when approaching concrete political measures addressed to promote such a shift. These highlighted factors should be considered also as important selecting indicators when Action Plans in the SFSC sector will be planned, thus avoiding support measures which do not take into account cultural, ethical and distance information of eligible firms. However, although the infrastructure is a condition *sine qua non* for the diffusion of EV, it is important to pay particular attention to the study results that suggest that the majority of entrepreneurs participating in the SFSC indicated their most favourite EV support measure to be a non-repayable grant for the EV purchase.

From a theoretical perspective, the employment of an extended model of the TPB to which the environmental opinions of entrepreneurs have been incorporated further contributes to the development of the theory itself. Results show that TPB is a useful theory to investigate behaviours of the entrepreneurs operating in the SFSC as well as to know which characteristics linked to the distribution of goods are identified as main drivers for the effective introduction of EV to be intended here as the greener transport mean currently available in the market.

Specific implications also arise for SFSC farmers, suggesting that the shift towards an electric transport system should be seriously considered as a further competitive advantage able to meet consumer's expectations towards more and more local farmers sustainability effort. Moreover, such a business choice should be mainly taken into account in those cases where distances travelled are over a reduced range, so suitable for the actual battery average duration.

Although this study extended our understanding of farmers' intention to introduce EVs inside their business, it has likewise a number of certain limitations that need to be considered in future studies. The first limit is linked to the case study method selected, which does not allow for the generalisation of results. Although the sample employed is statistically significant even if it represents a small scale sample, representing the overall Sicilian region, it possesses inherently a limitation. For this reason, future research might next extend the sample at least to the regional level, paying particular attention, when crossing the regional borders, to accurately considering the cultural and ethical dimensions of each of the areas investigated, together with factors linked to the infrastructure development status (such as, the number of charging stations, support measures in force, discounts to enter in urban zones, etc). Secondly, the study has been performed only inside a farmers' market, excluding the other alternative short supply chains such as shoppers, local e-commerce and other similar business models.

As a consequence, future work should engage more entrepreneurs working in other business distribution channels of the SFSC. Finally, targeted SWOT analysis and also cost-benefit analysis could be deepened in future research so as to acquire economic data useful to supporting an effective private-public partnership ensuring a more rapid EV diffusion, while also considering the possibility of case-by-case interaction between farmers and research centres to better conceive of a product, in this case battery and vehicle, that is more oriented to SFSC farmer needs.

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References

Adnan, N., Nordin, S.M., Bahruddin, M.A. and Tareq, A.H. (2019): A state-of-the-art review on facilitating sustainable agriculture through green fertilizer technology adoption: Assessing farmers behaviour. Trends in Food Science & Technology, **86**, 439–452. https://doi.org/10.1016/j.tifs.2019.02.040

Ajzen, I. (1991): The theory of planned behavior. Organizational Behavior and Human Decision Processes, **50** (2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002): Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behaviour. Journal of Applied Social Psychology, **32** (4), 665–683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

Ajzen, I. and Fishbein, M. (1980): Understanding Attitude and Predicting Social Behavior. New Jersey: Pearson Prentice Hall Publisher.

Ajzen, I. and Madden, T.J. (1986): Prediction of goal-directed behavior: attitudes, intentions, and perceived behavioral control. Journal of Experimental Social Psychology, **22** (5), 453–474. https://doi.org/10.1016/0022-1031(86)90045-4

Arunrat, N., Wang, C., Pumijumnong, N., Sereenonchai, S. and Cai, W. (2017): Farmers' intention and decision to adapt to climate change: a case study in the Yom and Nan basins, Phichit province of Thailand. Journal of Cleaner Production, **143**, 672–685. https://doi.org/10.1016/j.jclepro.2016.12.058

Berenguer, J., Corraliza, J.A. and Martín, R. (2005): Rural-Urban Differences in Environmental Concern, Attitudes, and Actions. European Journal of Psychological Assessment **21** (2), 128–138. https://doi.org/10.1027/1015-5759.21.2.128

Bunce, L., Harris, M. and Burgess, M. (2014): Charge up then charge out? Drivers perceptions and experiences of electric vehicles in the UK. Transportation Research Part A: Policy and Practice, **59**, 278–287. https://doi.org/10.1016/j.tra.2013.12.001

Coley, D., Howard, M. and Winter, M. (2011): Food miles: time for a re-think? British Food Journal, **113** (7), 919–934. https://doi.org/10.1108/00070701111148432

Cowell, S. and Parkinson, S. (2003): Localization of UK Food Production: An analysis using land area and energy as indicators. Agriculture, Ecosystems & Environment, **94** (2), 221–236. https://doi.org/10.1016/S0167-8809(02)00024-5

Dang, H.L., Li, E., Nuberg, I. and Bruwer, J. (2014): Understanding farmers' adaptation intention to climate change: a structural equation modelling study in the Mekong Delta, Vietnam. Environmental Science & Policy, **41**, 11–22. https://doi.org/10.1016/j.envsci.2014.04.002

Dunlap, R.E. and Van Liere, K.D. (1978): The new environmental paradigm. The Journal of Environmental Education, **9** (4), 10–19. https://doi.org/10.3200/JOEE.40.1.19-28

Dunlap, R.E., Van Liere, K.D., Mertig, A.G. and Jones, R.E. (2000): Measuring endorsement of the new ecological paradigm: A revised NEP scale. Journal of Social Issues, **56** (3), 425–442. https://doi.org/10.1111/0022-4537.00176

Dupuis, E.M. and Goodman, D. (2005): Should We Go 'Home' to Eat? Toward a Reflexive Politics of Localism. Journal of Rural Studies, **21** (3), 359–371. https://doi.org/10.1016/j.jrurstud.2005.05.011

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), 582–591. https://doi.org/10.1017/S0029665110002004

Egbue, O., Long, S. and Samaranayake, V.A. (2017): Mass deployment of sustainable transportation: evaluation of factors that influence electric vehicle adoption. Clean Technologies and Environmental Policy, **19** (7), 1927–1939. https://doi.org/10.1007/s10098-017-1375-4

Feagan, R.B. and Morris, D. (2009): Consumer Quest for Embeddedness: A Case Study of the Brantford Farmers Market. International Journal of Consumer Studies, **33** (3), 235–243. https://doi.org/10.1111/j.1470-6431.2009.00745.x

Fielding, K.S., Terry, D.J., Masser, B.M., Bordia, P. and Hogg, M.A. (2005): Explaining landholders' decisions about riparian zone management: The role of behavioural, normative, and control beliefs. Journal of Environmental Management, **77** (1), 12–21. https://doi.org/10.1016/j.jenvman.2005.03.002

Fielding, K.S., Terry, D.J., Masser, B.M. and Hogg, M.A. (2008): Integrating social identity theory and the theory of planned behavior to explain decisions to engage in sustainable agricultural practices. British Journal of Social Psychology, **47** (1), 23–48. https://doi.org/10.1348/014466607X206792

Galati, A., Siggia, D., Crescimanno, M., Martín-Alcalde, E., Saurí Marchán, S. and Morales-Fusco, P. (2016): Competitiveness of short sea shipping: The case of olive oil industry. British Food Journal, **118** (8), 1914–1929. https://doi.org/10.1108/BFJ-05-2016-0193

Garrone, L. (2017): Consumi consapevoli, la sfida dei Mercati Contadini. Corriere della Sera. Available at: https://www.corriere.it/extra-per-voi/2017/02/17/consumi-consapevoli-sfida-mercati-contadini-8717e540-f50d-11e6-acae-b28574795707.shtml?refresh_ce-cp (Accessed June 2019)

Giampietri, E., Verneau, F., Del Giudice, T., Carfora, V. and Finco, A. (2018): A Theory of Planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains. Food Quality and Preference, **64**, 160–166. https://doi.org/10.1016/j.foodqual.2017.09.012

Hall, C. and Moran, D. (2006): Investigating GM risk perceptions: A survey of anti-GM and environmental campaign group members. Journal of Rural Studies, **22** (1), 29–37. https://doi.org/10.1016/j.jrurstud.2005.05.010

Hawcroft, L.J. and Milfont, T.L. (2010): The use (and abuse) of the new environmental paradigm scale over the last 30 years: A meta-analysis. Journal of Environmental Psychology, **30** (2), 143–158. https://doi.org/10.1016/j.jenvp.2009.10.003

Henneberry, S.R., Whitacre, B. and Agustini, H.N. (2009): An Evaluation of the Economic Impacts of Oklahoma Farmers Markets. Journal of Food Distribution Research, **40** (3), 1–15.

Ilbery, B. and Kneafsey, K. (1998): Product and Place: Promoting Quality Products and Services in the Lagging Rural Regions of the European Union. European Urban and Regional Studies, **5** (4), 329–341. https://doi.org/10.1177/096977649800500404

Jarosz, L. (2008): The City in the Country: Growing Alternative Food Networks in Metropolitan Areas. Journal of Rural Studies, **24** (3), 231–244. https://doi.org/10.1016/j.jrurstud.2007.10.002

Kaiser, F.G., Hartig, T., Brügger, A. and Duvier, C. (2011): Environmental protection and nature as distinct attitudinal objects: An application of the Campbell paradigm. Environment and Behavior, **45** (3), 369–398. https://doi.org/10.1177/0013916511422444

Kemp, K., Insch, A., Holdsworth, D.K. and Knight, J.G. (2010): Food miles: Do UK consumers actually care? Food Policy, **35** (6), 504–513. https://doi.org/10.1016/j.foodpol.2010.05.011

Kissinger, M. (2012): International trade related food miles – The case of Canada. Food Policy, **37** (2), 171–178. https://doi.org/10.1016/j.foodpol.2012.01.002

Marsden, T., Banks, J. and Bristow, G. (2002): Food Supply Chain Approaches: Exploring their Role in Rural Development. Sociologia Ruralis, **40** (4), 424–438. https://doi.org/10.1111/1467-9523.00158

Menozzi, D., Fioravanzi, M. and Donati, M. (2015): Farmer's motivation to adopt sustainable agricultural practices. Bio-based and Applied Economics, **4** (2), 125–147. https://doi.org/10.13128/BAE-14776

Migliore, G., Schifani, G. and Cembalo, L. (2015): Opening the black box of food quality in the short supply chain: Effects of conventions of quality on consumer choice. Food Quality and Preference, **39**, 141–146. https://doi.org/10.1016/j.foodqual.2014.07.006

Morganti, E. and Browne, M. (2018): Technical and operational obstacles to the adoption of electric vans in France and the UK: An operator perspective. Transport Policy, **63**, 90–97. https://doi.org/10.1016/j.tranpol.2017.12.010

Paxton, A. (1994): The food miles report: the dangers of long distance food transport. SAFE Alliance.

Pearson, D., Henryks, J., Trott, A., Jones, P., Parker, G., Dumaresq, D. and Dyball, R. (2011): Local Food: Understanding Consumer Motivations in Innovative Retail Formats. British Food Journal, **113** (7), 886–899. https://doi.org/10.1108/00070701111148414

Pianeta Mercati (2019): Secondo gruppo in Sicilia. Available at: http://www.pianetamercati.com/ht/siamo-in-secondo-gruppo-in-sicilia/ (Accessed June 2019)

Pienaar, E.F., Lew, D.K. and Wallmo, K. (2015): The importance of survey content: Testing for the context dependency of the New Ecological Paradigm Scale. Social Science Research, **51**, 338–349. https://doi.org/10.1016/j.ssresearch.2014.09.005

Plötz, P., Schneider, U., Globisch, J. and Dütschke, E. (2014): Who will buy electric vehicles? Identifying early adopters in Germany. Transportation Research Part A: Policy and Practice, **67**, 96–109. https://doi.org/10.1016/j.tra.2014.06.006

Quak, H., Nesterova, N., van Rooijen, T. and Dong, Y. (2016): Zero Emission City Logistics: Current Practices in Freight Electromobility and Feasibility in the Near Future. Transportation Research Procedia, **14**, 1506–1515. https://doi.org/10.1016/j.trpro.2016.05.115

Ramos-Real, F.J., Ramírez-Díaz, A., Marrero, G.A. and Perez, Y. (2018): Willingness to pay for electric vehicles in island regions: The case of Tenerife (Canary Islands). Renewable and Sustainable Energy Reviews, **98**, 140–149. https://doi.org/10.1016/j.rser.2018.09.014

Renting, H., Marsden, T.K. and Banks, J. (2003): Understanding Alternative Food Networks: Exploring the Role of Short Food Supply Chains in Rural Development. Environment and Planning A: Economy and Space, **35** (3), 393–411. https://doi.org/10.1068/a3510

Rezaei, R., Mianaji, S. and Ganjloo, A. (2018): Factors affecting farmers' intention to engage in on-farm food safety practices in Iran: Extending the theory of planned behaviour. Journal of Rural Studies, **60**, 152–166. https://doi.org/10.1016/j.jrurstud.2018.04.005

Rezvani, Z., Jansson, J. and Bodin, J. (2015): Advances in consumer electric vehicle adoption research: A review and research agenda. Transportation Research Part D: Transport and Environment, **34**, 122–136. https://doi.org/10.1016/j.trd.2014.10.010

Roininen, K., Arvola, A. and Lahteenmaki, L. (2006): Exploring consumers' perceptions of local food with two different qualitative techniques: laddering and word association. Food Quality and Preference, **17** (1-2), 20–30. https://doi.org/10.1016/j.foodqual.2005.04.012

Santos, G. and Davies, H. (2019, in press): Incentives for quick penetration of electric vehicles in five European countries: Perceptions from experts and stakeholders. Transportation Research Part A: Policy and Practice. https://doi.org/10.1016/j.tra.2018.10.034

Schmitt, E., Galli, F., Menozzi, D., Maye, D., Touzard, J.M., Marescotti, A., Six, J. and Brunori, G. (2017): Comparing the sustainability of local and global food products in Europe. Journal of Cleaner Production, **165**, 346–359. https://doi.org/10.1016/j.jclepro.2017.07.039

Shin, Y.H. and Hancer, M. (2016): The role of attitude, subjective norm, perceived behavioral control, and moral norm in the intention to purchase local food products. Journal of Foodservice Business Research, **19** (4), 338–351. https://doi.org/10.1080/15378020.2016.1181506

Smith, P. and Smith, T.J.F. (2000): Transport costs do not negate the benefits of agricultural carbon mitigation options. Ecology Letters, **3** (5), 379–381. https://doi.org/10.1046/j.1461-0248.2000.00176.x

Spesa del Contadino (2019): Cerca le fattorie che fanno vendita diretta. Available at: https://www.spesadalcontadino.com/ (Accessed June 2019).

Van Dijk, W.F.A., Lokhorst, A.M., Berendse, F. and de Snoo, G.R. (2016): Factors underlying farmers' intentions to perform unsubsidised agri-environmental measures. Land Use Policy, **59**, 207–216. https://doi.org/10.1016/j.landusepol.2016.09.003

Van Hauwermeiren, A., Coene, H., Engelen, G. and Mathijs, E. (2007): Energy Lifecycle Inputs in Food Systems: A Comparison of Local Versus Mainstream Cases. Journal of Environmental Policy & Planning, **9** (1), 31–51. https://doi.org/10.1080/15239080701254958

Yin, R. K. (1984): Applied social research methods series Case study research: Design and methods. SAGE Publications.

Zeweld, W., Huylenbroeck, G., Tesfay, G. and Speelman, S. (2017): Smallholder farmers' behavioral intentions towards sustainable agricultural practices. Journal of Environmental Management, **187**, 71–81. https://doi.org/10.1016/j.jenvman.2016.11.014

Nina DREJERSKA*, Jarosław GOŁĘBIEWSKI* and Mariantonietta FIORE**

Social media for interactions with customers within the short food supply chain: the case of the SKIN project

Consumers have great power in the marketing process and social media represents an opportunity for farmers/producers to promote and strengthen ties with consumers by building short supply chains. Current business trends involving the application of social media for communication with costumers can also be observed among farmers/producers. The paper studies the use of social media by farmers/companies – here, the EU SKIN project partners registered within the SKIN Good Practice Repository. A first step included investigation of company webpages (native language version), which usually provided a general background to the company's activities and information about its products. A Facebook page was identified as the primary social media channel (used by 81% of the investigated group) as farmers/producers who did not have it also did not refer to any other social media. Research results indicate a relatively wide audience for the Facebook pages of farmers/producers (numbers of likes and followers) but interactions with consumers are limited (a low number of comments and sharings). The conclusion is implied that a number of farmers/producers use social media for providing information but they mostly interact with their costumers offline.

Keywords: social media, customers, supply chain.

JEL classifications: Q13, Q18

* Warsaw University of Life Sciences, Faculty of Economic Sciences, 166 Nowoursynowska Street, 02-787 Warsaw, Poland.
Corresponding author: nina_drejerska@sggw.pl

** University of Foggia, Department of Economics, Largo Papa Giovanni Paolo II n. 1, 71121 Foggia, Italy.

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Introduction

Companies use social media to provide users with information about the offer, new promotions or organised events. More specifically, they refer to consumers' needs to share knowledge on various topics. The non-formal nature of user-brand conversations may be more effective than typical marketing activities. The idea and mechanism of social media operation consists in encouraging people to take an active part in discussions about a company or brand that becomes so interesting or delightful that users themselves become their promoters (Evans and Schmalensee, 2007). This is why constant stimulation of discussions should be encouraged and care given to maintaining good relations with users of social media as it may have a fundamental impact on business development (Brunk, 2010).

