

Sustainability and New Models of Consumption: The Solidarity Purchasing Groups in Sicily

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Abstract European society, with its steadily increasing welfare levels, is not only concerned with food (safety, prices), but also with other aspects such as biodiversity loss, landscape degradation, and pollution of water, soil, and atmosphere. To a great extent these concerns can be translated into a larger concept named sustainable development, which can be defined as a normative concept by). Sustainability in the food chain means creating a new sustainable agro-food system while taking the institutional element into account. While different concepts of sustainability abound, in recent years, spontaneous groups of consumers called solidarity purchase groups (SPG) have been developing. In short, they are characterized by an economy that is not necessarily local, but ethical and equitable, where social and economic territorial relations tend to develop districts and networks. One of the main characteristics of a SPG is the direct relationships between small farms and their customers; a relationship that is characterized by consumer participation and farmer specialization. This study aims to address issues related to organizational frameworks, at farm and chain level, and to assess those elements that lead to consumer choice and satisfaction.

Keywords Sustainability · New models of consumption · Solidarity purchase groups · Institutions and economics

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Introduction

Within economic theory the idea of consumer behavior, rendered using neoclassic theory, is based on a representative agent named *Homo Oeconomicus*. The assumption underlying consumer behavior is the principle of rationality. This states that individuals tend to maximize their utility based on constraints imposed by income availability (Schotter 2002).

Numerous criticisms of the neoclassical theory on the study of consumer behavior reveal that the behavior of individuals is more than a mere manifestation of individuals living out their preferences. More precisely, it is thought that within the relationship between preference and behavior there is a mediating variable affecting choice, which includes the social environment. What we are essentially undermining is the vision of an overly rational *Homo Oeconomicus* intent on maximizing his/her own satisfaction while ignoring all sorts of moral considerations. In this wider debate what emerges is the more general argument for *Homo Sociologicus*, which, while different in origin, should not be considered conflicting to economic formulations (Bianchini 2007).

Essentially, *Homo Sociologicus* is an individual who, within his/her sphere of choices, assigns value to aspects that go beyond the neoclassic paradigm and on whom external factors have direct implications concerning social behavior and purchase. In recent years consumption dynamics in general, and food dynamics in particular, have been closely linked to changes in lifestyles (Briamonte and Giuca 2010). The vision of a *Homo Oeconomicus* was justifiable in an economy in which the rationality of ones choices was closely limited to the satisfaction of primary needs (in an environment where food was scarce); today in Western societies the consumer is becoming more and more a *Homo Sociologicus* whose models of consumption are strongly influenced by societal and cultural factors. Put differently, in a postmodern view of consumption a purchase act is not only related to the satisfaction of material human needs but it becomes a way through which an individual expresses his/her culture, a way to participate to social relations, a way to define his/her own identity (Kozinets 2001; Cicia et al. 2011).

Although the *Homo Sociologicus* identified in the literature is illustrated as a *reflexive consumer* and as such is involved with more general cultural norms (Vermeir and Verbeke 2006), he/she is still a consumer that, as such, does not subtract himself from the logics of consumption and marketing; in fact price, quality, convenience, and brand familiarity are still the most important decision criteria (Carrigan and Attalla 2001).

When it comes to purchase decisions, loss of biodiversity, the degradation of landscape, soil, and water pollution, social inequalities, and the disrespect of workers' rights are all issues that today, increasingly impact an individuals' behavior. What emerges is an individual who wants to exercise his/her right to choose. Ethics and solidarity represent important elements in the new purchase dimension and the profile of a consumer defined by sociological literature as the "critical citizen" emerges (Norris 1999). Critical citizens are individuals who give great value to democratic principles, who show increasing distrust towards institutions and towards the traditional channels of participation. For the critical

citizen, consumption is a means of direct action, permitting them to intervene in situations that seem to be outside of their philosophical beliefs and values (Forno and Tosi 2009).

In general, it is the forms of social participation that represent an alternative in the market and the chance to propose a change in perspective (Carrera 2009), promoting sustainable and durable development (Brunori et al. 2011).

Thus, a new institutional dimension of sustainability has been observed that has increasing evidence in support of this model. Strong links can be formed between environmental space, society, and economy, as is represented in the sustainability prism proposed by Spangenberg and Bonniot (1998) (Fig. 1).

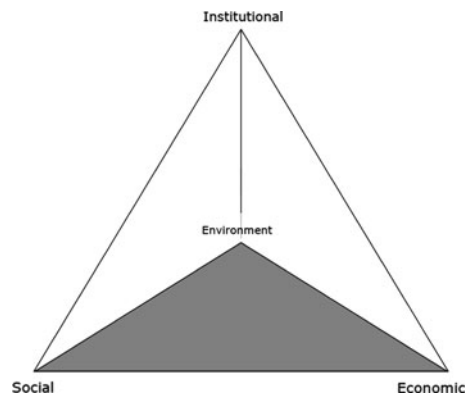
According to many in the field of sociology there seems to be growing support in Western countries for a concept referred to as Political Consumerism. As identified in the European Social Survey (2010) conducted between 2002 and 2003 in twenty-two European Countries, 28% of respondents reported they had boycotted or that they had performed critical consumption in the 12 months preceding the survey. These respondents stated that their intent was to improve society or fight against damage done to society.

It has also been seen that the level of institutionalization of consumer organizations is directly proportional to the diffusion of critical consumption (Forno and Tosi 2009). As an example, strong institutional forms of political consumerism are seen at international levels in response to the agro-food system; purchase networks of alternative agro-food products, within which social practices, environmentally friendly production models, and new direct economic relations based on trust between farmers and consumers, take shape and spread.

These represent individuals' intentions to reconnect with the local producers (in this case food producers) and to re-embed themselves in community-based values and institutions (DeLind and Bingen 2008).

Among the various forms of social participation, which experiment with direct selling to responsible consumers, we see *Farmers Markets* that can be seen as a result of cooperation between social and institutional agents and that have been rapidly growing in the last years even in Italy. Another example is *Community*

Fig. 1 The four dimensions of sustainability



Supported Agriculture, which involves farmers, often organic, supported by local communities (Cicia et al. 2010).

