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*Full Length Research Paper*

# Technical Assistance, Solution for the Identity Crisis of the Agricultural Cooperatives

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**The emergence of cooperative groups created by companies with a co-operative status, upstream production, and private companies, downstream, resulted in the rupture of their relationship with their members (Vargas Prieto, 2014). This paper addresses the role of the agricultural extension in strengthening the co-operatives/members' relation in order to resolve the inherent identity crisis of such groups. A qualitative method based on the case study of five groups allowed us to study the interactions between communities through a new mode of knowledge management characterized by the interaction between functional groups and communities of practice: the Model 3 (Vargas Prieto, 2015). We show that agricultural advisors act as translators between the two cognitive communities and this facilitates the resolution of the identity crisis of agricultural cooperatives**

**Keywords:** Agricultural Extension, Extension System, Agricultural Cooperatives, Cognitive Communities, knowledge management.

JEL: O13, O4, Q1, R11

## INTRODUCTION

The appearance of groups of cooperative organizations has been shown to have enabled the agricultural cooperatives to adapt to economic changes and thereby guarantee their development. But consequences persist for the cooperative-associate relationship (Vargas Prieto, 2014). Changes in the structure of the agricultural cooperatives lead to distancing, complexity and confusion for the associates (Forestier and Mauget, 2001). When a cooperative is integrated into a business group, the associate has the impression of becoming just another peon in an economic game whose rules are beyond his reach (Nicolas, 1993). Nowadays, cooperatives at the

worldwide level have a diffuse model that combines shareholder and associative governance modes, which is difficult for associates to understand. They feel distant from the centers of decision and it is difficult for them to identify with these new structures (Duvaleix, Cordier and Hovelague, 2003; Forestier and Mauget, 2001).

The identity crisis that affected French agricultural cooperative groups (Vargas Prieto, 2013) poses questions about maintenance of relationships with the associates and how this is reflected in the functioning of the cooperatives. According to Côté (2007; 2009), the challenge for agricultural cooperative groups is to show that, through

their economic actions, they can generate results that create added value for their associates compared to companies that are not part of the solidarity sector.

In agricultural cooperatives, resources are shared to facilitate or carry out economic activities as well as to improve or increase the results of those activities. Cooperatives therefore provide services and products to facilitate the sustainability of the activities of their members. The members are responsible for their cooperative and are based on ethical principles and transparency. Cooperatives are also involved in territorial development; they are democratic organizations controlled by their members, who actively take part in establishing policies and making decisions. The men and women elected as representatives by the members are responsible to them. Management of the cooperative is thus based on dialogue between the employees and associates, to maintain a balance between satisfying the needs and interests of the cooperative and those of its associates. Because they are both partners and clients, cooperatives must find solutions that reconcile their own financial health with satisfaction of the associates, in order to maintain their business and participate in the development of the communities.

In a context of evolution of the worldwide regulatory environment, associated with access to markets and subsidies, compliance with environmental regulations as well as those for food safety, health, animal welfare and land maintenance, these become decisive criteria for continuation of a productive agricultural activity, but they are difficult to predict and control (Barkaoui and Butault 2004; Lefer, 1997; Le Theule and Litvan, 1993). To achieve this objective, the European Community decided to establish agricultural extension systems at the national level to respond to these new regulatory requirements (see Regulation CE N<sup>o</sup> 1782/2003). In Colombia, in the framework of the agreement for termination of the conflict and building a stable and lasting peace (2016), in point 1 on “comprehensive rural reform” there is recognition of the need for the government to make available to the men and women beneficiaries of the Lands Fund (Fondo de Tierras), among other things, technical assistance in the framework of the Comprehensive Agricultural Development Programs with a Territorial Approach (Programas de Desarrollo Agrario Integral con Enfoque Territorial) (p. 13). Point 1.3.3 of the agreement, which identifies the necessary stimuli for development of the solidarity economy, then refers to “the strengthening of productive capacities and conditions of access to rural development instruments (means of production, **technical assistance**, education and training, among others)” (p. 24).

