

Short Food Supply Chains: rebuilding consumers' trust

JOSÉ LUIS CRUZ*, IVANKA PUIGDUETA**, ALBERTO SANZ-COBEÑA**,
MARIO GONZÁLEZ-AZCÁRATE***

DOI: 10.30682/nm2104c

JEL codes: L22, Q12, Q13

Abstract

Whereas population is showing increasing distrust rates in the regular agri-food system, Alternative Food Networks (AFN) are gradually gaining space. This paper analyses the role of a specific kind of AFN, Short Food Supply Chains (SFSCs) and its contribution to the restoration of consumers' trust in Spain. An online survey (n= 423) focus on trust and concern over food safety was conducted. The survey was addressed to very concerned and active consumers, which are interesting because they represent a powerful consumers' profile from the policies point of view. Principal Component Analysis (PCA) studied consumers' preferences on the different SFSC categories. This paper draws a map that signals which of SFSC attributes (such as labelling, common values or direct contact with producers) are more relevant in order to build consumers' trust. In addition, this paper offers a classification of SFSC consumers according to their priorities. The information provided by the article offers ideas to policy makers and producers for designing their marketing strategies according to different consumers' demands.

Keywords: Short food supply chains, Alternative Food Networks, Farmer markets, Consumer, Trust.

1. Introduction

Nowadays it is not possible to have food quality information on all the elements needed to make most certainly safety decision. The high level of complexity (number of stakeholders and their relationships) in conventional agri-food system hampers the access to information of production processes (Yu and Nagurney, 2013). This fact triggers a situation of asymmetry in which producers could have more information than consumers (Dierks, 2005).

In absence of sufficient information, consumers need trust to simplify food-related decision-making processes and minimize the risks associated to feeding (Adler *et al.*, 2003; Ritenthofer and Klitgaard, 2015). In other words, trust can be used as a substitute of full knowledge (Grebitus *et al.*, 2015). In this way, the existing agro-industrial model is generating detachment and mistrust among consumers (Allen *et al.*, 2003; Cleveland *et al.*, 2014; Giampietri *et al.*, 2018; Kriege-Steffen *et al.*, 2010; Levkoe, 2015; Pejic *et al.*, 2013). The occurrence

* Departamento de Investigación Aplicada y Extensión Agraria, Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario (IMIDRA), Alcalá de Henares, Madrid, Spain.

** ETSI Agronómica, Alimentaria y de Biosistemas (ETSIAAB), Universidad Politécnica de Madrid, Madrid, Spain; Centro de Estudios e Investigación para la Gestión de Riesgos Agrarios y Medioambientales (CEIGRAM), Madrid, Spain.

*** Departamento de Investigación Aplicada y Extensión Agraria, Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario (IMIDRA), Alcalá de Henares (Madrid), Spain; ETSI Agronómica, Alimentaria y de Biosistemas (ETSIAAB), Universidad Politécnica de Madrid, Madrid, Spain.

Corresponding author: joseluis.cruz@madrid.org

of food safety scandals, like the bovine spongiform encephalopathy (at the beginning of the 21st century) or the episode of eggs contamination in Europe (August, 2017), serves to further damage public trust on food chains (Calle *et al.*, 2012; Carbone *et al.*, 2007; Ding *et al.*, 2013).

This growing mistrust in conventional agri-food system is being accompanied by the expanding of ethical concerns among some consumers (Dowd and Burke, 2013; Giampietri *et al.*, 2018). Food consumers' value systems plays a key role in consumers' choice (Greibitus *et al.*, 2015), and increasing sectors of society are including a "responsibility factor" in their consumption patterns due to environmental, animal compassion or social equity reasons (Casia *et al.*, 2012). For these sectors of society, mega-farms, the high levels of delocation of production and consumption sites, or other attributes of industrial agri-food systems, are at odds with their ethical concerns (Higgins *et al.*, 2008).

In this context, Alternative Food Networks (AFN), as Short Food Supply Chains (SFSCs), are emerging as an answer to consumers' concerns and the lessening of trust on agri-food system (Torquati *et al.*, 2016). Although there are different typologies of SFSCs, European Union characterizes this kind of AFN in the Regulation (EU) No 1305/2013. SFSCs shall cover only supply chains involving no more than one intermediary between farmer and consumer (article 35.2d), and the geographical distance from production, transformation and distribution sites to the final consumer is also limited.

1.1. Trust in the agri-food system

Trust is an essential element for the good development of commercial relationships. There are several works about trust definition, Morgan and Hunt (1994, p. 23) define it "as existing when one party has confidence in an exchange partner's reliability and integrity". McKnight and Chervany (2001) include a review of trust definitions from different approaches (psychology, social psychology, sociology), all of them turn around the idea of trust as the belief that a voluntarily accepted duty will prevail, ensuring that no party exploit the others' vulnerabilities,

under conditions of risk and interdependence. Mooradian *et al.* (2006) define trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer *et al.*, 1995, p. 712).

Farmers need to develop trust-based relationships with their customers in order to create a better market access for their products (Roy *et al.*, 2017). In the past, knowledge sharing and trust were built and maintained through direct contact and a regular relationship between producer and consumer. Along with the increase in complexity of production and distribution systems, consumers placed trust in other stakeholders or sources of information.

The various definitions of trust have certain elements in common, as the existence of a risky or complex context, uncertainty and dependence on other people (Coveney *et al.*, 2012; Dierks, 2005). In the food chain, trust is not built on specific products, but rather on the human agents responsible for food production, processing, control and commercialization (Kjærnes, 2014). Social interaction and face-to-face relationships enable and help to consolidate deep trust (Roy *et al.*, 2017).

The published literature shows a collection of factors used by producers and consumers to generate and maintain trust. The most frequently quoted factor in generic literature about trust-building is integrity. Feeling that the people we are making business with are honest and will maintain their promises, and that they care about the others' well-being, is an essential factor in trust-building. Other frequently cited factors are openness, positive previous experiences, reputation and tradition, personal bonds, good treatment and producers' professionalism (Table 1). Direct contact between actors let to evaluate these elements and to build trust.