In this study we examine a phenomenon fast-spreading named Solidarity Purchase Groups (from here on referred to as GAS from its Italian name: Gruppi di Acquisto Solidale). GASs are spontaneous associations of consumers whose behavior is characterized by a strong philosophical and ethical agreement in which the territorial, economic, and social relations between the individuals involved tend to evolve into networks and districts of solidarity economics. The present study, which is part of a wider study financed by the Sicilian Region,¹ analyses the GASs' presence in Sicily (a region in Southern Italy) where 32 active groups are present, representing an estimated number of 1,200 families.

Although this phenomenon (i.e., GAS) is still marginal and limited to recent years, it can be particularly interesting because of its rapid proliferation. Attention to this type of political consumerism is warranted for two reasons; firstly, because of its progressive expansion into areas far from main cities where the phenomenon is more noticeable and secondly, because of its potential impact on the economic viability of the region.

Effectively, Sicily has very weak agricultural structures, is scarcely competitive on the global market, has a mean utilized agricultural land of 4.12 hectares² and shows a scarce rate of cooperation among farmers. ISTAT³ data also shows that there has been a progressive fall in the number of workers employed in agriculture. In fact data from the population censuses of 2001 and of 1991⁴ shows a fall of 26% in those employed in agriculture and a reduction in the number of farms, from 1990 to 2000⁵ of over 19%. Should this phenomenon continue to spread across the region, the characterization of ethical content products and the growth of GASs could contribute to slowing down the exodus from rural areas. This would thereby improve the declining situation of the territory caused by the reduction of agricultural activities. As stated by Sandler (2010): “Longitudinal collective action environmental problems are likely to be effectively addressed only by an enormous number of individuals each making a nearly insignificant contribution to resolving them.”

To evaluate the potential impact of this phenomenon in Sicily and the real attention paid to sustainability of the agro-food system by the critical citizen a sample of people were interviewed. This sample included 316 subjects (those in the household in charge of buying) belonging to almost all the GASs present and operating in Sicily. This group represents 946 consumers.

The following sections are so organized: section “[The Solidarity Purchase Groups](#)” identifies the principal characteristics of the GASs and their evolution; in

¹ “The development of GASs in Sicily and its relation with the world of production”, Demetra Department, University of Palermo, Sicily Region—Department of Food and Agriculture Resources, National Institute of Agricultural Economics (INEA).

² 5th General Agriculture Census, Sicily.

³ Italian National Institute of Statistics.

⁴ 13th and 14th General Population Census, Sicily.

⁵ 4th and 5th General Agriculture Census, Sicily.

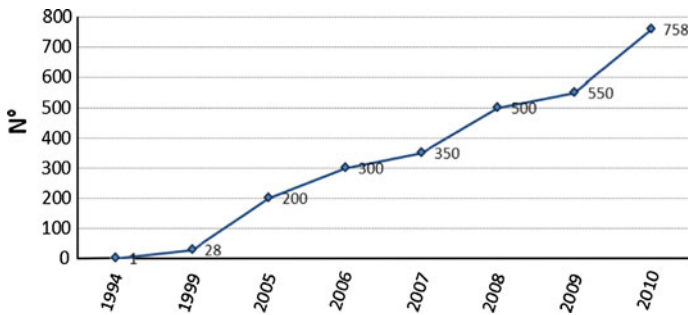


Fig. 2 Trend of GASs in Italy from 1994 to 2010. *Source:* our elaboration from data “National network linking GASs” available on web site <http://www.retegas.org>, December 2010

section “[Data Collected and Empirical Model](#)” the empirical model employed and the research variables used are described; in sections “[General Characteristics of the GAS Consumers](#)” and “[Consumer Factor and Attitude](#)” the principle socio-economic characteristics of the GASs’ consumer partners and their attitudes towards consumption are examined; while in sections “[Characterization of the Consumers: A Cluster Analysis](#)” and “[Consumer Characterization: Econometric Model](#)” the profiles which characterize GAS consumers are analyzed. In the last section, some conclusions and recommendations are offered.

The Solidarity Purchase Groups

Growing awareness of environmental issues and sustainability, concerns related to food scandals, attention to aspects linked to food safety and, above all, the need to express socially ethical and solidary behavior, have all given way to the constitution and proliferation of GASs in Italy. As previously mentioned, GASs are consumer groups which gather formally or informally, and decide to share products, especially those which are organic. Such groups are also motivated by a desire to experiment with new forms of socialization and participation linked to farming. GASs are, therefore, consumer associations characterized by their beliefs about ethical and critical consumption. They tend to consume responsibly, and they have an important role in stimulating economic activity, especially at a local level. Moreover, because of their voluntary and participative nature, GASs live out philosophies associated with collective growth, as tight internal and external networks are accomplished with producers and with other GASs.

The first GASs arose in Italy around the middle of the 1990s and steadily grew; initially in the Lombardy and Emilia Romagna regions in northern Italy and then, from 2005 onward, throughout the entire national territory. Today they are concentrated mostly in the northern regions of Italy and their number, which seems to be largely underestimated, was 758⁶ in 2010 (Fig. 2).

⁶ The only data available on GASs that are operating in Italy are on the Italian GAS network web site, where the GASs can register on a voluntary basis.

Regarding purchases GASs are in favor of particular products and farms. Products are frequently organic and local and they come from small or medium sized farms that are to be found near the groups (zero-Km products). These are often farms that have difficulty in entering the traditional commercial channels (Schifani and Albanese 2010; Schifani and Migliore 2011), or are from social farms or cooperatives. GAS producers have to fulfill certain fundamental requirements: preferably they should be certified as organic; alternatively they are asked to adopt environmentally friendly production practices; they should respect the rights of the workers involved in the production process; they should be willing to converse with other groups; and, finally, they should be available for visits to their farms. Agro-food products represent in volume and in value the highest percentage of GAS purchases. However, in some cases the groups will purchase products that come from fair trade channels.