Technical assistance for agriculture thus becomes one of the key forms of adaptation of new cultivation systems at the worldwide level. This assistance must comply with regulatory requirements, maintaining a high level of

production while guaranteeing farmers’ income. (Remy *et al.*, 2006). Given their specificity, agricultural cooperatives are in better condition to carry out technical assistance activities. In effect, they are viewed as principal actors in the diffusion of new agricultural practices or systems in France, for example (Meynard, 1998). On the other hand, cooperatives are created to provide accompaniment, support and to carry out the activity of their members. However, despite the legitimacy of cooperatives in providing technical assistance, few studies have examined this activity (Faure *et al.*, 2011). Taking into account the identity crisis caused by structural changes in the cooperatives along with the growing needs of their members to respond to changes in worldwide agricultural policy, this article aims to fill the gap. We are therefore interested in understanding **how does technical assistance contribute towards strengthening the cooperative-associate relationship to resolve the identity crisis of the agricultural cooperative groups?**

### Theoretical Framework

To make this analysis, we have initially used contractual theory to identify the governance model of the agricultural cooperatives. This has enabled us to characterize the hybrid governance mode that consists of a mixture of the associative governance of traditional cooperatives with the shareholder governance of commercial subsidiaries that join the principal cooperative to create cooperative groups. This hybrid governance mode has limitations due to asymmetries of information and conflicts of interest. These limitations arise because of the increased distance of the members due to the large number of associates, the diverse motivations of the different actors and the complexity of the new structure of the group. This has caused a weakening of the relationship with the members, which has in turn led to the identity crisis of the cooperative groups.

Our analysis also shows that technical assistance generates value creation for shareholders in the cooperative groups and this value creation is based on coproduction of knowledge in the exchange between technicians and associates (Vargas Prieto, 2015). In this analysis, we show that the contractual vision is limited to analysis of the value creation process (shareholders and associates) in cooperative groups, because it does not include knowledge creation and diffusion. In accordance with the work of Charreaux (2002), we have proposed the use of a cognitive approach to overcome the limitations of the contractual approach. The cognitive approach responds to the problems of asymmetrical information and conflicts of interest in agricultural cooperative groups. The first theoretical contribution of this research is to demonstrate the possibility for dialogue among contractual and cognitive theories in order to understand agricultural assistance activity within the cooperative groups. The use of both the contractual approach and the cognitive

approach in our theoretical framework enables us to identify the technical assistance functions within the cooperative groups, which go beyond technical support for farmers. In fact, interaction between the advisers and farmers of the cooperatives facilitates the creation and dissemination of knowledge and the development of skills and therefore resolution of the crisis.

Identifying the cognitive communities in the cooperative groups facilitated understanding the organization of technical assistance in the cooperatives. In the first place, two types of communities are observed – functional groups and communities of practice – (Vargas Prieto, 2015). The interaction between these two cognitive communities helps to create new knowledge and also facilitates the negotiation of beliefs and objectives, thus bringing the associates of the cooperatives closer. The interactions among the cognitive communities are explained in the literature using two models of interaction: interaction among the hierarchical communities (Model 1) and interaction among the autonomous communities (Model 2). These two models include information and training practices. Secondly, there are few studies on the interaction between different types of communities of different models. However, the agricultural assistance activity in the cooperative groups enables the development of communications channels among the different communities identified within them. This shows the existence of a new knowledge management model that incorporates the specificity of the cooperatives, in other words, the consultation practices of the organization for decision-making. Thus, the second theoretical contribution of this research is to understand model 3 for knowledge management, which enables conceptualization of the interaction between cognitive communities of different types within the same organization.

## **METHODOLOGY**

In terms of methodology, a qualitative approach based on case studies of French agricultural cooperative groups was chosen in order to deal with our problem. Given the lack of empirical studies and information about technical assistance, this methodological choice enabled us to study the organization of technical assistance activity by diverse cooperative groups in depth and in detail. In fact, the qualitative methodology approach was chosen precisely because of the lack of information on this topic. Interaction with the object of study enabled us to understand the reality of technical assistance in the cooperatives and its role in resolving the identity crisis. The case study used a sample of 5 representative cooperative groups in France. Applying technical criteria of representativeness, variety, balance and the potential for discovery, we studied polyvalent and specialized groups in diverse types of production and geographically located throughout the

country. The use of multiple data sources enabled us to identify the characteristics of technical assistance of the cooperative groups as well as to consider the most adequate strategies for dealing with the identity crisis. The following figure recapitulates the methodology that was applied.

