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Research paper

Sharing values or sharing costs? Understanding consumer participation in alternative food networks

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ABSTRACT

In this paper we investigate values and transaction conditions in consumer participation in alternative food networks (AFNs). We use and combine a collective action perspective with elements of ethical consumption (individual values) and transaction cost economics as a theoretical background to conceptualise this participation. Our research is motivated by the evidence that the role and interplay between values and transaction conditions is still under-investigated in the socio-economic literature when it comes to understanding participation in AFNs. We use a case study in which we focus on an AFN located in Palermo, a metropolitan area in southern Italy. We collected data related to 303 individuals: 103 participants in the AFN and 200 non-participants. From a methodological perspective we used a propensity score matching approach. We were thus able to build a subsample consisting of only those individuals who were sharing a similar likelihood of participating in an AFN. Individuals with the same propensity score show a substantial equivalence in terms of covariates as if they were randomly selected to join an AFN. Our results indicate a statistically significant difference in some transactional conditions for AFN participants. Namely, when it comes to transactional conditions associated to food purchasing strategies, participants in AFNs are characterised by a higher level of (perceived) information uncertainty (e.g. price uncertainty and product information), negotiation uncertainty (e.g. relevance of the speed of sourcing, transportation hazards, and bargaining), and monitoring hazards (e.g. quality uncertainty), when compared to non-participants. These results are used to account for the heterogeneity of participants in SPGs in particular, and AFNs in general.

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1. Introduction

In the last few decades the emergence of new forms of cooperation between farmers and consumers has been highlighted worldwide. Farmers' markets (FMs), community-supported agriculture (CSA) and solidarity purchasing groups (SPGs) are some examples of cooperation between farmers and consumers leading to new organisational forms which are often termed alternative food networks (AFNs) [77,10,102]. AFNs represent a fast-spreading phenomenon, both in the US and Europe. To illustrate, in the US the number of FMs and so-called direct-to-consumer marketing grew from 1755 in 1994 to 8144 in 2013 [6,54,95]. In Europe the spread of AFNs is more recent, and data are still not systematically recorded.

In the UK 450 farmers' markets have been operating since 2004 [43] and about 200 CSAs [94]. In France about 600 CSAs are active [94] while in Italy 1217 FMs are officially listed in the largest Italian farmers' association database, namely Coldiretti—CampagnaAmica. SPGs have also boomed in Italy, especially in the main urban centres, representing an increasingly important source of food purchase for urban consumers, especially if fresh produce is considered [71,76]. The SPG phenomenon started developing in Italy at the end of the 1990s. One of the common activities among SPGs is the purchase of food products from local producers. SPG members select and contact local farmers who become members of an SPG if, and only if, they agree to lower the environmental impact of their production activities, respect worker rights, and are willing to collaborate in building a reciprocal, though informal, trust [82,10]. In general within the European context Italy represents one of the countries where AFNs, and particularly SPGs, have been spreading more rapidly and widely (i.e. both in the north and the south, both in urban and rural areas), assuming multiple forms [10,76]. In Italy

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alternative forms of cooperation between farmers and consumers have also originated wide social and political phenomena, such as the Slow Food Movement, which have in time assumed a global dimension.

In terms of the relevant literature, AFNs have been basically analysed through three different lenses, namely ethical consumption [50], rural development [75,77,65], and a supply chain or organisational perspective [41,5,102].

From an ethical consumption perspective AFNs are seen and analysed as social devices that promote consumer awareness for purchasing locally grown food products, thus reducing environmental impacts of food consumption (i.e. greenhouse emissions), preserving biodiversity and supporting rural communities and cultural heritage [12,24,66]. Accordingly, purchasing food products by participating in AFNs is seen as an act of ethical consumption, because consumers are seeking additional “non-material” values of those products, such as social, environmental, health and political attributes, besides those values related to the “material” use of the products [60]. Consequently, consumers who are more sensitive and oriented towards ethical attributes of their food purchase acts are also more likely to participate in AFNs [49].

From a rural development perspective AFNs are seen as food regimes/systems contributing to build farmer-consumer relations, proving beneficial for the wellbeing of rural as well as urban communities, supporting rural heritage, traditional and small-scale farming, and resilience agriculture [34,77,62]. AFNs are also framed as “opposite” to mainstream and globalised food regimes/systems, which are considered to be lacking in embeddedness in local cultures and economies [75]. In AFNs governance mechanisms, social embeddedness and economic performance (i.e. sales, marketing, etc.) are strongly inter-related, at least more than in mainstream food regimes/systems [77]. Accordingly, AFNs are producer-consumer based systems which create new food supply practices, driven by values, beliefs and norms sustaining local resources [42].

Finally, the supply chain and organisational perspective looks at AFNs as the result of new vertical coordination mechanisms between chain actors when locally food products are transacted [41,102]. In this perspective AFNs are viewed more as a way of shortening the food supply chain by means of cooperation and trust between participants, in order to cost-economise transactions of credence food products, most likely locally and/or organically grown [70]. Thus participation in AFNs is mainly analysed through the lenses of supply chain management and organisation, and motivation for participation derived by the aim of setting up an efficient organisation [102]. In this respect reducing transaction costs is a key factor.

Taking stock of these three perspectives, in this paper we conceptualise an AFN as an organisation based on cooperation between farmers and consumers. More specifically, we look at AFNs as an example of community-based self-organised groups [68,56,73]. A community-based group is often made up by individuals who decide to share the costs and/or benefits of producing, managing and/or consuming resources because it is more efficient (less costly or risky) than an individual-based action [68]. These groups are often based on (i) *common and shared interests or values* among participants and (ii) requiring some kind of *common action* supporting such shared interests. Finally, a community-based group is based on (iii) *voluntary* participation [56]. The presence of group involvement, shared interests/values, common action and voluntary participation make community-based self-organised groups a type of organisation of collective actions [101,69].

Analysis of collective actions in agricultural and rural studies is not new, since collective actions are found in different agri-food systems worldwide. For example, the topic of collective actions is analysed in the vast body of literature on agricultural cooperatives

and producers' organisations, extensively discussing the role of collective actions in agricultural and rural development [32]. The role of collective actions has been widely analysed in rural development interventions [56], to assess the use of natural resources [56,44,2] as well as marketing strategies and smallholder access to markets in several contexts [7,53].

Despite this vast body of literature on collective actions, fewer studies have focused on AFNs as organisations of collective action. Particularly what makes AFNs different from other organisations dealing with collective actions in agri-food systems, is the fact that AFNs mainly consist of participants who may have contrasting interests (i.e. farmers and consumers), but still potentially share common values and norms [8,11]. In AFNs individuals engage in common actions, such as co-producing and distributing food products, or sharing resources in order to protect biodiversity, and produce local and organic foods [70]. In some types of AFNs, such as FMs and CSAs, organisation of the collective actions mainly involves producers, while consumers are more engaged in the marketing oriented actions. In others, such as SPGs, consumers are indeed the main collective action organisers, while producers are engaged mainly in the marketing phase/action. However, in all these cases participation in AFNs is indeed voluntary for both producers and consumers. Thus, in our view, groups of consumers cooperating with farmers in AFNs represent a way in which collective actions are translated into a specific organisational form when it comes to co-producing and transacting locally grown and/or organic food products.