Describing social media available today is not a simple task. This is due to the diversity of their applications, functions and goals around which users of online communities gather (Henderson and Bowley, 2010). The most popular, largest and at the same time the most dynamically developing social networking site in the world is Facebook. Its history goes back to 2003, when Mark Zuckerberg, a psychology and computer science student at Harvard University, decided to create a social networking site allowing Internet users to create their own profile, find and continue their contacts, and exchange with other messages and photos (Mezrich, 2010). This market leader as the first social network surpassed 1 billion registered accounts and currently (2018) sits at 2.27 billion monthly active users (Statista, 2019). Facebook fan pages give a lot of possibilities to present what a company does, especially resulting from (Kamiński, 2010):

- gaining fans - promoting a company gives an opportunity to win new customers;
- users of social media are usually open to new products;
- opportunity to present a company as friendly to the environment, caring for employees, or actively implementing social values - this can affect potential consumers when choosing a specific product, and it can also affect potential employees;
- a discussion forum, where users can exchange opinions about companies or products;
- interesting information presented by a company is noticed by fans, and consequently on their home pages, helping to increase the interest in a company among other users - this is so-called viral marketing, which relies on the free transfer of various content between users;
- placing links to company websites or online stores;
- organisation of competitions and promotions which allows to strengthen contacts with regular consumers and gives an opportunity to attract new ones;
- high efficiency and ease of implementation of promotional campaigns, with low or even zero financial input, what is a big saving for enterprises.

It is also important to notice that every relationship established between users and brands will be displayed on the board visible to all friends. This action may cause curiosity and willingness to visit the brand fan page among friends, and consequently they may even interact with it (Schüller and Schwarz, 2010). However, if a company or organisation has nothing interesting to convey to its fans, it is pointless to clutter up its fan page and bother users with unnecessary information, risking their loss. A big advantage is the placement of content useful to users, for example information about promotions or new offers (Bonek and Smaga, 2012).

Taking into account this important role of social media for business development we decided to study their use by farmers operating within short supply chains as this is a phe-

nomenon hitherto not studied deeply. The literature around the application of social media for business purposes will be enriched by demonstrating its use in food production, by farmers and within the short supply chain – and our study fills the gap in the literature dealing with all of these aspects together. To complete the study, the remainder of the paper unfolds as follows: the first section analyses the theoretical background of networks and social media in short food supply chain; then, the methodology section includes the study design and data collection; afterwards the analysis is provided, the findings are described and discussed.

Literature review: networks and social media in SFSC

Short Food Supply Chain (SFSC) is one of the six priorities of EU rural development within CAP 2014-2020. According to the European Regulation n.1305/2013, a 'short supply chain' involves a limited number of economic actors linked by close geographical and social relations among producers, processors and consumers. Mundubat (2012) defines two typologies of short supply chains: direct short chains with no intermediaries and the indirect short chains with only a single intermediary between farmers and consumers. SFSCs display an extensive creativity: 'direct selling, box schemes, farmers' markets, pick-your-own, on-farm sales, consumer cooperatives, direct internet sales, community supported agriculture, and e-commerce' (Giampietri *et al.*, 2016). In addition, a recent work presents an exploratory study investigating another channel that is local food logistics services implemented to distribute local food to restaurants: then, the platform provides logistics facilities focusing on local farms that strengthen the direct relation and knowledge exchange between farmers and consumers (Paciarotti and Torregiani, 2018). Indeed, farmers try to decrease dependency on retail and to avoid 'unidentified' supply chains thus promoting direct sales to consumers (Wubben *et al.*, 2013). Fiore (2016) highlights major benefits and social advantages of direct sales for consumers and for farmers. Not only lower costs of intermediation and correlatively major income and power for farmers can be counted, but also the quality of products in terms of higher safety and sustainability and the quality of relations in terms of higher trust and proximity can be seen to be the best result.

Alternative and trust-based networks certainly help and stimulate sustainable and economic positive impacts for increasing cultural identity of rural areas (Blom-Zandstra *et al.*, 2016; Le Velly and Dufeu, 2016; Bazzani and Canavari, 2013), thus reducing the informative gap among consumers, farmers and stakeholders (Barati *et al.*, 2017; De Pascale *et al.*, 2017; Contò *et al.*, 2016). Active communication, plus the quality of the exchanged information are positively associated to trust levels in buyer or supplier interactions and communication and cooperation envisage a willingness to participate in SFSCs (Charatsari *et al.*, 2018).

Levels of cooperation have to be strongly raised by means of each actor becoming the basis of new cultural approach towards competition, the "multi-actor" approach. This approach explores needs, and implies participatory acts undertaken in order to share problems and relative solutions (De Pascale *et al.*, 2017). Shortening the distance between knowledge and practical application is at the core of the multi-actor communities in the SKIN project. Four pillars characterize the methodology: 1) Consortium's partners have complementary skills and knowledge; 2) Involving actors is both at regional scale, called regional nodes, and at the international level named transversal subthematic workshops; 3) The quality and quantity of knowledge exchanges is ensured and 4) Planned organization and management is the backbone of the project.

Therefore, the SKIN multi-actor approach can be considered an approach which aims to considering dissimilar EU actors, methods and chances for creating a knowledge-based multi-party community of stakeholders.

Knowledge exchange via local networks makes it possible for agri-food systems to move towards adoption of a sustainable approach (Sacchi *et al.*, 2018). Short supply chains depend on an alternative form of social organisation, which is influenced by group norms that are important preconditions for the sustainability of these alternative food networks (Charatsari *et al.*, 2018). Policy makers and public organisations promote more and more innovative agri-food sustainable practices and regional and local foods because people are worried about food safety and animal health scandals and want to know food supply chain dynamics better and to be informed about food's origin and production models (Elghannam *et al.*, 2017; Fiore, 2016; Wubben *et al.*, 2013).

Using the Internet can be a crucial driver for farmers: thus, we can define two models, online and off-line. Via the online chain model, it is possible to buy food directly through the network or just to keep in touch consumers with sellers. Online models include: a) online platforms, for broadcasting purposes, and allowing purchasing online directly; and b) on-line sales websites where e-commerce is implemented. The offline model is clearly related to farms that do not offer their products via the web (Elghannam *et al.*, 2017).

Building on-line SFSCs using social networks seems likely to be a future buzzword in social media marketing. SFSC improves the tie with customers, while at the same time, getting direct feedback from them (Elghannam *et al.*, 2018), thereby meeting consumers' new requirements. Agri-food businesses can find in social-media marketing a potent tool for overcoming their weaknesses and the obstacles they face.

Methodology

The basic research problem was to study use of social media by farmers operating within short supply chains. We referred to farmers/companies registered within the SKIN Good Practice Repository. Shortening the distance between knowledge and practical application is the core of the SKIN project (Short Supply Chain Knowledge and Innovation Network) that is a significant and striving initiative in the domain of Short Food Supply Chain (SFSC) within the framework of H2020 - RUR-10-2016-2017 - Thematic Networks compiling knowledge ready for practice. 14 EU countries and

Table 1: Website content of investigated farmers/producers.

Website parts	Farmers/producers	
	No	%
Background	196	91.6
Products	193	90.2
Phone	182	85.0
Mail	176	82.2
Contact form	110	51.4
Shop	55	25.7

Source: own composition

Table 2: The most popular social media among investigated farmers/producers.

Social media	Farmers/producers	
	No	%
Facebook	174	81.3
Twitter	68	31.8
Instagram	45	21.0
YouTube	33	15.4

Source: own composition

22 partners belong to the SKIN project which will see its conclusion in November 2019. The main goal of the project is to build a new community of relations for re-connecting the two extremities of the food supply chain, producers and citizens. Trust represents the glue for establishing a short chain based on common values on food, its origin and production method by promoting innovation from the ground. The underlying idea and philosophy is to provide concrete and planned support to the stakeholders of short food supply chains and to enable actions aimed at the empowerment of the potential innovators (farmers, small business owners, innovation support services providers, regional services etc.) to be taken.

We checked how active farmers/companies of the SKIN project were and which social media they used. Investigation was completed within one month. The first step was to prepare a database. It involved 214 partners with websites available, out of 814 SKIN producers/farmers. The process of verification if a website worked or not brought us to the conclusion that 15 entities used Facebook as the only available source of information on the Internet. For the rest, we can conclude about using different combinations of presence online. Therefore, we are dealing with an observational study where the researcher merely records (observes) what happens in reality. In this way, we were able to collect basic information useful for further studies and for delineating a line of research.

The vast majority of studied entities among the investigated producers/farmers provided a general overview of their activities and information about products of their websites. They usually included phone numbers and email addresses, whereas contact form was not such a popular method of communication (Table 1). Nearly 26% referred to a possibility to purchase on-line (it was a classical on-line shop as well as an offer list with prices and description how to order particular items).

It is crucial to stress that the Facebook activity seems to be the basic social media channel as farmers/producers who did not have it, also did not refer to any other social media. It was used by 81% of investigated group (Table 2). Next popular were: Twitter, Instagram and YouTube. A number of entities (46, 21.5%) linked other platforms or ways of communication (decreasing order: blog, LinkedIn, Google+, TripAdvisor, Pinterest, RSS, Flickr, Vimeo, Tumblr).

However, 25 investigated entities with Facebook activities (nearly 13%), did not refer to it on their basic webpages. Qualitative analysis of these cases can lead to a conclusion that webpages were established much earlier, and nowadays Facebook was used to current communication – this can be proven for example by photos provided (much more updated on Facebook) and also a general outlay of a webpage – not following the modern look or navigation schemes. It does not mean than the webpages communicated wrong or misleading information. Probably Facebook is easier for communication than a classical webpage but this hypothesis needs further qualitative research among farmers.

Basic approach in this research assumed looking for a link to a Facebook page at the website (native language version), as this approach is logical and establishes a coherent method of communication with consumers. We noticed single cases where a related Facebook page was not directly linked to, it was possible only to like it. In such a situation we searched Facebook using a name of an entity included the SKIN Good Practice Repository.

The limitations of this study, which is indicated also in other similar ones, is the short time framework for data collection. Evaluating a longer period could identify seasonal differences and strategies for creating messages for holidays or special events (Klassen et al, 2018). What is more, we were not able to collect general info (age, gender, education, income, size of the producers etc.), as a privacy agreement of the SKIN project does not allow, in this step, the utilisation of such data.

Research

Entrepreneurs can name their activity in different ways when they establish a Facebook fan page (a business account representing a company or organization). In case of our research, 5 farmers/producers used a Facebook profile, which by theory is dedicated to individual, non-commercial use. As a group we researched included these individual profiles, we apply the term Facebook page for all types of accounts for further analysis.

An important part of the entities (34%) presented themselves as running selling activities, sometimes adding more detailed descriptive as: vegetable, wine, meat or referring to features of their products as: local, ecological or healthy (Figure 1). Facebook pages often included a few names for activities, as for example a shop and a farm – in such situation we identified the main descriptor basing on the content of the profile or a more detailed one (for example company *vs.* shop). It seems that naming the activity in a way related to selling products somehow stressed possibilities of establishment of relations with potential purchasers. But this state-

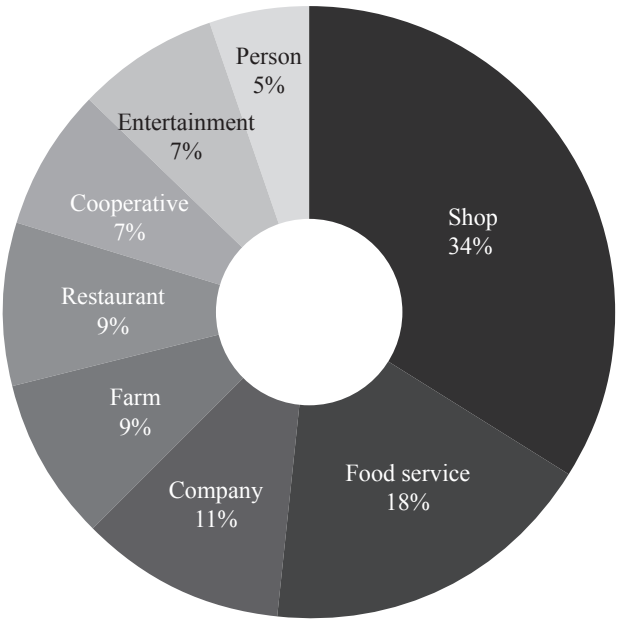


Figure 1: Structure of activities according description of Facebook pages
Source: own composition

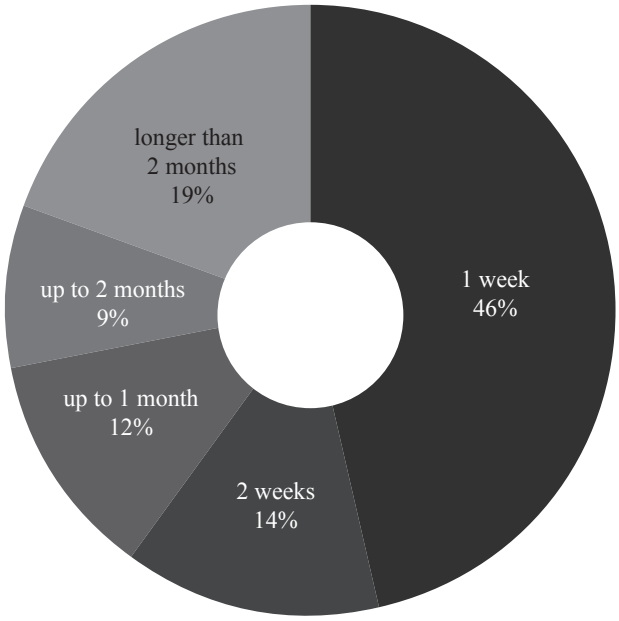


Figure 2: Time of last post publication
Source: own composition

ment can be treated only as a hypothesis for further research. Using a general phrase of entertainment we refer mainly to accommodation but also to educational services. Text mining techniques seems to be applicable to deeper analyses of this aspect of Facebook pages.

The oldest pages were started in 2009 (9 profiles, 5.4%) and cross-analysis shows that these were classic fan pages, so using a personal profile is not related with time of starting Facebook activities. Nearly half of investigated farmers/producers started their profile up until 2012. It proves significant time experience in this social media channel.

Generally it can be concluded that farmers/producers kept their profiles updated (Figure 2) - 60% published a post within last 2 weeks. On the other hand, there was also a group of those whose last post was published more than 2 months ago, with single cases of activities older than two or even three years ago. This lower level of activity of one fifth of the investigated group raises a question about reasons of maintaining a profile, as a significant outdating can discourage potential consumers from purchasing products or services.

Facebook has been developing different ways to allow users to build their pages. Publishing short videos is also a popular activity, compared to a similar possibility offered by YouTube. Nearly 82% of farmers/producers with a Facebook page published videos there. Usually a number of these videos was not high – in the case of 60% of investigated entities up to 10 short films. However, there were also 10 entities with 50 and more videos. Use of this way of communication did not replace activities on YouTube as 32 out of 33 farmers/producers referring to YouTube on their main web pages, published also videos on their Facebook pages.

What refers also to a presence in other than social media is a fact that, it was quite usual that a classic webpage gathered links to various social media where a company was present. However, it was not so obvious with links to others on a Facebook page - they were included in a list of Facebook content (left vertical menu) only by 10 producers/farmers.

Table 3: Descriptive statistics for numbers of likes and followers

Descriptive statistics		Number of likes	Number of followers
Average		3,163	3,405
Minimum		9	11
Maximum		45,688	45,309
Percentile	25	613	606
	50	1,529	1,580
	75	3,184	3,196

Source: own composition

The content of the majority of investigated Facebook pages was found to be quite standard. There were a few cases of newsletters (also with use of MailChimp) and information on promotions as well as single examples of: polls, testimonials, brochures on Issuu platform, book now function and fan of the week. On this background, a shop was a relatively popular functionality – present on 19 Facebook pages; 10 out of them had also a shop on a standard webpage. What is interesting, a shop on the Facebook page was present in case of entities describing themselves as shops (a natural connotation) but also a food service, restaurant, farm, entertainment and a cooperative. At this point, we assume that this kind of activity was run in accordance with the relevant legal regulations regarding, for example, food safety.

Liking and/or following are one of the easiest ways to display user's interest on Facebook as it requires only one click, without a necessity of providing own message or even selecting an appropriate graphic. Data on a number of users engaged in this way we got for 168 farmers/producers (Table 3).