The process of trust building can be divided on two phases: a first one of bond generation or "Initial trust" (McKnight and Chervany, 2001) and a second one of confidence preservation. In the first phase, producer's integrity and reputation are among the major influencing factors. In

Table 1 - Database with information on studies of food trust generators among consumers and on studies of SFSCs advantages.

<i>Trust generators</i>	<i>A sample of studies</i>
Integrity and reputation: perception of honesty and responsibility towards customers	Fritz and Fischer, 2007; Lombart and Louis, 2014; McKnight and Chervany, 2001; Migliore <i>et al.</i> , 2015; Pieniak <i>et al.</i> , 2007
Openness: transparency, traceability, information access	Pejic <i>et al.</i> , 2013; Pieniak <i>et al.</i> , 2007
Positive previous experiences	Fritz and Fischer, 2007; Jansen and Hamm, 2011
Personal bonds	Fritz and Fischer, 2007
Good customer service and kindness	Fritz and Fischer, 2007
Professionalism: perception of knowledge and experience possession	Fritz y Fischer, 2007; Jansen and Hamm, 2011; Lombart and Louis, 2014; McKnight and Chervany, 2001; Pieniak <i>et al.</i> , 2007
<i>SFSC advantages</i>	<i>A sample of studies</i>
Higher transparency and traceability	Lanfranchi and Gianetto, 2015
Rural development, employment generation, costs reduction and increase of farmers' income	Carbone <i>et al.</i> , 2007; Kneafsey <i>et al.</i> , 2013; Lanfranchi and Gianetto, 2015; Mundler and Laughrea, 2016
Higher quality foods	Aubry and Kebir, 2013; Carbone <i>et al.</i> , 2013; Kneafsey <i>et al.</i> , 2013
Environmental sustainability	Lanfranchi and Gianetto, 2015; Mundler and Laughrea, 2016
Lower prices	Carbone <i>et al.</i> , 2013; Lanfranchi and Gianetto, 2015
Direct contact	Aubry and Kebir, 2013; Carbone <i>et al.</i> , 2013; Casia <i>et al.</i> , 2012

the second phase, trust is under constant evaluation, and openness is among the most influencing factors (Table 1). The need for face-to-face interaction is often perceived as a prerequisite for diffusion of knowledge, because it allows for trust building, which in turn is critical to share knowledge. "Knowledge sharing" is defined as the provision or receipt of task information, know-how and feedback regarding a product or procedure (Mooradian *et al.*, 2006). Absorption of knowledge requires time, therefore, spend time and meeting places would foster knowledge sharing (Ipe, 2003). The amount of information available to assess another's abilities, intentions, and behaviors within a relationship provides more opportunity for people to develop a shared vision and language and so increase trust in one another's competence (Abrams *et al.*, 2003). Establishing communication mechanisms in supply chains increases trust building and knowledge sharing (Cheng *et al.*, 2008).

1.2. Short Food Supply Chains as trust rebuilders

Consumption is a conscious act of exercising choice and, as a consequence, the consumer actively participates in the creation of a fairer society (Schifani and Migliore, 2011). SFSCs present several attributes that place them in a favourable situation to regenerate the public trust that regular agri-food systems are losing (Table 1). First, SFSCs offer consumers what is lacking in conventional agri-food systems: closeness and transparency. Second, SFSCs show a better performance in most of the areas related to economy, the environment, ethics, health impacts and social consequences, such as biodiversity conservation, nutritional value or producers' income (Schmitt *et al.*, 2017). Following the means-and-chain theory, consumers would make their choices driven not solely by products' concrete attributes, but also by the final values the products can help to achieve (Gutman, 1982).

In consequence, SFSC products would be better placed to respond to several consumers' personal concerns. Third, a new kind of consumer is asking for a more central position in food production and distribution processes, along with new forms of cooperation between farmers and consumers (Bloemmen *et al.*, 2015; Hayden and Buck, 2014; Moschiz, 2008; Nost, 2014). The prototype of this new kind of consumer is the *prosumer*, which corresponds to the most frequent type consumer in SFSCs. The term prosumer is generally attributed to Alvin Toffler. He proposes that "contemporary society is moving away from the aberrant separation of production and consumption and towards a 'third wave' that, in part, signals their reintegration in the rise of the prosumer" (Ritzer and Jurgenson, 2010). However, the demand for a higher implication in agri-food related processes is not restricted to *prosumers*, as increasing sectors of society are motivated for these commercial interactions (Pascucci and de-Magistris, 2016).

This situation represents a window of opportunity for SFSCs to strengthen their position in the agri-food system. Indeed, some of SFSC attributes are already being used by farmers in their strategies to face agri-food system challenges, such as the establishment of direct relationships between producers and consumers, and the valorization of regional products (Schermer *et al.*, 2010). For the last few years, SFSCs have been spreading in Europe, although their impact remains limited (EIP-AGRI, 2015). One of the best opportunities for SFSC rise is the capture of consumers' vanishing trust, but this also remains a major challenge for producers. Further research to cast some light on the different processes to build consumer trust in SFSCs is needed.

The objective of this study was to analyse the relationship between trust and SFSCs, and to identify consumers' preferences on SFSCs' attributes and typologies. The final goal was to map consumers' demands, so they can be considered in the definition of SFSC promotion policies.

2. Materials and methods

A survey was conducted online and distributed among the Facebook followers of the Spanish Consumers Organization (OCU). The pro-

liferation of social media applications such as online communities, social networking sites or blogs gives the public new means for receiving, and, more importantly, providing information (Elghannam *et al.*, 2017). OCU is the most important Spanish consumers association. OCU develops a very important activity in mass media and social networks, with more than 400.000 followers all around Spain. Another recently published work (Cruz Macein and Benito Barba, 2018) highlighted the interesting profile of these followers. Facebook OCU followers are a more open profile than OCU members. The latter pay to get some specific information and services. However, the first ones just follow some open access information and they do not pay any fee. These followers are not Spanish average consumers, they are warier consumers and they represent one of the most important potential market niche for SFSCs in Spain. Currently, SFSCs are supported by activist consumers with different strong motivations (environment, rural development, health...), however, the expansion of this market niche is very limited. Next programming period for Common Agricultural Policy (2021-2027) will emphasize SFSCs and other market niches are necessary in order to scale up SFSCs. These wary consumers can be a good option. They have a very high willingness to buy in SFSC, however some barriers are hinder them from participating more often in SFSCs.