Assuming a collective action perspective raises a number of less widely investigated research questions, and leads to better understanding of the types of individuals who decide to cooperate and engage in an AFN. In particular, while the literature highlights that individuals with similar interests or values are more likely to cooperate and engage in collective actions, empirical evidence shows that individuals with similar values, and subject to the same socio-economic conditions, do not always engage in such action. Why? Previous research on AFNs indicates that similarity in social-related features, such as values and social preferences, are factors profiling types of individuals participating or not participating in AFNs [51,92]. However, while these studies also control for the role of economic incentives in participation decision-making, they still fail to address explicitly the role of transactional conditions and transaction-cost economising behaviour, which also appears relevant to participation decisions [102]. Our hypothesis is that a further element leading individuals to organise collective actions, as in the case of AFNs, can be associated to the transactional conditions of their food purchase strategies. According to Williamson [100] transactional conditions are determinants of transaction costs. The main types of transactional conditions concern the level of (asset) specificity, uncertainty and frequency [100,57]. They are distinguished from behavioural conditions or attributes, such as bounded rationality and opportunistic behaviour, which refer to the characteristics of the decision makers and their behaviours, which also determine transaction costs [100,57]. Therefore, from a transaction costs perspective, consumers participating in an AFN seek cooperation with farmers because they are largely interested in purchasing local and organic food, which has a high level of uncertainty due to their credence characteristics [70]. This is due to the fact that detecting credence characteristics is highly uncertain, generating high transaction costs for buyers (consumers), both ex-ante and ex-post [96]. Particularly since some participants may systematically seek food products with credence characteristics, they might also have a different structure of (perceived) transactional conditions, such as uncertainty, related to food purchase if compared with non-participants. For example, they might be more keen to invest in information and monitoring costs in their purchasing strategies. This type of consumer differs from others who

engage with farmers and organise a collective action only because they seek social justice, to preserve the rural heritage or endangered species/varieties. In other words, while some participants may be interested in participating because AFNs can ensure a fair price for farmers, protect local species or cultural heritage, others may be interested in participating in an AFN to better manage uncertain transactional conditions related to the credence attributes of their food products (i.e. organic or locally produced).

From our perspective, taking into account the role of general individual values and transactional conditions can help scholars gain insights and explain differences in AFN participants. Moreover, by understanding the role of transactional conditions and costs in profiling the type of consumers participating in AFNs scholars and practitioners can better understand the mechanism of formation and diffusion of collective actions in agro-food systems, as well as in other domains.

The aim of this paper is therefore to contribute to the literature on the organisation of collective actions, namely AFNs, by analysing participant characteristics in terms of individual values, for example looking at their self-orientation, hedonism, solidarity and openness to change, as well as in terms of their food purchasing strategies when it comes to dealing with uncertain transactional conditions. In order to tackle this question we use an interdisciplinary and theory-building approach: we combine the Ostrom approach to the analysis and organisation of collective actions [68,69] with conceptual elements grounded in the empirical analysis of individual values¹ [83] and the economic organisation of food value chains [57], as well as (transaction cost) economics of credence food [96]. In particular, to understand the role of transactional conditions in explaining consumer participation in AFNs, we isolate the influence of different individual values. In other words, differences in terms of perceived uncertain transactional conditions must also be relevant when individuals participating or not participating in an AFN are “similar” in terms of values. Therefore in this paper we focus on differences in perception of transactional conditions among a group of participants and a group of non-participants in an AFN, while controlling for general individual values and socio-economic variables.

We use a case study, in which we focus on an AFN in Palermo, a metropolitan area in southern Italy, which is a type of SPG. The Palermo SPG represents an interesting case study for a number of reasons. First, the participation mechanism used by the Palermo SPG members resembles to a great extent the procedure used by many other SPGs and AFNs in Italy and in Europe, which then adds to the generalisability of our results. Secondly, since the Palermo SPG has been widely investigated for several years by researchers at the University of Palermo, it represents a richer case with more information available compared to other cases. This is particularly important if researchers need to investigate participation and to understand complex social mechanisms underlying SPG functioning. The empirical evidence from the case is compared and contrasted with results from other cases, and used to further reflect and theorise about the organisation of AFNs, in particular, and collective actions, in general.

The paper is structured as follows: in Section 2 we present our interdisciplinary conceptual approach, and an overview of the literature on AFNs as an organisation of collective actions, focusing on

the role of values and transactional conditions related to food purchase strategies as factors of participation. In Section 3 we present how we made both values and transactional conditions operational in this specific research setting. In Section 4 we describe the data and the empirical strategy. In Section 5 the results are presented while in Section 6 discussion and conclusions are provided.

2. Conceptualising AFNs as organisations of collective actions

In this paper we conceptualise AFNs as organisations in which participants constitute a self-organised group of farmers and consumers engaging in decisions and operations related to producing and distributing (credence) food [72]. The emergence and development of AFNs as organisations of collective actions can be explained by looking at the influence of contextual factors on participants’ decision to engage and organise, as well as participants’ features and traits [69]. Contextual factors can be related to the bio-physical conditions of a given place/area (ecological dimension). For example, many AFNs operate in geographical contexts in which natural resources are often pressured by the intensification of agricultural practices, and/or urbanisation [5,77]. Emergence and development of AFNs has often been associated with consumer reaction to increased urbanisation [64,93]. The rise of urbanisation and increased disconnection between (rural) food producers and (urban) consumers have driven increasing numbers of individuals to support farmers and rural communities, to protect endangered (local) species/varieties [75,90,41]. Other factors relate to the socio-institutional dimensions of the context in which AFNs emerge and operate [8,77]. For example, the presence (or absence) of community attributes such as cooperation, trust and reciprocity can facilitate AFNs. Moreover, the emergence of AFNs is also explained as the need of individuals to restore a sense of community, and as a way to re-establish relationships between producers and consumers, generating socio-economic and environmental benefits through localised food systems [48,67,89]. AFNs are often organised as “open access” communities, in which rules are set such that participation is regulated like a club or private association, but substantially easy to gain admission [27,37,72]. It has also been shown that AFNs are collective organisations of individuals based on relational and trust-based mechanisms, deeply embedded within the distinctive features and rules of (local/regional) communities, based on solidarity, benevolence and fairness [99,19]. According to this framework we should observe organisation of collective actions as being more likely to emerge among and between participants sharing similar values associated with the specific contextual conditions and/or the credence attributes of the food products. Some participants may look at participation in AFNs more as a way to consume ethically [8,10], or to fulfil a healthier diet by consuming organic and/or locally produced food, while others more to engage with farmers. Thus while some AFNs may be seen as more active in promoting ethical and social engagements, others may be seen as more product and “business” oriented [102]. In this latter case, farmers and consumers may build a more transactional oriented engagement, to derive mainly economic benefits from their interaction. On the one hand, farmers can improve their economic viability and stabilise their cash flow by getting higher prices for their products and a more stable demand over time [72], being thus able to contribute to the well-being of the rural community [89]. On the other hand, consumers increase access to information, and may more easily control the production process, or the origins of food products, and gain access to high quality products (i.e. fresher, environmentally produced, and/or more authentic food) with less effort/costs [45,89].

¹ As pointed out by one of the reviewers, in this research we take into account only “general personality values” while we are unable to distinguish and identify the role of potentially credence-related values. In other words, while we can control for general issues of self-orientation, hedonism, solidarity and openness to change, we are silent about how these values are connected with the specific credence attributes of the food products transacted in the SPGs. We believe this is a limitation of this research and a topic to be addressed in the future.

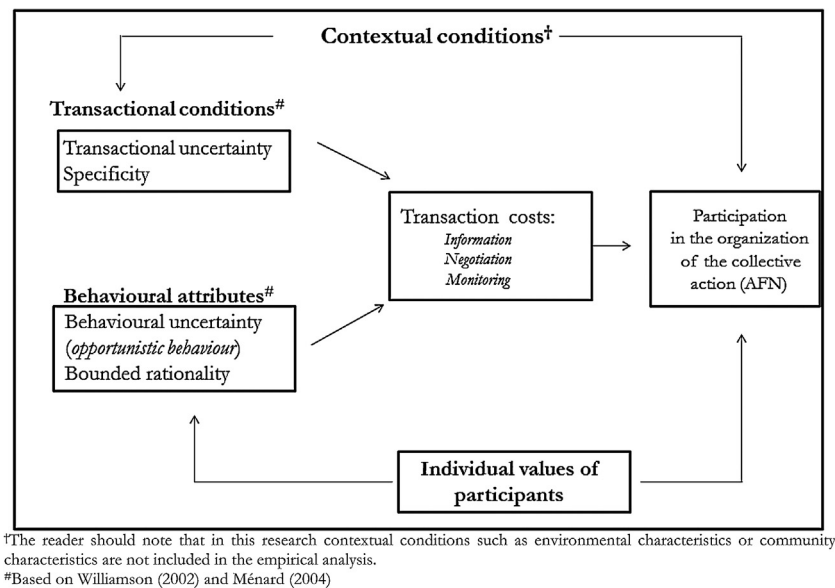


Fig. 1. Participation in AFNs from an economic transactional perspective.

