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Cooperatives' Internal and External Social Networks and Size

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Abstract: Under the perspective of social capital and social networks, this work analyses agrifood cooperatives' internal and external social networks and if they are conditioned by their size. A questionnaire about internal and external social networks was answered by managers of agrifood cooperatives in the Canary Islands (Spain).

The results show that there is an intense interaction both inside and outside the cooperatives, through very frequent contacts among members, managerial teams, customers and other external agents. Size only has an impact on the kinship or friendship ties. They differ depending on the number of employees of the cooperatives: there are more kinship and friendship ties in most of the smaller cooperatives.

As implications from these results, cooperatives' managers should be aware that their social ties make them different from the rest of firms. Social capital facilitates innovation and the exchange of information. Managers must favour its development. They must also focus on managing the information that flows through the diverse interorganisational and interpersonal relations in the cooperatives in an integrated way with their strategy.

This article contributes to the literature analysing organisational social capital of agrifood cooperatives, its elements, and its origin with respect to internal and external social networks. This paper also participates in the debate on the appropriateness of cooperatives' growth by linking their social networks to their size.

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1. Introduction

It has been argued that cooperatives are not only an entrepreneurial network but a "society of members with a social network" (Deng and Hendrikse 2018, p. 750). Therefore, the presence of a social group and the interactions and ties among those who belong to it mean that cooperatives' social capital becomes a significant comparative advantage against other forms of governance (Nilsson et al., 2012). This work explores the idea of the importance

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of social networks for cooperatives following the perspectives of social networks (Scott, 2000) and social capital (Burt, 1992). Social capital is the benefits obtained by the agents from their relations (Nahapiet & Ghoshal, 1998). Their main benefit is the information that these relations provide (Alder & Know, 2002; Coleman, 1990).

Thus, the literature links social capital and social networks to cooperatives. For example, García-Pérez et al. (2016) and Lamers (2012) consider cooperatives a *"network of networks"* whose members, in the case of agrifood cooperatives, can be farmers, managers, first-order and second-order cooperatives and other external organisations. Ties among these members are those of family, friendship, professional, market or contractual relations, among others. Therefore, members with their various roles in the cooperative can access different information and share it with other cooperative members. In short, these social networks allow greater access to information about the industry and a stronger link between a cooperative's members and the markets.

On the other hand, there is a great consensus about the need for Spanish agrifood cooperatives to grow (Juliá et al., 2010; Mozas-Moral et al., 2021). Their growth would allow them to be more competitive, given the asymmetry in the agrifood chain. However, one of the consequences of the growth of cooperatives is the greater heterogeneity of their social base as well as the need to incorporate professionals to manage them (Nilsson et al., 2012). Thus, when the cooperative has a larger number of members, the complexity and difficulty of coordinating activities and their management increases. In short, the growth trend of cooperatives in search of greater market power and competitiveness is not without negative consequences as well.

With these reflections in mind, the aim of this work is to examine the social capital of agrifood cooperatives in greater depth, analysing both their social networks and the impact of the size of these organisations on these networks.

Therefore, several contributions are made. First, this article contributes towards opening and "*shedding light on the black box of cooperatives*" (Guzmán et al., 2020) as it analyses the cooperatives' social capital from the perspective of Strategic Management. Studies of social capital at an organisational level have received less attention, and even less for the case of cooperatives (Westlund & Adam, 2010; Wu & Leung, 2005; Zhang & Fung, 2006). Second, this article analyses the cooperatives' social capital in detail, considering its elements and origin by distinguishing between internal and external social networks (for example, Lamers, 2012; Liang et al., 2015; Ruben & Heras, 2012; Yu & Nilsson, 2017). And third, another important contribution of this research is to link the size of cooperatives with their social networks, a relation that is becoming increasingly relevant in the study of cooperatives, as these two key issues are considered.

2. Literature review

2.1. Cooperatives' social capital: their internal and external social networks

For Feng et al. (2016), social ties among individuals or groups of people constitute social capital. Liang et al. (2015) define social capital as the networks that facilitate interactions among individuals. It includes shared knowledge, trust and culture and other stable inter-agent relationships (Valentinov, 2003)[1]. Thus, social capital is a valuable asset based on interpersonal relationships and whose main benefit is the information it provides (Adler & Kwon, 2002; Coleman, 1990).

Following Nahapiet and Ghoshal (1998), social capital comprises three dimensions: structural, cognitive and relational. Thus, the social ties among a cooperative's members can be regarded as the structural dimension of social capital (Deng & Hendrikse, 2018). The cognitive dimension includes the vision, purpose, codes and goals shared by the cooperative's members, and the main element of the relational dimension is trust (Nahapiet & Ghoshal, 1998). These dimensions are closely interconnected and it is difficult to evaluate their effects on the cooperatives' performance separately. Therefore, this article suggests only one dimension in which the structural dimension, an important dimension for the creation and development of the other two, predominates (Tsai & Ghoshal, 1998). However, trust is also considered as the main component of the relational dimension. What seems necessary to delimit, given the strategic approach of this work, is the origin of social capital.

The existing literature categorises social capital depending on its origin as internal social capital and external social capital (Adler & Kwon, 2002; Deng, 2015; Leana & Pil, 2006). Internal social capital describes the value of social

relations among the organisation's members (Coleman, 1990; Putnam, 1993). On the other hand, external social capital describes the ties between the organisation and other external agents (Burt, 1992). This distinction between internal and external social capital can also be applied to cooperatives, as some authors consider them a network of internal and external relations (for example, Lamers, 2012; Liang et al., 2015; Ruben & Heras, 2012; Yu & Nilsson, 2017). Therefore, the cooperatives' social capital would consist of the relations enjoyed by the cooperative, both among its members and with the environment (Yu & Nilsson, 2017).

The external social capital or the cooperatives' external relations are defined by the ties and contacts their members establish with external agents to those organisations, such as customers, suppliers, people from other business organisations, public administrations, or any other social group. Through these contacts, there is an exchange of information about the market, future plans, and ideas that allow the most efficient achievement of the parties' goals.