A brief post about SFSCs and the survey was added in the Facebook OCU profile. This post included a link to the online survey. A total of 423 responses were collected from all around Spain during the months of August and September 2017. Previously, a pilot test survey was performed with consumers (n= 15) in July to close the questions and minimized the biases. We are dealing with convenience sampling focused on OCU followers. They are aware consumers and they represent one of the most important potential market for SFSCs in Spain (Cruz Macein and Benito Barba, 2018). Profile of respondents has been tested with OCU social network managers.

The survey is divided in two blocks with ten main closed questions, some of them multi-questions (Annex 1). The first block perceptions with regard to food supply chain. This block includes

Table 2. Sample.

		%
Sex	Men	19.4
	Women	54.5
	Dk/Da	26.1
Age	<35	27.7
	35-50	42.7
	>50	3.3
	Dk/ Da	26.3
Studies	University studies	52
	No university studies	22
	Dk/ Da	26

questions about concern and information about food. In addition, there are questions about drivers of trust on the different food chain stakeholders. The second block is focused on SFSCs. It includes questions about willingness and reasons to buy in different SFSCs, and barriers and drivers for buying in SFSC.

The survey was designed using a 0 to 10 rating scale classification since it allows factorial techniques such as Principal Components Analysis (PCA) (Abascal and Díaz de Rada, 2014). An 11-point scale is able to get a much broader spread of the results yielding better predictive analysis. On the other hand, Five-point, seven-point and 10-point scales are relatively easy to use. Although shorter rating scales are rated as quicker to use, scales with 10 and 11 alternatives are much preferred to express respondent feelings adequately (Taherdoost, 2019).

Descriptive statistics and bivariate correlations were used. For all analyses, the level of significance was a set to <0.05 . Exploratory factor analyses, PCA, were performed. In the extraction method by principal components, the factors obtained are the autovectors of the matrix of rescaled correlations. The statistical contrasts used to evaluate the goodness of the fit of the factorial models formulated were: the mean of the KMO (Kaiser-Meyer-Olkin) measure and Bartlett's test of sphericity. In this study, a factorial PCA was carried out by a Varimax rotation with Kaiser normalization.

Initially, all independent variables were analyzed using PCA as a data reduction technique. Finally, PCA was focused on two key issues getting a better simplified structure. These issues were defined as *SFSC form* and *SFSC content or core*, where *SFSC form* refers to the existence or absence of intermediary agents, and *SFSC content* refers to the nature of the warranty for food safety.

3. Results

3.1. Consumers' trust on food supply chains

Results showed that surveyed consumers are concerned about food safety (8.3/ 10) and, at the same time, they considered that they do not have enough information about the food products they acquire (5.1/ 10). Concern about food safety was associated to a lack of information

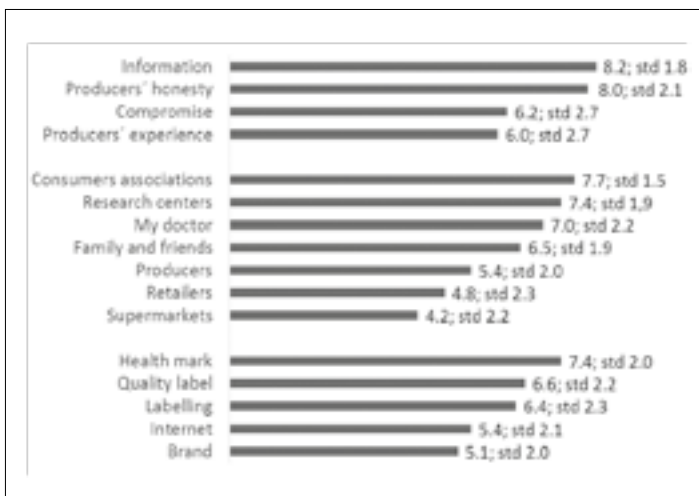


Figure 1 - Drivers of trust.

Main drivers of trust. It presents the average of trust of three types of drivers. First group (from information to producers' experience) includes producers' characteristics that work like drivers of trust. Second group (from research centres to supermarkets) are driver of trust people. And third group focuses on information exchange mechanisms (from health mark to brand) that work like driver of trust. All of them are evaluated from consumers point of view (n=423). Rating is from 0 (low trust) to 10 (high trust).

Table 3 - Consumers' willingness to buy in each SFSC category (n=423).

SFSC type	%
Farmer markets	68
Willingness to buy directly in the farm	67
Willingness to participate in a collective food buying group	61
Ecologic food shop	60
Willingness to buy directly to the farmer with a periodic contract signature	59
Internet	31

(C.Pearson=-0.065; Sig.bilateral=.028). In this situation, trust plays a key role in the relationship between consumers and food producers.

The main trust drivers (Figure 1) indicated by this sample were information availability (8.2/ 10) and producers' perceived honesty. Surveyed consumers prefer information from consumers associations (7.7/ 10), research centers (7.4/ 10), health professionals and close relationships. On the contrary, they place little trust on producers (5.4/ 10) or retailers. Supermarket had the worst rating in consumers' trust (4.2/ 10).

Interestingly, the low punctuation for producers as trust deservers was accompanied by the consideration that producers are good professionals (7.3/ 10). This can be explained by the fact that consumers perceived that producers prioritise their profits rather than consumers' health (6.5/ 10) and that they are unconcerned about environmental issues (3.9/ 10).

On the other hand, health marks (7.4/ 10) and quality labeling (6.6/ 10) were important instru-

ments in the process of trust building. These factors offer relevant information about food safety to consumers.