However, to consider transactional conditions more explicitly to explain participation in AFNs, we need to consider elements based on the literature on the economic organisation of food value chains [57,79], and credence food in particular [96] (Fig. 1). Transactions involving food with credence attributes often have high costs [96,70]. This is because credence attributes are costly to detect both ex-ante and ex-post [96]. In contexts of “anonymized” and disconnected relationships between farmers and consumers, control and monitoring of credence characteristics is particularly complex, since credence attributes depend on the actions of all the actors involved in the chain. In this setting consumers who particularly seek credence characteristics may experience increased uncertainty related to the characteristics of their food products, and higher dependency/specificity on the (anonymous) supply chain actors. Moreover, the disconnection with the production and distribution phase, and reduced embeddedness may increase the perception of being exposed to higher behavioural uncertainty, such as opportunistic behaviour from supply chain actors. For these types of consumers, who systematically “invest” more time and resources in searching for information, controlling and consuming credence foods, anonymized “long” food supply chains may become very costly [70]. This may lead such consumers to engage systematically in AFNs in which participants monitor and control activities directly with farmers, since participating in AFNs can then create (comparative) transactional advantages.

As presented in Fig. 1, individual values play a role in conditioning participation in AFN also because they are connected with perceived transactional conditions and relative costs. On the one hand, individuals characterised by values of benevolence and solidarity may perceive farmers engaged in AFNs as more “trustworthy” or “less opportunistic” compared to actors operating in mainstream food value chains. On the other, more conservative and traditional consumers, for example oriented to preserve cultural heritage and rural communities, may see transactional activities with farmers as being more reliable than those with shoppers or retailers in the (“modernised”) mainstream distribution chains. Finally, self-oriented or hedonistic consumers may be more concerned about uncertainties related to the credence attributes of the product, and may see direct engagement with farmers as a way to reduce price and product information uncertainties. Following this line of reasoning we may observe AFN participants who structurally show differences in both individual

values and perceived transactional conditions, when compared to non-participants. More specifically, our research hypothesis is to observe individuals participating in AFNs with a higher level of (perceived) transactional uncertainty associated to food purchase compared to non-participants. Since perceived transactional conditions are influenced by (diverse) individual values, in order to disentangle the role of individual values and transactional conditions we need to compare a group of individuals participating, or otherwise, in an AFN as similar as possible in terms of values. In the next two sections we further explain this mechanism and indicate how to make such concepts operational.

3. Operationalising values, behavioural attributes and transactional conditions

3.1. Measuring values and behavioural attributes

As stated above, individual values and behavioural attributes are important drivers in credence food transactions related to participation in AFNs (Fig. 1). However, they are difficult to conceptualise and even more difficult to measure. In the case of credence foods, *opportunism* is often highlighted as a core element [96]. For example, cheating on the credence attributes of a food product can be rewarding for a seller in certain conditions. *Trustworthiness*, *selfishness*, *fairness* are other examples of values which reflect behavioural attributes [51]. In the consumer behaviour literature the use of values to analyse purchasing decisions has increased in recent decades [61]. Inglehart [35,36] introduced a model based on Maslow’s theory [55] which states that people’s needs are of two types: basic (i.e. safety, sustenance) and of a higher order (i.e. self-fulfilment, belonging). Rokeach [78] theorised the central role of values in cognitive networks of attitudes and beliefs. He also built a Value Survey (RVS) that was implemented in several studies with different objectives [97,4]. However, the RVS looked substantially arbitrary in terms of values collected, making the Rokeach empirical procedure somewhat unattractive [40]. While other authors defined values in slightly different fashion (see Ref. [31], in the early 1990s Schwartz [83] made a breakthrough. He identified ten values, namely: Benevolence, Universalism, Self-direction, Stimulation, Hedonism, Achievement, Power, Security, Conformity, Tradition. Schwartz suggested two alternative approaches to measure indi-

Table 1
Implementation of transactional conditions and related costs.

Code	Item	Transactional conditions
Panel A: Importance of general transactional conditions related to food purchase		
Please look at the following statements about food shopping habits in your household. When you answer, think about your habits in the last year. Please express how important some buying habits are for you. Answer with a number from 1 to 7, where 1 means “not important to me” and 7 means “very important to me”. You can modify your response with any number in between		
TC.1	Not having information about product prices before buying them	Price uncertainty
TC.2	The price of the product you choose is not clearly indicated	Price uncertainty
TC.3	To find easily the level of quality that you desire for your food (for example in terms of taste, healthiness, origin, variety)	Product information
TC.4	To control the quality of products that you wish to buy (for example label visibility, information in the place where you buy them, nutritional information)	Product information
TC.5	To compare prices of products in different markets before buying them	Cost comparison
TC.6	To compare quality of products in different markets before buying them	Cost comparison
TC.7	To find fresh food near the place where you live	Speed of sourcing
TC.8	To plan food supplies (in advance) for the week in your family	Speed of sourcing
TC.9	Do not find the food that you are looking for (for example because it is difficult to find)	Risk of sourcing
TC.10	To control the expiry date of products before buying them	Purchase loss
TC.11	To manage with attention all the expiry dates of the products that you have at home.	Purchase loss
TC.12	Pay attention to expiry dates of products to avoid any waste	Purchase loss
TC.13	To transport food from the place where you buy it to the place where you live in time to ensure quality preservation (for example think about frozen food)	Quality uncertainty
Panel B: Relevance of transactional conditions related to different food purchase outlets		
Please answer these questions about the food shopping habits in your household. When you answer think about your habits in the last year. Please express how important some buying habits are for you. Answer with a number from 1 to 7, where 1 means “not important to me” and 7 means “very important to me”. You can modify your response with any number in between		
TC.14	How long does it take your household to collect information about the price of foods that you buy (hrs/week)?	Price information uncertainty
TC.15	How long does it take your household to collect information about food sales promotions (hrs/week)?	Price information uncertainty
TC.16	How long does it take your household to collect information about the quality of food that you want to buy (hrs/week)?	Product information uncertainty
TC.17	How long does it take your household to buy food in the supermarket/large-scale retail trade (hrs/week)?	Purchase uncertainty
TC.18	How long does it take your household to buy food in the local market or in small food shops (hrs/week)?	Purchase uncertainty
TC.19	How long does it take your household to buy food in Solidarity Purchase Groups or in farmers markets (hrs/week)?	Purchase uncertainty
TC.20	How many times a week does your household buy food?	Frequency of sourcing
TC.21	Do you think there are enough food suppliers to ensure a good price for your product?	Bargaining power
TC.22	Rate the ability of the supermarket/large-scale retail outlet where you usually buy food, to guarantee a good price	Bargaining costs
TC.23	Rate the ability of small food shops, where you buy food, to guarantee a good price	Bargaining costs
TC.24	Rate the ability of solidarity purchase groups/farmers' markets where you buy food, to guarantee a good price	Bargaining costs
TC.25	Rate the ability of the supermarket/large-scale retail outlet where you usually buy food, to guarantee the quality that you desire	Quality uncertainty
TC.26	Rate the ability of small food shops, where you buy food, to guarantee the quality that you desire	Quality uncertainty
TC.27	Rate the ability of solidarity purchase groups/farmers' markets where you buy food, to guarantee the quality that you desire	Quality uncertainty

Measures are adapted from Refs. [33,74,91].