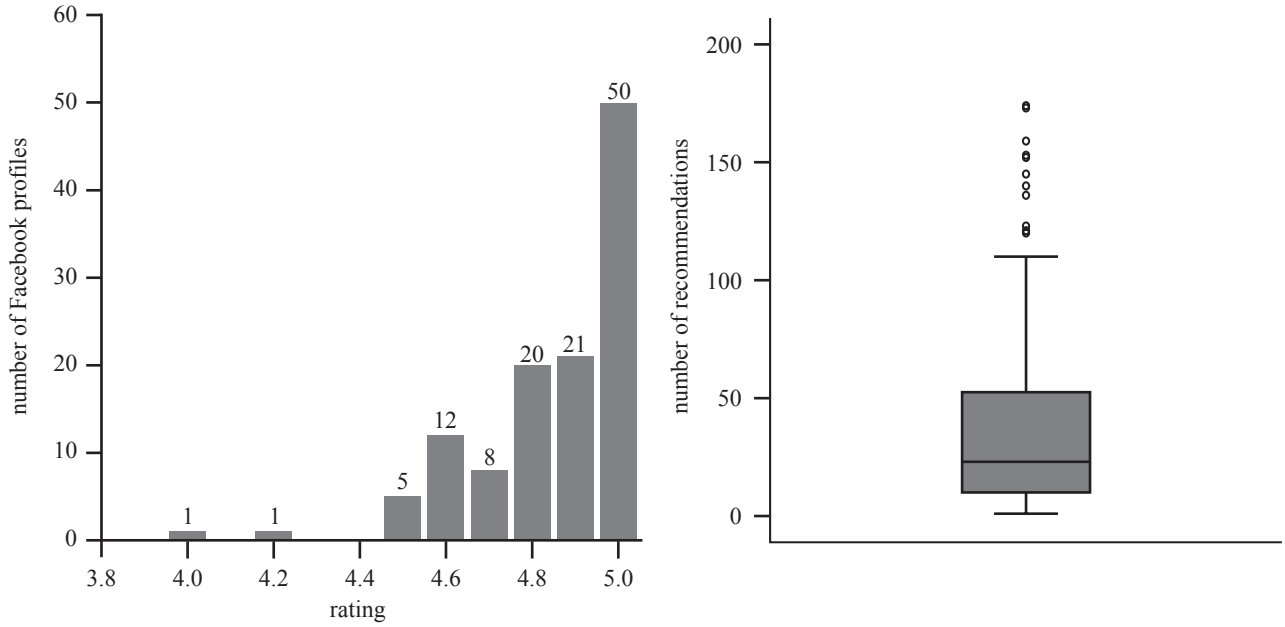


Figure 3: Rating of Facebook pages and number of recommendations.
Source: own composition

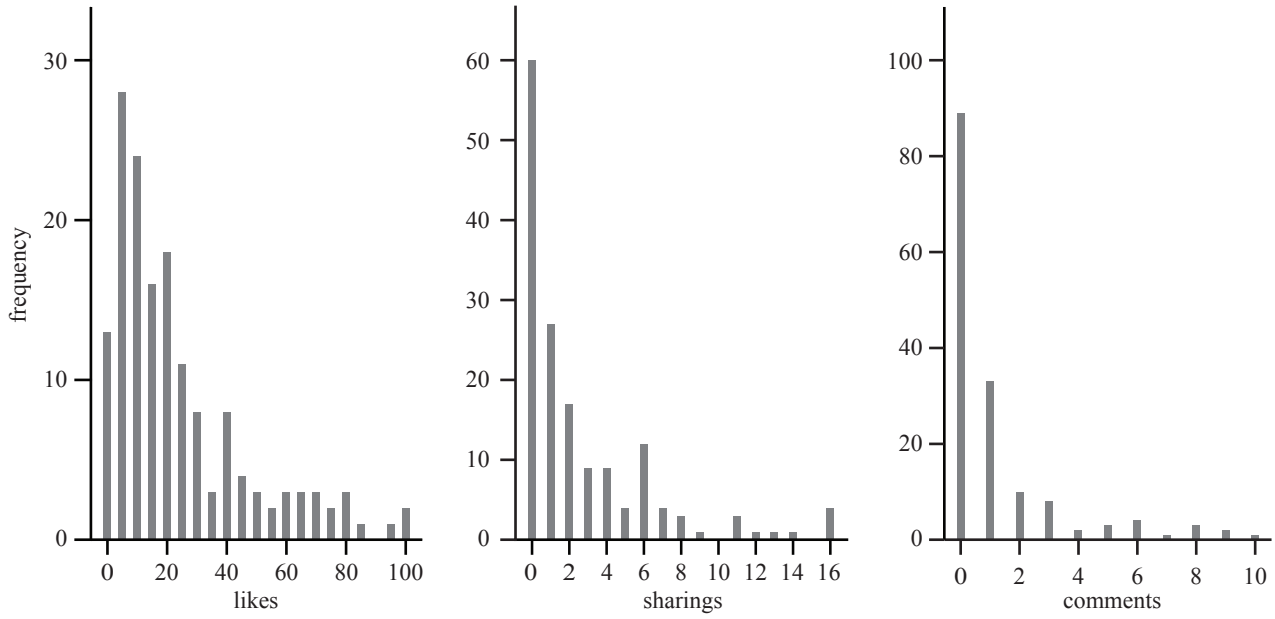
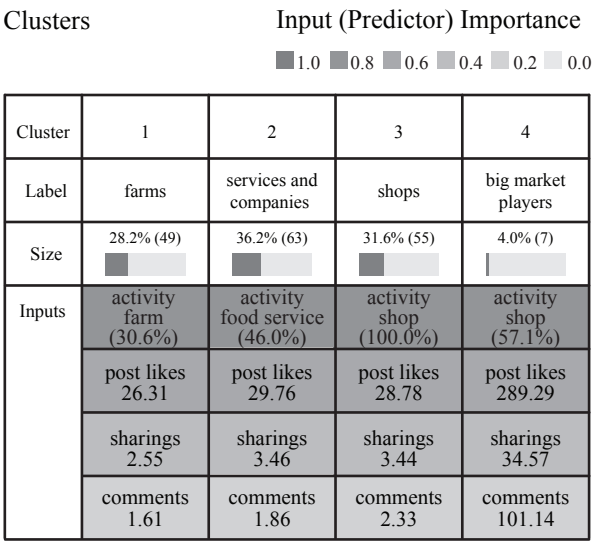


Figure 4: Likes, sharings and comments to the last post published.
Source: own composition

Usually, the numbers of likes were very similar to a number of followers. It can be a result of a scheme working in a way that when a user likes a page, it is automatically set to follow that page as well. Anyway, the first look at the Table 3 can lead one to a conclusion about relatively wide audience of investigated Facebook pages – 75% of them had more than 613 likes and 606 followers. The next step of the research was to investigate if users were active in communication with the farmers/producers. Firstly, we investigated rating of Facebook profiles and a number of recommendations (Figure 3).

Generally, investigated farmers/producers got a high rating – 50 out of 118 rated (42%) got 5 out of 5. Numbers of recommendations used for rating were very diversified, starting from 1 to maximum 865 recommendations. The second part of the Figure 3 illustrates numbers of recommendations (three biggest outliers: 865, 320 and 227 were removed from this figure). The "middle" value of a number of recommendations (median) was 23, which means that 50% of rates were based on no more than 23 recommendations. The third quartile's value was 55, which means than 75% of them were based on no more than 55 recommendations. Altogether, it proves rather limited number of stakeholders engaged into leaving recommendations. Afterwards, we summarised the numbers of likes, sharings and comments to the last post published (Figure 4) which can be interpreted as a next descriptor of a level of activity of Facebook users at the pages of investigated farmers/producers.



Cluster	1	2	3	4
Label	farms	services and companies	shops	big market players
Size	28.2% (49)	36.2% (63)	31.6% (55)	4.0% (7)
Inputs	activity farm (30.6%)	activity food service (46.0%)	activity shop (100.0%)	activity shop (57.1%)
	post likes 26.31	post likes 29.76	post likes 28.78	post likes 289.29
	sharings 2.55	sharings 3.46	sharings 3.44	sharings 34.57
	comments 1.61	comments 1.86	comments 2.33	comments 101.14

Figure 5: Average values of investigated characteristics across clusters.
Source: own composition

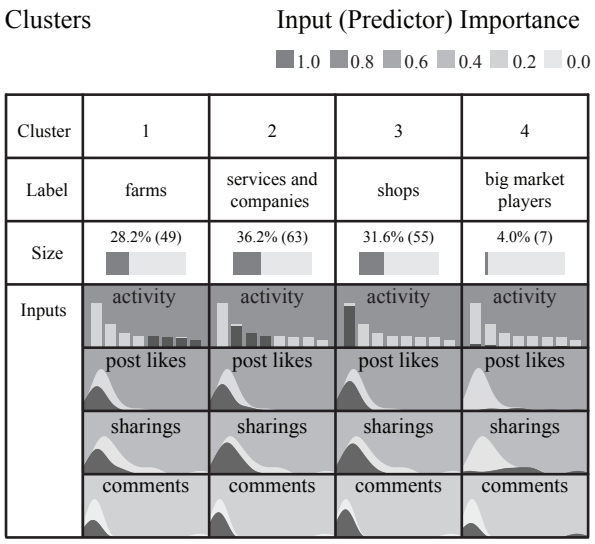


Figure 6: Distribution of absolute values of investigated characteristics across clusters
Source: own composition

The order of characteristics presented on Figure 4 can be interpreted as a ranking of ways of interactions on the investigated Facebook pages. Likes were the most popular way, but posts with more than 40 of them were not very numerous. Sharings were much less common whereas comments were really rare – 4 comments and more were noticed in single cases. Partly it can be a result of lack of engagement in the moderation of the discussion, where farmers/producers provide answers to comments. In some cases it was clearly seen that communication through social media had a cyclical character to it as the most recent posts typically informed followers about completing of next successful season of (vegetable, fruit, wine, etc.) production.

We applied the two-step clustering algorithm in order to investigate Facebook interactions with costumers and types of activities run by investigated entities within short food supply chain (Figure 5 and 6). A silhouette method was used to assess the validity of the identified clustering solution. In our case the value was 0.4, which can be considered particularly fair (Li *et al.*, 2018).

The revealed five clusters were:

Cluster 1 was dominated by farms – it included all entities describing themselves as farm, entertainment and persons as well nearly all cooperatives. It can be characterized by the lowest number of last Facebook post's likes, sharings and comments. Undoubtedly, this is a group with the least developed Facebook interactions from the perspective of these quantitative measures.

Cluster 2 represents moderate Facebook interactions and includes 29 out of 31 food services, all companies and restaurants.

Cluster 3 represents only entities describing themselves as shops (55 ouf of 59 shops) with Facebook interactions comparable to the previous cluster.

Cluster 4 can be treated as a group of outliers with the highest measures of Facebook interactions; it consists only of 7 entities (4 shops, 2 food service entities and 1 cooperative).

Discussion

As stated in the methodological part of this study, there have not been a lot of studies on the role of social media within short food supply chains. However, it is noticed that they can contribute significantly to development of such contemporary issues as the circular economy or ecology approaches, for example as a forum for many bottom-up initiatives like: discussion group platforms for the exchange of products which also have as their aim product promotion, providing information or the exchange of opinions (Drejerska *et al.*, 2018). What is more, as it is simple to implement, social media can be important for small and medium sized enterprises operating in the food and beverage sector, which usually use relatively simple and cheap IT solutions for activities in local markets and to facilitate cooperation with local suppliers (Wicki and Franc-Dąbrowska, 2013).

A detailed study on the application of social media within the supply chain was performed for Austria (Meixner *et al.*, 2013). However, this particular research focused on food and beverages companies, so there exist entities possessing different characteristics to the investigated farmers and producers. The research team drew conclusions about the use of social media for interactions with costumers for building accountability. These methods of communication were indicated as innovative alternatives for customer relationship management. Through using social media farmers, like companies, can also communicate their social responsibility.

Scholars (Elghannam *et al.*, 2018) have recently investigated the use of social networking sites within short food supply chains in Mexico, Spain and Egypt. Their study examines the free-listing tasks and sentence completion techniques from 424 actual social media users. Results demonstrate both that consumers show high acceptance for this approach and that social networking sites might serve to increase sale levels and, therefore, increase profitability and reduce costs within the SFSC.

For example, the Landwinkel co-operative in the Netherlands helps and develops marketing tools either off-line (posters, price tags, newsletters) or on-line (farmers blogs, farmers family Facebook, professional site) (EIP-AGRI, 2015). In addition, visits to other farm-shops, lessons in social media and on "how to develop a webshop", workshops and learning activities for farmers are aimed at professionalising the shops and farmers' activities in SFSC. Regarding the category of home delivery/box schemes/webshops, most of them are initiated by distributors and buyers instead of the estimated suppliers (Wubben *et al.*, 2013).

However, we can find also indications of a limited role of social media. Research results on this topic done in Poland presented by Jaska and Werenowska (2016) indicates that whereas Internet users search for information about a brand on online forums (78%) and official websites (68%), only one third declared that they search for information on social networks. If this low figure is related to the limited engagement of businesses in popular social networking sites and/or a lack of confidence in the new ways of communication with consumers, then we have a kind of vicious circle. Although research into the behaviour of Hungarian consumers of products provided within short food supply chains did not refer directly to social media, they identified buying food directly from the producer, farmers' markets and farm shops as the most popular ways to buy food. Other options scored low aver-age values, with purchasing options from the Internet (mail order and e-commerce) being the least popular (Szabó, 2017).

Conclusions

Undoubtedly, it is reasonable to study social media application across short supply chains as social media marketing has been receiving a growing level of interest recently. As can be assumed based on the general leadership of the company in the market, Facebook was identified as a basic social media channel – as those farmers/producers who do not use it, also do not refer to any other social media. Numbers of likes and followers are one of the simplest indications of the level of popularity of a Facebook profile. A number of likes indicates how popular the brand is, as its posts and updates will appear in the news feeds of all its followers. As a result, when a page has more 'likes', conventional wisdom can state that it is more successful (Phua and Ahn, 2014). Our research results indicate a relatively wide audience of Facebook pages of farmers/producers (numbers of likes and followers) but feedback relations with consumers are limited (number of comments and sharings). The cluster analysis also proves that entities describing themselves as farmers can be characterised by a relatively low level of Facebook interactions with costumers, as compared for example with stressing their selling activities (introduced on Facebook as shops). Taking the above into account as well as conclusions from other research in this topic, a question arises – is social media mostly only a source of information within short supply chains whereas interactions take place in the real world (for example thank to proximity between producers and consumers)? This can be considered a feature of the investigated group, which in fact operates within an offline model of short supply chains.

To sum up, the results we found allow one to expect that there is still potential for the application of social media across short food supply chains, especially when viewed from the perspective of getting direct feedback from consumers. Taking it into account as well as the need for more detailed research indicated by the study, further steps seem to be necessary in relation to this topic. The issues studied here can be reviewed at the end of the SKIN project, scheduled in November 2019, in order to collect important data on the role of social media within short food supply chains and analyse them, for example, by means of SEM (structural equation modelling).

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References

Barati, A.A., Kalantari, K., Nazari, M.R. and Asadi, A. (2017): A hybrid method (ANP-SWOT) to formulate and choose strategic alternatives for development of rural cooperatives in Iran. Journal of Agricultural Science and Technology, **19** (4), 757–769.

Bazzani, C. and Canavari, M. (2013): Alternative agri-food networks and short food supply chains: A review of the literature. Economia Agro-Alimentare, **15** (2), 11–34. https://doi.org/10.3280/ECAG2013-002002

Blom-Zandstra, M., Korevaar, H., Stuiver, M. and Groot, A. (2016): Critical success factors for governing farmer-managed public goods in rural areas in the Netherlands. International Journal of Agricultural Sustainability, **14** (1), 45–64. https://doi.org/10.1080/14735903.2015.1024972

Bonek, T. and Smaga, M. (2012): Biznes w Internecie [Business in the Internet]. Warsaw: Wolters Kulwer.

Brunk, K.H. (2010): Reputation building: Beyond our control? Inferences in consumers' ethical perception formation. Journal of Consumer Behaviour, **9** (4), 275–292. https://doi.org/10.1002/cb.317

Charatsari, C., Kitsios, F., Stafyla, A., Aidonis, D. and Lioutas, E. (2018): Antecedents of farmers' willingness to participate in short food supply chains. British Food Journal, **120** (10), 2317–2333. https://doi.org/10.1108/BFJ-09-2017-0537

Contò F., Santini C., La Sala, P. and Fiore, M. (2016): Reducing information gap and increasing market orientation in the agribusiness sector: some evidences from Apulia Region. Recent Patents on Food, Nutrition & Agriculture **8** (1), 48–54. https://doi.org/10.2174/2212798408001160304144309

De Pascale, G., Colantuono, F., Djelveh, S. and Contò, F. (2017): Economic sustainability in Short Food Supply Chain. The case of the Horizon 2020 project "Short Food Supply Chain Knowledge and Innovation Network (SKIN). Rivista di studi sulla sostenibilià, **1**, 169–181. https://doi.org/10.3280/RISS2017-001011

Drejerska, N., Perzanowski, M., Gołębiewski, J. and Fiore, M. (2018): From a concept to implementation of food chain within

the Circular Economy paradigm: The case of Poland. Rivista di Studi Sulla Sostenibilita, **1**, 71–86. https://doi.org/10.3280/RISS2018-001007

EIP-AGRI Focus Group (2015): Innovative Short Food Supply Chain management. Final report 30 November 2015.

Elghannam, A., Arroyo, J., Eldesouky, A. and Mesias, F.J. (2018): A cross-cultural consumers' perspective on social media-based short food supply chains. British Food Journal, **120** (10), 2210–2221. https://doi.org/10.1108/BFJ-11-2017-0633

Elghannam, A., Escribano, M. and Mesias, F.J. (2017): Can social networks contribute to the development of short supply chains in the Spanish agri-food sector? New Medit, **16** (1), 36–42.

Evans, D.S. and Schmalensee, R. (2007): Catalyst Code: The Strategies Behind the World's Most Dynamic Companies (1 edition). Harvard Business Review Press.

Fiore, M. (2016): Direct selling in the wine sector: lessons from cellars in Italy's Apulia region. British Food Journal, **118** (8), 1946–1959. https://doi.org/10.1108/BFJ-05-2016-0201

Fischer, C. (2013): Trust and communication in European agri-food chains. Supply Chain Management: An International Journal, **18** (2), 208–218. https://doi.org/10.1108/13598541311318836

Giampietri E., Finco, A. and Del Giudice, T. (2016): Exploring consumers' behaviour towards short food supply chains. British Food Journal, **118** (3), 618–631. https://doi.org/10.1108/BFJ-04-2015-0168

Henderson, A. and Bowley, R. (2010): Authentic Dialogue? The role of "Friendship" in a Social Media, Recruitment Campaign. Journal of Communication Management **14** (13), 237–257. https://doi.org/10.1108/13632541011064517

Jaska, E. and Werenowska, A. (2014): The use of social media in communication and branding. Economics and Law, **13** (1), 47–58.