3.2. Consumers' perception about SFSCs

The survey indicated that just 34% of respondents buy in any kind of SFSC, although an important percentage of surveyed consumers (69%) were willing to do so. This tendency increases with higher levels of concern about food safety and health risks (C.Pearson=,183; Sig. bilateral=.001). Preferred SFSC systems were producers organized markets (68%) and direct purchase at the farm (67%) (Table 3).

The main reason exposed by surveyed consumers to acquire SFSC products was obtaining higher quality products. Consumers' interest to have a direct contact with farmers and supporting rural development were also important factors in determining SFSC choice (Figure 2).

On the other hand, the main barriers for consumers to access SFSCs were the difficulties to find trustworthy producers and the higher efforts associated to this option. It is easier to buy in a supermarket or close to the home than in SFSCs (Figure 3).

3.3. Information exchange and intermediaries in SFSCs

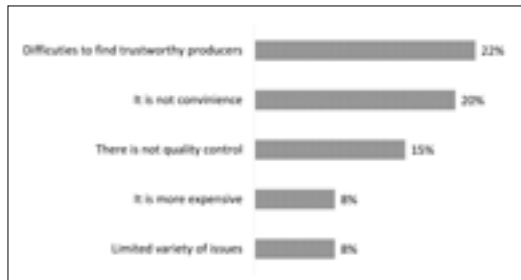
Information exchange between producers and consumers is a key issue in trust building processes, and SFSCs provide easier ways for it. Direct contact is a common practice in SFSCs, but

Figure 2 - Reasons to buy through SFSCs.



Main reasons to buy through SFSCs. It presents the percentage of surveyed consumers that consider each issue like a SFSCs opportunity (n=423).

Figure 3 - Barriers to buy through SFSCs.



Main barriers to buy through SFSCs. It presents the percentage of surveyed consumers that consider each issue like a SFSCs barrier (n=423).

Table 4 - Total variance explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.422	34.600	34.600	2.422	34.600	34.600
2	1.878	26.824	61.424	1.878	26.824	61.424
3	.827	11.819	73.243	.827	11.819	73.243
4	.610	8.708	81.951			
5	.486	6.940	88.891			
6	.458	6.548	95.439			
7	.319	4.561	100.000			

Seven variables have been reduced in three factors (73.2% of cumulative variance explained). Each component focuses on a kind of relationship between producers and consumers.

Table 5 - Component Score Coefficient Matrix.

	Component		
	1	2	3
Willingness to participate in a collective food buying group	.791		
Willingness to buy directly to the farmer with a periodic contract signature	.780		
Willingness to buy directly in the farm	.766		
Trust on supermarket		.813	
Trust on retailer		.756	
Trust on family and friends		.708	
Willingness to buy in farmer markets			.678

This matrix highlights only the highest scores for each component. It clarifies how each component has been built.

SFSC definition opens the way for the participation of intermediary agents. However, the direction and magnitude of their influence remains to be assessed. Conducted PCA included variables about consumers' willingness to buy in different SFSCs with direct contact and their trust on a number of intermediaries.

PCA clustered variables in three components (KMO= 0.7). Component 1 grouped those variables associated with direct contact ("Willingness to participate in a collective food buying group", "Willingness to buy directly to the farmer with a contract signature", "Willingness to buy directly in the farm"). This component reflected the willingness of a strong reconnection with farmers. It explains a 34.6 of total variance. On the other hand. Component 2 clustered variables related to trust on different intermediaries ("Supermarket", "Retailer" and "Family and friends"). This component does not focus on farmers. It focuses on intermediaries. Finally, component

3 differentiated farmer markets as a special element. This component is a mix of component 1 and 2. It focus on a direct relationship with farmers but in a market.

3.4. SFSC content or core: food safety certification in SFSCs

Food safety is the first driver for SFSC products consumption. Labelling or certification offer warranties about the quality of food, especially when consumers do not meet producers in person. However, the role of labelling and certification when direct contact occurs remains to be evaluated. Next PCA focused on the content of the relationship between producers and consumers. It included variables about trust on several certification systems, and at the same time it analysed consumers' perception of farmers' behaviour (KMO=0.7).

Component 1 (trust on research centre, trust on quality label, trust on health mark) included

Table 6 - Total variance explained.

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.625	43.747	43.747	2.061	34.349	34.349
2	1.242	20.697	64.444	1.806	30.096	64.444
3	.759	12.657	77.102			
4	.685	11.420	88.521			
5	.412	6.867	95.388			
6	.277	4.612	100.000			

Six variables have been reduced in two factors (64.4% of cumulative variance explained). Each component focuses on a trusted source. First component highlights on third party certification. Second component underlines the direct relationship with the farmers.

Table 7 - Rotated Component Matrix.

	Component	
	1	2
Trust on research centre	.673	
Trust on quality label	.855	
Trust on a health mark	.851	
Farmers "...offer safety food"		.783
Farmers prioritize their profit before consumers' health		-.742
Farmers "...are concern about environment"		.762

This matrix highlights only the highest scores for each component. It clarifies how each component has been built.

variables focused on the certification approach. That is third party certification (public institutions, NGOs or certification companies). Farmers are not the main reference from the food safety point of view. It explained 34.3% of variance. On the other hand, Component 2 (farmers' concern about food safety and environment) clustered consumers' perception about producers' behaviour. This component pay attention on farmers as a reference for food safety.

4. Discussion

In the light of these results, Spanish consumers are significantly concerned about the quality of food. Additionally, surveyed consumers show detachment and mistrust in conventional agri-food systems, as observed in Italy, Canada or Australia (Giampietri *et al.*, 2018; Levkoe, 2015; Roy *et al.*, 2017). On the other hand, this survey confirms the narrow relationship between consumers' perception about food safety and the lack of information, as observed in previous

studies (Calle *et al.*, 2012; Carbone *et al.*, 2007; Dierks, 2005; Ding *et al.*, 2013). Information exchange and honesty are signalled as key factors in trust-building processes, as found by Migliore *et al.* (2015). In this sense, as showed in previous research, these results also highlight the relevance of trust in farmer markets, as it has been proven that it can be an effective substitute for full knowledge (Greibitus *et al.*, 2015).