In the case of agrifood cooperatives, the external social networks gain significant relevance due to their need to adopt market-oriented strategies as a response to increasing competitive pressures (Deng & Hendrikse, 2018). In this sense, the alignment between the activities and investments by the different agents of the agrifood chain (producers, wholesalers or retailers) will be crucial. This involves a consequent exchange of complex information not only about supply and demand, but also about the quality requirements of customers and final consumers (Bijman et al., 2011). Thus, market trends demand from agrifood cooperatives the development of external social networks with their suppliers and customers to facilitate the coordination of their activities, and which are essential to satisfying their customers' needs.

In this sense, related to channel relationships between industry and distribution (Anderson & Narus, 1990)[2], power is critical in understanding those buyer–supplier relationships (Gaski, 1984). Specifically in agrifood chains, power is usually skewed in favour of large retail buyers, that is, the distributor firms (Glavee-Geo et al., 2021; Hingley, 2005). Thus, agri food industries and cooperatives have found themselves subjected to the conditions imposed by the large hypermarket and supermarket chains (the distributor firms). For example, they are subject to the large distribution's system of postponed payments, or the continuous pressure to reduce the prices of the agrifood products they supply. In addition, these large distribution chains are also present in the home markets through their own procurement centres, which aggravates hostility.

There are some alternatives to solve such conflict among the members of agrifood supply chains: the growth of the industry and the cooperatives, and the development of balanced and equal relationships and links among suppliers (industry and cooperatives) and buyers (distributor firms), that is, external social capital. Growth would allow cooperatives to break the imbalance in power and in the negotiation conditions between the parties. Then, they would work in a more balanced way with the rest of the agrifood chain members. In this sense, it must be borne in mind that these are perishable products, with a high stock turnover and whose distribution means travelling great distances. Therefore, great efforts in coordination must be achieved to obtain innovative products that comply with the quality and food safety standards required by society. Only full collaboration and coordination between the farmer and the rest of the agrifood chain can generate the final product wished by the customer, as Peterson et al. (2001) explain.

On the other hand, the cooperatives' internal social capital and internal networks are the existing contacts and ties among the members of the cooperatives, that is, the interactions among the cooperatives' members, among their members and managers or among the employees and managers. These ties comprise, for example, family, friendship, professional, market and contractual relations. The quality of these interpersonal relationships determines the internal coordination and the resource allocation in cooperatives (Valentinov, 2004). The better the relationships between members, the more flexible and smooth the internal coordination and distribution of resources in cooperatives (Valentinov, 2004) and the less free riding (Nilsson et al., 2012). Thus, these internal social relations also facilitate the flow of information among the members, which is crucial in cooperatives (Piñeiro et al., 2021). On the other hand, the loss or reduction of ties among the members, would be reflected in less involvement for mutual benefits, less collaboration and less trust in their leaders (Nilsson et al., 2012). Ruben and Heras (2012) therefore found that the relationship among the members is a relevant explanatory factor for the effectiveness and productivity of collective action. Thus, as a last consequence of the above, social ties have a positive impact on the

members' production activities, total utility and economic payments (Deng & Hendrikse, 2018) and even in their reputation (Nilsson et al., 2012).

In line with the above, agriculture cooperatives cannot be maintained without enough social capital (Valentinov, 2003). Agrifood cooperatives are precisely stable partnerships between members, "allowing them to join together to act in ways that each member on its own could not" (Mozas-Moral et al., 2021). From this definition of cooperatives based on their origin, agrifood cooperatives are currently an instrument of rural development (Piñeiro et al., 2021) and strategic elements to achieve sustainable economic development (Bretos & Marcuello, 2017) through the achievement of the objectives of their members. However, the management of agrifood cooperatives as organisations could not be an easy task because sometimes their members have different objectives even contradictory (Hendrikse, 1998), present a lack of homogeneity and play different roles simultaneously within the cooperative (Mazzarol et al, 2011)[3].

2.2. Social capital and size of cooperatives

Size is a way to gain competitive advantage in agrifood cooperatives (Piñeiro et al., 2021). Thus, the growth of cooperatives is a way to improve their competitiveness and also a way of adapting to market situations (Deng et al, 2021; Feng et al., 2016). Their growth, sometimes with vertical or horizontal integration, creates bigger cooperatives with very large and heterogeneous social bases (Cook & Burress, 2009), especially in the case of agribusiness (Höller & Kühl, 2018)[4]. This reduces the trust and the face-to-face interactions, creates less involvement and more difficulties to solve collective actions and also weakens democratic governance (Nilsson et al., 2012). Besides, it can cause the cohesiveness of members to disappear, the distance between members and management to increase and communication problems to emerge (Nilsson et al, 2009; Österberg & Nilsson, 2009). Consequently, there is a reduction in the commitment of the members to the organisation and their willingness to participate in it (Bijman & Hendrikse, 2002) and a tendency to cause opportunistic behaviour (Xu et al., 2018).

As a result, as cooperatives grow and become more complex, the interactions among their members stop serving as a mechanism to develop and maintain the shared beliefs and values (Deng & Hendrikse, 2014). In short, the cooperatives' growth trend, in search of a greater competitiveness, makes it necessary for the impact of this growth on their social capital to be analysed (Deng, 2015).

Feng et al. (2016), in a study of agrifood cooperatives from Sweden, suggest that members in smaller cooperatives are more involved in the cooperative's management, trust their managers more, are more satisfied and are also more loyal. Liang et al. (2015) state that the social capital of smaller groups is denser because their members have closer spatial and emotional contacts. This reflection is similar to that formulated by Valentinov (2004) for whom maintaining social capital as the main resource of cooperatives is a difficult task, due to the rise in the number of members, and consequent increase in heterogeneity and in the complexity of the objectives and activities. As the cooperative's members become unknown to each other, it is more difficult for them to interact (Deng & Hendrikse, 2018). In fact, the paradigm of social capital helps to explain why some of the largest and traditionally most complex agrifood cooperatives have failed recently (Nilsson et al., 2012). Thus, the presence of interpersonal and interorganisational ties in cooperatives would be negatively linked with their size (Feng et al., 2016).