As aforementioned, one of the most interesting characteristics of GASs, apart from aspects linked to environmental and economic sustainability of the local agro-food system, is their experimentation with new forms of socializing and participation. Groups meet periodically to evaluate the impact of decisions made, form new product tasting events, make additional decisions, share farming resources, take part in the organization and management of purchases and deliveries, and in some cases to address economic and political issues. Among the socio-cultural activities associated with GASs, the creation of Time Banks and Book Banks⁷ are particularly interesting. Because GASs are not isolated groups, interaction among GASs is varied and layered within a single region as well as on a national level. GASs promote networks and districts of solidary economy, where environmental associations, other non-profit organizations, craftsmen, and ethical banks, are also involved.

In Italy institutional attention to this phenomenon started in 2007 when the Budget Commission of the Italian Government approved an amendment to the article 5 of the Financial Law 2007 (Gazzetta Ufficiale 2006); the purposes of GASs and their non-profit nature were recognized and the fiscal and financial aspects were disciplined. In Sicily, although the first GAS was established in the province of Syracuse in 1994, the diffusion of GASs is still a recent phenomenon. It is marginal, limited and essentially referable to very recent years. In particular between 2007 (the first year the phenomenon picked up speed) and December 2010 the number of GASs notably increased from 6 to 32 (Fig. 3).

However, it is worth noting that we are dealing with a dynamic, growing phenomenon. We observed during the census of GASs in Sicily that in some cases the establishment of new groups was accompanied by the closing or temporary suspension of older groups. This could be due to internal organization and the volunteer nature which marks GAS participation seeing as the number of groups in Sicily has varied from as few as 8 to as many as 150 associated units.

⁷ Time Banks are based on the free sharing of time and know-how. Each partner dedicates some of his time and in turn receives other services, always on a volunteer basis. The hours that a partner dedicates to a certain cause become credits that can be exchanged through an appropriate service (Bank) among partners. In the Book Banks the partners establish libraries, which are often "virtual," where books that one intends to lend are put at the disposal of other partners, covering cultural and economic needs.

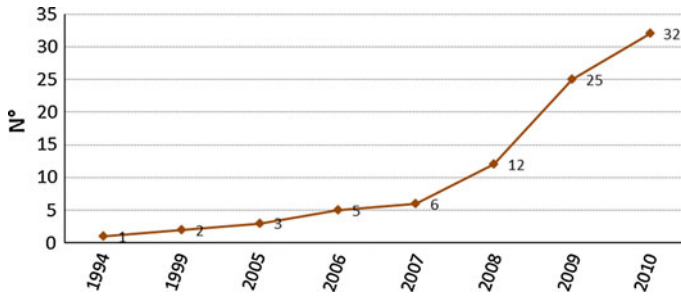


Fig. 3 Trend of GASs in Sicily from 1994 to 2010. *Source:* our elaboration on direct surveys, December 2010

Data Collected and Empirical Model

Data collection and sample selection were possible after completion of the first phase of our study and allowed us to determine the consistency and the geographical distribution of GASs over the entire Sicilian territory.

Data was collected in 2010 through the submission of an *ad hoc* questionnaire divided into 3 sections with a total of 32 closed-answer questions.

The first set of questions served to collect information on the socio-economic characteristics of the family units and of the purchasers. The aim was to evaluate whether some key variables, such as age and education level, were elements able to influence the individual sensitivity edging to a more sustainable agro-food system. At the same time, family income was collected to test whether, and in what extent, it is related to political consumerism.

The second part of the questionnaire was dedicated to collecting the opinions of the participants via a Likert scale 1–5. In this section are included variables concerning the importance given to social and environmental sustainability by the units, and the purchase frequency and spending percentage of GAS compared to its total food purchase. These variables served to verify and, eventually, to measure if and how social environmental and altruistic motivations affect critical consumption attitude.

Finally, the third section of the questionnaire served to explore attitudes and perceptions regarding the organizational and managerial aspects specific to GAS via a Likert scale 1–5. In particular, years of participation to GASs and level of interest to other cultural activities organized were collected in the attempt to measure the level of commitment.

The data collected through the questionnaire represents a participatory research approach where information was gathered through informal encounters with GAS partners and by participating in meetings with Sicilian and national GAS members. In Fig. 4 the variables collected are subdivided into three sets corresponding to as many sections of the questionnaire. The individuals interviewed, even if not statistically representative of the family partners of the GASs present in Sicily, come from a sample extracted from all Sicilian provinces excluding the province of

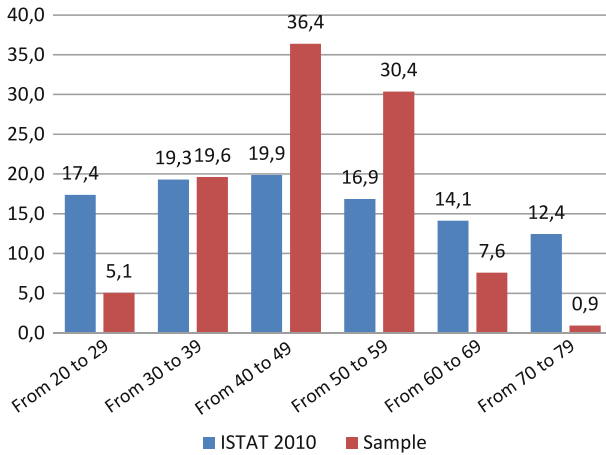


Fig. 4 Age groups distribution

Table 1 Variables collected through the questionnaire

Set 1	Set 2	Set 3
Age	Solidarity towards farmers	Interest in visiting farms
Family members	Ethically responsible consumption	Food tasting interest
Income	Convenient prices	Cultural interest
Numbers of income in the family	Trust relation with farmers	General organization satisfaction
Sex	Food safety	GAS discovery mode
Education	Environmental sensibility	Quality satisfaction
	Spending percentage	Price satisfaction
	Spending frequency	Delivery organization satisfaction
	Attention locally sourced products	Family GAS participation level
	Attention towards organic food certification	Buying group experience
		Previous experience with other GAS
		Years of adherence to GAS
		Adherence from constitution of GAS
		Initiative promoter
		Organizational activities
		Associate producer

Trapani in which no GASs were found and the provinces of Agrigento and Enna, where the two GASs present, one in each province, chose to not participate in the study (Table 1).