Note: the questionnaire was administered to respondents in Italian; this is an *ex post* translation.

vidual values: the Schwartz Value Survey (SVS), and the Portrait Values Questionnaire (PVQ) [85]. More recently, Lusk and Briggeman [51] and Hauser et al. [25] made food-values related studies. Lusk and Briggeman [51] defined food values as a comprehensive mix of food values and attitude directly affecting consumer choice. Hauser et al. [25] measured salient food attitudes and food-related values. Despite the differences in methodology involved and theoretical approaches, both works underline the paramount importance of investigating consumer choice behaviour [52]. Thus choosing one method or the other is a matter of research objective and sample under study. However, the PVQ approach proved easier to implement and more consistent in the results obtained [85]. Therefore in the context of this research we decided to use the PVQ approach. A detailed description of the values and the questionnaire used is presented in Appendix A.

3.2. Measuring (perceived) transactional conditions

As shown in Fig. 1 transactional conditions represent another significant element characterising participation in AFNs. Transac-

tions and related costs are the main unit of analysis in transaction cost economics (TCE). Though TCE is rooted in the analysis of contract design [1] and vertical integration [38], it has been recently applied to explain consumers' choices, such as use of e-commerce and participation in virtual markets [74,91]. In the specific case of food purchases, transaction costs reflect consumers' resource allocation, for example in terms of time or money, for gathering information, negotiating and monitoring the features of desired attributes of food products. Information costs refer to searching costs, such as the time and effort used to search for relevant product information and compare prices or other attributes among different food outlets [91]. Monitoring costs refer to time and effort used to ensure that the product features match the buyer's expectations. Negotiation costs refer to time and effort related to physically carrying out the transaction and may include commission costs, the costs of physically negotiating the terms of an exchange, and the costs of formally drawing up contracts [33,79]. Consumers choose organisational forms (governance structures) that reduce their (perceived) transaction costs [1,79,58]. Therefore, it might be

expected that the consumers' decision to participate in AFNs is a strategy to reduce their transaction costs in purchasing (credence) food. Credence attributes require high transaction costs both ex-ante and ex-post, such as information, negotiation and monitoring costs [96,70]. Thus, it is expected that consumers who perceive that they purchase credence food under a high level of transactional and/or behavioural uncertainty may choose more integrated organisations, such as AFNs, to minimise their transaction costs [57]. Otherwise, consumers who perceive lower uncertainty related to credence food purchases may be less likely to participate in AFNs and prefer to use supermarkets or large retailers. In these outlets food products with credence attributes are transacted by means of multiple contractual arrangements between a buyer (i.e. consumer) and a seller (i.e. retailer), where safeguard conditions are formalised through private and/or public monitoring systems (such as a brand or certification) [57]. Instead, consumers in AFNs may choose to partner credence food producers (farmers) directly, thus participating in an integrated organisation where decision rights and uncertainty are shared between consumers and producers. Thus participants and non-participants may have a different perception of uncertainty related to credence food transactions, which needs to be investigated. Accordingly, our hypothesis is that consumers participating in AFNs are likely to perceive higher transactional and behavioural uncertainty in their food search, monitoring and negotiation strategies than non-participants in an AFN. Still, one of the main empirical challenges when implementing and measuring transactional conditions and related costs is to disentangle these two concepts clearly. While (perceived) transactional conditions are potential factors to explain participation, transaction costs are the result/outcome of participation. In other words, transaction costs are endogenous with the organisational form used to carry out the transaction in question [87,79].² In our strategy to make such concepts operational, we took care to tackle this challenge in two different interconnected ways: (i) first we use and define concepts associated to the general transactional conditions related to food purchase (see panel A in Table 1); (ii) second we refer to several food purchasing outlets (see panel B in Table 1). Table 1 reports the main concepts/items used to measure and proxy the transactional conditions.

4. Data and empirical strategy

In order to gather information and data to test our conceptual framework empirically (Fig. 1), we develop and use a case study, in which we focus on a solidarity purchase group (SPG) located in Palermo, a metropolitan area in southern Italy. Palermo is one of the largest cities in southern Italy (the administrative centre of both the region of Sicily and the province of Palermo).

In all, 303 interviews were collected by means of an *ad hoc* questionnaire: 103 administered to SPG participants (SPGp or treated), and 200 to consumers not joining any alternative food chain organisation (NSPGp or control or counterfactual sample of consumers). The latter interviewees were recruited in two malls in the city of Palermo. The choice of interviewing AFN (SPG) and non-AFN participants in the same city was taken in order to have two subsamples of consumers not affected by differences in the social, economic or cultural environment (see Table 2 for characteristics of study participants).

The questionnaire was self-compiled, taking about 20–25 min to fully fill in. SPG participants were asked to compile the questionnaire while they were waiting at the meeting place to pick up their weekly food order. Non-SPG participants voluntarily stopped by a

Table 2
Characteristics of case study participants.

Variables	SPG		Variables	Non-SPG	
	no.	no.		no.	no.
Sex			Occupation		
Women	57	120	Unemployed	1	25
Men	46	80	Homemaker	3	34
Household size			Student	2	10
1 persons	88	167	Retired	9	12
2 persons	11	28	"White collar" worker	51	71
3 persons	3	5	Manual worker	0	19
4 persons	1		Teacher	15	5
Education			Retailer	0	5
Elementary school	0	12	Businessperson	16	18
Middle school	4	59	Entrepreneur	6	1
High school	40	102	Age (years)		
BS	42	21	18–29	3	71
MS or PhD	17	6	30–39	17	50
Net monthly household income (in euro)			40–49	41	40
Below 1499	16	105	50–59	31	23
1500–2499	28	62	>60	11	16
2500–3499	36	22			
3500–4999	18	7			
5000 or more	5	4			

Table 3
Schwartz portraits: descriptive statistics.

Values	SPGp (obs. 103)				Non-SPGp (obs. 200)			
	Mean	Std. Dev	Min	Max	Mean	Std. Dev	Min	Max
Benevolence	1.66	0.697	1.0	4.5	2.04	1.198	1.0	6.0
Universalism	1.64	0.598	1.0	3.7	2.16	1.083	1.0	6.0
Self-direction	2.01	0.914	1.0	5.5	2.23	1.095	1.0	6.0
Stimulation	3.22	1.073	1.0	5.5	2.94	1.171	1.0	6.0
Hedonism	3.03	0.941	1.0	6.0	2.80	1.229	1.0	6.0
Achievement	3.58	1.258	1.0	6.0	2.64	1.259	1.0	6.0
Power	3.94	1.026	1.5	6.0	3.31	1.124	1.0	6.0
Security	2.49	1.116	1.0	5.0	2.22	1.168	1.0	6.0
Conformity	2.88	0.919	1.0	5.5	2.70	1.231	1.0	6.0
Tradition	2.67	0.966	1.0	5.0	2.32	1.192	1.0	6.0

desk where questionnaires were available. Near the desk a poster was displayed inviting people to take part in a (generic) university research regarding consumer behaviour. At the end of any interview, people were rewarded for their participation with a lottery ticket with a jackpot ranging from 5 to 500,000 euro. Data collection was carried out from 15th January to 10th February 2012.

The questionnaire was divided into different sections. The first was about socio-demographic and economic characteristics of the interviewee and his/her household. The second section served to collect values replicating the Portrait Value Questionnaire (PVQ) proposed by Schwartz [83,84]. The PVQ consists of 21 questions (differentiated by gender) presented as a description of an individual, for example: "Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way".³

The interviewee was asked to respond on a scale ranging from 1 to 6, where 1 means "very similar to me", and 6 "very different to me". From the 21 answers, Schwartz portraits are built by calculating the mean scores collected from pairs of questions (except for one value which is the result of three questions answered). The resulting ten values (Table 3) are those described in Section 3.1. Schwartz organises the ten values in a circular spatial way divided into two pairs of opposite main dimensions: *Openness to*

² We are indebted to one of the anonymous reviewers who asked for a more detailed and clearer discussion about this point.