Kamiński, R. (2010): Facebook. Poradnik krok po kroku [Facebook. Guide step by step]. Biblioteczka Komputer Świat, **60**, 84–85.

Klassen, K.M, Borleis, E.S., Brennan, L., Reid, M., McCaffrey, T.A. and Lim, M.S. (2018): What People "Like": Analysis of Social Media Strategies Used by Food Industry Brands, Lifestyle Brands, and Health Promotion Organizations on Facebook and Instagram. Journal of Medical Internet Research, **20** (6):e10227. https://doi.org/10.2196/10227

Le Velly, R. and Dufeu, I. (2016): Alternative food networks as 'market agencements': exploring their multiple hybridities. Journal of Rural Studies, **43**, 173–182. https://doi.org/10.1016/j.jrurstud.2015.11.015

Li, K.J., Zhou, Y., Shrestha, A. and Liu, G.W. (2018): A cluster analysis of real estate business models in China. Proceedings of the 21st International Symposium on Advancement of Construction Management and Real Estate, Springer, Singapore.

Meixner, O., Haas, R., Moosbrugger, H. and Magdits, P. (2013): Interaction with customers: The Application of Social Media within the Austrian Supply Chain for Food and Beverages. International Journal on Food System Dynamics **4**, 26–37.

Mezrich, B. (2010): The Accidental Billionaires: The Founding of Facebook: A Tale of Sex, Money, Genius and Betrayal (Reprint edition). Anchor.

Mundubat (2012): Circuitos cortos de comercialización en Euskal Herria. Mundubat, Bilbao, Spain.

Paciarotti, C. and Torregiani, F. (2018): Short food supply chain between micro/small farms and restaurants: An exploratory study in the Marche region. British Food Journal, **120** (8), 1722–1734. https://doi.org/10.1108/BFJ-04-2018-0253

Phua, J. and Ahn, S.J. (2014): Explicating the 'like' on Facebook brand pages: The effect of intensity of Facebook use, number of overall 'likes', and number of friends' 'likes' on consumers' brand outcomes. Journal of Marketing Communications, **22** (5), 544–559. https://doi.org/10.1080/13527266.2014.941000

Sacchi, G., Cei, L., Stefani, G., Lombardi, G. V., Rocchi, B., Belletti, G., […] and Vasvari, G. (2018): A multi-actor literature review on alternative and sustainable food systems for the promotion of cereal biodiversity. Agriculture, **8** (11), 173. https://doi.org/10.3390/agriculture8110173

Schüller, A.M. and Schwarz, T. (2010): Leitfaden WOM Marketing, "Marketing Boerse", Hamburg 2010.

Statista (2019): https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/ (accessed 10.03.2019)

Szabó, D. (2017): Determining the target groups of Hungarian short food supply chains based on consumer attitude and socio-demographic factors. Studies in Agricultural Economics, **119** (3), 115–122.

Tayenaka, T. (2018): Facebook Vs. YouTube for Marketing Videos: What's the Difference? https://www.forbes.com/sites/theyec/2018/04/30/facebook-vs-youtube-for-marketing-videos-whats-the-difference/ (accessed 04/03/2019)

Timpanaro, G., Foti, V.T., Scuderi, A., Schippa, G. and 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 Proceedings, https://doi.org/10.17660/ActaHortic.2018.1215.39

Wicki, L. and Franc-Dąbrowska, J. (2013): The role of IT systems in supporting logistics systems in agribusiness enterprises. Issues in Information Systems, **14** (2), 127–138.

Wubben, E.F.M., Fondse, M. and Pascucci, S. (2013): The importance of stakeholder-initiatives for business models in short food supply chains: the case of the Netherlands. Journal on Chain and Network Science, **13** (2), 139–149. https://doi.org/10.3920/JCNS2013.1004

Martin COLLISON*, Tom COLLISON*, Irina MYRONIUK, Nadiya BOYKO** and Giustina PELLEGRINI*****

Transformation Trends in Food Logistics for Short Food Supply Chains – What is New?

The way in which food reaches consumers is a high profile component of the food chain's Greenhouse Gas (GHGs) emissions, but is changing rapidly as technology facilitates online and new targeted logistic solutions which deliver directly to the consumer's home, workplace or other convenient locations. The challenge is how can new, more fragmented supply chains be developed without increasing GHGs emissions. More broadly speaking, digitalisation is transforming how all food logistics functions. This allows consumers to connect more directly with both farmers and food producers, in Short Food Chains (SFCs), which help the former to understand more about the source of their food and how it was produced. This paper aims to analyse the current SFCs' challenges, with particular attention paid to fresh products, taking into account the evolution of consumers and market trends as well as the transformation of logistics. The analysis is based on evidence and examples from across Europe. New direct delivery food logistics models could help consumers access supplies of fresh products more easily, improve consumer health and reduce the high waste levels and carbon emissions, which represent key challenges for many European fresh product supply chains. Food suppliers would also benefit by securing more of the final consumer value of the food they produce.

Keywords: short food chains, logistics, fresh products, perishability, new trends, sustainability

JEL classifications: Q13, Q18

* Collison and Associates Limited, Tilney All Saints, Kings Lynn, Norfolk, PE34 4RW, United Kingdom. Corresponding author: martin@collisonassociates.co.uk.

** Uzhhorod National University, Uzhhorod, Ukraine.

*** Department of Economics, University of Foggia, Foggia, Italy.

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Introduction

Food logistics are a key part of the food chains, connecting producers with consumers. The way in which food logistics occurs has changed substantially and the modern food industry has been shaped by these changes (Martikainen *et al.*, 2014). For example, before the railways were built in the 19th and early 20th Centuries, virtually all fresh food was produced close to the point of consumption. As transport became faster, producers of fresh produce were freed from the need to produce close to the market, typically one day's horse and cart distance, and the market gardens which surrounded most towns and villages in the Middle Ages were replaced with more concentrated areas of specialised production (Braudel, 1982). These concentrated areas of production, based on soil, topography and climatic advantages, produced much more fresh produce than their local community could consume, with the excess production taking advantage of new faster logistics to access the cities and larger towns. Since the end of World War 2, the use of railways has been replaced in many areas by lorries which transport food over long distances using much improved road networks (Hayter, 1997).

As transport distances lengthened, the food chain became more efficient both economically and environmentally, as most of the GHGs emissions in the food chain relate to production, in agriculture primarily, and therefore the more efficient farm production that was enabled more than outweighed the extra GHGs emissions from logistics (Jones, 2002). New SFC models can increase the GHGs per unit of food, if they either reduce transport efficiency per unit of product or increase waste in the supply chain. For fresh products, with shorter shelf lives (such as fruit and vegetables), the arrival of cool chain technology further revolutionised the potential to transport fresh products, but cool chains use a lot of energy and as a result can increase the GHGs per unit of food. Much of Northern Europe receives large consignments of fresh products from Southern Europe, particularly in winter time, with most of the produce transported by refrigerated lorry (do Nascimento Nunes, 2014).

In recent decades, however, consumers have become concerned that these long supply chains, which are long not only in distance terms, but also because they tend to include more steps (e.g. wholesalers, transport companies etc.), have broken the link between producer and consumer. Farmers have also become concerned that their share of the final value to the consumer has been reducing (Hesse and Rodrigue, 2004).

Arguably, we are now on the cusp of two major changes which may alter this trend towards more specialised areas of production, followed by long distance logistics. Firstly, production technology is allowing season extension, e.g. in Northern Europe the strawberry season is now over 7 months compared to 7 weeks in the 1980s and urban farming technology are beginning to allow year round production. In parallel, logistics technology is changing, with digitalisation allowing smaller consignment sizes and direct relationships between consumers and producers, addressing concerns of both: consumers who want to know more about where and how their food was produced; producers wanting to secure a larger share of consumer value (Kunze, 2016; Maslarić *et al.*, 2016; Van der Vorst *et al.*, 2005). The challenge in changing the logistics system is how new logistics models can be developed which are commercially competitive at the same time as reducing waste and GHGs emissions (Hesse and Rodrigue, 2004).

This paper discusses the main challenges that the food chain is facing, especially in the fresh produce sector, by analysing how new consumers/market trends and new tech-

nology adoption influence logistics transformation. Additionally, the authors study the role of new food systems models, based on SFCs in influencing logistics transformation and the opportunity to increase sustainability by reducing food waste and GHGs emissions (Bloemhof et al., 2015). The paper ends with recommendations for how SFC fresh produce businesses, both farmers and food companies, can use new logistics technology and business models to develop more efficient short food chains.

Material and method

This paper is based on a review of literature and emerging issues/results obtained through the work of the EU Thematic Network on short food chains: the Short Supply Chain Knowledge and Innovation Network (SKIN) project. The SKIN project has, since late 2016 been working to collect examples of best practices and information on innovations which are changing the food supply chain, including distribution and logistics issues. Therefore, the study will discuss innovative approaches, methods or technologies from the pool of research knowledge the project accesses. Short Food Supply Chains embrace a wide range of concepts. A definition provided by EIP AGRI (2015) defines SFCs as those systems aiming at creating value by reducing the number of steps in the food chain from producer to consumer. According to the European rural development regulation (1305/2013), a 'short supply chain' means a supply chain involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers, processors and consumers.

The Innovation Challenge Workshops (ICWs) held by the SKIN project have considered the factors which are changing the way in which SFCs work, including specifically:

- Changes in consumer demands and business models for fresh products (ICW, Belgium and the Netherlands, April 2018 and project visits in Austria in January 2018) which looked at how farmers are reconfiguring their businesses and supply chains to meet changing market needs;
- Changes in technology which allow new logistics and production (ICW, Budapest, September 2018) processes enabled in the main by the move to digitalisation.

In addition, other SKIN ICWs looked at related changes in food chain structures including: the regulatory framework (ICW Poland November 2018) for food; skills in the food chain workforce (Dublin, February 2019); and consumer values (Paris, April 2019). Each ICW brought together SKIN consortium members with local stakeholders from farming, industry, the public sector and regulatory bodies to debate the changes in the food chain. The paper below reports on and collates the findings from these events and workshops.

The main forces which are reshaping the food chain include: digitalisation and the resultant new possibilities for food chain structure and logistics; a focus on food waste and efficiency; changing consumer demands and interests in provenance and traceability. This paper focuses mainly on the logistics within the food chain, but draws on feedback from consumer interests and considerations of waste and efficiency in doing this.

Food Chain and Logistics

The food chain is the link between where food is originally produced on farm, where it is processed, stored and distributed to consumers. Each stage of the chain will involve logistics which move food or the products used to produce and protect food from business to business in the food chain. Long term, there has been steady growth in global trade volumes, with the value of global product trade rising by +32% to $16 trillion from 2007-'16 (WTO, 2018) even during recovery from the 2007-2010 economic downturn. Whilst this was a big fall from the +124% growth seen from 19962006, it shows that the value of World trade continued to grow even during slow growth periods.

More recent analysis suggests, however, that the slowing of global trade is continuing, with Lund *et al.* (2019) reporting that, whilst global trade continues to grow the proportion of goods which are traded is falling. This move to more local supply chains is being driven by consumers' propensity to choose regional products, new automated production methods which are levelling the playing field between locations (notably by reducing the advantages of low labour costs) and the growth in wealth levels in markets which were traditionally poor to more production for local consumption. In the food sector these factors are expected to lead to more local production, with more consumers interested in regional food provenance, technology changing how food is produced and consumers becoming wealthier.

Globally the world is seeing increased demand for food with reports suggesting this will continue until at least 2050. The reasons for increased demand have been studied by many reports, the first substantive report being FAO (2009) which predicted that global food demand would rise by 50% by 2030 and 60-100% or more by 2050 (compared to 2010).

The global food retail sector was worth $4.3 trillion in 2015 and growing at 6% per annum (USDA, 2013). Whilst data for the food service sector is less readily available, the share of consumer expenditure spent on food service varies substantially between rich countries (now similar to food retail) and poor countries where the food service sector is still very small. Globally food service is growing as wealth rises. Using the best estimates available for the food service sector suggests that the total food market is worth over $8 trillion.

The food chain is still seeing consolidation and a growth in global food flows, with this process anticipated to continue as the scale of the food sector globally continues to grow and countries specialise production.

Global shipping is very concentrated with consolidation continuing. Alphaliner's Top 100 states that in 2015 five of the biggest shipping companies dominated the global shipping industry and accounted for about 70 percent (Hellenic Shipping News, 2019) of the global market: APM-Maersk; Mediterranean Shipping Co.; CMA CGM Group; Cosco

Shipping Co. Ltd.; Hapag-Lloyd. This trend is supported by global food companies (e.g. Nestle, Unilever) and traders (e.g. Glencore), who wish to have a small number or single global logistic partner(s). This concentration and focus on unit costs is a key reason for growth in the global food chain, creating low cost competition for SFC producers. However, the EU food chain remains a large and complex sector, with 500 million consumers and sales (2015) of €1.115 trillion. The food and drink industry is the largest manufacturing employer in Europe with 4.51 million staff (15% of manufacturing employment), and is the largest manufacturing sector (15.2% of manufacturing turnover). The food supply chain starts with 11 million farmers and 94,000 fish producers, is sold by 63,000 agricultural wholesalers, processed by 293,000 food and drink manufacturers, distributed by 277,000 food and drink wholesalers, with 134 major food retail groups and 904,000 food and drink points of sale (Food and Drink Europe, 2018) and accounted for 13.8% of household expenditure in 2016.

This scale and complexity means that food logistics and distribution is a very complex and arguably inefficient system, increasing costs for everyone in the supply chain, including consumers. This also presents real challenges in the adoption of end-to-end, single systems to transport food, particularly as many of the companies in the food chain are very small and dispersed. The success of the large retail groups and multi-national food companies can in part be attributed to their focus on supply chain efficiency, with consolidation, regional distribution centres and the use of heavy goods vehicles used to drive down unit costs.

The Fresh Produce Sector

Fresh products are products without any thermal or other processing grown locally without any type of preservation before storage. Whilst fresh products cover a wide range of products from fruit, salad and vegetables to meat and unprocessed dairy products, this paper focuses on fresh produce: salads; vegetables; fruit. The fresh produce sector is a large and dynamic sector in the EU and presents particular challenges for food logistics as most of its products have a short shelf life and need to be part of a cool chain to reduce waste, unless consumed very close to where they were produced soon after harvest.

In the US fresh fruit and vegetables are defined as: fresh fruits and fresh vegetables include all produce in fresh form generally considered as perishable fruits and vegetables, whether or not packed in ice or held in common or cold storage, but does not include those perishable fruits and vegetables which have been manufactured into articles of food of a different kind or character. Furthermore they add that: the effects of the following operations shall not be considered as changing a commodity into a food of a different kind or character: water, steam, or oil blanching, battering, coating, chopping, colour adding, curing, cutting, dicing, drying for the removal of surface moisture; fumigating, gassing, heating for insect control, ripening and colouring; removal of seed, pits, stems, calyx, husk, pods rind, skin, peel, et cetera; polishing, precooling, refrigerating, shredding, slicing, trimming, washing with or without chemicals; waxing, adding of sugar or other sweetening agents; adding ascorbic acid or other agents to retard oxidation; mixing of several kinds of sliced, chopped, or diced fruit or vegetables for packaging in any type of containers; or comparable methods of preparation. This definition thus means that minimally processed fruit and vegetables are still considered fresh produce.

According to FAOSTAT (2019), Europe (EU and other European states) has a very large fresh produce industry. Fruit covered 7.2 million hectares in 2017, with output of 77 million tonnes worth $92 billion in 2016. Vegetables covered 3.7 million hectares in 2017, with output of 96 million tonnes of vegetables worth $50 billion in 2016. The sector is present in every state in Europe, but the crops and production systems used vary greatly across Europe.

According to Kyriacou and Rouphael (2018) quality is determined both by pre-harvest conditions and inputs and post-harvest treatment. They state that 'the potential quality of fresh fruits and vegetables in the horticultural supply chain is defined in the period preceding harvest, however the full development of quality characteristics can be optimised through the use of appropriate post-harvest technology. The use of post-harvest technology for fresh produce focuses heavily on conditions during logistics, both transport and storage, with the adoption of appropriate technology improving quality for consumers and reducing food waste and environmental impact' (do Nascimento Nunes, 2014).

The Challenge of Food Waste and Greenhouse Gas Emissions

Population growth as well as current production and consumption models are severely affecting the environmental impact of economic activity in terms of global warming, resource depletion and extinction of species. Therefore, the sustainability of food supply chains is becoming a key challenge to the world. Managing food supply chains is complex and involves multiple agents and processes, ranging from production to manufacturing, logistics and retail activities with each making different contributions to the overall sustainability of a product. Food Supply chain (re)design approaches suggested in the literature recognise the potential and increasing need to consider the system/network as a whole, as integrated approaches and collaboration between agents can yield greater benefits in terms of optimisation and raise standards (Higgins *et al.*, 2010; Van der Vorst *et al.*, 2009). It is therefore important to consider the supply chain as a whole, in order to reduce the environmental impact of a product.