Table 2 Territorial distribution and sample extraction

Province	N° GAS	N° Family	Sample extraction	Approximation
Caltanissetta	2	190	57.0	57
Catania	3	85	25.5	26
Messina	1	50	15	15
Palermo	12	382	114.6	115
Ragusa	3	153	45.9	46
Syracuse	6	191	57.3	57
Total	27	1,051	315.3	316

Table 3 KMO and Bartlett's test

Kaiser–Meyer–Olkin measure of sampling adequacy		0.72
Bartlett's test of sphericity	Approx. Chi-Square	2,409.32
	df	465
	Sig.	0.0000

Among the 32 GASs contacted, 27 took part in the survey while 3 GASs in the provinces of Messina, Caltanissetta, and Syracuse were excluded because they were unable to meet survey completion deadlines. In sample extraction the province with the lowest number of GAS partners was considered, on which a minimum threshold of sample extraction equal to 30% of individuals present in the GASs was established. The extraction made up a total sample of 316 consumers and people responsible for purchases in the GAS partner families, representing, as mentioned, 946 family members (Table 2).

In order to identify the main characteristics and motivations of the GAS members, a principal components analysis (PCA) and a cluster analysis were carried out.

To verify the validity of the initial data applied to the factorial model two tests were performed. Firstly, the Kaiser–Meyer–Olkin Test (KMO), (also known as a measure of sampling adequacy) was done based on the partial correlations of the variables; and secondly the Bartlett's Test of Sphericity.⁸ Because in both cases

⁸ The partial correlation result from the correlation between two variables when the effect of a third variable is annulled; the formula for calculating the KMO is the following:

$$KMO = \frac{\sum_i \sum_{j \neq i} r_{ij}^2}{\sum_i \sum_{j \neq i} r_{ij}^2 + \sum_i \sum_{j \neq i} r_{ij,12,\dots,q}^2} \text{ where } r_{ij,12,\dots,q}^2 \text{ is the correlation coefficient between } x_i \text{ and}$$

x_j excluding extracted factors and x_{ij} is the simple coefficient between the variables.

Bartlett's of sphericity is based on Chi-squared:

$\chi^2 = (n - 1 - \frac{2v+5}{6}) \text{Log}_e |R_{vv}|$ where n is the number of cases, v is the number of element present on the diagonal of the correlation matrix and $|R_{vv}|$ is the determinant of the correlation matrix. The degrees of freedom are calculated in the following way:

$$df = v \frac{v-1}{2}.$$

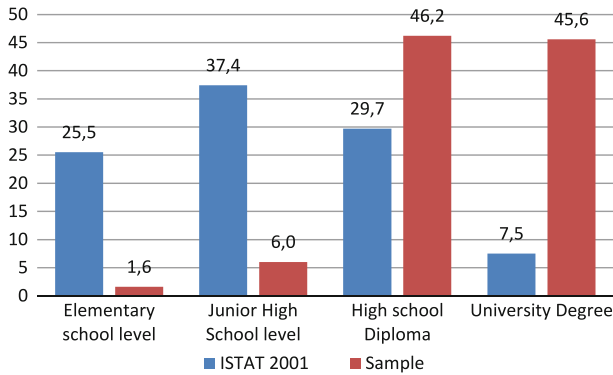


Fig. 5 Distribution of education among the sample and the Sicilian population

these analyses generated positive results (i.e., sig. less than alpha) on the application of the model (Table 3) a decision was made to move forward with the research. The use of PCA was to analytically transform a set of correlated variables into a smaller number of independent macro-variables, synthesizing the original variables while minimizing the loss of information. In this way each component supplies a synthetic representation of the association present among the original variables. The Principal Component Analyses can be expressed by means of the following general formula⁹:

$$Y_i = w_{i1}X_1 + w_{i2}X_2 + \dots + w_{ip}X_p.$$

Moreover, the components reproduce, in decreasing order, the maximum of the variation reproducible in that turn and are independent among them. The loadings of the contributions provided by the variables to the principal components are quantified through correlation coefficients called calculated componential loading, between variables and the single principal components.

After the PCAs, Factor scores were produced on each principal component. These express the contribution of each observation on the composition of factors. The factor scores are used for the subsequent Cluster Analysis and for the econometric model.

General Characteristics of the GAS Consumers

In examining the data generated by the present analysis together with ISTAT (2001, 2010) statistics, some of the principal socio-economic characteristics of GAS consumers were found and are shown below.

The mean age group of consumers in the sample was between 40 and 49 (36.4%) and 50–59 (30.4%; Fig. 4).

The education level of GAS consumers is also greater than what is found in the census data for the region. According to our sample, the individuals who possess a

⁹ Where Y_i is the i -th new variable, X_1, X_2, \dots, X_p are the standardized original P variables and $w_{i1}, w_{i2}, \dots, w_{ip}$ are the values of the loading weights associated to each of them.