It is, therefore, the task of the leaders of these organisations, especially those growing, to manage these internal and external networks in an integrated way within their strategic plan, providing the cooperatives with a minimum efficient size that allows them to achieve economies of scale and to negotiate with large distributors in a balanced way.

3. Methodology

3.1 Data collection [5]

This work took place in the Canary Islands (Spain) where, according to the Ministry of Employment and Social Services, of the 202 existing cooperatives in the region in 2016, 64 specialised in agrifood activities (31.68%). The 64 agrifood cooperatives had 1,664 employees and represented 1.96% of all agrifood cooperatives in Spain. In contrast

to Andalucía, the region with the most cooperatives in Spain (712 cooperatives, 21.8% of the total), the Canary Islands is one of the Spanish regions with the fewest agrifood cooperatives.

The collection of data on the Canary Islands agrifood cooperatives has been a difficult process. One difficulty was the absence of an up-to-date census of agrifood cooperatives in the Canaries. For this reason, as a starting point a census on agrifood cooperatives in the Canary Islands with the contact information of these cooperatives was designed from the one drawn up by the Cátedra de Economía Social y Cooperativa CajaSiete of Universidad de La Laguna. Then, a questionnaire was designed *ad hoc* by the research team to obtain the information needed for the aim of the study[6]. This questionnaire was answered by the manager of each agrifood cooperative.

In order to obtain a higher response rate and to make the process of obtaining information more efficient, in September 2017, the research team hired the services of a company specialising in survey processes called "Servicios Estadísticos". The researchers provided the company a file with the census and the contact information of all 64 agrifood cooperatives in the Canary Islands according to the Ministry of Employment and Social Services. The company made an initial phone call to explain to the managers the objective of the project, the types of questions and to ask them to respond to the questionnaire designed by the researchers. At this initial contact, an appointment was made to carry out the survey at a time that best suited the cooperative's management, or if they preferred, it was sent by email reminding them to return it as soon as possible.

After two reminders by phone and email in order to gain the maximum number of participants (620 calls made and 73 emails sent in total), the data collection process finished at the end of November 2017, with a final sample of 50 organisations of the 64 that existed at the beginning of 2017. Of the 50 questionnaires, 17 were completed by fishermen's associations and the rest by agrifood cooperatives, of which 2 were second-order and the rest were first-order cooperatives [7].

3.2. The questionnaire

Based on the literature review, the research team designed a questionnaire to be used in the survey process and to obtain the information needed to analyse both their social networks and the impact of the size of these organisations on these networks.

The questionnaire is structured in three parts:

1. Part one: descriptive information about the cooperatives. The managers should answer some questions about the descriptive characteristics of the cooperatives. These questions are those about the age of the cooperative (measured as years from its set up until 2017), number of members, number of employees, activities they carry out, products they offer and markets they serve. The managers must choose age, number of members and employees that describe their cooperatives from the ranges included in the questions. On the other hand, they must select the products, markets and activities of the cooperative from those presented in the questionnaire.
2. Part two: internal social networks. This part has a question about internal social networks. This question has four items (Table 1) adapted from Peng et al. (2016), Ostgaard and Birley (1996), and Österberg and Nilsson (2009). Regarding these items, the managers had to indicate how frequently they maintained different types of contacts among members/managers (horizontal contacts: among members, and vertical: between members and managers) to exchange ideas, information, plans, objectives..., the degree of kinship or friendship and the degree of trust among members. The Likert scale used goes from 1 (shows no tie/contact or very low trust) to 5 (shows very frequent ties/contacts or very high trust).

Table 1. Internal Social Networks Scale

COOPERATIVE'S INTERNAL SOCIAL NETWORKS (among members/managers)
1. Are there any kinship or friendship ties among the members in your cooperative? (horizontal ties)
2. Contacts among the members in your cooperative are…. (horizontal ties)
3. Contacts between the members in your cooperative and the cooperative's managerial team are…. (vertical ties)
4. Trust among members…

3. Part three: external social networks. The question about external social networks was designed with four items (Table 2) adapted, primarily, from Vallet-Bellmunt (2010), and Sporleder and Peterson (2003). Regarding these items, the surveyed managers had to indicate how frequently they maintained contacts with their customers and other external agents to the cooperative (other co-operatives external to yours or any other agrifood, professional or trade association, city councils, public administrations…) to exchange ideas, information, objectives, plans... and the degree of trust between the cooperative and its main customers. The Likert scale used goes from 1 (shows no contact with main customers, or very low trust in them) to 5 (shows very frequent contacts with main customers, or high trust in them).

Table 2. External Social Networks Scale

COOPERATIVE'S EXTERNAL SOCIAL NETWORKS (with external agents to the cooperative)
1. Your cooperative shares ideas and information with its main customers (distributors, large distribution…)
2. Your cooperative sets objectives, establishes plans and makes decisions jointly with its main customers (distributors, large distribution…)
3. Trust between the cooperative and its main customers (distributors, large distribution…) is usually….
4. Your cooperative interacts with other agents of the environment such as other co-operatives external to yours or any other agrifood, professional or trade association, city councils, public administrations…

Once the survey process was completed, company staff transferred all the responses to an Excel file, which was sent to the research team. The researchers then applied statistical processing using IBM SPSS Statistics version 25.

3.3. The sample

From a descriptive point of view (Table 3), the sample used in this study is characterised by the fact that the most numerous group of cooperatives has been active for between 31 and 45 years (40%) and the next largest group is over 46 years old (26%). Thus 66% of the cooperatives of the sample are at least 31 years old. On the contrary, the smallest group is made up of cooperatives that have been created in the last 15 years. This could mean that fewer and fewer cooperatives are created or that it is more difficult for them to remain active.