The food sector has to manage the complexities generally dealt with in supply chain management, but with the added problem that its products are perishable (Van der Vorst *et al.*, 2005). In recent years food waste has become a growing problem: reducing food losses and waste is considered to be one of the most promising policy measures to improve food security in future and is receiving a lot of attention from institutions (van Boxstael *et al.*, 2014). Wasting food in the supply chain affects consumers economically and creates

additional environmental impacts (Eriksson *et al.*, 2012). According to the FAO (2013) the global carbon footprint (CF) of annual food wastage is about 3.3. Gt CO_2 equivalent (CO_{2eq}). The amount of food waste in Europe is estimated to be 88 million tons and to cost €143 billion per annum (European Commission, 2016). Perishable products are among the most wasted food items in supply chains and households and fruit and vegetables usually account for the highest proportion of food waste in developed countries (Stefan *et al.*, 2013).

In Europe, the consumption of food accounts for about 20-30% of GHG emissions from all products, and globally, agriculture is the primary cause of increasing atmospheric concentrations of CH_4 and N_2O and produces 10-12% of total anthropogenic GHGs emissions (Tukker *et al.*, 2006). The World Resources Institute (2019) estimates that the total food chain impact on GHGs emissions is 25-30%: with agriculture directly responsible for 13.8% of emissions, a further 1.4% coming from agricultural energy use, 1% for food chain energy use and 12.2% due to land use change most of which is cleared for agriculture. Transportation generates 14% of total emissions, both at global and EU level (Stern, 2018) and it is the main source of CO2, NOx, SO2 and PM production. In this context, logistics management plays an important role in sustainable performance, particularly as far as the short food supply chain is concerned (Heitz *et al.*, 2019). The impact of this phase depends on the mode of transport: plane, ship, truck, rail, barge or pipelines. Each mode has different characteristics in terms of environmental and economic performances (reduction of GHG and increased fuel efficiency), transit time, accessibility, speed and it depends on the kind of product to covey and distance to be travelled (Dekker *et al.*, 2012). Another important aspect related to the sustainability of food supply chains are the inventories, which should be minimised with just-in-time production. In addition, the optimisation of one's distribution centre location can positively affect transport efficiency in terms of both costs and environmental impact. Concluding, one of the key issues in green logistics is the identification of "Eco-efficient" solutions as balancing environmental and economic supply chain performances (Quariguasi *et al.*, 2009; Canfora, 2016). In this context SFCs represent a new model able to achieve the environmental goals as legally defined by reg. 1305/13, because it reduces the environmental impact (GHG emissions) by reducing the logistics impact linked to transportation costs. Furthermore, SFCs promote biodiversity and contribute to peri-urban agriculture development (Canfora, 2016).

Logistics transformation and Short Food Chains: the importance of changes

The food industry is working to adopt SFCs, with fewer commercial steps in the chain to increase provenance and efficiency. As this process proceeds changes in the structure of the supply chain are anticipated (Blanquart *et al.*, 2010). Regional and local SFCs tend to deal with smaller volumes of food and drink and this can make it hard for them to compete on costs terms with established food chains, dominated by the 134 large food and drink retailers in Europe and larger food processors (EIP-AGRI, 2015).

Smaller volumes in each consignment tend to increase unit costs in both financial and environmental terms per unit of consumption. This inconvenient truth is a challenge for SFCs whose consumer appeal is often based on promoting ecological, environmental, health and local benefits, all of which are premised on the promise that these products are more sustainable. It is therefore essential for SFCs to find ways to deliver environmentally efficient logistics systems to reach consumers (Kneafsey *et al.*, 2013).

This challenge is becoming harder due to another change which the food chain needs to respond to, continuing urbanisation, with the UN predicting in 2007 that the percentage of the European population living in urban areas, 72% in 2007, would continue to climb, reaching 84% by 2050 (UN, 2014). With many SFCs producers based in remote rural areas, continued urbanisation of their customer base presents a logistical challenge and potentially increases financial and environmental costs of logistics. To address this, it is important for SFC producers to look at ways in which they can collaborate with other businesses to deliver efficient logistics. The potential for new technology to help has been reported by many projects on SFCs and the next section explores the potential of these new technology systems and business models (Maslarić *et al.*, 2016).

New logistics Models for Short Food Chains

Within the framework of SFCs new logistics models are emerging and SFCs producers routinely report that the costs and complexities of logistics are a major constraint on growth. The SKIN project has identified interesting examples of new distribution and logistics models which help producers at the same time as making SFCs products more accessible to consumers. In January 2018, a SKIN event reviewed the progress of a number of kiosk/unmanned food vending units which sell products direct to consumers.

These vending units either have a computer interface which allows consumers to buy products which are then released to them or they are based on a trust model, normally backed up with a CCTV system, which trusts consumers to pay for what they take. A similar trust model is found in Ukraine in the Lviv region near the Kyiv-Chop highway in the village of Banyuniny Kamyanka-Buzky. A local producer Mikhail Kostyuk (Store and Road) founded a trust store, which is expanding quickly and now has three units. There are no staff, but instead price tags and the inscription 'Self-service'. Drivers work out how much they owe for the products they want and pay in a three-litre can with a hole for money to be posted in. Mikhail says 'no one is stealing anything, we are ready to open the door to Europe'.

Shared distribution and logistics models take many forms and include: collaborations of farmers and small food producers such as witnessed during the SKIN project Innovation

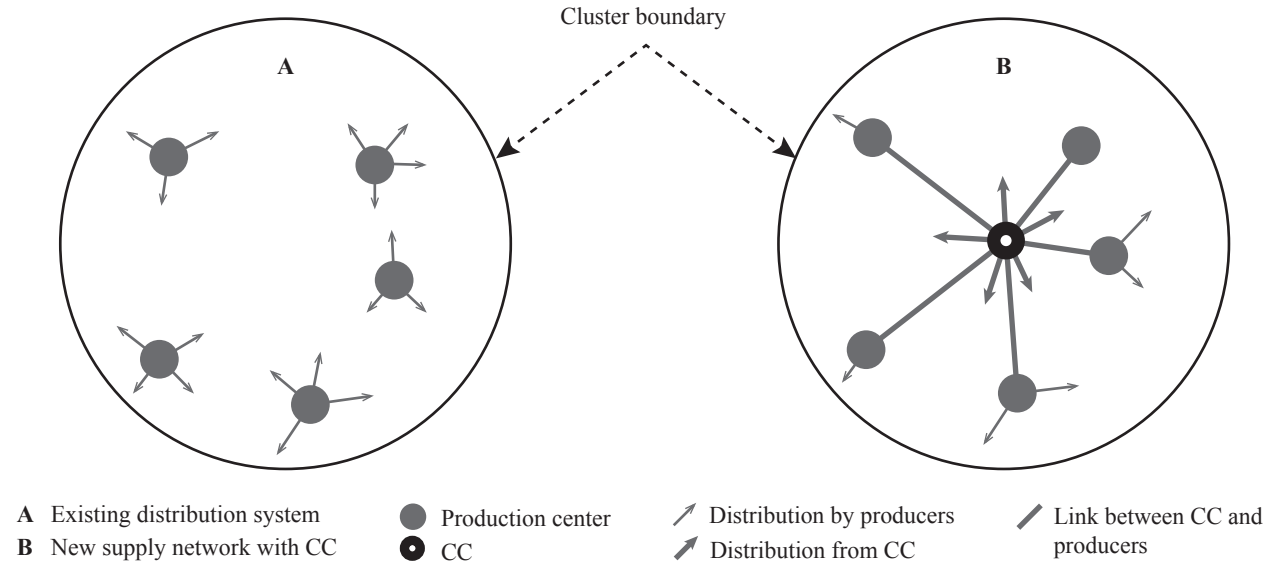

Figure 1: Logistics and Supply Chains in Agriculture and Food.
Source: Gebresenbet and Bosona (2012)

Challenge Workshop visit to Franken Agro in April 2018. Their Fresh from the Farm delivery service combines the outputs from 14 farmers and offers a delivery service to commercial customers, sharing the costs of logistics between the participating farmers. An interesting feature of these systems is that sales are made under one brand, supported by and on behalf of clusters of brands from independent businesses. Similar collaborative ventures are found in the UK, including Ashlyns Organics and Woburn Country Foods, both of whom combine supplies from over 25 farmers and deliver to food service and retail customers near London.

These new models all depend on clusters of businesses working together. In a study conducted by Gebresenbet and Bosona (2012), looked at supply chain clusters in agriculture and food (Figure 1) and reported that these clusters can have both positive and negative outcomes. Small producers in these clusters do not need marketing strategies and business plans and functions such as logistics and sales are outsourced. Moreover, they are in tight collaboration with other companies. However, they lose independence and if some cluster members have quality problems this reflects badly on all those involved in the cluster.

There are multiple examples of how new technology is changing the way produce is sold. For example, the KATANA project introduced an innovative start-up which developed an iPhone app to link farmers' products to a local restaurant. In Slovakia, a SKIN best practice, Labas FRESH, has developed a call centre to distribute regional fresh products.

In big cities, services such as Just Eat and Deliveroo, are using bicycle or moped couriers to deliver food directly to consumers. Glovooffers is a similar service in Spain, France, Italy, Portugal, Ukraine and South America, which uses an app-based delivery service.

The proliferation of new digitally enabled distribution services also includes FARMDROP; join food chain; green market co., get go kart, and, many others. It is unlikely that all these new online systems will survive, but their collective impact and disruptive nature, signals substantial change in how food is purchased and distributed.

SFCs are very well suited to the adoption of new marketing and logistics systems given that logistics is a key challenge for SFCs; thus, systems that facilitate more efficient logistics or reduce the need for logistics services are beneficial. It means that: they do not have big transport costs for deliveries; services using bicycles or mopeds are seen as environmentally friendly; they are suited to local delivery and close connection between consumers and producers; they can reduce infrastructure needs; they can be more flexible to fit with busy lives; and they can be aligned with local food strategies developed by the public sector.

A key challenge for all alternative logistics solutions is that they reduce the volume of food transported by each vehicle. Whilst a moped or small van may seem a very efficient and low impact vehicle, in practice a moped will only transport a few tens of kilos of food, compared to 25 tonnes for a full size articulated lorry. The fuel costs per kilo can thus increase per kilometre per kilo through using smaller vehicles.

Most SFCs are therefore only more efficient from an environmental perspective, if the longer part of the supply chain is undertaken using a large lorry, with the 'last kilometre' using a smaller vehicle such as a light van or moped. Perhaps counter-intuitively, this problem can also exist if consumers travel further to visit a farm, for example urban consumers travelling out to the countryside, to buy their food direct if they do this by car. Each family will only buy a few kilos of product and the combined GHGs emissions of all these car journeys can be orders of magnitude higher than if the farmer uses a lorry to transport their product to the city or town. Of course, consumers benefit by meeting the farmer in terms of their reconnection with the source of their food, but it can increase the GHGs emissions associated with the supply chain.

The conclusions of the ICWs run by SKIN is that further work is needed to design new hub and spoke SFCs supply chains which optimise GHGs emissions at the same time as unlocking consumer and farmer value.

Use of Technology in Logistics

Physical logistics is only one part of the distribution system connecting SFCs producers with consumers. In most cases logistics are provided as a service or addendum to the main product and so it is critical to understand how the supply chain works and consumers buy food and drink products.

The food chain is witnessing rapid changes in its structure and thus logistics needs, as consumers change where and how they buy food. The growth of online retailing is accelerating with £1 in £5, i.e. 20% by early 2019 of the UK retail sector now online, with online retail growing by over 13% from 2017-18 (ONS, 2018). However, UK food retailing taking place online is only 5.5%. Similar patterns of growth are being seen across many countries in Europe, but the degree of retail sales online and the percentage of consumers who buy online varies greatly, with fresh food generally having a smaller percentage of online retail than other sectors, such as clothing. Statista (2018) states that 7.5% of total global online grocery sales were in the UK and 5.6% in France, but only 0.5% in the similar sized Italian market, which suggests that parts of Europe have substantial potential for growth in online sales. Growth in 2016 was reported as being fastest in Central and Eastern Europe with online retail sales in Romania increasing by 38% and by 35% in Slovakia (ECommerce Europe, 2017).

Trend data suggests that further rapid growth in online food retail can be expected as platforms and delivery services improve. A key challenge for fresh products delivery is the need to maintain cool chain integrity, because with many consumers not at home in the daytime this makes home delivery of fresh food challenging. If this challenge can be solved cost effectively, the potential for home delivery of fresh produce would be transformed.

Automation of deliveries is being trialled, with both drones and robots used in cities. A system developed in Estonia and developed into a commercial delivery robot, is being trialled by Tesco in some UK cities. The development of automation for food logistics is also being driven by the challenge of rising labour costs and challenges in finding lorry drivers. The potential for automation to address labour supply challenges in logistics with companies reporting that skill shortages lead to higher wages and this is increasingly tipping the balance in favour of automation.

In a recent review of how technology will impact the logistics industry, the UK Government Office for Science identified how 7 digitally enabled technologies will impact the logistics industry (Wang *et al.*, 2015): cloud computing; Internet of Things (IoT); social media networks; Artificial Intelligence (AI); big data analytics; immersive technologies; distributed ledger technology (e.g. blockchain). They concluded that these technologies will enable the development of smart and digitalised applications and have great potential to enhance the sustainability of transport in respect of its physical, environmental, economic and social dimensions. Currently, cloud computing and social media networks enjoy wider adoption than the others, with IoT closely following. They also conclude that both cloud computing and IoT have become the backbone of freight transport and logistics systems, whereas big data analytics and AI, though less mature, have received substantial private and public investment. They also report that empirical evidence suggests that AI, IoT, big data analytics and immersive technologies are likely to have the greatest impact in the future, given their potential for driving better decisions, increasing productivity, streamlining supply chains and developing new, data-driven business models. The review also identified challenges to the further adoption of emerging technologies, which include cost, lack of expertise, security, privacy and legal concerns, and an absence of standards.

Heavy investment is being made globally to increase the efficiency of food logistics systems and a key challenge for SFC producers is that, as these systems in the 'mainstream' food chain reduce costs, there will also be pressure on SFC producers to adopt similar systems to remain competitive. SFCs already struggle to deploy cost effective logistics, which is an even larger challenge for smaller producers in remote areas with weak infrastructure. It could be argued that SFC producers need to accept that they have to use logistics systems provided by other companies, who can deliver efficiently, or that groups of SFCs producers will need to collaborate on logistics.

Autonomous vehicles will be a key driver in the future of logistics with many warehouses now having fully automated warehousing e.g. Ocado and Amazon. However, for smaller producers there are also solutions that can be implemented such as autonomous forklift trucks. These autonomous systems allows organisations to operate 24/7, delivering cost savings by allowing haulage contractors to fit the supplier in when costs are lowest, by reducing the cost associated with lorry waiting time. For example, STILL is working on concepts to enable co-operation between several autonomous trucks. This would result in improved utilisation, avoidance of obstacles and a reduced waiting times. Whilst many of these systems are initially being developed in other sectors of the economy, once developed it is relatively easy to apply them to fresh produce.

Sasko Cuklev, Director of Autonomous Solutions, Volvo Trucks, has stated that (Volvo, 2019): "Transportation is really the lifeblood, the pulse of societies, it drives prosperity for business and the people. In the near future, we will start to see self-driving trucks from Volvo on our roads". The shift to autonomous vehicles brings benefits such as reduced haulage costs as the vehicles do not require breaks legally required for human drivers, but it also has the benefit of increased safety.

Amazon have been trialing their PrimeAir drone service in Cambridgeshire, United Kingdom since 2016, claiming that PrimeAir is a future delivery system designed to safely get packages to customers in 30 minutes or less using drones.

Looking further forward, there is considerable investment being made into new technologies to substantially reduce the logistics distance travelled by the finished product. This includes urban farming systems, which are currently heavily

focused on fresh produce, as perishable high value products where production very close to the point of consumption brings benefits. Whilst more futuristic for fresh produce, for manufactured food products some commentators are predicting a bright future for 3D printed food. In terms of practical equipment, the Foodini is a 3D printer designed for the home kitchen. Food is prepared using a blender or processor and the mix is printed through the 3D printer to create the product. Whilst there would still be a need for the ingredients to be delivered, most of these would be preserved or ambient goods, meaning more efficient, lower cost logistics methods could be used.

As with the earlier discussions about consumers visiting farms to buy food direct, a key challenge for these new technology enabled food chain systems is that they can lead to higher GHGs emissions per kilo of food. Virtually every system being developed is focused on 'just in time delivery' of small quantities of food direct to the consumer, for example using drones or robots. At the extreme, a lorry with a 25 tonne load of food transports 5,000 times as much food as a robot delivering a 5 kilo consignment or 25,000 times as much food as a drone with a 1 kilo payload. The energy consumption and GHGs per kilo are therefore higher for the smaller delivery. This can be overcome to some extent through the use of hub and spoke models, in which the small consignment size is only used for the 'last kilometre'.

Tracking Systems

Consumer trust in food has been disrupted by food scares and this is leading to a focus on being able to prove food provenance and traceability. The food industry has used Hazard Analysis Critical Control Points (HACCP) for many years to manage accidental adulteration risks in food production. In the aftermath of scandals in the food sector, including: the use of Sudan Dyes; lamb takeaways which included no lamb; and finally, the Horsemeat Scandal in 2013 in which horse meat from Romania had its paperwork changed during its distribution across Europe, eventually being sold in UK supermarkets as beef, new controls have been introduced to reduce the risk of food being deliberately altered or threatened in the supply chain.

This has led to the development of Threat Analysis Critical Control Points (TACCP) and Vulnerability Analysis Critical Control Points (VACCP) (Leatherhead Food Research 2016), to reduce the risk of threats (commercially motivated changes to food) and vulnerabilities (terrorism or deliberate adulteration of food by criminals) in the food chain, particularly during transport.