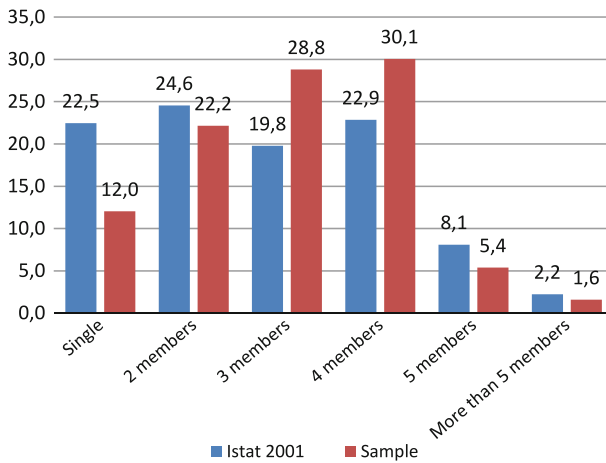


Fig. 6 Distribution of family unit sizes among the sample and the census data

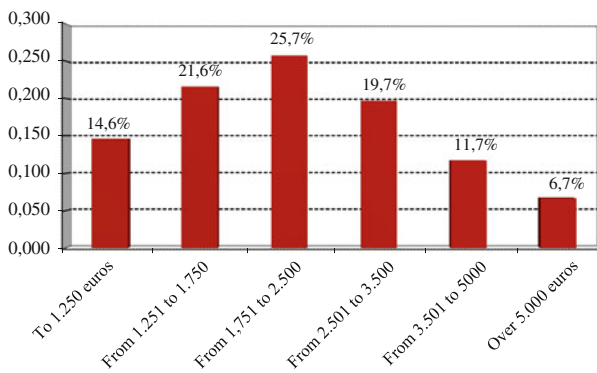


Fig. 7 Distribution of the income groups of the family units

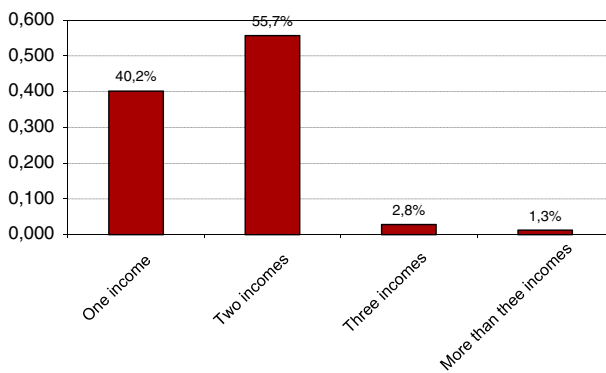


Fig. 8 Type of income present in family units

High School Diploma or a University Degree present a higher incidence; and this leads us to think that there could be a direct relationship between educational level and the propensity to adhere to consumer associations (Fig. 5).

Family size in the sample is also larger than that identified via census data. In fact, as illustrated in Fig. 6, 60% of the sample belong to a family of 3 or 4 members.

The political GAS consumer does not have a particularly high income level. From the latest available ISTAT data regarding Sicilian population pro-capita monthly income in 2008 equaled 1,790 euros a month. When looking at the sample under study, the income levels found within the family units did not exceed 2,500 euros a month in most cases. Furthermore, we must note that in over 55% of the family units, two family members contributed to the average monthly income (Figs. 7, 8).

Consumer Factors and Attitude

The application of Factor Analysis allowed us to reduce the initial number of variables (32) into 10 Principal Components which account for 61.3% of the total variance.¹⁰ For the choice of the number of components being extracted we referred to the major self-value Criteria of 1 (also called the Kaiser Criteria).

Three variables of the 32 present in the model presented componential loadings approximately equal to three components. Therefore we decided to carry out a Varimax rotation.¹¹ The first Component after the rotation accounted for 10% of the explained variance, the second 8%, the third 7.6% and so forth with the tenth component accounting for 3.2% of the explained variance.

The first Principal Component (or factor) extracted was named “Sustainability of the agro-food system” because its results were characterized by the variables associated with the motivations which brought the individuals to the GAS, for example: solidarity towards producers (+0.772), environmental sustainability (+0.775), trusting relationship with farmers (+0.736), food safety (+0.721), responsible consumption (+0.551) and convenient prices (+0.530). This last variable, although less incisive compared to the others, leads us to suppose that, even though environmental and social solidarity are very important, the “rational” component (expressed by the attention given to the convenient prices of the products purchased at the GASs) is present, even if in modest measures.

¹⁰ Despite the literature, the number of Principal Components extracted is rather large, the choice of the number of factors to extract has tried to maximize the variance explained using the fewest possible factors (De Lillo et al. 2007). Also, to avoid arbitrary solutions to the number of components to extract, but still remain subjective, in addition to the variance explained jointly used the Scree Method (graphic method) which aims to consider the difference between successive eigenvalues $dk = \lambda(k-1) - \lambda(k)$, where the number of components is determined by where dk is almost constant for different values of k (Anania and Tarsitano 1995).

¹¹ More in detail the Varimax rotation is orthogonal and seeks the position of the axis that maximizes the variance among all the factors through a transformation of the factorial coefficients of each factor. In particular what has to be maximized is the variance of the factorial coefficients squared among the factors (De Lillo et al. 2007).

Table 4 Components matrix

	Component									
	1	2	3	4	5	6	7	8	9	10
Age	-.013	-.119	-.029	.188	-.102	.063	-.396	.502	.069	-.338
Household size	-.047	-.001	.025	.728	-.104	-.030	-.114	-.206	-.021	.106
Number of income in family	.030	.122	-.068	.761	.049	-.094	.081	-.019	-.042	.099
Income	.009	-.057	.086	.760	-.031	-.008	.237	.181	-.009	-.201
Education	.199	.083	.097	.152	.025	.049	.714	.075	-.139	-.056
Spending percentage	.142	.187	.180	.021	.011	-.029	-.075	.383	.528	.151
Spending frequency	-.132	-.083	.040	.091	-.118	.076	.132	.198	-.644	.122
Quality satisfaction	.122	.095	.728	.100	.164	.011	.154	.060	.143	.040
Price satisfaction	.069	-.088	.757	.013	-.031	.069	.052	.089	-.046	.112
Attention locally sourced products	.167	.095	.128	-.112	-.180	-.169	.152	.253	-.254	.453
Delivery organization satisfaction	.033	.237	.676	.016	.086	-.023	-.120	-.271	-.164	-.150
EPG participation	.078	.211	.472	-.117	-.224	-.138	-.061	.253	-.023	.123
Attention towards organic food certification	.008	.019	.053	.100	.010	.062	-.048	-.066	.027	.817
Solidarity towards farmers	.772	.181	.053	.069	-.008	.037	.094	.109	.066	-.055
Ethically responsible consumption	.551	.234	.034	-.045	.098	-.018	.254	-.008	.063	.160
Convenient prices	.530	-.233	.314	-.006	-.208	.235	-.177	-.011	-.034	-.068
Trust relation with producer	.736	.071	.194	-.076	.015	.055	-.089	.065	-.058	-.099
Food safety	.721	.079	.013	.073	.031	.082	.053	-.087	.190	.159
Environment sensibility	.755	.216	-.119	-.039	.080	-.006	.112	.023	.026	.039
Interest in visiting farms	.178	.813	.031	.089	-.025	.071	.117	.073	.135	.027
Food tasteing interest	.212	.762	.101	-.070	-.110	.082	.131	-.004	.091	.061