## **RESULTS**

The proposed methodology enabled us first of all to determine that the appearance of technical assistance in the cooperatives corresponds to the period of emergency of the cooperative groups. The increase in the number of advisers, diversification of activities for providing the service, opening of supply stores and increased availability of storage silos in the 2008-2011 period concretely justifies our observation. It was also found that technical assistance activities are very specialized in just two types of production: cattle raising and cereals. This strategy can be guided by the profitability of that type of production. In hybrid governance, the objective is to maximize shareholder value, including production subsidiaries.

### Characterization of the technical assistance

The case studies are used to identify the characteristics of technical assistance in the agricultural cooperatives. We present the evolution of the organization and identify the profiles of the agricultural technicians in the cooperative groups (3.1.1). We then present the impact of the characteristics of technical assistance on strengthening of the cooperative-associate relationship (3.1.2). Finally, we present the technical assistance development strategies of the cooperative groups, to strengthen the cooperative-associate relationship (3.1.3).

#### 1.1.1. Organizational development and profiles of the agricultural technicians

The reconstruction of the territory forced all cooperative groups to reorganize their technical assistance activity. The strategy of all of the cooperatives that were studied was to strengthen technical support for farmers. To understand how this activity came about in the organizations, the organizational charts of each cooperative group were constructed based on available information. A simplification of the general organizational chart of the agricultural cooperative groups studied is shown in figure 2. This information has enabled us to determine that, over the past two years, two departments were created in charge of the back-office for technical assistance in all of the cooperative groups. One department, dedicated to research and experimentation to improve the content of the advice, is called Agronomy in Figure 2 (green) and the department in charge of creating the supply of services, communication