The focus on provenance and traceability is a potential advantage for SFC producers, given that their supply chains are based on reducing the number of steps in the chain to the minimum and creating a direct link between consumers and the source of their food. However, even in SFCs it is common for third party companies to manage distribution and logistics. The need to use TACCP and VACCP systems is therefore still an increasingly common feature of SFCs.

Fresh produce wastage is a major issue for the food chain, with consumers increasingly concerned by waste, which is also a big cost for farmers and retailers. Cool chain technology can reduce these costs and technology is being used to monitor fresh produce in the supply chain to ensure cool chain integrity.

Tiny Tag manufacture 2 types of data loggers primarily used in the food chain, with costs now under €60 for the standard Transit 2 data logger to €320 for the Cryogenic data logger. These data loggers are lightweight and compact, allowing unobtrusive placement in food consignments and are compliant with EU regulations. Sigfox provides food systems to track food supplies in real time using battery devices, which transmit location data from fleets of returnable containers and report data on temperature, shock and tilt to provide better insights into quality control and traceability.

Companies are also beginning to investigate the potential for next generation technologies, such as blockchain, based on distributed ledger technology, to provide complete traceability from end to end in the food supply chain. IBM and Walmart are running a commercial trial in the USA (IBM) and Albert Heijn, in the Netherlands, has developed a trial blockchain solution for orange juice. The global shipping sector has been developing systems to deliver real time tracking and security of international freight. Maersk is leader in this field and started to use very-small-aperture terminal (VSAT) satellite technology in 2012. It is now used on all their vessels to provide real time tracking. Further system developments are being used to monitor conditions inside containers.

LINKFresh is a Microsoft ERP software package used by many fresh produce businesses to provide barcodes and traceability allowing them to track products on a mass balance system by consignment to see if product has been added or removed during logistics. All these technology based systems, whether focused on automated deliver, food tracking or quality monitoring, rely on food producers using Electronic Data Interchange (EDI) systems, which has been used for groceries since the 1970's. However, most small food producers do not have the internal systems to embrace EDI and this is a serious challenge in the adoption of these systems in SFCs.

The use of technology in the mainstream food chain has been focused on delivering efficiency until fairly recently. However, digital technologies can also be used to help consumers understand where and how their food was produced. The ability to scan a barcode or QR code and to be directed to a website giving information on the food appeals to many consumers. In practice most consumers will not use this technology most of the time, but the fact the information is available helps consumers to trust the authenticity and provenance of food. Providing this information electronically is expensive, but unless SFCs producers embrace this technology it is likely that one of the key advantages of SFCs, which consumers pay for, traceability and provenance, will be eroded as all mainstream food products will also provide this information.

Tracking systems in the food chain allow problems to be identified quickly, such as temperature spikes, which can help corrective action to be taken, in turn reducing food waste. This has a direct impact on greenhouse gas emissions in the food chain.

Next steps and future research

This paper has discussed how food logistics is changing and the specific role played by SFCs, both as a driver of change and as a recipient of change in logistics technology and business models. Consumers' needs are changing and new logistics models can respond to this, helping to create shorter chains in which consumers learn more about their food choices through closer connection with producers.

New technology and logistics business models are also changing rapidly and SFCs producers must understand how these changes will impact their businesses. Arguably SFCs are well placed to benefit from these changes as new technology and business models allow smaller producers, common in SFCs, to compete with larger companies without losing the economies of scale dedicated logistics have given larger producers in the past. If SFCs can compete on price, then all other things being equal, they are likely to see their market share grow because of the other benefits of provenance and traceability they provide. However, efficient logistics systems are critical to achieving this.

In the fresh produce sector, new logistics and supply chain models have to ensure they don't increase GHGs. The history of the last 200 years has largely been one of greater spatial specialisation in production and, if SFCs wish to develop more local and regional supply chains, they will also need to embrace new production technologies, as well as efficient logistics, to overcome the inherent environmental disadvantages of producing in less ideal climatic conditions. The transport of food in bulk is one of the least impactful parts of the food chain and so any marginal gains in GHGs emissions in transportation must not be lost due to less efficient farm production. Similarly, the trends towards personal delivery of food direct to consumers 'just in time' could, unless carefully managed, lead to a substantial increase in GHGs emissions as smaller consignment sizes are inherently less efficient in energy terms than larger consignments. Further work is needed to consider these environmental impacts of SFCs, given that GHG emissions and environmental impact have not been the driving force for the development of SFCs. Instead, to date SFCs have been developed primarily to help reconnection between consumers and the source of their food and to deliver higher financial returns to farmers and primary food processors. Looking forward there are other areas which need to be researched further to help the SFC fresh produce sector to deliver its potential. These areas include the need to understand: how consumers make fresh produce purchase decisions; how to encourage consumers to purchase more fresh produce, particularly seasonal products; which new logistics technologies offer the most potential for SFCs; how age, lifestyle and other factors affect consumer interest in and purchasing decisions for fresh produce. If the fresh produce sector can address these challenges at the same time as it embraces new logistics models, then the changes being seen in logistics could be a significant driver of growth in SFCs fresh produce supplies.

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References

Blanquart, C., Gonçalves, A., Vandenbossche, L., Kebir, L., Petit, C. and Traversac, J.B. (2010): The logistic leverages of short food supply chains performance in terms of sustainability. World Conference on Transport Research Society. 12th World Conference on Transport Research, Jul 2010, Lisbonne, Portugal.

Bloemhof, J.M., van der Vorst, J.G.A.J., Bastl, M. and Allaoui, H. (2015): Sustainability assessment of food chain logistics. International Journal of Logistics Research and Applications, **18** (2), 101–117. https://doi.org/10.1080/13675567.2015.1015508

Braudel, F. (1982): The Wheels of Commerce Civilization and Capitalism 15th–18th Century, Vol. 2. Harper and Row, New York.

Canfora, I. (2016): Is the short food supply chain an efficient solution for sustainability in food market? Agriculture and Agricultural Science Procedia, **8,** 402–407. https://doi.org/10.1016/j.aaspro.2016.02.036

Dekker, R., Bloemhof, J. and Mallidis, I. (2012): Operations research for green logistics - an overview of aspects, issues, contributions and challenges. European Journal of Operational Research, **219** (3), 671–679. https://doi.org/10.1016/j.ejor.2011.11.010

do Nascimento Nunes, M.C., Nicometo, M., Emond, J.P., Melis, R.B. and Uysal, I. (2014): Improvement in fresh fruit and vegetable logistics quality: Berry logistics field studies. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, **372** (2017). https://doi.org/10.1098/rsta.2013.0307

Ecommerce Europe (2017): Global Ecommerce Report.

EIP AGRI (2015): EIP-AGRI Focus Group - Innovative Short Food Supply Chain management. Retrieved from https://ec.europa.eu/eip/agriculture/sites/agrieip/files/eip%20agri_fg_innovative_food_supply_chain_management_final_report_2015_en.pdf

EIP-AGRI Focus Group (2015): Innovative Short Food Supply Chain management - Final Report. Brussels, Belgium.

Eriksson, M., Strid, I. and Hansson, P. (2016): Food waste reduction in supermarkets - net costs and benefits of reduced storage temperature. Resources, Conservation and Recycling, **107,** 73–81. https://doi.org/10.1016/j.resconrec.2015.11.022

European Parliament and of the Council (2013): On support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005. Official Journal of the European Union, L 347/487.

FAO (2013): Food Wastage Footprint: Impacts on Natural Resources, Summary Report: http://www.fao.org/3/i3347e/i3347e.pdf

FAO (2009): How to Feed the World in 2050. FAO, Rome, Italy.

FAOSTAT (2019): Data on crop production and values available at http://www.fao.org/faostat/en/#data/QC

Food and Drink Europe (2018): Data & Trends of the European Food and Drink Industry 2018. Brussels, Belgium

Gebresenbet, G. and Bosona, T. (2012): Logistics and Supply Chains in Agriculture and Food. In Pathways to Supply Chain Excellence, 125–146. https://doi.org/10.5772/25907

Hayter, R. (1997): The dynamics of industrial location. In: The Factory, the Firm and the Production System. Wiley, Chichester.

Heitz, A., Launay, P. and Beziat, A. (2019): Heterogeneity of logistics facilities: An issue for a better understanding and planning of the location of logistics facilities. European Transport Research Review, **11** (5). https://doi.org/10.1186/s12544-018-0341-5

Hellenic Shipping News (2019): Available at https://www.hellenicshippingnews.com/

Hesse, M. and Rodrigue, J.P. (2004): The transport geography of logistics and freight distribution. Journal of Transport Geography, **12** (3), 171–184. https://doi.org/10.1016/j.jtrangeo.2003.12.004

Higgins, G., Spencer, R.L. and Kane, R. (2010): A systematic review of the experiences and perceptions of the newly qualified nurse in the United Kingdom. Nurse Education Today, 30 (6), 499–508.

Jones, A. (2002): An environmental assessment of food supply chains: A case study on dessert apples. Environmental Management, **30** (4), 560–576. https://doi.org/10.1007/s00267-002-2383-6

Kneafsey, M., Venn, L., Schmutz, U., Balázs, B., Trenchard, L., Eyden-Wood, T., Bos, E., Sutton, G., Blackett, M. (2013): Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics. European Commission Joint Research Centre Institute for Prospective Technological Studies.

Kunze, O. (2016): Replicators, ground drones and crowd logistics: A vision of urban logistics in the year 2030. Transportation Research Procedia, **19,** 286–299. https://doi.org/10.1016/j.trpro.2016.12.088

Kyriacou, M. C. and Rouphael, Y. (2018): Towards a new definition of quality for fresh fruits and vegetables. Scientia Horticulturae, **234,** 463-469. https://doi.org/10.1016/j.scienta.2017.09.046

Lund, S., Manyika, D.C.J., Woetzel, J., Bughin, J., Krishnan, M., Seong, J., Muir, M., (2019): Globalisation in Transition: The Future of Trade and Value Chains, McKinsey Global Institute.

Martikainen, A., Niemi, P., Pekkanen, P. (2014): Developing a service offering for a logistical service provider—Case of local food supply chain. International Journal of Production Economics, **157,** 318-326. https://doi.org/10.1016/j.ijpe.2013.05.026

Maslarić, M., Nikoličić, S. and Mirčetić, D. (2016): Logistics response to the industry 4.0: The physical internet. Open Engineering, **6** (1), 511–517. https://doi.org/10.1515/eng-2016-0073

ONS (2018): Retail sales, Great Britain: October 2018

Quariguasi Frota Neto, J., Walther, G., Bloemhof, J., van Nunen, J., Spengler, T. (2009): A methodology for assessing eco-efficiency in logistic networks. European Journal of Operational Research, **193** (3), 670–682. https://doi.org/10.1016/j.ejor.2007.06.056

Stefan, V., van Herpen, E., Tudoran, A.A. and Lähteenmäki, L. (2013): Avoiding food waste by Romanian consumers: The importance of planning and shopping routines. Food Quality and Preference, **28** (1), 375–381. https://doi.org/10.1016/j.foodqual.2012.11.001

Stenmarck, Å., Jensen, C., Quested, T. and Moates, G. (2016): Estimates of European food waste levels IVL Swedish Environmental Research Institute, Stockholm, Sweden. Report number: C186, https://doi.org/10.13140/RG.2.1.4658.4721

Stern, N. (2018): Public economics as if time matters: Climate change and the dynamics of policy. Journal of Public Economics, **162,** 4–17. https://doi.org/10.1016/j.jpubeco.2018.03.006

Tukker, A., Huppes, G., Guinee, J., Heijungs, R., de Koning, A., van Oers, L., Suh, S., Geerken, T., van Holderbeke, M., Jansen, B. and Nielsen, P. (2006): Environmental Impact of Products (EIPRO) Analysis of the Life Cycle Environmental Impacts Related to the Final Consumption of the EU-25. http://ec.europa.eu/environment/ipp/pdf/eipro_report.pdf

US Department of Agriculture (USDA) Economic Research Service (2013): Global Food Industry. Available at https://www.ers.usda.gov/topics/international-markets-us-trade/international-consumer-and-food-industry-trends/

Van Boxstael, S., Devlieghere, F., Berkvens, D., Vermeulen, A. and Uyttendaele, M. (2014): Understanding and attitude regarding the shelf life labels and dates on pre-packed food products by Belgian consumers. Food Control, **37,** 85–92. https://doi.org/10.1016/j.foodcont.2013.08.043

Van Der Vorst, J.G.A.J., Tromp, S. and Van Der Zee, D. (2009): Simulation modelling for food supply chain redesign; integrated decision making on product quality, sustainability and logistics. International Journal of Production Research, **47** (23), 6611–6631. https://doi.org/10.1080/00207540802356747

Van Der Vorst, J., Beulens, A. and Van Beek, P. (2005): Innovations in logistics and ICT in food supply chain networks. AGRIS Books, Wageningen, Netherlands.

Volvo (2019): https://www.volvotrucks.com/en-en/about-us/automation.html (Accessed: June 2019)

Wang, Y., Rodrigues, V.S. and Evans, L. (2015): The use of ICT in road freight transport for CO2 reduction - an exploratory study of UK's grocery retail industry. International Journal of Logistics Management, **26** (1), 2–29. https://doi.org/10.1108/IJLM-02-2013-0021

World Resources Institute (2019): Statistics World Greenhouse Gas Emissions. Available at: http://datasets.wri.org/dataset/cait-country (access on February 2019)

World Trade Statistics (2018): World Trade Statistics. Available at: https://www.wto.org/english/res_e/statis_e/wts2018_e/wts2018_e.pdf

United Nations, Department of Economic and Social Affairs, Population Division (2014): World Urbanization Prospects: The 2014 Revision, Highlights (ST/ESA/SER.A/352).

Gusztáv NEMES*, Viktória CSIZMADIÁNÉ CZUPPON, Katalin KUJÁNI***, Éva ORBÁN****, Ágnes SZEGEDYNÉ FRICZ***** and Veronika LAJOS******

The local food system in the 'genius loci' – the role of food, local products and short food chains in rural tourism

This article investigates the roles that locally produced, processed and marketed food (Local Food System) play in rural tourism and local socio-economic development. It is the first account of a 3 years' research project (LO-KÁLI) exploring a successful Hungarian rural tourism destination, investigating both the demand side (what attracts tourists to pay for premium products/services); and the supply side (what attitudes, norms, values keep producers in their business). We contrast the externally perceived image ('genius loci') of the region ('Hungarian Provence', together with its cultural landscape, gastronomy, and social and environmental sustainability) with the impacts of the current development process on the environment and the general wellbeing of the local economy and society in reality. This article presents some of the theories and the analytical framework underpinning our project, alongside preliminary results on how the elements contributing to tourist attraction are perceived by locals and by visitors to the region.

Keywords: local food systems; LFS; rural tourism; rural development; interdisciplinary; Balaton; measuring touristic attraction.
JEL classifications: Q13, Q1

* Hungarian Academy of Sciences, Centre for Economic and Regional Studies & Corvinus University of Budapest, Budapest, Hungary. Corresponding author: nemes23@gmail.com.

** Department of Business Economics, Pannon University, Hungary.

*** Department of Agricultural Economy and Rural Development, Neumann János University, Hungary.

**** Hungarian Academy of Sciences, Centre for Economic and Regional Studies, Hungary.

***** Campden BRI, Hungary.

****** Department of Cultural and Visual Anthropology, University of Miskolc, Hungary.

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Introduction – context and research questions

Success stories of local economic development are often based on sustainable/rural/eco-tourism, multi-functional agriculture and the 'experience economy' (Marsden and Sonnino, 2008). Within the agro-food sector culturally-based, high value-added local products and short food supply chains (SFSCs) represent crucial factors for small business development in rural areas (Kneafsey, 2001; Ray, 2001). They have the potential to improve farm incomes, promote sustainable farming systems, and contribute to local economic regeneration (Hinrichs, 2003).

Local food systems (LFSs) are another useful concept for the analysis of rural development. A local food system can be defined as a set of agri-food sectors located in a regional geographic space and coordinated by territorial governance (Rastoin, 2015). An LFS depends on the relationship that exists between the social, cultural, ecological and economic diversity one the one hand, all of which are important for the vitality of the region, and the desired regionalism of food provision on the other. Another additional economic benefit of local food systems is the potential it provides for increased rural tourism due to the effective introduction of local branding and the provision of recreational shopping opportunities, bringing customers to the gate and multiplier effects to the local economy.

Social networks, innovation, co-operation, and the reconfiguration of local resources are critical in the process of establishing and maintaining LFSs, according to pertinent literature (Lowe *et al.*, 1995; Sanz Cañada and Muchnik, 2011). Consumer trends, such as the growing demand for local/ecological products and the exponential growth in rural/eco-tourism, have also confirmed the benefits of establishing LFSs across the EU (Berti and Mulligan, 2016). Some selected EU regions (e.g. Tuscany, Provence) were designated as exemplary cases on which less favoured rural areas could model future programs (Randelli *et al.*, 2014).

Nevertheless, in spite of the wide agreement concerning the positive role of LFSs and sustainable tourism in rural regeneration, there are direct and latent criticisms in the literature and unresolved conflicts within the discourse. Local food systems can be understood in different ways, implying very different costs and benefits for the locality. When LFS is understood as 'local food for local people', as in the Slow Food movement, it is associated with low food miles, environmental protection (Jones, 2002), enhanced social networks and a revitalised local community (Feenstra, 1997). However, when discussed in local economic/rural development discourse, LFS tends to produce high quality, pricy products, sold to rich tourists and city dwellers. That means something quite different, 'local food for NON-local people', either transported to urban centres, or attracting flows of tourists into remote rural areas. Here an LFS can certainly enhance local businesses, together with economic and rural development; however, actual environmental benefits (Guthman, 2004), similar to the ones claimed by the Slow Food movement would normally be difficult to trace.