Although this study shows high levels of interest about SFSCs, a very small percentage of consumers use this option to acquire their food products. SFSCs have the potential to continue growing, but important barriers difficult their development, as the Agricultural European Innovation Partnership (EIP-AGRI) concludes (EIP-Agri, 2015).

The first barrier for SFSCs in Spain is the distance between producers and consumers. Consumers do not meet trustworthy farmers as a consequence of the absence of close links between rural and urban areas, as well as current leading role of supermarkets in the food chain.

In addition, consumers' perception about farmers highlights some relevant differences with their values. From the point of view of consumers, health, and environment are not too much important for farmers. Any strategy for SFSCs sprawl needs to be preceded by the rapprochement of food producers and consumers, as it has happened in Canada or California (Cleveland *et al.*, 2014; Levkoe, 2015). The second major barrier for SFSCs are logistics. The lower level of organization needed to acquire food through conventional channels, and the higher presence of supermarkets and conventional food stores in urban areas, makes it easier to buy in these establishments than through SFSCs. It would be necessary to bring consumers closer to SFSCs. The farmer markets are the best valued option. Intermediary agents play a conflicting role in the process of surpassing SFSC barriers. On the one hand, they improve commercial logistics, which facilitates the acquisition of SFSC products. On the other hand, they reduce the communication between consumers and producers. First PCA shows this reality, as it separates those factors associated to direct contact from those factors related to consumers' trust on intermediary agents.

These results showed that, while direct contact with food producers is preferred, or even critical, for a segment of consumers, another segment of the population accepts the involvement of intermediary agents. These contrasting preferences define the two extremes of the range of SFSC modalities.

Farmers' markets are a special case within SFSCs, as they facilitate logistics for consumers, while allowing direct contact with food producers. For this reason, farmers' markets receive a greater variety of customers than any other kind of SFSCs.

Survey results showed the relevance of what Casia *et al.* (2012) named as CCTI stimulus intangibles: customer, company, territory and interaction. This theory suggests that support to rural development and direct contact with the farmer are important incentives to choose SFSCs. Shared values between the consumer and the producer are also a key aspect for SFSC choice (Adler *et al.*, 2003). Another predictor of sustainable food preference is the importance of health and ethical values (Dowd and Burke,

2013). However, as observed in other studies (Aubry and Kebir, 2013; Carbone *et al.*, 2007; Kneafsey *et al.*, 2013), these results suggested that the acquisition of high quality and safe products is the primary aspect for SFSC choice. In that sense, quality assurance is also a major barrier for the absorption of a segment of consumers in SFSCs, as indicated by Migliore *et al.* (2015), who talk about "the black box of food quality in the short supply chain". Second PCA reflected consumers' segmentation towards this aspect, grouping factors related to the need for quality certification and those associated to environmental or social engagement.

Contrary to previous studies that did not find a direct relation between organic labels and consumer choices (Ritenthof and Klitgaard, 2015), These results clearly indicated the existence of a population segment that asks for quality certification as a necessary condition to purchase SFSC products. These data allow us to draw a conceptual map supported on two axes: *SFSCs form* (Axis 1) and *SFSCs content* (Axis 2). As indicated in section 3, *SFSCs form* refers to the existence or absence of direct relations between consumers and producers, while *SFSC content* refers to the use of quality certification or labels. Looking at the conceptual map, it can be notice that, while some consumers prefer to obtain direct information about food products on the hand of producers (F1E1), others find it enough, or even prefer, to get information through labeling or intermediaries (F2E1). On the other hand, it can be notice that some consumers search for products with safety or quality certification labels (F1E2), but others look for producers that share their personal values and beliefs (F2E2).

The intersection between these two axes defines four kinds of consumers preferences, that can be associated to four different categories of SFSC (Figure 4).

Type 1.- Prosumers (Pr): consumers that look for producers that share their personal values and beliefs and that like to have a direct contact with them. They prefer to participate in consumers' groups and to buy directly at the farm.

Type 2.- Logistics limited (LI): they are interested in sharing values with producers, but they do not prioritize to have direct contact, so they look

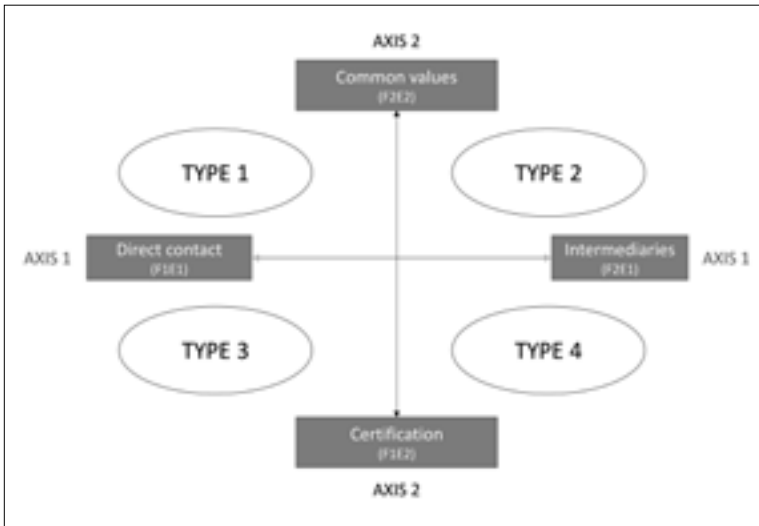


Figure 4 - Conceptual map. Classification of consumers according to SFSC priorities.

Combining above PCA components in a conceptual map we can get four types of consumers. Axis 1 is based on first PCA and Axis 2 is based on second PCA. Each type can receive a tag: type 1= prosumers (Pr), type 2= logistics limited (Ll), type 3= guaranteed concerned (Gc); type 4= certification focused (Cf). Text details their characteristics.

for intermediaries to simplify the purchase of food products. They tend to buy in organic stores.