³ See Appendix A for details.

Table 4
Description of transactional conditions and descriptive statistics.

Transactional conditions	Label	SPGp (obs. 103)				Non-SPGp (obs. 200)			
		Mean	Std. Dev	Min	Max	Mean	Std. Dev	Min	Max
Panel A: Transactional conditions related to food purchase									
Price uncertainty (a)	tc.1	4.17	1.772	1	7	4.04	2.368	1	7
Price uncertainty (b)	tc.2	5.82	1.419	2	7	4.87	2.193	1	7
Product information(a)	tc.3	6.20	0.984	3	7	4.82	2.067	1	7
Product information(b)	tc.4	6.22	1.047	3	7	5.33	1.964	1	7
Comparison costs (a)	tc.5	4.25	1.719	1	7	4.88	2.191	1	7
Comparison costs (b)	tc.6	4.57	1.791	1	7	4.95	2.084	1	7
Speed of sourcing (a)	tc.7	6.24	1.071	2	7	5.54	1.813	1	7
Speed of sourcing (b)	tc.8	5.01	1.839	1	7	4.76	2.050	1	7
Risk of sourcing	tc.9	4.89	1.668	1	7	4.43	2.149	1	7
Purchase loss (a)	tc.10	6.28	1.353	1	7	5.88	1.854	1	7
Purchase loss (b)	tc.11	5.71	1.758	1	7	5.73	1.773	1	7
Purchase loss (c)	tc.12	6.08	1.440	1	7	5.80	1.825	1	7
Quality uncertainty	tc.13	6.28	1.192	1	7	5.57	1.825	1	7
Panel B: Transactional conditions related to different food purchase outlets									
Price information (a)	tc.14	0.89	0.982	0	5	1.87	4.021	0	48
Price information (b)	tc.15	0.64	0.837	0	4	1.59	1.752	0	12
Product information	tc.16	1.25	1.215	0	7	1.36	1.796	0	12
Purchase uncertainty (a)	tc.17	2.34	1.624	0	8	2.91	2.195	0	14
Purchase uncertainty (b)	tc.18	1.58	1.871	0	12	1.81	1.994	0	20
Purchase uncertainty (c)	tc.19	1.69	1.297	0.5	8	0.62	1.141	0	10
Frequency of sourcing	tc.20	3.45	1.673	1	10	3.94	2.004	0	10
Bargaining power	tc.21	0.75	0.437	0	1	0.81	0.393	0	1
Bargaining costs (a)	tc.22	4.21	1.563	1	7	5.18	1.996	1	7
Bargaining costs (b)	tc.23	3.59	1.751	0	7	4.75	1.984	0	7
Bargaining costs (c)	tc.24	5.27	1.380	1	7	1.60	2.347	0	7
Quality uncertainty (a)	tc.25	3.96	1.495	1	7	5.03	1.859	0	7
Quality uncertainty (b)	tc.26	3.94	1.638	0	7	4.95	1.856	0	7
Quality uncertainty (c)	tc.27	5.79	1.169	1	7	1.92	2.639	0	7

change (stimulation and self-direction) versus *Conservation* (security, conformity and tradition); *Self-transcendence* (benevolence and universalism) versus *Self-enhancement* (hedonism, achievement and power). Proximity of values is considered similar in meaning, so that similarity is inversely proportional to the distance that values occupy in the circle.

The last section of the questionnaire concerned transactional conditions. As explained in Table 1 and the previous empirical studies on making transaction conditions and costs operational [33,47,91,79] in Table 4 we implement transactional conditions by dividing them into two types, namely transactional conditions related to general food purchase strategies (panel A in Table 4) and transactional conditions related to purchasing food in specific outlets (panel B in Table 4). The respondents were asked to state the degree of importance of some aspects concerning the different transactional conditions categories to questions ranging from 1 to 13 and from 22 to 27.⁴ They were asked to answer in terms of hours/week in response to questions from the 14th to the 20th, and a yes/no answer for the 21st.

We now present our empirical strategy. As stated above, the aim of this paper is to analyse the relations between transactional conditions and participation in AFN (SPG), after isolating for the effect of individual values. One of the main issues to address in our empirical strategy is to control for potential sample selection bias. This is due to the fact that data were collected in the framework of observational or quasi-experimental studies. Both the latter terms come from behavioural economics and non-statistically oriented literature, and are used interchangeably since they refer to the same purpose [86].⁵ More explicitly, one of the main features of

observational or quasi experimental studies concerns treatment effects. An observational study shares, with a pure experimental one, the same purpose but, unlike an experiment, no method of experimental design is implemented to maintain a control group [21]. In this context, treated (SPGp) and control groups (NSPGp or control/counterfactual) may show large differences in terms of covariates yielding biased estimates of treatment effects. Such studies occur, or are necessary, when randomized assignment of treated and non-treated groups are infeasible, unethical, or when researchers need to assess differences between groups under particular settings of the social behavioural environment. The latter motivation is one of the main critiques of social experiments made by econometricians. Heckman and Smith [30], for instance, argue that randomization is unfeasible, or non-desirable, when institutions and social environments are part of the decisional process and, therefore, are relevant when the purpose of the study is to design policy intervention following behavioural economics analysis.

In particular, in social behavioural evaluations it becomes important to directly model the process of assigning study participants to the treatment condition by using factors that influence participants' decisions regarding programme participation [26,30]. In other words, it is not desirable to search for randomization to create groups because the assumption that treated and non-treated participants share the same socio-economic characteristics under non-treatment is questionable.

In observational studies, where the task is to evaluate treatment effects in a non-randomization/non-experimental approach, in order to reduce the multidimensional covariates to only one score, it is worth invoking the so-called propensity score. Since the seminal work of Rosenbaum and Rubin [80] on propensity score analysis, this method has become increasingly popular in observational studies. The propensity score approach has been implemented in many disciplines such as psychology [39], medicine [18,20], education [63], social work [3,22,98] and social welfare studies [28,46,59].

⁴ A Likert scale ranging from 1 to 7 was implemented for these questions.

⁵ Another possible definition is "natural field experiment" which defines those experiments where the subjects do not know they are participating in an experiment [23].

When participation in a programme, or treatment, or in a peculiar social setting, is not randomly assigned but is stochastically dependent on a number of variables observable in quasi-experimental studies, the propensity score can be implemented as a measure of probability of treatment participation conditional upon the observed variables (covariates). Let x be the observable variables, and $p(x)$ the conditional probability of treatment participation (or propensity score):

$$p(x) = \Pr[D = 1 | X = x] \quad (1)$$

given D_i and x_i , the propensity score measure can be calculated using any parametric or semiparametric method by implementing, as we did in our study, a logit regression [9]. One of the major assumptions in evaluating programme participation (or participation in an AFN as in our case) is the balancing condition:

$$D \perp x | p(x) \quad (2)$$

A more intuitive way to express the balancing condition is to look at the individuals' side. Let y_1 and y_0 be defined, respectively, as the outcome for the treated and control group, $p(x)$ the propensity score and N_T the number of individuals "treated" in the sample (AFN participants in our case study). Individuals with the same propensity score then show a substantial equivalence in terms of the x vector as if they were randomly selected for treatment. A useful implication found by Rosebaum and Rubin [80] about the conditional independence given $p(x)$ is:

$$y_0, y_1 \perp D | x \Rightarrow y_0, y_1 \perp D | p(x) \quad (3)$$

The direct implication of Eq. (3) is that the assumption of conditional independence given x implies conditional independence given $p(x)$, or independence of y_0, y_1 , and D given $p(x)$.⁶ The intuition behind this is that, since $p(x)$ is a function, albeit peculiar, of x , the conditional independence given $p(x)$ is implied for the same given x . However, conditioning on x means eliminating the correlation between D and x , as well as between D and x when conditioning on the propensity score $p(x)$. In this way we can get a regression where the unknown propensity score is substituted by a sample estimate of $p(x)$:

$$\begin{aligned} y &= x'\beta + \alpha p(x) + up(x) + u \\ &= x'\beta + \alpha \hat{p}(x) + (u + \alpha(p(x) - \hat{p}(x))) \end{aligned} \quad (4)$$