Enhanced local production, tourism, and visitor pressure can cause social, economic, and environmental degradation. Multiplier effects do not always occur to build more busi-

nesses and sustain social and economic capital. Resources, profit, and power can be overtaken by incomers or external investors, leading to conflicts and in the end, damage to the local resource base (Sonnino *et al.*, 2014). Still, the products of local food systems are produced and marketed with the added value of environmental and social responsibility, representing confusion and/or an inherent contradiction within the discourse. These aspects are not well explored yet by the literature; hence, a complex, holistic, multi-disciplinary approach, taking into account social, economic, psychological, environmental, cultural and policy aspects should create a framework for significant scientific improvement.

Research questions

We are currently exploring the above issues by means of a three-year, interdisciplinary research project in one of the most successful rural tourism destinations of Hungary, the Kali-basin. The central question of our research is:

What roles can locally produced, processed and marketed food (or the LFS) play in rural tourism and local socio-economic development?

Within this we are investigating three main problem areas:

a. *Demand side* – How is the 'genius loci' constructed? What makes the area attractive as a rural tourism destination and what is important for people living there?
b. *Supply side* – How local food and services are produced? Who are the entrepreneurs, and what are their origins, motivations and values?
c. *Local effects* – What benefits, costs, tensions, developments (social, economic, environmental) result from the LFS and rural tourism?

At the time of writing this article, our research has just started; thus, we are far from having answers to all of our research questions yet. Here we present some of the main theoretical considerations, our planned methodology and some preliminary results, mainly focusing on how the elements of place attractiveness are perceived by different social groups and on the implications of this for the dynamic evolution of the genius loci.

Local production and local food systems

The term "local product" has no accepted, universal definition, it is used in various contexts on different ways. An obvious Euclidean/geographical approach (Morrison *et al.*, 2011) determines the maximum distance between production and consumption. There are many examples of this approach, but the distance, depending on the size of the country, is different: local is defined around 40-100 km in Europe[1] and 100 miles in the United States. Local production can also be understood within administrative boundaries defining 'local' within settlement, district, county, region or country. Nevertheless, besides geography, local food can also be understood in a cultural and socio-economic context, having connotations to different value systems, worldviews or behavioural patterns. Fonte (2008), for example, concentrates on the valorisation of local products in three dimensions: economic, social and environmental. He stresses that economic valorisation is the ''dominant dimension of sustainability in a strategy of integrated rural development for marginalised and impoverished areas''; and that the social dimension ''require a collective effort that activates mechanisms of social coordination and cohesion in the community'' (Fonte 2008, p. 209). Finally, environmental dimensions can refer to special characteristics of the area, which can embrace wider environmental characteristics linked with the symbolic value of the product and not just local varieties of plants or breeds of animals.

Local food systems can be explored in three fundamentally different contexts (Table 1). One perspective takes into account grassroots initiatives for re-establishing the link between producers and consumers in an ''interpersonal world of production'' (Morgan *et al.*, 2006). Since the 1990's, many initiatives led by social movements representing groups of producers and consumers or by local institutions have been launched to re-build food production at a local level, especially in northern Europe and the US. The most typical examples are the self-sufficient farmstead movement, farm direct selling, the farmers' market movement (USA, UK, Ireland, Scotland). These cases involve local communities based on shared ecological values, aiming at self-subsistence, joint production, local exchange and trade, and all in all – producing, exchanging, selling and consuming food locally. Value systems in this context include environmental sustainability, resilience in the face of globalisation and consumerism, empowerment of local communities, health, protecting culture, traditional ways of life and production, etc.

Nevertheless, there are many people, living in cities, who cannot move to a village and start self-subsistent agriculture, but still desire some level of engagement with the above values. Thus, many initiatives have been launched in areas where food is almost exclusively available in super-

Table 1: Typology of LFSs

	Locally embedded	CSA based	PDO/PGI based
Producer	local, rural, small scale	local, rural, small scale	rural, any scale
Consumer	local	extra-local – urban	extra-local – urban
Food miles	low	medium	high
Value system	environment, health, taste, anti- global, embedded production practices	environment, health, taste, anti- global, embedded production practices	food quality, health, culinary art, traditional cultural value,
Food chain	direct sale, SFSCs	direct sale, SFSCs	any chain
Examples	Farmstead, self subsistence, eco-villages	CSA, box schemes, purchasing groups, GAP, AMAP, etc.	speciality shops, fine dining, etc.

Source: own composition

[1] In Hungary agricultural products can be sold as 'local products' by their producer (or immediate family members) on the farm, or on farmers' markets within 40 km, on the county seat or in Budapest (FVM, 2009).

markets and there is no market place for local agricultural products. These are a "placeless foodscape", according to Morgan *et al.* (2006) or "food deserts" according to Wrigley (2002). Initiatives include many different forms of community supported agriculture (CSA): box schemes, local food buying groups, city food circles, food policy councils (Hendrickson and Heffernan, 2002, Friedmann, 2007). Initiatives that sell food in alternative ways are therefore becoming increasingly common, and the demand to buy 'alternative', 'local' and/or 'quality' food products is rising (Ilbery *et al.*, 2005). The reasons for this are by now well-known and include various food scare episodes, growing consumer mistrust in standardised food production methods, and ethical and environmental concerns associated with how and where food is produced (McMichael, 2008). Locally produced food, so it is argued, offers a closer 'connection' with the point of production and an opportunity to support the local economy (Guptill and Wilkins, 2002). Thus in this approach, food is produced locally (small scale, environmental friendly, etc.), but consumers are extra-local (mainly in cities). Nevertheless, the surrounding value system is still very similar to the first case, concentrating on health, culturally and socially embedded production, anti-globalism, anti-consumerism, etc.

The third approach combines the local product with values associated with territory, traditional production practices, high quality and value added. The EEC has launched a system for regulating geographical indications (Protected Designation of Origin - PDO, Protected Designation of Indication - PGI) for agricultural products and foodstuff in 1992 with the aim of helping to maintain the diversity of the European agricultural economy. It also gives farmers in disadvantaged or remote areas the opportunity to preserve their traditional production systems, communities, ways of life, etc. and provides consumers with adequate, clear information about products from different geographical areas. In some of the reportedly successful examples of PDOs and PGIs, the positive impact and potential economic and social valorisation of the product seems to be related with the involvement of local actors which are not part of the supply chain. Quetier *et al.* (2005) link the success with 'closed' forms of common management and de Roest and Menghi (2000) with the cooperation of local actors.

Buying high value added local products has become a fashion and a strong consumer trend, and as such, it has attracted considerable investment both in production, processing and marketing of the products in question. Some PDO and PGI products (Rioja wine, Parma cheese or lavender from Provence as a few famous ones) have become fundamental to the local economy in many rural areas. This process has been hugely reinforced by strong growth in rural tourism, attracting many customers into rural localities. In this context, high value added, often certified quality food products are produced. They are supported with images of being local, small scale, personal, familiar, and environmentally friendly and are interwoven with images of cultural landscapes, stories and traditions. Then, the whole 'pricey package' is sold to 'extralocal customers' with the apparent objective of maximising profit. This obviously helps to sustain socio-cultural values and enhance local economic development, providing the locality with marketable/exportable products; however, it is associated with values and mechanisms that are considerably different from those associated with the origins of local food systems. It is more geared up for economic (than social or environmental) sustainability and is more exposed to risks, associated with external capital investment (the capture of resources and business opportunities by external investors, power struggles, etc.). Nevertheless, the 'genius loci' or the 'social imaginary' commonly associated with local products is heavily used for their marketing (Kirakosyan, 2017). Within this framework, unlike the two previous ones, LFS is an outward-looking construction, creating significant income through 'exporting' products, based on the natural, economic, social and cultural resources and capitalising on the social imaginary/genius loci of the particular locality (Counihan, 2016).

Shortening the food chain

When good quality, raw and processed food is produced by a LFS and is readily available for consumption, the next important issue is how it actually reaches potential customers. Traditional long food chains are normally not suitable for this because industrial production has unbalanced the market equilibrium and, more specifically, generated a break in the global supply chain. According to Low *et al.* (2015), industrial marketing processes have led to a niche activity which has grown over time into a complex system that has expanded from farm-to-farmer's market to farm-to-institution and more recently to farm-to-retail.

To fill this niche, many alternative ways/channels have developed all over the World, and there is a wealth of academic literature exploring different aspects and consequences of the issue. A number of approaches and definitions exist in parallel, concentrating on the actors, the channel itself, the social innovation (Peters *et al.*, 2018) and the new ways of marketing involved, and exploring the socio-economic consequences or the contribution made to rural development (Brunori *et al.*, 2016).

We are using in this project a Short Food Supply Chain (SFSC) approach focusing on the exploration of producer-consumer relations. According to European regulation, an SFSC involves a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers, processors and consumers. The regulation recognizes the importance of social relationships between people involved in the food chain, which are key to a proper understanding of how collaborative SFSCs operate. There are a number of different applications of this approach throughout Europe, however, they all aim to:

- decrease the distance – both physically and personally – between small-scale farmers and consumers;
- empower agricultural producers and stabilise their income; supply consumers with locally made, healthy food;
- decrease environmental pollution;
- support a food supply policy – based on real funds.

Trends in rural tourism and their significance for LFS and local development

The significance of local food systems, especially in terms of creating 'exportable' products, has been greatly enhanced by rural tourism in recent years/decades. Tourism is one of the world's largest and fastest growing industries (Saarinen, 2006) and, according to the World Tourism Organisation, rural/alternative/ecological tourism is growing three times faster than the tourism industry as a whole (Cox, 2006). The development of communication and ubiquitous information systems, along with significant improvements in productivity and production systems, have contributed greatly to opening up rural areas to the outside world. Rural populations have extended their networks, widening their social space and economic scope (Bessière, 1998). Tourism and its integration into the rural economy can very much contribute to developing employment opportunities, increasing local prosperity, conserving and maintening the environment, celebrating cultural assets and generally ensuring a greater spread in terms of who can benefit (economically, socially and culturally) (McAreavey and McDonag, 2010).

Rural tourism brings customers to the gate of the producers and to those rural businesses (shops, markets, restaurants, coffee rooms, etc.) where the marketing of high value added local products is concentrated. Tourists eat, sleep, and buy products and services; and a great part of the economic value, increased by multiplier effects, stays in the locality. This is the situation where the social imaginary has the greatest effects. Customers, besides paying for products and services, also 'buy the genius loci', they come back, and they might start buying 'local products' in cities too, delivered through short food chains. Rural tourism can also reinforce a more coherent local identity, strengthen local networks and be in many other respects beneficial and highly valued in the context of rural development or an LFS.

Nevertheless, rural tourism destinations must face pressures placed on them both directly, from increased visitor numbers, and indirectly, from negative impacts on the environment and on destination communities (Gössling *et al.*, 2008). For more than three decades many studies have detected various negative socio-cultural impacts as a result of tourism development (Mansfeld and Jonas, 2005). Besides economic benefits, tourism can also cause much damage in all-important domains of human life, that is ecological, infrastructural, sociodemographic, cultural and economic. Complex consequences can include (Hashimoto, 2002):

- tension between social classes due to the uneven distribution of tourism-generated wealth;
- conflicts between indigenous people, old locals and incoming second-home owners;
- overdependence on tourism, and the commercialisation of local cultures;
- visitor pressure, crowded places, pollution, environmental degradation.

Growing tourism can easily result in rising property prices, local people moving away and whole villages becoming tourist ghost towns, with beautifully maintained buildings but no real rural life and culture to be found.

Our case – the Káli-basin at the Balaton-uplands, Hungary

Research focus

We designed a three years' research project (LO-KÁLI – Myths and Realities of Local Food Systems – discourses, producers, customers and socio-economic effects in the 'Hungarian Provence') to investigate the complexities of the above phenomena by focusing on a small Hungarian region, the Balaton-uplands and particularly the Káli-basin within it. This region has a long history of urban incomers, as until the late 1990's it used to serve as a safe haven for Hungarian artists and intellectuals. However, the local economy and society experienced significant changes during the last 10 years, comparable to the exemplary stories encountered in Tuscany or Provence (Czuppon *et al.*, 2015). The Káli-basin has been emerging as a very strong destination for rural/ecological/food – tourism. Today a number of small scale family businesses, crafting high-quality, value-added products (cheese, wine, meat, honey, sweets, jams, bread, etc.) and services can make a decent living here, thanks to the flow of tourists, and the organic markets, fine restaurants, speciality shops opened within the area and in Budapest. The Káli-basin, thus, is becoming a real brand for local food, wine, gastronomy and sustainable tourism and is being referred to as the 'Hungarian Provence'. Simultaneously, the Balaton-uplands is turning into a byword for well-performed rural development in the Hungarian context – an exemplary case for other rural areas. Improvements are visible and obviously rooted in changing patterns and trends in rural tourism, the local food system, and supportive policies.

Nevertheless, even within the Balaton-uplands, there are huge differences between smaller micro-areas in terms of socio-economic indicators, trends, and business opportunities. The Káli-basin, for example, has since the 1960s been on much the same development track as as the neighbouring areas. It is still part of the same National Park, the same wine region and tourist area. Yet, while its neighbours have not changed very much, today the Káli-basin has more 'five star' restaurants' and pensions than any other parts of rural Hungary, and its all-year-around Sunday market (Liliomkert) has become so famous that it is impossible to find parking around it. At the same time, while mostly old people live there, very few children and almost no entrepreneurs outside the tourism industry live in this valley, whereas the neighbouring area (Nivegy-völgy) has one of the youngest population rates in Europe and is full of vibrant life.

These differences most likely originate in recent local cultural and social history and in the social fact that the Hungarian Provence, the Káli-basin has become a social imaginary in certain strata of the Hungarian society, especially for the elite and the intellectuals, since the 1960-70s, and for the well-off middle class more recently. Appadurai (1996: 31) considers the "imagination as a social practice" and the

social imaginary as culturally constructed, historically situated knowledge. It is a kind of knowledge of action, an active force, which mobilises people to take actions, for example to move from one place to the another, to take part in tourism, to consume, etc. He states that "The imagination is now central to all forms of agency, is itself a social fact, and is the key component of the new global order" (Appadurai 1996: 31).

According to our preliminary analysis, the social imaginary of the Káli-basin, consisting of different dynamic processes, has changed significantly in the last few decades. In the making of the Káli social imaginary, emerging in the 1970-80s, mainly film directors, actors and other movie professionals as well as artists (of music, fine arts, popular culture etc.) took part. The social imaginary was based on the 'rural idyll', attracting immigrants from Budapest. This period is formulated as a counter-culture of Hungarian socialism by the people having second-homes in the area. The second phase started after the fall of socialism (1990's), when private agriculture entrepreneurship became a life strategy again. The emergence of wine and festival culture and the refurbishment of old buildings into new forms can be detected in this period. The formation of high quality, elite tourism started when the Kali Art Inn was established in the mid-1990s. The third phase, characterised by new forms of tourism (eco/green/food/wine) emerged as the basis of the awakening of the 'Hungarian Provence' started around 2010, building on the previous phases, external connections, human and financial capital. Food tourism became the main image of the area, constantly appearing in cooking programmes, gastro blogs, social media, etc. One of the villages, Köveskál is called today the Hungarian Gastro-village.

Research methodology

Our research is based on a principally empirical qualitative methodology combined with a grounded theory approach (Strauss and Cobrin, 1994), as we develop social theory alongside the empirical work. We use mixed methods research (Tashakkori and Teddlie, 2010) in order to gain a deeper understanding of the sociocultural and economic reality. Most of the empirical evidence comes from case studies, questionnaires, structured and semi-structured interviews, appreciative inquiry, and participant observation. Stakeholder workshops have been used to validate our results and to gain more insights through participatory analysis. Besides rural sociology, social economy and geography, we have made use of the distinctive qualitative research methods of cultural anthropology and environmental psychology while having primarily a local focus – a micro level perspective –, where the researcher observes the given issue from the point of view of the subject of the study, an insider's view of reality, called an "emic" perspective.

Preliminary results and analysis

We are at the very beginning of our research, and still in a preparatory phase. Up to the point of finishing this article, 26 stakeholder interviews were held (with producers, local leaders, gatekeepers, etc.), and 84 long questionnaires with local dwellers and 89 shorter ones with visitors were conducted. According to the grounded theory approach, we planned our research as an iterative process, continuously validating our results through participatory analysis and with a view to stakeholder involvement occurring in the later stages. Here, therefore, we can only give preliminary answer to some questions and speculate about the reasons.

Measuring the role of local products and gastronomy within touristic attractiveness

Based on our interviews, we first identified the main involved social groups according to their relation to the locality. Main groups were (1) locals and (2) visitors, both divided into two subgroups. Locals could be (1/a) indigenous or (1/b) newcomers, while visitors could be: (2/a) staying (overnight) or (2/b) daily visitors. Then we designed a short questionnaire complemented with card sorting. During the interviews, first we clarified the interviewee's relation to the locality, then asked them to choose five out of the ten attractiveness-elements cards and sort them according to their importance (Figure 1).

These elements can be classified into three groups:

- tangible, physically existing long-term elements/values, inherent to the locality;
- tangible constructed elements/values, products of the recent decades and urban incomers (the intellectual safe-haven past and the more recent rural tourism development);
- intangible constructed elements that are associated to the locality only through social imaginary.

During the first phase of the research, we conducted 157 full questionnaires in two different situations: local people were asked in their homes in one particular village, as part of a census survey. Visitors were asked on the main Sunday farmers' market of the area. We plan to conduct more questionnaires in different setups and locations, however, preliminary results are already quite thought-provoking (Figure 2).