Table 3. Descriptive Characteristics of the Cooperative

		TOTAL (N=50)	
		No.	**%**
AGE	0-15 years old	6	12%
	16-30 years old	11	22%
	31-45 years old	20	40%
	Over 45 years old	13	26%
	TOTAL	50	100%
SIZE (Number of employees)	0-9 employees	28	56%
	10-49 employees	16	32%
	Over 49 employees	6	12%
	TOTAL	50	100%
SIZE (Number of members)	1 to 31 members	16	32%
	32 to 151 members	16	32%
	Over 151 members	18	36%
	TOTAL	50	100%

Regarding the size of the firms in the sample, two variables have been used for the analysis: the number of employees and the number of members[8]. If we take the number of employees into account, the cooperatives are characterised by being mainly small firms, as 56% are microenterprises (0 to 9 employees), and 32% of them have between 10 and 49 employees (small enterprises). If we use the number of members to measure their size, the most numerous group of cooperatives has over 151 members. However, it is necessary to clarify that only 6 cooperatives of the total have over 700 members and the largest has 2,953 members [9].

To sum up, the sample of cooperatives considered in this study is characterised mainly by comprising microenterprises based on the number of employees, and for being between 31 and 45 years old.

Table 4. Products and Markets of the Cooperatives of the Sample

		TOTAL (N=50)	
		No.	**%**
PRODUCTS	Bananas	12	24%
	Fish	5	10%
	Tomatoes	4	8 %
	Potatoes	3	6%
	Wine	2	4%
	Cheese	2	4%
	Others	8	16 %
	A combination of the above	14	28%
	TOTAL	**50**	**100%**
MARKETS	Local market	11	22 %
	Island market	5	10%
	Regional market	6	12 %
	National market	9	18%
	European Union market	1	2%

		TOTAL (N=50)	
		No.	**%**
	Island + national markets	3	6 %
	Local + national markets	2	4%
	Other combinations of the above	3	6%
	TOTAL	50	100%

As an image of the agrifood population in the Canary Islands, the cooperatives, all producer agrifood cooperatives, that only sell bananas or tomatoes predominate widely among the cooperatives from the sample (Table 4): 24% of the cooperatives only sell bananas, 10% sell fish and 8% sell tomatoes. In addition to these cooperatives, there is also a percentage of cooperatives to be highlighted (28%) that sell several of the products presented such as bananas and potatoes, bananas and tomatoes, bananas, tomatoes and wine or tomatoes and wine, to name a few. Due to the variety of products they sell, the markets in which they are commercialised are also very different and varied with the local market predominating (22%) followed by the national market (18%).

If we relate the size of the cooperatives to the products they offer, we can see that banana cooperatives are the largest. They represent 56% of the cooperatives with between 10-49 employees and half of those with more than 50 employees. On the other hand, tomato, potato and wine cooperatives have the highest percentage of cooperatives (7.1% each) that are micro-enterprises (up to 9 employees).

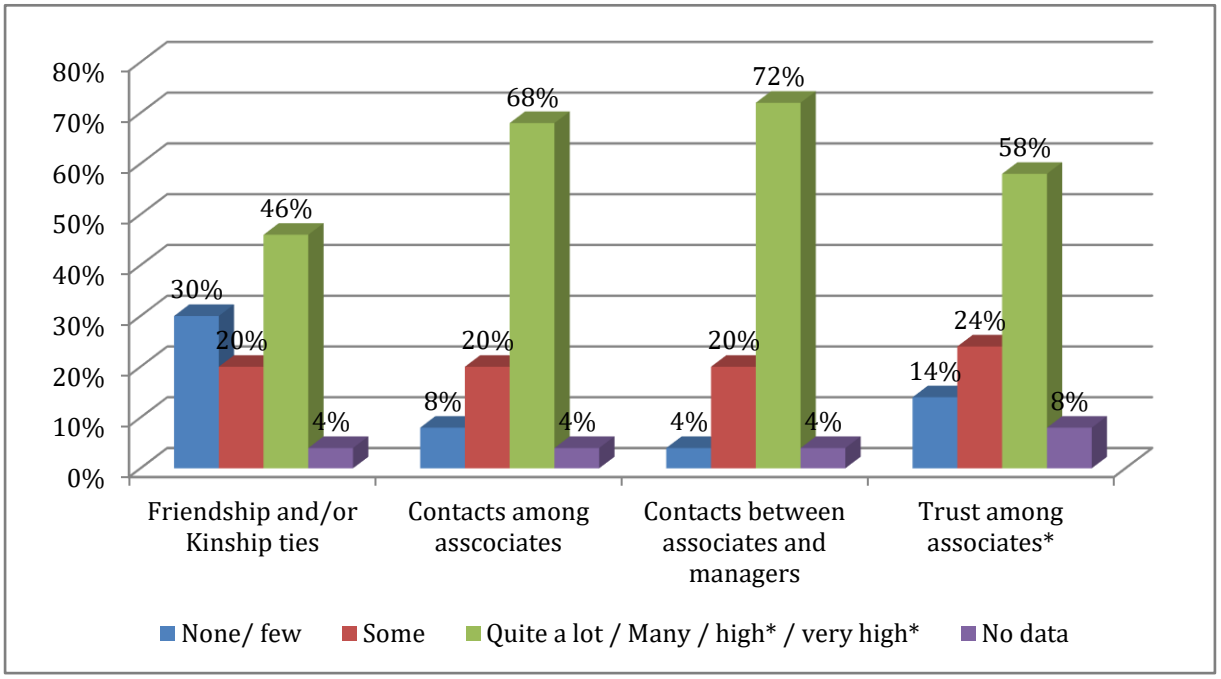
4. Results

4.1. Internal and external social networks of the cooperatives

In this first section of results, we present a general description of the internal and external social networks of the agri-food cooperatives analysed.