Table 4 continued

	Component									
	1	2	3	4	5	6	7	8	9	10
Cultural interest	.184	.819	.126	.062	-.098	-.069	.007	.096	-.031	.004
General organization satisfaction	-.042	.066	.328	.025	.371	.216	-.371	.179	-.427	.127
EPG discovery mode	.162	.168	-.056	.018	.007	.577	.127	.205	.353	.273
Buying group experience	.052	.033	-.006	-.144	-.014	.752	-.012	-.231	-.098	-.035
Previous experience with other epg	.070	-.027	.025	-.011	.082	.762	.059	.106	-.100	-.050
Years of adherence to epg	-.089	.079	.446	-.145	-.473	-.087	.108	.076	.255	.012
Adherence from constitution of epg	.044	-.023	.044	-.098	.832	.003	.143	-.022	.098	.012
Initiative promoter	.041	-.286	.053	-.062	.667	.010	.063	-.275	.077	-.099
Organizational activities	-.040	-.131	-.069	.116	.144	.010	-.074	-.631	.099	-.021
Associate producer	.012	.232	.005	.081	.334	.170	.499	-.056	.013	.090

Extraction method: PCA; rotation method: Varimax with Kaiser normalization

Values in bold are variables characterizing principal components

The second Component extracted was named “Interest in the activities organized by the GASs” and represents interest in visiting farms and interest in food-tasting events hosted by the GAS.

The third Factor, named “Satisfaction with services and products” is intended to represent levels of satisfaction by the units regarding prices of the organic products¹² (+0.757), satisfaction with the quality of products (+0.728), satisfaction levels regarding delivery (+0.676) and the level of participation in GAS activities (+0.472; Table 4).

The fourth Component is characterized by variables which allowed us to define the economic characteristics of the family units, for example the number of family

¹² Price satisfaction regarding organic products is explained with the final price being much lower when compared with prices in the traditional channels of distribution. In fact, in GASs there are no intermediaries between farmer and consumer resulting in lower prices for consumers and higher earnings for producers.

Table 5 Final centers of the clusters

	Clusters		
	1	2	3
Agro-food system sustainability	-.657	.348	.176
Interest towards activities organized by GAS	.000	.044	-.150
Product and service satisfaction	-.058	-.015	.171
Economical component of the family units	-.612	.519	-.497
Adhesion period to GAS	.179	.062	-.579
Group purchase experience	.220	-.169	.120
Cultural level of buyers	.311	.215	-1.369
Participation in the organization of the GAS	.443	-.241	-.097
Importance of purchases	-.200	.135	-.044
Attention towards local-organic products	.338	-.057	-.505

members, the number of incomes in a family, and the total average monthly income. The fourth Component was called “Economic component of family units.”

The period of time for which the partners adhered to the GAS is expressed in the fifth Component, named “Adhesion period to GAS,” and is characterized by high positive saturations of the variables: adhesion to GAS from its constitution (+0.832), as also by the variable which identified the promoters of the initiative (+0.667) and by the variable relative to the years of adhesion to the GAS, which, instead manifested a negative saturation (-0.473).

Previous experiences in purchase groups¹³ (+0.752) and/or in other GASs (+0.762), as well as the form of contact with the GAS are the variables that make up the sixth Factor which is defined “Collective purchase experiences.”

The seventh Component, defined “Cultural level of buyers” receives high factors on the variable “study level” (+0.714) and from the variable “Producer partners” (+0.499), which in this specific case refers to consumer partners.¹⁴

“Participation in the organization of the GAS” is the name of the eighth Component which is characterized by the variables: promotion of organizational activities (-0.631) and age partners (+0.502).

The ninth Factor was negatively characterized by the variables: purchase frequency (-0.644) and general satisfaction with the GAS (-0.427) and positively by the spending percentage (+0.528); for these reasons the ninth Component was called “Importance of purchases.”

The tenth and last Component was named “Attention to local organic products”, and is strongly saturated by the variables: attention to organic certification (+0.817) and attention to local origin of products (+0.453).

¹³ Purchase groups are organized product purchase forms which are not motivated by aspects of environmental or social solidarity but, prevalently by aspects of economic and organizational convenience for the purchases.

¹⁴ The interpretation of the variable producer partner is amenable to the distribution of frequency of the forms expressed by the same variables.

Characterization of the Consumers: A Cluster Analysis

In order to find the main characteristics of GAS members a Cluster Analysis procedure was adopted with the aim of grouping individuals with similar characteristics. Among the cluster techniques, for this current research, the aggregation around mobile center technique was used (also called of the K-means).¹⁵

Through the Cluster Analysis three clusters of individuals were identified whose final cluster centers are reported in Table 5.

First Cluster: Consumers not Satisfied

The first cluster is made up of 101 individuals, equal to 32% of sample, and is mostly characterized by the first Component (-0.657), the fifth (-0.612), the eighth ($+0.443$), the tenth ($+0.338$) and, even if in smaller quantities, the sixth and ninth Components.

In particular, we are dealing with consumers little inclined towards environmental and social sustainability, who have very high income and education levels, aged 40–59 who do not take part in the organizational activities of the GAS. Generally, in this group we find consumers who do not have previous experiences with other purchase groups or other GASs. The individuals belonging to this group show a low general satisfaction with the GAS, correlated with the low purchase frequency and with a modest percentage of buying dedicated to GAS products.