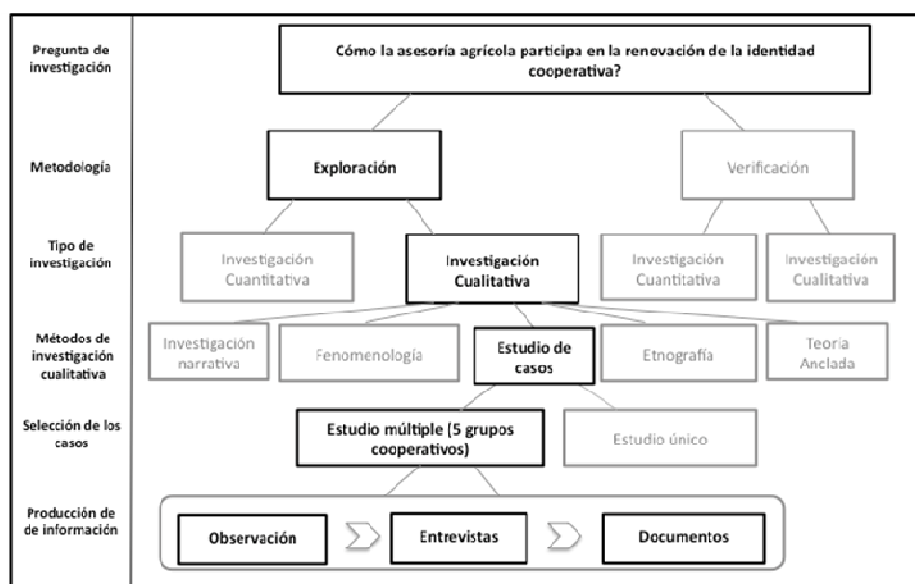


Figure 1. Methodology of the Research

Source: author

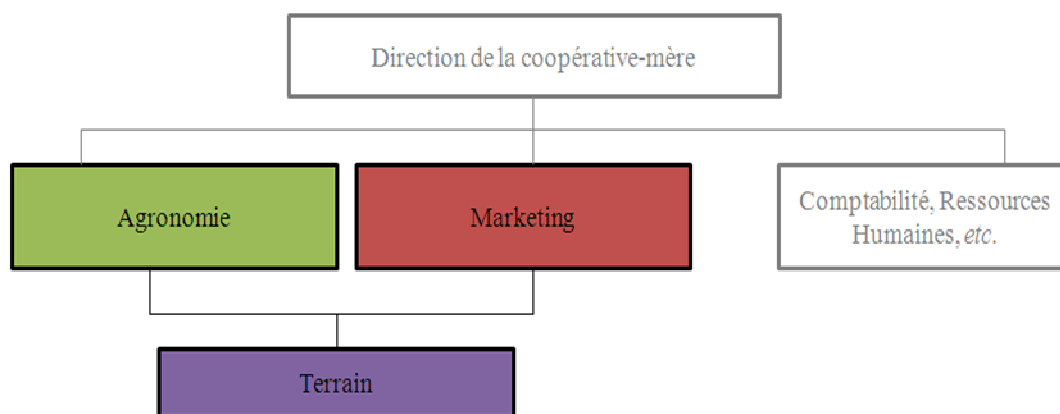


Figure 2. General organizational chart of cooperative technical assistance

Source: author

of new services and setting prices has been denominated Marketing (red). These two departments are directly associated with the technicians that provide the front-office. The purple-colored chart in Figure 2 is called terrain and groups together the technicians that have a direct relationship with the associates of the cooperatives. The organizational charts created using the case studies not only show the work of providing advice by the cooperative groups but also the diversity of profiles of the technicians of the field support department (technicians for field support, research and experimentation, commercialization). Analysis of the data has enabled us to

identify five different profiles of advisors in cooperative technical assistance.

- The person responsible for the portfolio carries out the following activities:

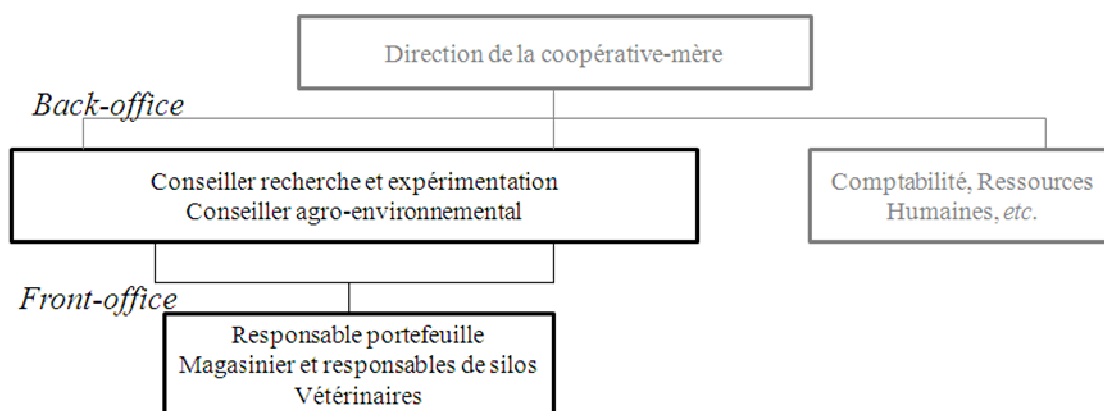
- Follow-up on a group of farmers to maximize the gross margin of the members, offering products and services that satisfy production needs.
- Advise farmers on use of the products offered by the cooperatives (consumables and decision aid tools, or OAD Technological tools for decision making. from the French acronym)
- Carry out administrative follow-up on the farmers (creation of contracts and purchase orders).

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- Participate in creating the commercial offering of the cooperative.
- Be in contact with those responsible for supply stores and with heads of silos.
- Organize technical and commercial meetings with members of the cooperative.
- Promote the image of the cooperative.
- Respect the safety and quality standards of the cooperative.
- Propose and finalize animal production contracts.
- Establish financing solutions under the control of the associate account.
- Prospection among non-members of the cooperative
- Support the creation of projects to obtain donations and aid.
- The agro-environmental advisor or technician carries out the following activities:
  - Administrative management of the OAD
  - Development of the OAD
  - Inform and educate colleagues about their services
  - Participate in the use of the technical and economic data gathered in the framework of production traceability.
  - Maintain all necessary statistics to quantify the impact and profitability of the OADs
  - Provide administrative follow-up on the portfolio and review the regulations.
  - Advice and information for the members
  - Treatment of potential subcontractors
  - Promote the services sold by the cooperative
- The research and experimentation advisor or technician carries out the following activities:
  - Seek information to design experimental programs
  - Propose protocols for tests, participate in their application and guarantee synthesis of the technical results.
  - Develop programs to disseminate the results.
  - Develop itineraries of the most profitable crops adapted to each situation.
  - Develop technical and economic options of consumables.
  - Inform and encourage the sales force.
  - Carry out technical follow-up on evolution of the crops throughout the season.
  - Participate in meetings to present technical reports
  - Ensure external and research relationships to sign agreements with other organizations.
  - Train in order to innovate and always be a forerunner, follow the regulations and inform the responsible departments.