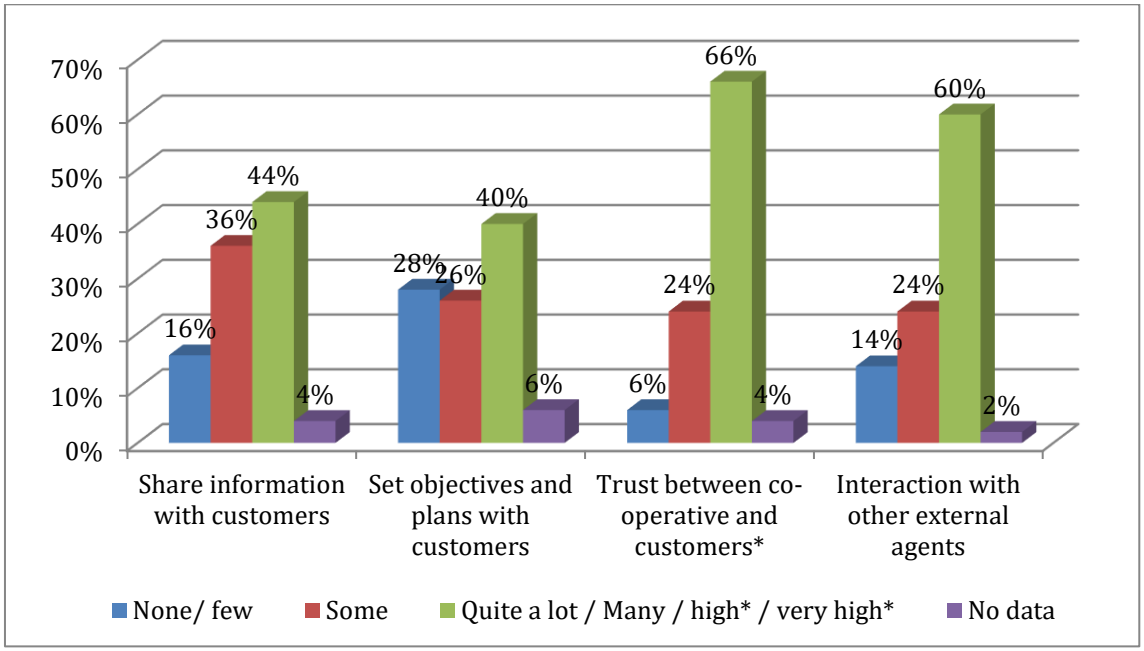
The internal social networks show the ties or contacts that take place among the cooperatives' members (horizontal ties) and between these and the different managerial teams (vertical ties). Thus, in most of the cooperatives from the sample (Figure 1), the members interact frequently or very frequently with other members (68%) and even more with the entity's managers (72%). Moreover, in 46% of the cases studied, there are many friendship and kinship ties among the members. It can also be highlighted that trust among members is high or very high in most cases (58%). To sum up, a great majority of the cooperatives establish many contacts among the members (horizontal ties), and even more between members and managers (vertical ties).

Figure 1. Analysis of Internal Social Networks



The external social networks show the ties established by the cooperative with external agents like its customers (distributors or large distribution), among others (Figure 2). In this study we find that 44% of the cooperatives are very prone to sharing ideas and information with their customers, and 40% would set objectives, establish plans and make decisions with them. However, the great majority of these entities (66%) have a high or very high trust in their customers, either distributors or the large distribution. In addition, a significant percentage of cooperatives (60%) establish frequent interactions with other agents from their environment like other cooperatives or any other agrifood, professional or trade association. In conclusion, the great majority of the cooperatives interact much more with other agents from their environment (60%) than with their customers (44% share information with them), despite the great trust between the majority of the cooperatives and the latter.

Figure 2. Analysis of External Social Networks



4.2. Size of cooperatives and their internal social networks

Regarding internal social networks, the results obtained for each one of the items are:

- Kinship or friendship ties are different depending on the number of employees in the cooperative (Table 5). In 64% of the smallest cooperatives (0-9 employees) there are many kinship and friendship ties, few or none in 60% of the small cooperatives (10-49 employees), and some ties in 50% of the medium size cooperatives (50 employees and over). These differences are statistically significant. According to the number of members in the cooperatives, there are no significant differences, with many kinship and friendship ties predominating in all cases.

Table 5. Internal Social Network (Kinship or Friendship Ties)

	Size (No. employees)						Size (No. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No.	%	No.	%	No.	%	No.	%	No	%	No.	%
None / Few ties	5	18%	9	60%	1	17%	5	31%	6	38%	4	25%
Some ties	5	18%	2	13%	3	50%	3	19%	3	19%	4	25%
Several/ Many ties	17	64%	4	27%	2	33%	8	50%	7	43%	8	50%
TOTAL	**27**	**100%**	**15**	**100%**	**6**	**100%**	**16**	**100%**	**16**	**100%**	**16**	**100%**
Pearson's Chi-square 11.656[a] df 4 .020 asymptotic significance (2-sided)							Pearson's Chi-square .687 df 4 .953 asymptotic significance (2-sided)					

- Contacts among members (horizontal ties): the frequency with which members of the cooperatives had contact with other members of the same cooperative does not differ significantly according to their size (Table 6), these contacts being frequent or very frequent in all cases.

Table 6. Internal Social Network (Contact Members)

	Size (no. employees)						Size (no. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
Non-existent/ few	1	4%	3	20%	0	-	2	13%	0	-	2	13%
Some contact	6	22%	3	20%	1	17%	2	13%	4	25%	4	25%
Frequent/ very frequent	20	74%	9	60%	5	83%	12	74%	12	75%	10	62%
TOTAL	**27**	**100%**	**15**	**100%**	**6**	**100%**	**16**	**100%**	**16**	**100%**	**16**	**100%**
Pearson's Chi-square 4.145 df 4 .387 asymptotic significance (2-sided)							Pearson's Chi-square 3.035 df 4 .552 asymptotic significance (2-sided)					

– Interaction of the cooperatives' members with managers (vertical ties): the regularity with which the members of a cooperative establish some type of contact with the managerial team does not change according to their size (Table 7), being always frequent or very frequent.