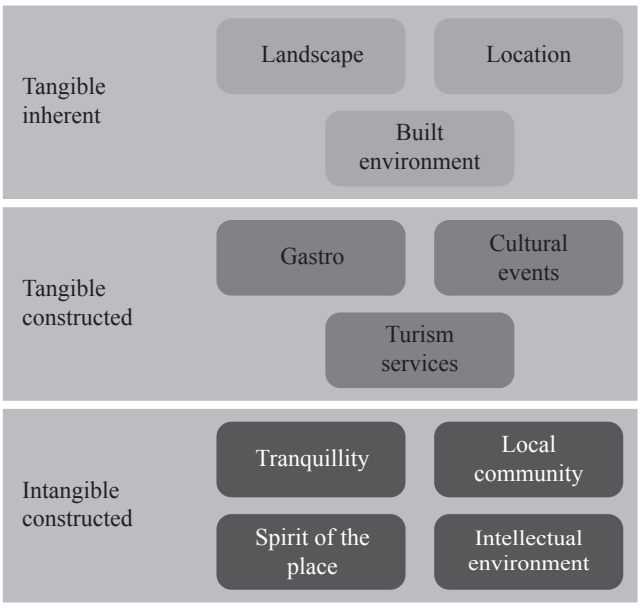

Figure 1: Card sorting set for measuring attractiveness.
Source: own composition

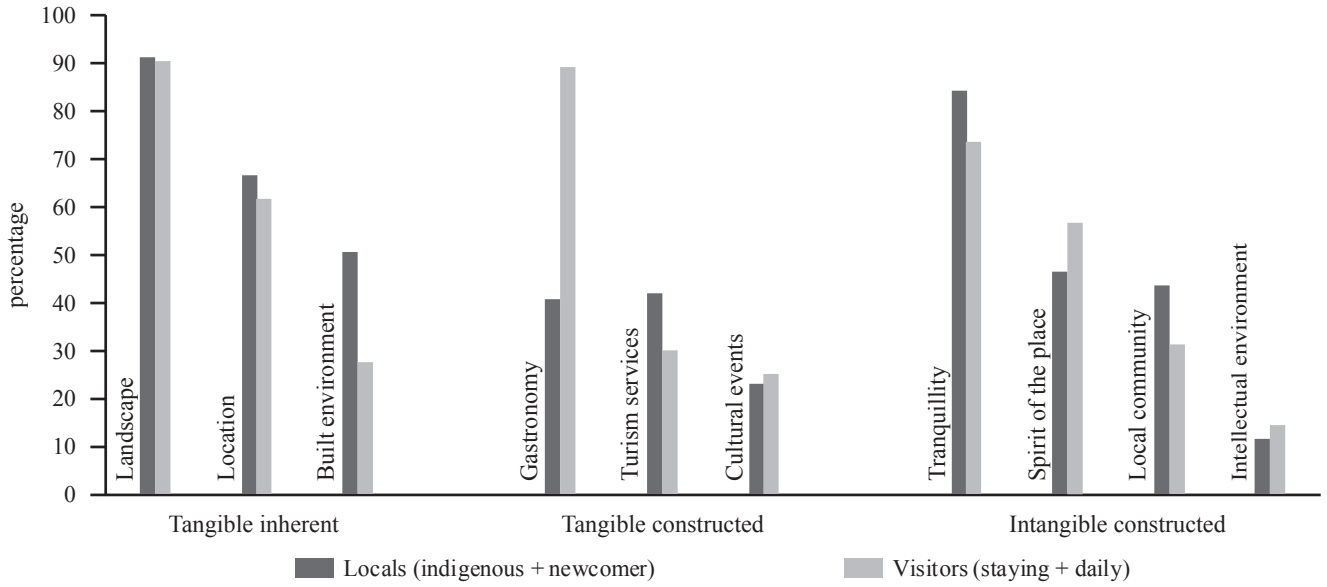

Figure 2: Proportion of the attractions ranked in the first 5 places according to the type of respondents, grouped according to the classification of attractions.
Source: own composition

The first important/surprising result is that the within each social groups, the subsequent subgroups (indigenous/newcomer and staying/daily visitors) showed virtually no differences in their approach towards the attractiveness of the locality. This, on the one hand, means that though newcomers (second home owners) are culturally more similar to visitors/tourists, they 'became locals' in this respect and find the same elements attractive as the indigenous population, who have generally lower social status, lower levels of education and less external experience and connections. On the other hand, visitors coming for just a day visit (mainly to the market) and those staying several days in the area were also very similar in their choices. This is also remarkable, indicating that the perception of visitors is quite pre-defined and is not very much modified by personal experience of staying in the area.

In most elements of attractiveness, there was no significant difference between the perception of locals and visitors. The absolute winner is, not surprisingly, landscape and natural beauty for all. Nevertheless, there were significant differences between the preferences of locals and visitors in three topics. Most importantly, gastronomy and local food in general is the most important one for visitors and one of the least important for locals. The two other ones were the built environment (nice old stone buildings) and tranquillity, both of which are more valued by local people, with property and a strong connection to the locality. On the other hand, even non-significant elements show some interesting tendencies. Locals tend to value more almost all elements that are tangible or/and some kind of inherent properties of the locality (including tranquillity). Visitors' preferences tend to belong to those elements, constructed alongside the touristic image of the area and such as gastronomy, cultural events.

Genius loci as a dynamic concept – preliminary analysis

According to our interviews and also to the preliminary analysis of questionnaires, genius loci should be understood as a dynamic concept, when used for the explanation of attractiveness to tourists and the role of local food within it. Dynamism here has two interconnected dimensions, as we will now explain.

The first dimension is time. We saw in the description of the locality how the defining image of the Káli-basin has changed over the decades since its first transformation from a declining rural region to an intellectual safe haven; through its second phase emerging as place for unique holidays for a narrow elite and a third one, where it has become a busy rural tourism destination, focused on food, wine and local products. The constructed image of the region changed significantly alongside these transformations, from artistic films, photos and paintings, through high quality services, wines, accommodation, to a complex marketing of the area as a destination for culinary expeditions through broadcasted cooking programmes, wine and food festivals, the involvement of social media, blogs, etc. At the same time, the three phases described here are far from distinct, they are interconnected, largely building one another.

The other dimension of dynamism is the social one. Looking at how locals and visitors see the area it seems obvious that visitors are greatly influenced by the image projected by the media and different kinds of discourses (constructed tangible and intangible attractions), while locals (either indigenous or incomers) having spent significant time in the area value other elements much more (inherent tangible + tranquillity). At the same time the immense growth of the number of visitors in parallel with the development of services in tourism reinforces the new genius loci / social imaginary based on local food. One could see this as an itera-

tive process, resulting in the evolution of local economies, culture and society.

As a preliminary answer to our original research question[2] we could say that the LFS plays a very complex role in the evolution of the Káli-basin as a rural tourism destination. The LFS in its current stage of development is both the result of and the reason for such an evolution. It is certainly becoming more and more significant in the process, and the resulting economic/business opportunities are certainly apparent. Nevertheless, social and environmental costs, a number of ethical problems remain to be examined, and the investigation of them is the primary aim of our project.

Some questions, dilemmas for further investigation

During our preliminary interviews, questionnaires and analysis of the genius loci, we have found some interesting tensions, and further questions to be explored. In the following paragraphs, we will share some of these.

The most interesting/important issue concerns social justice and development ethics. As far as we understand the situation, (at least) two distinct worlds exist in the Káli-basin. One is a tourism reality, based on gastronomy, local products, wine and the now well-established image of the Hungarian Provence. When the restaurants, wineries organise a 'gastro-picnic' or a festival, or on a simple Sunday farmers' market day the Káli-basin fills with wealthy tourists. Nevertheless, besides this shiny, constructed reality, one can find here quite normal, run-down Hungarian villages with the usual rural development problems, such as ageing inhabitants, depopulation, and a lack of basic services, infrastructure, etc. These two worlds are hardly connected with each other, local (indigenous) people rarely take advantage of the opportunities provided by tourism and gain little income from it.

The other problem concerns directly the structure of the local food system. While most restaurants (flagships of the Káli-basin) claim that they base their menu on local products, when interviewing local producers one can find that they hardly sell anything to these restaurants. Sources of local products, the structure of the LFS, and power relations between producers have to be the subject of further investigation.

The third area is, again related to local power, social and environmental costs. Today the main tension within local society is not between indigenous people and newcomers any more, but between old immigrants, who gained local influence (economic, social, or public) before or during the tourism boom, and newly appearing external investors, who see rural/food tourism in the Káli-basin as a business opportunity. The ongoing fight for resources and space can endanger natural beauty and tranquillity, the very basis of the current tourism development.

[2] What roles locally produced, processed and marketed food (LFS can play in rural tourism and local socio-economic development?

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References

Appadurai, A. (1996): Modernity at Large. Cultural Dimensions of Globalization. Minneapolis: University of Minnesota Press.

Berti, G. and Mulligan, C. (2016): Competitiveness of Small Farms and Innovative Food Supply Chains: The Role of Food Hubs in Creating Sustainable Regional and Local Food Systems. Sustainability, **8** (7), 1–31. https://doi.org/10.3390/su8070616

Bessière, J. (1998): Local Development and Heritage: Traditional Food and Cuisine as Tourist Attractions in Rural Areas. Sociologia Ruralis, **38** (1), 21–34. https://doi.org/10.1111/1467-9523.00061

Brunori, G., Galli, F., Barjolle, D., Van Broekhuizen, R., Colombo, L., Giampietro, M., Kirwan, J., Lang, T., Mathijs, E., Maye, D., De Roest, K., Rougoor, C., Schwarz, J., Schmitt, E., Smith, J., Stojanovic, Z., Tisenkopfs, T. and Touzard, J.-M. (2016): Are Local Food Chains More Sustainable than Global Food Chains? Considerations for Assessment. Sustainability, **8** (5), 449. https://doi.org/10.3390/su8050449

Counihan, C. (2016): Cultural heritage in food activism: local and global tensions. Edible Identities: Food and Cultural Heritage.

Cox, R.S. (2006): Ecotourism. CQ Researcher, 16.37, 865–888.

Csizmadiáné Czuppon, V., Sáriné Csajka, E. and Molnár, T. (2015): Potentials of local economic development in aspect of tourism. Deturope – Central European Journal of Regional Development and Tourism, **7** (2), 175–187.

De Roest, K. and Menghi, A. (2000): Reconsidering 'traditional' food: the case of Parmigiano Reggiano cheese. Sociologia Ruralis, **40** (4), 439–451. https://doi.org/10.1111/1467-9523.00159

Feenstra, G. (1997): Local food systems and sustainable communities. American Journal of Alternative Agriculture, **12** (1), 28–36. https://doi.org/10.1017/S0889189300007165

Fonte, M. (2008): Knowledge, Food and Place. A way of producing, a way of knowing, Sociologia Ruralis, **48** (3), 200–222. https://doi.org/10.1111/j.1467-9523.2008.00462.x

Friedmann, H. (2007): Scaling up in Ontario: Bringing public institutions and food service corporations into the project for a local, sustainable food system. Agriculture and Human Values, **24** (3), 389–398. https://doi.org/10.1007/s10460-006-9040-2

FVM (2009) 123/2009. (IX. 17.) Available: https://net.jogtar.hu/jogszabaly?docid=A0900123.FVM Downloaded: 1 April 2019.

Gössling, S., Hall, C.M., Lane, B. and Weaver, D. (2008): The Helsingborg statement on sustainable tourism. Journal of Sustainable Tourism, **16** (1), 122–124. https://doi.org/10.2167/09669580809411813

Guptill, A. and Wilkins, J.L. (2002): Buying into the food system: trends in food retailing in the US and implications for local foods. Agriculture and Human Values, **19,** 39–51. https://doi.org/10.1023/A:1015024827047

Guthman, J. (2004): Agrarian Dreams: The Paradox of Organic Farming in California. Berkeley: University of California Press.

Hashimoto, A. (2002): Tourism and Sociocultural Development Issues. IN Sharpley, R. and Tefler, DJ. (eds.) Tourism and Development Concepts and Issues, Clevedon: Channel View Publication, 202–230.

Hendrickson, M.K. and Heffernan, W.D. (2002): Opening Spaces through Relocalization: Locating Potential Resistance in the Weaknesses of the Global Food System, Sociologia Ruralis, **42** (4), 347–369. https://doi.org/10.1111/1467-9523.00221

Hinrichs, C.C. (2003): The practice and politics of food system localization. Journal of Rural Studies, **19** (1), 33–46. https://doi.org/10.1016/S0743-0167(02)00040-2

Ilbery, B. and Maye, D. (2005): Retailing local food in the Scottish-English borders: A supply chain perspective. Geoforum, **37** (3), 352–367. https://doi.org/10.1016/j.geoforum.2005.09.003

Jones, A. (2002): An Environmental Assessment of Food Supply Chains: A Case Study on Dessert Apples. Environmental Management **30** (4), 560–576. https://doi.org/10.1007/s00267-002-2383-6

Kirakosyan, L. (2017): Social Imaginaries, Shared Citizen Action, and the Meanings of "Community". Community Change, **1** (1), 1–14. https://doi.org/10.21061/cc.v1i1.a.2

Kneafsey, M. (2001): Rural cultural economy: Tourism and Social Relations. Annals of Tourism Research. **28** (3), 762–783. https://doi.org/10.1016/S0160-7383(00)00077-3

Low, S.A., Adalja, A., Beaulieu, E., Key, N., Martinez, S., Melton, A., Perez, A., Ralston, K., Stewart, H., Suttles, S., Vogel, S. and Jablonski, B.B.R. (2015): Trends in Local and Regional Food Systems: Report to Congress. USDA Economic Research Service. Available at: http://www.ers.usda.gov/media/1763057/ap068.pdf

Lowe, P., Murdoch, J. and Ward, N. (1995): Network in rural development: beyond endogenous and exogenous approaches in: Van der Ploeg, J.D. and van Dijk, G. (eds.): Beyond modernization: the impact of endogenous rural development, Assen, The Netherlands: Van Gorcum.

Mansfeld, Y. and Jonas, A. (2005): Evaluating the socio-cultural carrying capacity of rural tourism communities: a 'value stretch' approach. Tijdschrift voor Economische en Sociale Geografie, **97** (5), 583–601.

Marsden, T. and Sonnino, R. (2008): Rural development and the regional state: Denying multifunctional agriculture in the UK. Journal of Rural Studies, **24** (4), 422–431. https://doi.org/10.1016/j.jrurstud.2008.04.001

McAreavey, R. and McDonag, J. (2010): Sustainable Rural Tourism: Lessons for Rural Development. Sociologia Ruralis, **51** (2), 175–194. https://doi.org/10.1111/j.1467-9523.2010.00529.x

McMichael, P. (2008): The Peasant as 'Canary'? Not Too Early Warnings of Global Catastrophe. Development, **51** (4), 504–511. https://doi.org/10.1057/dev.2008.56

Morgan, K., Marsden T. and Murdoch, J. (2006): Worlds of food place, power and provenance in the food chain, Oxford: Oxford University Press.

Morrison, K.T., Trisalyn, A.N. and Ostry, A.S. (2011): Methods for mapping local food production capacity from agricultural statistics. Agricultural Systems, **104** (6), 491-499. https://doi.org/10.1016/j.agsy.2011.03.006

Peters, B., Herens, M. and Brouwers, J. (2018): Capturing Social Innovations in Agricultural Transformation from the Field: Outcomes of a Write-Shop. Sustainability, **10** (12), 4727. https://doi.org/10.3390/su10124727

Quetier, F., Marty, P. and Lepart, J. (2005): Farmers management practices and land use on an agropastoral landscape: roquefort cheese production as a driver of change. Agricultural Systems, **84** (2), 171–193. https://doi.org/10.1016/j.agsy.2004.05.005

Randelli, F., Romei, P. and Tortora, M. (2014): An evolutionary approach to the study of rural tourism: The case of Tuscany. Land Use Policy, **38,** 276–281. https://doi.org/10.1016/j.landusepol.2013.11.009

Rastoin, J.M. (2015): Editorial, Les systèmes alimentaires territorialisés: considérations théoriques et justifications empiriques, Économies et Sociétés, Tome XLIX, Isméa Les Presses, Paris.

Ray, C. (2001): Culture Economies – A perspective on local rural development in Europe. CRE Press, University of Newcastle upon Tyne.

Saarinen, J. (2006): Traditions of sustainability in tourism studies. Annals of Tourism Research, **33** (4), 1121–1140. https://doi.org/10.1016/j.annals.2006.06.007

Sanz Cañada, J. and Muchnik, J. (2011): Ancrage et identité territoriale des systèmes agroalimentaires localisés-Introduction au dossier. Économie Rurale, **322** (4), 4–10.

Sonnino, R., Moragues Faus, A. and Maggio, A. (2014): Sustainable Food Security: An Emerging Research and Policy Agenda. International Journal of Sociology of Agriculture and Food, **21** (1), 173–188.

Strauss, A. and Corbin, J. (1994): Grounded theory methodology: An overview. IN Denzin, N.K. and Lincoln, Y.S. (eds.): Handbook of qualitative research, 273–285.

Tashakkori, A. and Teddlie, C. (2010): SAGE Handbook of Mixed Methods in Social and Behavioral Research. Thousand Oaks: SAGE.

Wrigley, N. (2002): Food deserts in British cities: policy context and research priorities. Urban Studies, **39** (11), 2029–2040. https://doi.org/10.1080/0042098022000011344

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