Once a propensity score estimation is computed, the next step is to match the treated group to a control (counterfactual) group of participants based on the estimated propensity score.⁷ The intuition behind matching is to generate a new data sample built by only those cases that share a similar likelihood of participating in an AFN. This likelihood is the propensity score. The most common matching algorithm is "greedy matching". There are many methods to reach a greedy matching: mahalanobis metric matching with or without including propensity score, nearest neighbour matching, caliper matching; nearest neighbour matching with caliper, just to name the most popular [14,81,88,21]. The methods implemented in our paper follows those implemented by Dehejia and Wahba [16,17] which will be described below. The core idea, however, starts from the two widely used measures of treatment effects that can be calculated as treatment evaluation: Average Treatment Effect (ATE), and Average Treatment Effect on the Treated (ATET). In the specific case of our study the appropriate measure is ATET. Indeed, ATE measures treatment effect over all individuals. In order

to assess the gain from treatment, it is of some relevance when the treatment is considered to be universal over the whole population, though hypothetical, and applicable to any member of the population randomly selected. Since we are considering a group of people that have already decided to participate to a AFN (SPG), the ATET is a sounder measure which is relevant when the aim is to evaluate the differences, or average gain, from treatment (participation in an AFN) for the treated (participants) [29]. A general specification of ATET is defined as:

$$ATET = \Delta^M = \frac{1}{N_T} \sum_{i \in \{D=1\}} \left[y_{1,i} - \sum_j w(i,j) y_{0,j} \right] \quad (5)$$

where $A_j(x) = \{j | x_j \in c(x_i)\}$ enotes the set of the comparison group of the treated case i with characteristics x_i , and where $c(x_i)$ is the characteristics neighbourhood of x_i . N_T is the total number of cases, and $w(i,j)$ denotes the weight given to the j th case when compared with the i th treated case, so that $\sum_j w(i,j) = 1$ but in

the equation it ranges from $0 < w(i,j) \leq 1$. $\{D=1\}$ is the set of treated individuals, while j is an element of the set of matched comparison units. Matching estimators differs by choosing different $w(i,j)$. The calculation is not direct because only part of the equation has an observed component. In other words, given that only y_1 or y_0 is observable for each observation, unless assignment into the treatment group was random, generally the difference in average, say τ , will not be equal to $\tau = \bar{y}_1 - \bar{y}_0$. This is one of the main difficulties when matching has to be computed. In practice, matching could be done by comparing treated and non-treated individuals with the same value of x . If several regressors are involved, however, matching would be not possible since regressors (x) take a number of different values. A solution is thus to find a vector of covariates that allows to matching on the propensity score, defined earlier as the conditional probability of treatment $p(x) = \Pr[D = 1 | X = x]$. In our study, following Dehejia and Wahba [16,17], we estimated a logit model on the probability of participating in an AFN (SPG):

$$\Pr[GAS_i = 1 | x_i] = \Lambda(x_i'\beta), i = 1, \dots, 303 \quad (6)$$

where $\Lambda(z = x_i'\beta) = e^z / (1 + e^z)$ while the regressors are the ten Schwartz portrait value scores (Benevolence, Universalism, Self-direction, Stimulation, Hedonism, Achievement, Power, Security, Conformity, Tradition), and some individual socio-economic characteristics (age, number of household employees, education, gender, monthly net income per household, share of food expenditure over total household monthly income).

A practical issue to face in choosing a matching algorithm based on propensity scores is to ensure the balancing condition (Eq. (2)). Dehejia and Wahba [17] (p. 161) suggest an algorithm, the so-called parsimonious logit model, that allows $p(x)$ to be estimated through a stratification of observations within strata where treated and non-treated units are close to one another.

5. Results

Table 5 shows results of the logit estimation where only variables statistically significant at least at 10% were retained in the model to ensure the best model goodness of fit.⁸ Within each stratum the similarity of means is tested for each covariate. The propensity score calculation is thus restricted to the common stratum, or region, by testing for the balancing property. This is done by using only those observations that show a propensity score lying

⁶ For a formal demonstration please see Ref. [80]

⁷ Alternatively it is possible to skip matching analysing data after a propensity score in a different way depending on the research question and goal [21]. In our case matching was what we were looking for.

⁸ All calculations were done by using STATA 12.

Table 5
Estimation of the propensity score.

Logistic regression Number of obs = 303			
LR chi2(9) = 198.73			
Prob > chi2 = 0.0000			
Log likelihood = -94.855 Pseudo R2 = 0.5116			
Dep. Var.: SPG			
Regressors	Coef.	z-stat	
Benevolence	-0.513	-1.58	*
Universalism	-1.078	-3.00	**
Achievement	0.595	3.57	***
Power	0.343	1.87	**
Tradition	0.962	3.87	***
Age	0.085	4.41	***
No. workers	-0.322	-2.02	**
Education	1.202	4.89	***
Income	0.001	2.86	***
Cons	-11.254	-6.95	***

Level of significance: * 10%; ** 5%; *** 1%.

The region of common support is [0.04533766, 0.99980076].

Table 6
Inferior bound, number of treated and number of controls for each block*.

Inferior of block of pscore	SPG participation		Total
	NSPGp/control	SPGp/treated	
0.0453	51	4	55
0.20	22	15	37
0.40	14	15	29
0.60	8	21	29
0.80	6	48	54
Total	101	103	204

Table 7
Mean values and differences before and after propensity score matching.

Variables	Before matching			After matching		
	Control mean	Treated mean	diff	Control mean	Treated mean	diff
Obs	200	103		101	103	
Benevolence	2.04	1.66	-0.39	1.85	1.66	-0.20
Universalism	2.16	1.64	-0.52	1.83	1.64	-0.19
Achievement	2.64	3.58	0.94	2.97	3.58	0.61
Power	3.31	3.94	0.63	3.45	3.94	0.49
Tradition	2.32	2.67	0.35	2.39	2.67	0.28
Age	37.67	47.88	10.22	42.56	47.88	5.32
n.workers	1.86	1.97	0.11	1.97	1.97	0.00
Education	2.75	3.70	0.95	3.07	3.70	0.63
income.hh	573	1033	460	706	1033	327

in the intersection of the supports of the propensity score of the treated and non-treated units.

As a result, only a portion of the original sample is taken into account. Table 6 shows the distribution of the propensity score within the stratum computed.

Table 7 shows mean values and differences before and after propensity score matching for those regressors implemented in the model. It is worth noting that, after matching, mean differences between control and treated groups are significantly lower. From the general specification of the ATET (Eq. (5)), we implemented some methods suggested by [17]: stratification matching; kernel matching; radius matching estimator.⁹

Since these matching methods involve trade-offs between the number of matches and the quality of matching, and none is clearly superior to the others, we report results for all three matching

methods. The first two methods are shown in Table 8, while in Table 9 the radius matching estimator is reported. In order to verify which variable (transactional conditions score) showed a significant difference between treated and control groups, a *t*-test was performed and hence reported in the tables. For the wider diversification of results we decided to describe only results from radius matching. However, the other two methods confirm direction, significance and magnitude of estimated ATETs.

In radius matching the set $A_i(p(x)) = \{p_j | p_i - p_j < r\}$ based on propensity scores. This means that all control cases with estimated propensity scores falling within radius *r* are matched to the *i*-th treated case. ATET with radius matching can be expressed in terms of $p(x)$, assuming that the overlapping condition $0 < p(x) < 1$ holds [15]:

$$ATET = E \left[\frac{(D - p(x))y}{Pr[D = 1](1 - p(x))} \right] \quad (7)$$

The last two columns of Table 9 report the benchmark and % of benchmark. The benchmark is calculated by regressing each of the transactional condition scores on a constant and on the dichotomous variable SPG. The estimated parameter of the constant is the benchmark value [17].