Table 7. Internal Social Network (Contact Members-Managers)

	Size (no. employees)						Size (no. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
Non-existent/ few	1	4%	1	7%	0	-	1	6%	0	-	1	6%
Some contact	5	19%	3	20%	2	33%	4	25%	4	25%	2	11%
Frequent/ very frequent	21	77%	11	73%	4	77%	11	69%	12	75%	13	81%
TOTAL	**27**	**100%**	**15**	**100%**	**6**	**100%**	**16**	**100%**	**16**	**100%**	**16**	**100%**
Pearson's Chi-square 1.102 df 4 .894 asymptotic significance (2-sided)							Pearson's Chi-square 1.967 df 4 .742 asymptotic significance (2-sided)					

– Trust among the cooperatives' members: in all sizes of cooperatives (by number of employees and by number of members), the cooperatives with high or very high trust among their members predominate. Hence, no significant differences are observed. Therefore, trust among workers does not depend on the number of employees hired or on the number of members that make up the cooperative (Table 8).

Table 8. Internal Social Network (Trust)

	Size (No. employees)						Size (No. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
Very low/low	4	15%	3	20%	0	-	2	12%	2	12%	3	19%
Some	7	26%	4	27%	1	17%	4	25%	2	12%	6	38%
High/very high	16	59%	8	53%	5	83%	10	63%	12	76%	7	43%

	Size (No. employees)						Size (No. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
TOTAL	**27**	**100%**	**15**	**100%**	**6**	**100%**	**16**	**100%**	**16**	**100%**	**16**	**100%**
Pearson's Chi-square 2.022 df 4 .732 asymptotic significance (2-sided)							Pearson's Chi-square 3.596 df 4 .463 asymptotic significance (2-sided)					

To sum up, the cooperatives' internal social networks only differ significantly in the existence of kinship and friendship ties when their size based on the number of employees is considered. The presence of more kinship and friendship ties in the cooperatives with 9 or fewer employees stands out.

4.3. Size of cooperatives and their external social networks

The analysis of the elements of the agrifood cooperatives' external social networks based on their size, both in number of employees and number of members, gives the following results:

- Sharing information with their main customers: although the high percentage of smaller cooperatives (based on the number of members) that exchange information frequently or very frequently with their customers stands out (72%), there are no significant differences among the cooperatives when sharing ideas and information with their main customers (Table 9).

Table 9. External Social Network (Sharing Ideas and Information with Customers)

	Size (no. employees)						Size (no. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
Never/Rarely	6	23%	2	12%	0	-	3	21%	2	12%	3	17%
Occasionally	9	35%	6	38%	3	50%	1	7%	9	56%	8	44%
Frequently/ very frequently	11	42%	8	50%	3	50%	10	72%	5	32%	7	39%
TOTAL	**26**	**100%**	**16**	**100%**	**6**	**100%**	**14**	**100%**	**16**	**100%**	**18**	**100%**
Pearson's Chi-square 2.269 df 4 .686 asymptotic significance (2-sided)							Pearson's Chi-square 8.462 df 4 .076 asymptotic significance (2-sided)					

- Setting objectives, establishing future plans and making decisions with their main customers: although the high percentage of larger cooperatives (based on the number of employees) that set objectives, plans... frequently or very frequently with their customers stands out (83%), there are no significant differences with the other cooperatives when setting objectives, plans... with their main customers (Table 10).

Table 10. External Social Network (Setting Objectives, Establishing Plans and Making Decisions with Customers)

	Size (no. employees)						Size (no. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No.	%	No	%	No	%	No	%	No	%	No	%
Never/Rarely	10	40%	4	25%	0	-	5	38%	5	31%	4	22%
Occasionally	6	24%	6	37%	1	17%	2	15%	5	31%	6	33%
Frequently/ very frequently	9	36%	6	37%	5	83%	6	46%	6	38%	8	45%
TOTAL	**25**	**100%**	**16**	**100%**	**6**	**100%**	**13**	**100%**	**16**	**100%**	**18**	**100%**
Pearson's Chi-square 6.422 df 4 .170 asymptotic significance (2-sided)							Pearson's Chi-square 1.829 df 4 .767 asymptotic significance (2-sided)					

– The existing trust between cooperatives and their main customers is not significantly different based on the size of the cooperatives considered (Table 11), being high or very high in all cases.

Table 11. External Social Network (Trust in Customers)

	Size (no. employees)						Size (no. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
Very low/low	2	8%	1	6%	0	-	2	14%	1	6%	0	-
Some	8	31%	4	25%	0	-	2	14%	3	19%	7	39%
High/very high	16	61%	11	69%	6	100%	10	72%	12	75%	11	61%
TOTAL	**26**	**100%**	**16**	**100%**	**6**	**100%**	**14**	**100%**	**16**	**100%**	**18**	**100%**
Pearson's Chi-square 3.357 df 4 .500 asymptotic significance (2-sided)							Pearson's Chi-square 5.111 df 4 .276 asymptotic significance (2-sided)					

– The cooperative's relations with agents from the environment, like other cooperatives or any other agrifood association do not depend on their size (Table 12), although the high percentage of larger cooperatives (based on the number of employees) that relate frequently or very frequently with external agents stands out (83%).

Table 12. External Social Network (Interaction with Other External Agents)

	Size (no. employees)						Size (no. members)					
	0-9		10-49		Over 49		1 to 31		32 to 151		Over 151	
	No	%	No	%	No	%	No	%	No	%	No	%
Never/rarely	2	7%	5	31%	0	-	1	6%	3	19%	3	17%
Occasionally	7	26%	4	25%	1	17%	7	47%	2	12%	3	17%
Frequently/very frequently	18	67%	7	44%	5	83%	7	47%	11	69%	12	66%
TOTAL	**27**	**100%**	**16**	**100%**	**6**	**100%**	**15**	**100%**	**16**	**100%**	**18**	**100%**
Pearson's Chi-square 6.557 df 4 .161 asymptotic significance (2-sided)							Pearson's Chi-square 6.060 df 4 .195 asymptotic significance (2-sided)					

In summary, there are no statistically significant differences in the external social networks established by the cooperatives with other agents from the environment, like their customers, according to their size.