- Draft documents and messages for the farmers according to their specialty.
- Prepare the necessary technical files for sales campaigns.
- The person responsible for the store and the silos carries out the following activities:
  - Receive the members and/or customers of the shop: participates in commercial operations (calls, sales in the store).
  - Operation of the silo: reception, unloading, storage, classification, packaging, wrapping and transport of all agricultural production.
  - Deliver all purchased products
  - Introduce the information into the system
  - Inform their superior about the activity of the stores or silos
  - Guarantee the application of safety and quality norms.
- The person responsible for the store and for the silos carries out the following activities:
  - Accompany the farmers with preventive assistance
  - Carry out interventions to deal with certain problems
  - Technical-commercial support for the cooperative sales forces
  - Drafting of information documents
  - Support for their colleagues on specialized topics

Identification of the activities of the different agricultural technicians in the cooperative groups shows their proximity to the associates. The technicians that take part in the back-office are a bit more remote than those who participate in the front-office. In fact, the back-office technicians are those for research and experimentation (profile 3) along with the agro-environmental technicians (profile 2). These two types of advisers are responsible for creating the content of the back-office, and their interaction with the associates is infrequent or nonexistent. On the other hand, the technicians that are part of the front-office are responsible for the portfolios (profile 1), the veterinarians (profile 5), and those responsible for the stores and silos (profile 4). Their job is to serve the members; they are the technicians of the territory that have face-to-face contact with the associates. The back-office technicians inform and train the front-office technicians to homogenize knowledge and then disseminate the information to the associates. This information dissemination is mainly done through individual visits that can help to strengthen relationships with the associates. However, thematic meetings and use of ICTs are also important. The groups send out periodic informative bulletins, e-mails, etc. The technical recommendations are



**Figure 3.** Organization of technical assistance in agricultural cooperatives

Source: author

also published on the Intranet of the cooperative, to which the members have access. We may infer however, that they do not take part in creating the cooperative associative relationship, because they do not facilitate exchanges.

To better understand the back-office and front-office operations, we have placed the different types of technicians on the organizational chart of a cooperative group (Figure 3).

The impact of technical assistance in recovering the cooperative-associate relationship

The characteristics of technical assistance activity within the cooperative groups are as follows: First of all, participation by the associates in orientation of the technical assistance. Secondly, the diversity of services that the cooperatives offer, and finally, equal access to the technical service and segmentation in the provision of that service.

### ***Participation by the associates in orientation of the technical assistance***

During the visit to the cooperatives, it was found that most cooperatives carry out evaluations of the technical assistance service. We therefore decided to research these results in depth. All of the cooperative groups apply yearly surveys, on average, to identify the members' concerns and their expectations about the services. Our case studies found two evaluation strategies. On the one hand, the specialized groups are developing questionnaires for the surveys and posting them on the Intranet, which can be negative for building the cooperative-associate relationship. In fact, the Internet

surveys are voluntary and therefore limited in number, and only those participants that use this tool may respond.

### ***The diversity of the services offered by the cooperatives***

One of the characteristics that we have observed during the field visits is the variety of services beyond technical assistance. In fact, the members are increasingly demanding the development of decision aid tools or OAD and economic and strategic support for operations. To understand this diversity of services, the information gathered by the cooperative groups was standardized to create an identification list of all of the groups of services in our sample. We therefore made a list of 76 services offered by the cooperative groups. We classified the services in three types of accompaniment. A total of 44 services associated with management of diseases, parasites and crop incidents, handling of fertilizers, training, benefits in reproduction and variety were grouped together under technical and productive accompaniment. The second type of accompaniment involves 16 services associated with support for the environment. These services are related to the use of pesticides, breeding, and following the CAP, among others. The third category is economic and strategic accompaniment. It has 16 services associated with economic and financial training to manage production, informatics knowledge and follow-up on management software. The cooperative groups therefore not only accompany the associates in agricultural production; they give advice about financial resource allocation and management of operations as well as the new regulations, to help farmers deal with environmental challenges. Once the services have been classified in the three types of accompaniment, we analyze the type of support that favors each cooperative group. This is to show the availability of