Once this value is obtained, it is possible to calculate the percentage of ATET compared with the benchmark. This gives an index of robustness of ATET estimates across specifications that can be evaluated in terms of the ratio of ATET to the benchmark estimate, given in the last column of the table.

If we look at the overall results of our analysis, few robust and consistent features related to transactional conditions can be highlighted. First, regardless of the specific type of individual value or socio-economic conditions, consumers participating in an AFN have more issues than non-participants in dealing with elements of price and quality uncertainty related to the food they purchase. In this perspective, an AFN may function as an organisational device which facilitates information sharing for its members (TC.2, TC.3, TC.4). Second, concerns about proximity and accessibility to fresh products is a further element of differentiation between participants and non-participants (TC.7). Finally, participants in an AFN associate to this organisation the capacity to guarantee good price and quality issues (TC.24, TC.27), albeit investing more time in purchasing food (TC.19).

6. Discussion and conclusions

In this paper we investigated and disentangled the role of values and transactional conditions to explain consumer participation in AFNs. Grounded in the debate on ethical consumption and rural development studies we used a collective action perspective integrated with elements derived from transaction cost economics to conceptualise participation in AFNs (Fig. 1). Our research was motivated by the evidence that the role and interplay between individual values and transactional conditions is still under-investigated in the socio-economic literature when it comes to understanding participation in AFNs.

Our findings indicate that when controlling for different individual values, namely whether consumers are characterised by hedonism and self-enhancement, openness to change, self-transcendence, or conservation, a number of transactional conditions emerge as factors associated with AFN participation. More specifically, uncertainty related to information, price and quality of the credence products were highlighted to be significantly associated to participants rather than to non-participants. Moreover, participants are more likely than non-participants to make a greater investment in time and effort to negotiate and monitor credence food products.

⁹ Please see Refs. [17,9,13] for technical notes.

Table 8
Estimates of ATET with stratification and kernel matching.

Transactional conditions		Stratification matching				Kernel matching			
		ATET	Treated	Control	t.stat	ATET	Treated	Control	t.stat
Panel A									
tc.1	Price uncertainty (a)	0.075	103	101	0.149	0.043	103	101	0.081
tc.2	Price uncertainty (b)	0.799	103	101	1.662	0.577	103	101	1.315
tc.3	Product information(a)	0.254	103	101	1.198	0.303	103	101	1.235
tc.4	Product information(b)	0.166	103	101	0.626	0.256	103	101	0.859
tc.5	Comparison costs (a)	−0.550	103	101	−0.982	−0.562	103	101	−0.948
tc.6	Comparison costs (b)	−0.687	103	101	−1.420	−0.610	103	101	−1.388
tc.7	Speed of sourcing (a)	0.185	103	101	0.752	0.304	103	101	0.979
tc.8	Speed of sourcing (b)	−0.217	103	101	−0.381	−0.396	103	101	−0.844
tc.9	Risk of sourcing	−0.016	103	101	−0.028	−0.351	103	101	−0.663
tc.10	Purchase loss (a)	−0.443	103	101	−2.714	−0.462	103	101	−2.872
tc.11	Purchase loss (b)	−0.382	103	101	−1.102	−0.444	103	101	−1.150
tc.12	Purchase loss (c)	−0.316	103	101	−1.530	−0.348	103	101	−1.634
tc.13	Quality uncertainty	−0.126	103	101	−0.698	−0.161	103	101	−0.865
Panel B									
tc.14	Price Information (a)	−0.453	103	101	−2.202	−0.405	103	101	−1.701
tc.15	Price information (b)	−0.835	103	101	−2.997	−0.998	103	101	−2.869
tc.16	Product information	−0.126	103	101	−0.433	−0.206	103	101	−0.726
tc.17	Purchase uncertainty (a)	−0.960	103	101	−1.921	−0.865	103	101	−1.803
tc.18	Purchase uncertainty (b)	−0.116	103	101	−0.485	−0.173	103	101	−0.661
tc.19	Purchase uncertainty (c)	1.207	103	101	7.617	1.167	103	101	5.038
tc.20	Frequency of sourcing	−0.677	103	101	−1.478	−0.884	103	101	−1.880
tc.21	Bargaining power	−0.041	103	101	−0.403	−0.087	103	101	−1.010
tc.22	Bargaining costs (a)	−1.292	103	101	−4.455	−1.154	103	101	−3.538
tc.23	Bargaining costs (b)	−0.586	103	101	−1.240	−0.898	103	101	−1.929
tc.24	Bargaining costs (c)	3.220	103	101	5.810	2.754	103	101	3.812
tc.25	Quality uncertainty (a)	−1.415	103	101	−4.609	−1.282	103	101	−3.884
tc.26	Quality uncertainty (b)	−0.965	103	101	−2.068	−0.995	103	101	−2.147
tc.27	Quality uncertainty (c)	3.387	103	101	4.763	2.872	103	101	3.306

Level of significance: * 10%; ** 5%; *** 1%.

Bootstrapped standard errors with 400 replications.

Table 9
Estimate of ATET with radius matching.

	ATET	Treated (obs #)	Control (obs #)	t-stat	Benchmark	% of benchmark
Information uncertainty						
tc.2: price uncertainty						
radius, $r = 0.02$	0.719	91	85	1.743	**	5.443
radius, $r = 0.04$	0.566	99	97	1.655	**	10.40
radius, $r = 0.06$	0.545	103	101	1.648	**	10.01
tc.3: product information						
radius, $r = 0.02$	0.807	90	85	2.356	***	5.590
radius, $r = 0.04$	0.757	99	97	2.612	***	13.53
radius, $r = 0.06$	0.725	103	101	2.758	***	12.97
tc.4: product information						
radius, $r = 0.02$	0.517	93	86	1.700	**	5.831
radius, $r = 0.04$	0.499	99	97	1.767	**	8.57
radius, $r = 0.06$	0.475	103	101	1.769	**	8.15
Negotiation uncertainty						
tc.7: speed of sourcing						
radius, $r = 0.02$	0.526	93	85	1.650	**	5.885
radius, $r = 0.04$	0.499	99	97	1.755	**	8.94
radius, $r = 0.06$	0.459	103	101	1.728	**	8.49
tc.19: purchase uncertainty						
radius, $r = 0.02$	1.191	90	85	5.012	***	1.173
radius, $r = 0.04$	1.040	99	97	5.282	***	101.51
radius, $r = 0.06$	1.005	103	101	5.313	***	88.64
tc.24: bargaining costs						
radius, $r = 0.02$	3.159	90	85	5.772	***	85.65
radius, $r = 0.04$	3.120	99	97	6.477	***	97.66
radius, $r = 0.06$	3.118	103	101	6.854	***	96.45
Monitoring and control uncertainty						
tc.27: quality uncertainty						
radius, $r = 0.02$	3.387	90	85	5.682	***	3.607
radius, $r = 0.04$	3.342	99	97	6.470	***	93.91
radius, $r = 0.06$	3.353	103	101	6.833	***	92.66

Level of significance: * 10%; ** 5%; *** 1%.

Analytical standard errors.

To summarise our results indicate a statistically significant difference in several (perceived) transactional conditions for SPG participants, namely: information uncertainty (price uncertainty and product information), negotiation uncertainty (speed of sourcing, transportation hazards, and bargaining), and monitoring hazards (quality uncertainty). This confirmed the preliminary hypotheses of different structures of (perceived) transactional conditions between SPG participants and non-participants who have the same likelihood to participate in an SPG when considering values and the main socio-economic features. Since our conceptual model indicates relationships between individual values and transactional uncertainties (Fig. 1), our results highlight some similarities in terms of structure and perception of transactional conditions which can be used to explain heterogeneity of participants in terms of values.