5. Conclusions, implications and future research

5.1. Conclusions

There is a great consensus that social capital is highly relevant in the cooperative context (Feng et al, 2016; Xu et al, 2018). It is a key dimension for competing in the markets. For this reason, it is necessary for cooperatives to reflect on their internal and external social networks and analyse them to, thus, incorporate them into their strategic plan, which is essential for their survival.

Thus, regarding the cooperatives' internal social networks, there is a social context of great interaction. Frequent or very frequent contacts are observed among the members (horizontal ties) and, even more, between members and managers (vertical ties) of most cooperatives. At this point, it would be interesting to remember that, according to Peng et al. (2016), horizontal communication among farmers is linked to process innovation, whereas vertical communication between farmers and managerial teams is linked to product innovation. The frequency of contacts may be due to the existence of a high or very high trust among the members in most of the cooperatives analysed.

These results bring to light the powerful social environment of these cooperatives and the innovative potential that exists or could exist in these cooperatives.

Regarding the external social networks, a great interaction is observed between these cooperatives and their external agents like, for instance, any other agrifood association, professional and trade associations, city councils, or public administrations. However, although cooperatives show great trust in their customers, this does not turn into an equivalent exchange of ideas and information with them, or a joint design of plans and decision making. One of the possible reasons for this outcome is that the cooperatives are small compared to their customers (distributors or large distribution). Further research will be required to explore whether this means that price and quality standards are being set by their external agents with little or much less input from the cooperatives together with the possible commercial impact these arrangements are having on the membership over time. The degree to which professional managers are mediating these exchanges in the larger cooperatives and whether this is having any noticeable advantage or disadvantage also requires further investigation.

In a second stage, this work studies the cooperatives' social networks according to their size. Related to social networks or ties established inside the cooperative (internal social networks), it is concluded that the only statistically noticeable difference regarding their size is the existence of more kinship and friendship ties in the smallest cooperatives based on the number of employees, which seems understandable. The smallest cooperatives are often linked to small towns or agricultural areas where all the members know each other and many of them are friends or relatives.

In this sense, social networks based on affective contacts like those of kinship and friendship, called strong ties by Granovetter (1973, 1983) , provide cohesion to the group. However, these ties sometimes provide redundant information to people (Hansen, 1999) or information that is already shared. This circumstance will not help when considering innovation as a strategy. On the contrary, the ties of a more professional and impersonal nature, which Granovetter (1973, 1983) calls weak ties, provide new, non-redundant and innovative information because the participants have fewer ideas in common. Thus, although forms like cooperatives have the unique capacity to carry out social innovations, due to their collective nature and their democratic processes (Vézina et al., 2017), these innovations cannot be developed or achieved with just any social base.

Regarding external social networks, the interactions of the cooperatives with their customers, to share information or set common plans and objectives, or the trust between customers and cooperatives do not depend on their size. The reason again may be that these cooperatives, whether having 9 or over 50 employees, are still very small when compared to their customers, mainly large distributors. However, cooperatives understand the importance of interacting a lot with their customers due to the necessary market orientation they should have to be competitive.

In short, agrifood cooperatives are characterised by a social context of great interaction, both between their members and managerial teams and with the exterior. Cooperatives and their members thus seem to have understood that the links they establish are one of the most valuable resources for facilitating both the achievement of their own objectives and those of the co-operative as an organisation. The economic and commercial impact of these relationships was not a focus for this study but is seen as an important next stage in our research.

5.2. Practical implications

Social capital is defined as the basis for survival and success of cooperatives (Deng et al., 2020). Thus, the cooperatives' managers should, firstly, be aware that they have networks and social ties that make their cooperatives different from other types of governance. This difference from the rest of organisations must be used, in accordance with their strategy, to be more competitive as it the positive impact of social capital on the cooperatives' performance (Liang et al., 2015, 2018) and on the ease of obtaining financing, like bank loans (Yu & Nilsson, 2017), has been confirmed. Moreover, social capital facilitates innovation and the exchange of information, reduces information asymmetry and, with that, favours transactions (Yu & Nilsson, 2017), thus limiting opportunism (Lian et al., 2015). Therefore, managers must make an effort to take advantage of its existence and, even more, to favour its development, being complementary to the formal governance. With that, managers must promote the development

of both (Liang & Deng, 2018), that is, favour and complement the formal and informal, interpersonal and interorganisational relationships and ties.

The maintenance and strengthening of the social networks and interactions of their members is not an easy and quick task to achieve in cooperatives. It requires a sustained investment of time and effort (Ostrom, 1994). Firstly, it requires managers to be fully aware of and committed to cooperative values and to base their management on them (Awotwe et al., 2020). It is particularly important to insist on the idea that, given market circumstances, members will achieve their objectives more efficiently through the cooperative than individually. The development of networks and linkages, both internal and external, should be included as a social objective of the cooperative and be part of the organisation's strategic plan. This is the best way to demonstrate externally and internally their importance and the commitment to their development and improvement.

This objective could be achieved by organising meetings between the members of the cooperative beyond those that are legally obligatory. For example, members, employees and management could strengthen their relations by attending workshops organised on topics of interest to all involved. Experts could be invited to talk about the latest market trends, cultivation techniques, pests, new online administrative procedures, quality improvement, legislation or the rising fuel prices and transport. The main external agents with whom the cooperative maintains relations could also be invited to participate in these meetings. For example, it would be interesting to exchange impressions with cooperatives' main clients to know directly their point of view of the market situation. With a high level of internal social capital, they will reduce free riding behaviours and encourage cooperation among members (Deng et al., 2020).

One of the main problems of agrifood cooperatives in Spain is their size (Meliá-Marti et al., 2021). Thus, the efforts to protect social capital must be intensified when the cooperative is planning to develop a growth strategy. It is in these circumstances that the social capital of cooperatives is most damaged by the increasing heterogeneity of members' attitudes and objectives (Grashuis & Su, 2019). Therefore, in addition to considering the economic and financial aspects of, for example, a vertical integration strategy or a merger, the social capital implications for the viability of the project must also be taken into account.