Type 3.- Guarantees concerned (Gc): this type of consumer likes to have direct contact with producers, but they need further guarantees on the quality of food products. They get these guarantees by acquiring their products in markets backed by recognized organization or public administration (e.g., weekly food markets).

Type 4.- Certification focused (Cf): they do not need direct contact with producers, but a quality and safety certification of the products that they are buying. They are especially interested on local products and the type of commerce where they tend to buy their food products regular supermarkets (specialized shelves).

Public administration plays a different role towards each of these kinds of SFSCs. Because of that, when at national, regional or community level appears the intention to support SFSCs, it is important to determine the preferred option prior to any other action. Furthermore, when a SFSC model is already in place, it is also possible to define public policies that help to foster a transition from one model to another. For instance, if a community where certification focused population (type 4) is predominant would be interested in evolving towards a prosumer (type 1) or a logistics limited model (type 2), it would be necessary to develop actions that foster the creation of producers-consumers networks. The guiding

lines would be very different if the desired transition was towards more formal models. This same logic applies to SFSC producers that want to target other consumer groups.

The classification of consumers also serves to identify the best strategies to reduce barriers to SFSC choice (Table 4). Prosumers do not need further intervention, as they already engage with local producers to increase trust in food products and get them through SFSCs. In the case of Logistics limited type of group, it would be necessary to make access to SFSCs easier. Guarantees concerned consumers need external guarantees that the products that they are buying are safe, which could be achieved with public administration support. Certification focused group do not show special interest in changing their consumption patterns. A strategy to encourage the SFSC choice in this group could be to increase SFSC products presence in regular markets. However, this is unlikely to have a direct effect in consumers' trust. It might be a better strategy to carry out awareness campaigns, educating consumers in the functioning of agri-food systems, and promoting their interest in the products that they are buying.

Currently, it is possible to find regions in the Mediterranean countries where the direct relationship between food producers and consumers takes place. However, this paper focuses on those Mediterranean regions with an intensive

Table 8 - Strategies to reduce barriers to SFSC choice among different consumer types.

<i>Consumer type</i>	<i>Barrier</i>	<i>Strategy</i>
Pr	Already convinced	Quality and good treatment maintenance.
Ll	Logistics	Bringing SFSC products closer to consumers, increasing distribution networks.
Gc	Safety guarantees	Increasing public support: public spaces habilitation, organization collaboration, etc.
Cf	Logistics and safety	Increasing SFSC products presence in conventional spaces. Designing awareness campaigns to achieve their involvement.

urbanization process, an agro- industrial model and a radical disconnection between urban and rural areas. In these regions, small farmers need to find alternatives to the supermarkets, hypermarkets and discount stores. At the same time, some market segments are looking for a reconnection between consumers and producers.

This paper offers the perceptions of relevant potential consumers of SFSCs (Cruz Maceín and Benito Barba, 2018). The above conceptual map integrates all these perceptions. This map can help to different stakeholders (like farmers or policy makers) to design stronger marketing strategies according to their target.

5. Conclusions

Information exchange and direct contact are highly effective instruments in the process of trust building. SFSCs allow to meet these requirements. However, potential SFSC consumers' drivers are very heterogeneous. From a theoretical point of view, this paper offers a way of classifying consumers according to these drivers. The need for official or institutional warranties about food safety and the relationship between producers and consumers (direct or quasi-direct contact) are the main distinctive elements that set the difference when consumers choose their SFSC typology. This categorization has important implications from practical point of view. Promotion policies about SFSCs need to analyse what the consumers' preferences are. This paper notes a typology of SFSCs and the elements working in each type in order to build consumer' trust. Furthermore, it supports policy-makers and producers in designing promotion strategies for SFSCs. The categorization highlights different preferences and strategies in order

to foster a specific SFSC. At the same time, the conceptual map allows producers to identify where they are focusing their production and where they would like to offer their products.

The present paper focuses on social networks followers of consumers associations. They are not general consumers, so this information would complementize with other surveys focused on representative pools of consumers. In addition, it is relevant to contrast these results with consumers' perception whose purchase in SFSC.

References

- Abascal E., Díaz de Rada V., 2014. Analysis of 0 to 10-point response scales using factorial methods: a new perspective. *International Journal of Social Research Methodology*, 17(5): 569-584. <https://doi.org/10.1080/13645579.2013.799736>.
- Abrams L.C., Cross R., Lesser E., Levin D.Z., 2003. Nurturing interpersonal trust in knowledge-sharing networks. *Academy of Management Executive*, 17(4): 64-77. <https://doi.org/10.1177/0258042X0903400202>.
- Adler S., Fung S., Huber G., Young L., 2003. Learning our way towards a sustainable agri-food system. Three cases from Sweden: Stockholm Farmers Market, Ramsjö Community Supported Agriculture and Järna Initiative for Local Production. *Ekologiskt lantbruk*, 38: 2-40. <http://edepot.wur.nl/115386>.
- Allen P., Fitz Simmons M., Goodman M., Garner K., 2003. Shifting plates in the agrifood landscape: the tectonics of alternative Agrifood initiatives in California. *Journal of Rural Studies*, 19: 61-75. [https://doi.org/10.1016/S0743-0167\(02\)00047-5](https://doi.org/10.1016/S0743-0167(02)00047-5).
- Aubry C., Kebir L., 2013. Shortening food supply chains: A means for maintaining agriculture close to urban areas? The case of the French metropolitan area of Paris. *Food Policy*, 41: 85-93. <https://doi.org/10.1016/j.foodpol.2013.04.006>.