On the basis of our findings, AFNs can be effective governance structures for those consumers who “invest” more resources and time in credence transactions than others, no matter their values or socio-economic condition. These results, though preliminary and limited to one case study, may shed light on a puzzling issue concerning participation mechanisms in AFNs. While scholars in such fields as ethical consumption and rural sociology tend to emphasise the role of values as aggregating factors, and organisational economists emphasise the role of cost-economising transactions and supply chain organisation, we showed that both may play a role in the participation mechanism. In other words, while a sub-group of participants is seeking to share values when participating in an AFN another sub-group is seeking cost-economising strategies when it comes to purchasing credence foods.

An implication of this study for AFN managers and practitioners, as well as policy-makers, is that AFN membership can be profiled in a more articulated way, as well as changing the way most AFNs are organised, and decision-making achieved. This is a particularly important point since the ongoing debate about how to scale up AFNs (see for example [94] basically neglects the role of more transactional participant behaviour, while only emphasising the “alternative” to mainstream food production and the distribution systems component of AFN participation. While value-oriented participants may be more interested in developing and sharing social interactions and relations, participants more oriented to cost-minimising may be more sensitive to issues like membership fees, and weekly or seasonal payment schemes. Thus if AFN organisers/managers would like to increase the number of participants, or modify the type of participants, they may consider setting up differentiated strategies which are either more oriented to enhance social interactions and activities, or more focused on reducing participation costs. This may be a successful strategy to engage with more participants, and ultimately to scale up and create greater impact.

A number of empirical challenges and limitations were also tackled in this paper. For example, from a methodological perspective this paper dealt with a major shortcoming which arises when using non-experimental data. Since SPG and non-SPG participants were not randomly selected, a sample bias might be present. For this reason we implemented a propensity score matching approach, thereby building a subsample consisting only of those cases that were sharing a similar likelihood of participating in an AFN. This likelihood is the propensity score calculated by running a binary response model (logit) where the dependent variable is dichotomous (1 if the interviewee was an SPG participant, 0 otherwise), and the regressors were Schwartz-portrait values scores, and some of the individual's socio-economic characteristics. Individuals with the same propensity score show a substantial equivalence in terms of covariates as if they were randomly selected to join an SPG. After computing the propensity score, and the selection of the new sample was made, a matching procedure was implemented to cal-

culate the Average Treatment Effect on the Treated (ATET). ATET is a measure to evaluate the differences, or average gain, from treatment (participation in the SPG) for the treated (actual participants). Moreover, the operationalization of transactional conditions was particularly challenging since a clear distinction between concepts and frameworks related to transactional conditions and transaction costs is often difficult to make. During the research design and implementation process we kept struggling with these concepts, and could not rely on solid, widely tested prior knowledge.¹⁰

Based on the results obtained, and in the light of the conceptual and empirical challenges we faced in this case study we envision further research on this topic. In particular, we invite scholars to engage in future research to further analyse the interplay between these two “dimensions” of participation, for example implementing a longitudinal study and analysing how changes in “social interactions” affect transactional cost-related issues, and hence participation, in more general terms. Moreover, extending the number of cases would make the results more generalisable. This may be beneficial to further develop a conceptual understanding of the organisation of collective actions in food systems.

Also we think that future research should take more into account and focus on the diversity of actors setting up and participating in the organisation of collective actions in AFNs. Typologies of AFNs such as FMs or CSAs are organisations participated and influenced mainly by producers while SPGs are mainly participated and influenced by consumers. Although both share the feature of having a “mixed” type of actors involved in the organisation, it is worth considering the difference in terms of relevance and influence of the two types of actors.¹¹ Finally, a more detailed and sophisticated approach should be developed to connect specific individual values to specific credence attributes. We believe this study may represent a promising base to start from.

Appendix A.

See Fig. A1 and Table A1.

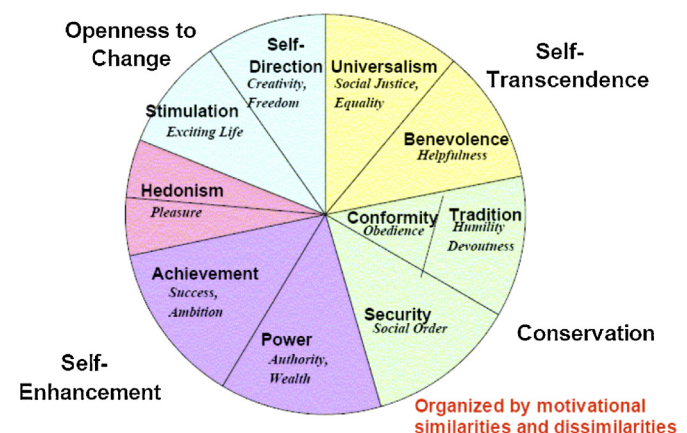


Fig. A1. Theoretical model of relations among ten motivational types of values.

Source: Ref. [85].

¹⁰ We are particularly thankful to the two anonymous reviewers who provided useful comments to clarify and further develop this point.

¹¹ We are indebted to one of the reviewers who suggested this point as a potential limitation of our research as well as a basis to design future investigations and reflections.

Table A1
Portrait value questionnaire.

Description of people	To what extent is this person like you?					
	Very much like me	Like me	Some-what like me	A little like me	Not like me	Not like me at all
Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way	1	2	3	4	5	6
It is important to him/her to be rich. He/she wants to have a lot of money and expensive things	1	2	3	4	5	6
He/she thinks it is important that every person in the world should be treated equally. He/she believes everyone should have equal opportunities in life.	1	2	3	4	5	6
It is important to him show his/her abilities. He/she wants people to admire what he/she does	1	2	3	4	5	6
It is important to him/her to live in secure surroundings. He avoids anything that might endanger his/her safety.	1	2	3	4	5	6
He/she likes surprises and is always looking for new things to do. He/she thinks it is important to do lots of different things in life	1	2	3	4	5	6
He/she believes that people should do what they're told. He/she thinks people should follow rules at all times, even when no one is watching	1	2	3	4	5	6
It is important to him/her to listen to people who are different from him/her. Even when he/she disagrees with them, he/she still wants to understand them.	1	2	3	4	5	6
It is important to him/her to be humble and modest. He/she tries not to draw attention to him/herself	1	2	3	4	5	6
Having a good time is important to him/her. He/she likes to "spoil" him/herself	1	2	3	4	5	6
It is important to him/her to make his/her own decision about what he/she does. He/she likes to be free and not depend on others.	1	2	3	4	5	6
It is very important to him/her to help the people around him/her. He/she wants to care for their well-being	1	2	3	4	5	6
Being very successful is important to him/her. He/she hopes people will recognise his/her achievements	1	2	3	4	5	6
It is important to him/her that the government ensures his/her safety against all threats. He/she wants the state to be strong so it can defend its citizens.	1	2	3	4	5	6
He/she looks for adventures and likes to take risks. He/she wants to have an exciting life.	1	2	3	4	5	6
It is important to him/her always to behave properly. He/she wants to avoid doing anything people would say is wrong	1	2	3	4	5	6
It is important to him/her to get respect from others. He/she wants people to do what he/she says.	1	2	3	4	5	6
It is important to him/her to be loyal to his/her friends. He/she wants to devote him/herself to people close to him/her	1	2	3	4	5	6
He/she strongly believes that people should care for nature. Looking after the environment is important to him/her	1	2	3	4	5	6
Tradition is important to him/her. He/she tries to follow the customs handed down by his religion or his/her family	1	2	3	4	5	6
He/she seeks every chance he/she can to have fun. It is important to him/her to do things that give him/her pleasure	1	2	3	4	5	6

In this section we briefly describe some people. Please read each description and think about how much each person is or is not like you. Tick the box to the right that shows how much the person is like you. The scale has this meaning:: 1. "VERY MUCH LIKE ME"; 2. "LIKE ME"; 3. "SOMEWHAT LIKE ME"; 4. "A LITTLE LIKE ME"; 5. "NOT LIKE ME"; 6. "NOT LIKE ME AT ALL".

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