Another way of strengthening the ties and the social relations, both internal and external, could be to put efforts into keeping the membership stable (Deng, 2015). The best way to maintain or even increase membership is to ensure that members are satisfied with their participation in the cooperative. This enhances the cooperative's reputation in the sector and its attractiveness. This can be done by conducting member satisfaction surveys or simply by establishing informal contact with members to find out their opinion on how the cooperative is doing. In any case, an atmosphere of closeness and familiarity should be created, inviting participation and exchanges of information. This atmosphere is facilitated if cooperative objectives and values are common and shared.

In addition to establishing and strengthening such ties, managers also should focus on managing the information that flows through the diverse interorganisational and interpersonal relations in the cooperatives in an integrated way with their strategy. For example, the regular meetings or workshops organised according to their objectives are a way to convey valuable information to both members and employees, and to external agents in this way. Besides, the managers could periodically send a "newsletter" with the main news or decisions related to the cooperative, to the sector or even with a summary or conclusions of the meetings organised.

On the other hand, social capital is also a consequence of the institutional conditions (Yu & Nilsson, 2017). Furthermore, it should be borne in mind that agricultural cooperatives are a valuable instrument for job creation and development in rural areas. Thus, the development of their social capital, as their key resource, must also be encouraged and promoted by institutions and public administrations. For example, they could arrange training conferences and sectoral meetings, dialogue and discussion forums, annual acknowledgements and prizes, to name a few. All these policies and public actions must be focused on the training of managers, whose role in the creation and development of a social base that is integrated and coherent with the strategy of each cooperative is vital.

Anyway, although social capital is more difficult to build than economic capital (Valentinov, 2003) and its increases with use (Liang et al., 2015), the benefits of all efforts to strengthen the social capital of cooperatives will be realised in the long run in improved cooperative performance.

5.3. Future research lines

This work significantly contributes to the literature on social capital and also on the management of agrifood cooperatives as it analyses the agrifood cooperatives' internal and external social networks from an empirical point of view. Moreover, it links them with their size. Despite this added value, this research has some limitations. From a methodological point of view, this work uses a sample of cooperatives from a specific geographical scope (Canary Islands), with a relatively limited dimension, and dedicated to one activity only (agrifood). This type of limited sample is usual in works about this matter (for example, Cechin et al., 2013; Peng et al., 2016). Yet, among the future research lines to be developed from these results, it is suggested first to widen the study both organisationally and geographically.

Additionally, it is necessary to include in the analysis of the cooperatives' social networks the measurement of their performance. Thus, it could be learned whether the development of a greater social network, internal and/or external, with the consequent greater amount of information flowing through it, turns into better performance. Furthermore, what type of network, internal or external, or the combination of both, is more profitable for the cooperative in terms of economy, satisfaction of the associates, or external image could be determined.

Another future development possibility is in the traits of the ties established by the cooperatives, the nature of the information flowing through them and the relation between these traits and the strategic behaviour of the cooperatives. Thus, it would be interesting to establish a relation between strong/weak (Granovetter, 2005) or internal/external ties, explicit/tacit information (Nonaka & Konno 1998) and prospective/defensive strategy (Miles & Snow, 1978). And thus, as shown by the scarcity of existing literature on the subject (García-Pérez et al., 2016; Yanes-Estévez et al., 2011), it would be interesting to be able to respond to questions like: *Are the cooperatives based on "weak", external relations, that exchange tacit and new information, that develop more prospective and innovative strategies, the ones that obtain good results?* and *Are the cooperatives based on "strong, internal relations, that exchange explicit and redundant information, that develop more defensive and conservative strategies, the ones that obtain good results as well?*

To conclude, not only is this work relevant by pioneering the analysis of the agrifood cooperatives' internal and external social networks with a strategic approach, but also for the researching potential and the possible future lines to be developed from these preliminary results. To have a strategic approach linking these external and internal social networks implies an element of common goals and common vision for these agrifood cooperatives' future as an industry. The development of this research line stresses the need for cooperatives to have strategic, proactive and coherent approaches. Thus, they must incorporate their social base in their approaches, sharing prominence with the cooperative's size, as essential pillars to their success, to be able to compete in the market with the rest of capitalist organisations.

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Notes

[1] See Valentinov (2003) to delve into the concept of social capital, its distinctive features and relevance. He also highlighted the characteristics of social-capital-based organisations and its importance for agricultural organisations and especially for agrifood cooperatives.

[2] The large distributor sector is made up of large supermarket and hypermarket chains. The reader can learn more about power and conflicts in channels of distribution in Gaski (1984). Hingley (2005) explains the power in the agrifood business-to-business vertical supply chain context and Glavee-Geo et al. (2021) present the power imbalance in agrifood supplier-buyer relationships.

[3] Members of cooperatives could act simultaneously as suppliers of products to the cooperative (for example, bananas, tomatoes, wine, meat, milk, oranges…), as clients of the services offered by the cooperative (for example, technical advice), as buyers of raw materials offered by the cooperative (for example, fertilisers, other materials, tools) and as part of the management team. All these different roles imply multiple relationships and objectives in the context of the internal social capital of cooperatives.

[4] Höller and Kühl (2018) present a review of heterogeneity of members in cooperatives, its dimensions and impact on performance.

[5] This work was supported by Fundación Canaria Cajamar (Project A16120338/ Cooperativas Agroalimentarias).

[6] The questionnaire is explained in the following sub section.

[7] First-order and second-order agrifood cooperatives, plus fishermen's associations are considered as units of analysis in this project. The term *cooperative* will be used generically.

[8] The cooperatives are classified according to their number of employees based on the European Union Recommendation of 6 May 2005 (DOCE 20.05.2003) into micro-enterprises (0-9 employees), small enterprises (10-49 employees) and medium enterprises (50-250 employees). As there is no established criterion to classify them considering the number of members, we decided to use the groups based on the quantiles.

[9] Regarding the size of the cooperatives according to the number of members, the top 10 Spanish first-order agrifood cooperatives can be taken as reference. Their members vary between the 570 members of Vicasol and the 15,904 members of Covap. Moreover, the average number of members of Spanish agrifood cooperatives is 374 (OSCAE, 2015).