Although the sustainability matters are not seen as elements to justify belonging to a GAS, these consumers show an elevated awareness of local products and certified organic products. Opportunity and/or availability seem to guide these individuals towards their adhesion to the GASs.

Second Cluster: High Solidarity Consumers

More than 52% of the people interviewed are concentrated in this group; they are individuals who pay great attention to environmental and social solidarity matters. In general, family units with two incomes belong to this group, whose average monthly income is not particularly high, between 1,750 and 2,500 euros, the educational level of these respondents is rather high (high school diploma and in some cases university degree). The individuals belonging to this group are particularly involved in the organization of the GAS, among which there is the organization of the farm visits, food-tasting, cultural events and order management. People who had previous experience with other GASs are in this group. We also find, in this second cluster, consumers who shop on a weekly basis, and who buy over 50% of their food at the GAS.

¹⁵ The advantage of the K-means technique lies in the shifting of cases from one group to another optimizing the objective-criteria.

Third Cluster: Average Solidarity Consumers

The third cluster is numerically the least represented group (15.5% of the interviewed sample).

Within this group social and environmental solidarity factors are felt only to a certain extent. However, the members pay little attention to organic certification and are highly satisfied with the prices of the products bought through the GAS.

These are consumers who are not interested in the organizational activities, with an average monthly income lower than the other groups, and a medium–low educational level.

Partner producers and consumers who have been members of the GAS for a long period of time (over 2 years) and a part of those who have no previous experience with other GASs are found in this cluster.

Consumer Characterization: Econometric Model

We added another analysis to the ones previously described that was conducted via an econometric model with the purpose of identifying potential functional relationships between an indicator which synthesizes the principal characteristics of the members of the Sicilian GASs and some of the variables obtained with the help of our questionnaire.

In order to better explain why, and in what extent, an econometric model adds information to a principal component and cluster analysis, some words must be said on the main characteristics of the two approaches. PCA can be defined as a mathematical procedure useful when a set of observations of variables, statistically correlated, are converted into a set of values of uncorrelated variables less numerous than the original ones. Such variables are defined as principal components while the conversion procedure is named orthogonal transformation. In extreme synthesis, the transformation takes place in such way that the first principal component has the highest possible variance, and each following component has itself the highest variance possible constrained by orthogonality (uncorrelation with) the preceding component. PCA is, then, a tool particularly powerful in exploratory data analysis revealing the internal framework of the data by means, mainly, of the variance among variables.

On the other hand, econometric models are purely statistical in the way that the “quantities” analyzed are treated as random variables. Such a model is made of a set of joint probability distributions to which the true joint probability one, of the variables under study, is supposed to belong. To this extent, a set of parameters are estimated giving values and direction to relationships assumed between a variable, said dependent, and a set of economic quantities (pertaining a particular economic phenomenon under study) defined as explanatories.

The use of an econometric model added, therefore, information about the respondents, investigating the forces of the entire sample relative to the motivations belonging to the participation in the GASs, and to the satisfaction concerning some organizational and motivational characteristics of the participants through the

calculations of parameters. Hence, results allowed us not only to elaborate on the identity of the citizen/consumer, but also to foresee, with due caution, the future perspectives of GASs. The hypothesis subject to empirical analysis was to correlate the factor scores obtained by ACP in relation to only the first factor,¹⁶ with some explanatory variables in our view, crucial in the identification, characterization and satisfaction levels of GASs.

The estimation method used was ordinary least squares robust.¹⁷ The explicative variables selected for the model are listed in Table 6.

Although the significance of the variables is self-evident, it seems appropriate to briefly describe the reasons behind our choice in relation to all the variables available for selection. The variables from 1 to 4 (group A) indicate the socio-demographic and structural characteristics respectively of the respondent and of the GAS unit. The variables from 5 to 17 (group B) identify the attitude of the unit towards the initiative and its own grade of satisfaction with the GAS. This includes general organization (logistics and promotion of cultural events) and products purchased through the established commercial agreements. Finally, the variables 18 and 19 (group C) identify two figures of great importance for the good outcome of the initiative; that is the partner promoters, who stimulate demand and the producer partners who promote the offer (Table 7).

The coefficients with a positive sign relating to the variables “Attention to local origin of the products” (11), “overall GAS purchase percentage (7)” and “Interest for the cultural initiatives of the GAS (13)” suggest an emphasis on elements outside the market or at least far from the vision of a consumer intent on maximizing his own utility, according to his economic capability. Political consumerism is based on the intrinsic meaning of these variables and looks towards the “local” as a governing instrument, rather than contrasting the “global”. However, the presence of the variable “Product quality satisfaction (15)” identifies a consumer aware of these transversal characteristics in the economic approaches to consumption. Another important variable, in our opinion, is the “years of adherence to GAS (7).” A negative sign seems to be a certain “weariness” on the part of GAS members. Consequently GASs have a high turnover of participants and, even though there is a positive balance with new entries the GAS, this aspect has to be considered by GAS participants and public operators.

Among the variables which were statistically insignificant, numbers 5, 9 and 12 (Table 6) stand out particularly. In fact the “Evaluation of price convenience (5)” does not seem to be an important decisional and/or behavioral element as was on the other hand the perception of the quality of the products. The variables “Responsible

¹⁶ The decision to consider only the first factor derives from the capacity to include within factor 1 a great part of the variability of the sample. Remaining with the description of the factors of paragraph 5 of this paper, we need only to remind that Factor 1 was defined “Agro-food systems sustainability” since it is characterized by the variables amenable to the motivations that brought the individuals to adhere to the GAS.

¹⁷ Since the evaluation method is well known we preferred not to describe it in detail in this paper. For further details see Cameron and Trivedi (2005) and Greene (2008). The software used for evaluation is STATA version 11.