- Bloemmen M., Bobulescu R., Le N.T., Vitari C., 2015. Microeconomic degrowth: The case of Community Supported Agriculture. *Ecological Economics*, 112: 110-115. <https://doi.org/10.1016/j.ecolecon.2015.02.013>.
- Calle A., Soler M., Vara I., Gallar D., 2012. La desafección al sistema agroalimentario: ciudadanía y redes sociales. *Interface: A Journal for and about Social Movements*, 4(2): 459-489.
- Carbone A., Gaito M., Senni S., 2007. *Consumers' Buying Groups in the Short Food Chains: alternatives for trust*. Paper presented at the 1st International European Forum on Innovation and System Dynamics in Food Networks, February 15-17, Innsbruck (Austria).
- Casia F., Ugolini M., Bonfanti A., Cappellari C., 2012. The perceptions on Italian farmers' market shoppers and strategic directions for customer-company-territory interaction (CCTI). *Procedia - Social and Behavioral Sciences*, 58: 1008-1017. <https://doi.org/10.1016/j.sbspro.2012.09.1081>.
- Cheng J.H., Ye C.H., Tu C.W., 2008. Trust and knowledge sharing in green supply chains. *Supply Chain Management: An International Journal*, 13(4): 283-295.
- Cleveland D.A., Muller N.M., Tranovich A.C., Mazaroli D.N., Hinson K., 2014. Local food hubs for alternative food systems: a case study from Santa Barbara County, California. *Journal of Rural Studies*, 35: 26-36. <https://doi.org/10.1016/j.jrurstud.2014.03.008>.
- Coveney J., Mamerow L., Taylor A., Henderson J., Myer S., Ward P., 2012. Comparative examination of trust during times of a food scandal in Europe and Australia. *Food and Public Health*, 2(6): 202-212. <https://doi.org/10.1186/1471-2458-13-229>.
- Cruz Maceín J.L., Benito Barba A., 2018. *Canales cortos de comercialización*. Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario Consejería de Medio Ambiente y Ordenación del Territorio. Comunidad de Madrid. http://www.comunidad.madrid/sites/default/files/doc/medio-ambiente/canales_cortos_de_comercializacion_en_la_cm_0.pdf.
- Dierks L.H., 2005. Determinants of trust in food safety information. *Jahrbuch der Österreichischen Gesellschaft für Agrarökonomie*, 14: 111-122. www.boku.ac.at/oega.
- Ding Y., Veeman M.M., Adamowicz W.L., 2013. The influence of trust on consumer behaviour: an application to recurring food risks in Canada. *Journal of Economic Behaviour and Organization*, 92: 214-223. <https://doi.org/10.1016/j.jebo.2013.06.009>.
- Dowd K., Burke K.J., 2013. The influence of ethical values and food choice motivations on intentions to purchase sustainably sourced foods. *Appetite*, 69: 137-144. <https://doi.org/10.1016/j.appet.2013.05.024>.
- EIP-AGRI, 2015. EIP-AGRI Focus group: *Innovative Short Food Supply Chain management. Final report*. https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_fg_innovative_food_supply_chain_management_final_report_2015_en.pdf. Accessed July 20th, 2020.
- Elghannam A., Escribano M., Mesias F., 2017. Can social networks contribute to the development of short supply chains in the Spanish agri-food sector? *New Medit*, 16(1): 36-42. <https://newmedit.iamb.it/2017/03/15/can-social-networks-contribute-to-the-development-of-short-supply-chains-in-the-spanish-agri-food-sector/>.
- European Commission, 2013. Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005.
- European Committee of the Regions, 2011. 88th Plenary Session held on 27 and 28 January 2011. Opinion of the Committee of the Regions on 'Local food systems' (outlook opinion) (2011/C 104/01).
- Fritz M., Fischer C., 2007. The role of trust in European food chains: theory and empirical findings. *International Food and Agribusiness Management Review*, 10(2): 141-164.
- Giampietri E., Verneau F., Del Giudice T., Carfora V., 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>.
- Grebitus C., Steiner B., Veeman M., 2015. The roles of human values and generalized trust on stated preferences when food is labelled with environmental footprints: insights from Germany. *Food Policy*, 52: 84-91. <https://doi.org/10.1016/j.foodpol.2014.06.011>.
- Gutman J., 1982. A means-end chain model based on consumer categorization processes. *Journal of Marketing*, 46: 60-72. <https://doi.org/10.2307/3203341>.
- Ipe M., 2003. Knowledge Sharing in Organizations: A Conceptual Framework. *Human Resource Development Review*, 2(4): 337-359.
- Hayden J., Buck D., 2014. Doing community supported agriculture: tactile space, affect and effects of

- membership. *Geoforum*, 43: 332-341. <https://doi.org/10.1016/j.geoforum.2011.08.003>.
- Higgins V., Dibden J., Cocklin C., 2008. Building alternative agri-food networks: certification, embeddedness and agri-environmental governance". *Journal of Rural Studies*, 24: 15-27. <https://doi.org/10.1016/j.jrurstud.2007.06.002>.
- Jansen M., Hamm U., 2011. Governmental and private certification labels for organic food: consumer attitudes and preferences in Germany. *Food Policy*, 49: 437-448. <https://doi.org/10.1016/j.foodpol.2014.05.011>.
- Kjærnes U., 2014. *Consumer trust in food: a European study of the social and institutional conditions for the production of trust*. "Trusinfood". Funded EU Research project (2002-2004).
- 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*. JRC Scientific and Policy Reports. Luxembourg: Publications Office of the European Union. <https://doi.org/10.2791/88784>.
- Kriege-Steffen A., Boland H., Lohscheidt J., Schneider F., Stolze M., 2010. Transparent food and consumer trust. *Proceedings in Food System Dynamics and Innovation in Food Networks*, 2010: 452-462.
- Levkoe C.Z., 2015. Strategies for forging and sustaining social movement networks: a case study of provincial food networking organizations in Canada. *Geoforum*, 58: 174-183. <https://doi.org/10.1016/j.geoforum.2014.11.013>.
- Mayer R.C., Davis J.H., Schoorman F.D., 1995. An integrative model of organizational trust. *Academy of Management Review*, 20(3): 709-734.
- McKnight D.H., Chervany N.L., 2001. Conceptualizing trust: a typology and e-commerce customer relationship model. In: *Proceedings of the 34th Hawaii International Conference on System Sciences*. January 6, Maui, HI.
- Migliore G., Schifani G., 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>.
- Mooradian T., Renzl B., Matzler K., 2006. Who Trusts? Personality, trust and knowledge sharing. *Management Learning*, 37(4): 523-540. <https://doi.org/10.1177/1350507606073424>.
- Morgan R.M., Hunt S.D., 1994. The commitment-trust theory of relationship marketing. *Journal of marketing*, 58: 20-38. <https://doi.org/10.2307/1252308>.
- Moschitz H., 2008. *Knowing food - a privilege for the concerned consumer? A research programme on organic urban-rural relationships*. Paper presented at the Summer School of the European Society of Rural Sociology (ESRS), Veszprém (Hungary).
- Nost E., 2014. Scaling-up local foods: commodity practice in community supported agriculture (CSA). *Journal of Rural Studies*, 34: 152-160. <https://doi.org/10.1016/j.jrurstud.2014.01.001>.
- Pascucci S., de-Magistris T., 2016. The effects of changing regional agricultural knowledge and innovation system on Italian farmers' strategies. *Agricultural Systems*, 104: 746-754. <https://doi.org/10.1016/j.agsy.2011.07.005>.
- Pejic V., Gorenak I., Orthaber S., 2013. The role of trust in the food supply chain. *Business Logistics in Modern Management*, 13: 33-39.
- Pieniak Z., Verbeke W., Scholderer J., Brunsø K., Ottar S., 2007. European consumers' use of and trust in information sources about fish. *Food Quality and Preference*, 18: 1050-1063. <https://doi.org/10.1016/j.foodqual.2007.05.001>.
- Ritenthof I., Klitgaard K., 2015. Organics, trust, and credibility: a management and media research perspective. *Ecology and Society*, 20(1): 6. <http://dx.doi.org/10.5751/ES-07169-200106>.
- Ritzer G., Jurgenson N., 2010. Production, Consumption, Prosumption: The nature of capitalism in the age of the digital 'prosumer'. *Journal of Consumer Culture*, 10(1): 13-36. <https://doi.org/10.1177%2F1469540509354673>.
- Roy H., Hall C.M., Ballantine P.W., 2017. Trust in local food networks: the role of trust among tourism stakeholders and their impacts in purchasing decisions. *Journal of Destination Marketing and Management*, 6(4): 309-317. <https://doi.org/10.1016/j.jdmm.2017.07.002>.
- Schermer M., Renting H., Oostindie H., 2010. Collective farmers' marketing initiatives in Europe: diversity, contextuality and dynamics. *International Journal of Sociology of Agriculture and Food*, 18(1): 1-11.
- Schifani G., Migliore G., 2011. Solidarity Purchase Groups and the new critical and ethical consumer trends: first results of a direct study in Sicily. *New Medit*, 10(3): 26-33. <https://newmedit.iamb.it/2011/07/11/solidarity-purchase-groups-and-the-new-critical-and-ethical-consumer-trends-first-results-of-a-direct-study-in-sicily/>.
- Schmitt E., Galli F., Menozzi D., Maye D., Touzard J.M., Marescotti A., Six J., Brunori G., 2017. Comparing the sustainability of local and global food products in Europe. *Journal of Cleaner Production*, 165: 346-359.

Taherdoost H., 2019. What Is the Best Response Scale for Survey and Questionnaire Design; Review of Different Lengths of Rating Scale / Attitude Scale / Likert Scale. *International Journal of Academic Research in Management (IJARM)*, 8(1).

Torquati B., Viganò E., Taglioni C., 2016. Construction of Alternative Food Networks for organic products: A case study of “Organized Groups of Supply and Demand”. *New Medit*, 15(4): 53-62. [https://](https://newmedit.iamb.it/2016/12/08/construction-of-alternative-food-networks-for-organic-products-a-case-study-of-%ef%bf%bdorganized-groups-of-supply-and-demand/)

newmedit.iamb.it/2016/12/08/construction-of-alternative-food-networks-for-organic-products-a-case-study-of-%ef%bf%bdorganized-groups-of-supply-and-demand/.

Yu M., Nagurney A., 2013. Competitive food supply chain networks with application to fresh produce. *European Journal of Operational Research*, 224: 273-282. <https://doi.org/10.1016/j.ejor.2012.07.033>.

Annex 1 - Survey questions

1. To what extent do you feel informed about food safety? (0= nothing informed and 10= strongly informed)

2. To what extent do you care the food safety? (0= nothing worried and 10= strongly worried)

3. To what extent do you agree with following statements? (0= nothing agree and 10= strongly agree) “Farmers...

a. “...inform perfectly about their productions”	
b. “...know how to grow”	
c. “... offer safety food”	
d. “...prioritize food safety over their benefits”	
e. “...prioritize their benefits over the food safety”	
f. “...are concerned with gaining the trust of consumers”	
g. “...are concerned with agricultural environmental impact”	

4. How often do you buy... (0= never; 10= always)

a. Local products	
b. Protected designation of origin (PDO)	
c. Food directly from farmers	
d. Organic food	

5. To what extent do you trust on the following people about food safety? (0= nothing and 10= absolutely)

Supermarkets	
Retailers	

Producers	
Family and friends	
My doctor	
Research centers	
Consumers associations	

6. To what extent do you trust on the following elements about food safety? (0= nothing and 10= absolutely)

Brand	
Internet	
Labelling	
Quality label	
Health mark	

7. What is the main reason of consumers to buy through SFSCs? (circle one)

Higher quality food	
Rural development support	
Direct contact with farmers	
It is cheaper	
Lower environmental impact	

8. What is the main barrier of consumers to buy through SFSCs? (circle one)

Limited variety of issues	
It is more expensive	
There is not quality control	
It is not convenience	
Difficulties to find trustworthy producers	

9. To what extent do you consider important the following trust drivers? (0= nothing and 10= absolutely)

Producers' experience	
Producers' compromise	
Producers' honesty	
Clear information offered by the producer	

10. To what extent are you willing to buy in...? (0= nothing and 10= absolutely)

Willingness to buy directly in the farm	
Willingness to buy in farmer markets	
Willingness to participate in a collective food buying group	
Willingness to buy directly to the farmer with a periodic contract signature	