Table 6 Explicative variables selected for the model

Variables
<i>Group A</i>
1 Age
2 Gender
3 Family Income
4 Education
<i>Group B</i>
5 Price convenience
6 Degree of trust to local producers
7 GASs budget share on total food consumption
8 Environmental sensitivity
9 Ethical and responsible consumption
10 Solidarity to farmers
11 Degree of attention to local products
12 Degree of attention to organic products certification
13 Interests on cultural events promotion
14 Degree of satisfaction concerning products distribution logistic
15 Degree of satisfaction concerning quality of products
16 Modality of first contact with a GAS
17 Number of years participating in a GAS
<i>Group C</i>
18 Initiative's partner promoter
19 Producer partner associate

and ethical consumption (9)” and “Attention to organic certification of the products (12)” are dealt with by the agreements that each GAS makes with the farmers.

In fact, the farmers commit to agricultural practices which have a low environmental impact, without residues of active principles harmful to health in the products sold, and to following a code of ethics in dealing with workers.

If we add to these characteristics the proximity of the production to the consumption (the so-called zero-Km products), GAS participants obtain guarantees that go well beyond any quality certification system with completely informal contracts. Moreover, these contracts allow the GAS to satisfy every request, corresponding to the summit of the prism of sustainability described in the first paragraph, which have emerged during the recent debate on sustainability.

Concluding Remarks

Today the study of consumer organizations, in particular specialized ones like GASs, is a new form of research in the economic-institutional panorama.

The stress put on this form of consumer participation comes, above all, from the will to define the elements which distinguish the individuals taking part in this form

Table 7 Results of the econometric model

Variables	Coeff.	S.E.	<i>t</i>	<i>P</i> > <i>t</i>	[95% Conf. interv]	
15. Degree of satisf. of quality of products	0.156	0.0849	1.83	0.068	-0.0114	0.3228
11. Degree of attention to local products	0.158	0.0622	2.54	0.012	0.0353	0.2803
17. Number of years participating in a GAS	-0.382	0.1199	-3.18	0.002	-0.6174	-0.1457
7. GASs budget share on total food cons.	0.309	0.1287	2.40	0.017	0.0555	0.5621
13. Interests on cultural events promotion	0.110	0.0473	2.32	0.021	0.0166	0.2026
Constant	-1.602	0.3912	-4.10	0.000	-2.3718	-0.8323
Dep. Var.: Factorial score of I factor coming from ACP						
				Numb of obs. = 315		
				$F(5, 309) = 7.50$		
				Prob > $F = 0.0000$		
				R-square = 0.5223		
				Root MSE = 1.0747		

Method: OLS robust

of consumption, so as to estimate the expansion and consolidation of this initiative in the Sicilian territory.

In Sicily, individuals belonging to GASs have a medium–high level of education, are aged 40–59 and are part of a family made up of 3 or 4 members.

While it has been seen in the literature that the organic food consumer has a medium–high income, the political consumer seen in Sicilian GASs has a total family income which, in over 60% of the cases, does not exceed 2,500 euros a month.

The results of this research have shown that the GAS is a particularly complex phenomenon, outlining different ways of perceiving sustainability in the agro-food system and belonging to the group.

The three consumer profiles that were traced, even if aware of the product-price component, show in most cases a marked sensibility towards environmental, social, and economic sustainability. The participative approach is revealed in different intensities.

In fact, about half of the respondents show limited attention to the activities in GASs, while another number of individuals are particularly active in the organization of cultural events such as food-tastings and visits to the farms that provide the group.

The GAS system of participation is in many ways unique given the types of observable political consumerism. Its uniqueness lies principally in the spontaneous

way that these groups come about and in their self-management. One would affirm that consumers not only express more and more modern (or post-modern) instances pertaining to the sustainability of the agro-food system, but also, when they do not find answers on the market, they themselves generate organized forms which satisfy needs which are getting more and more complex and less and less linked to mere accumulation of goods.

In fact, one might argue that through their informal contract, they obtain guarantees which exceed many of today's quality certification systems. Although the aspects linked to sustainability in the agro-food system are lived with different intensity, in this study emerges a reflexive consumer caring about local products as a way to fight back the "global." His/her objective is to build a more loyal economy that is able to give answers to new schemes of personal ethic attitudes and feelings.

From the results obtained, and in relation to the sample analyzed, it can be suggested that the dynamism of the phenomenon is partially explained by that component of GAS participants less motivated by those principles, such as ethics and solidaristic, that are funding principles of GASs. Such participants are attracted by opportunistic choices related to price convenience and an easier way to buy organic food. These aspects, summed up to the relative rigidity of the supply characterizing the GASs,¹⁸ contribute to the weary of those less motivated participants.

As a laboratory of social and political awareness the GAS can be considered as an effective tool for a wider diffusion of critical, ethical and responsible consumption behavior.

The impact that the diffusion of GASs has on the agricultural world cannot be underestimated. Besides supporting farms from an economical point of view, they create direct relationships based on mutual solidarity and acquaintance and guided by shared ethics. These relationships are established between the groups and small food farms and encourage farmers to improve farm management and organization methods and to take on major responsibilities.

Constant contact with these associative forms, to which farmers and their families adhere in some cases, allow the farmer to comprehend GAS members' needs. This in turn can facilitate the stability of the relationships leading to mutual satisfaction.

The diffusion of the phenomenon, especially if today's development trends are confirmed in the coming years, could bring about great awareness from other economical operators, and not only those in the agro-food system.

We hope that many *Homo Sociologicus* requests expressed by GAS consumers are heard by the traditional and big retailers channels of distribution if not in totality at least in part.

To this end it is necessary that GASs continue constantly to promote themselves and that a regional GAS network is created. Such a network could represent an

¹⁸ In this case supply rigidity refers to the difficulty, mainly experienced by small group of consumers, to buy a volume of products big enough to make the delivery convenient. For this reason introducing new products or widening the offer of goods is difficult. Organizational rigidity is, on the other hand, referred to the managerial aspect related to the procedure followed by GAS members to pick up products. Very often they are organized in a specific place in a short range of hours with little margin of flexibility.

important environment in which an ever-growing number of consumer-citizens could express themselves.

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