**Table 1.** Availability of the services provided in technical assistance at the agricultural cooperatives

Tipos de acompañamiento	Grupos polivalentes			Grupos especializados	
	GC1	GC5	GC4	GC3	GC2
Grupos cooperativos					
Acompañamiento 1 – Técnico y productivo	29	36	33	27	26
Acompañamiento 2 – Ambiental y reglamentación	7	12	12	11	5
Acompañamiento 3 – Económico y estratégico	4	7	9	9	7
<b>Total servicios de asistencia técnica</b>	<b>40</b>	<b>55</b>	<b>54</b>	<b>47</b>	<b>38</b>

Source: author

these services and thereby identify their strategy. This information is presented in Table 1.

According to the table, groups GC4 and GC5 have the largest amount of technical assistance services in their 2010 offering. Groups GC1, GC4 and GC5 have a large offering of services in accompaniment 1 and 2 compared to groups GC2 and GC3. The specialized groups have more services in type 3 accompaniment than the polyvalent groups. However, GC4 seeks to attain the level of specialized services with accompaniment 3. Therefore, GC4 seems to have adopted the best strategy for developing technical assistance services.

### ***Equal access to technical service and the segmentation of service provision***

There are three possibilities for access to the technical assistance services of the agricultural cooperative groups: A strong commitment and/or one included in a service/product package, a low level of commitment and/or rates for the services separate from the products, and a price independent of the associate's commitment. According to these price strategies, dealing with the associates is relatively easy. For example, if access to the services is associated with commitment, uncommitted associates face limitations in gaining access to the technical assistance service.

Development strategies for technical assistance activity at the agricultural cooperatives

The case studies make it possible to identify different development strategies for this activity in the cooperative groups. The specific strategies of the cooperative groups affect the loyalty of their members and maintain the relationship between them and the cooperative. We have identified three such strategies. The first is to develop experimentation and associations that satisfy a need to share knowledge. The second strategy is associated with the commitment to technical assistance certifications and guarantees for quality of service. A third strategy is to

develop tools for disseminating the advice that seek to improve communication.

Technical assistance understood as a cognitive community

Through use of the theoretical framework of the knowledge economy as proposed in the theoretical framework. A reading is made of the technical assistance to show that, through the cognitive communities, we can understand how the cooperative groups can use this activity to strengthen the relationship with their associates.

Technical assistance understood through the associative practices

In all of the groups studied, it is the portfolio technicians who provide the technical assistance. For example, in GC2 there are 8 visits per year for each associate, in GC2 6 visits, in GC4 5 visits and in GC5 4 visits per year. The group with the fewest visits per year is GC3, with 3. It has been found that the creation of Internet sites and use of the Intranet serve to inform the members. All of the groups have therefore developed an agronomic module that is available on the Extranet. This module contains all of the technical information about the crops, and in some groups there is also an OAD or decision aid tool available to the members. The use of ICTs plays an important role in disseminating information in the agricultural cooperatives. Finally, informative bulletins are sent to all members containing the results of the tests of crop varieties or the introduction of new techniques. Sending these bulletins facilitates communication between a cooperative and its members. The information they contain is not limited to technical questions but also includes general information about the cooperative, which is helpful in the dissemination of strategic information of the cooperative group.

With respect to training, we have found technical training for the application of phytosanitary products as well as about storage and conservation of cereals, certifications, management elements and creating dossiers to gain access to aid from the CAP, risk management, variety of

**Table 2.** Synthesis of associative practices in technical assistance

Tipos de grupos	Grupos polyvalentes			Grupos especializados	
	GC1	GC5	GC4	GC3	GC2
Prácticas asociativas					
Información	37	50	48	38	30
Formación	3	5	6	9	8
Consulta	2	2	3	2	3

prices, market analysis, discovery of the Internet and Extranet and teamwork. These training sessions aim to develop abilities such as leadership and command of informatics tools. The courses are also given by different types of technicians, depending on their specialty.

In the list of technical assistance services provided, there are no *a priori* practices of consultation about decision-making. However, the general assembly's held by the cooperatives for decision-making are taken into account. We have therefore added participation in decision-making about their cooperatives through the different bodies of the associates to the list of associative practices.

The following is a table summarizing the results found in each group.

According to the table, information is the most developed associative practice, followed by training and consultation. In fact, the cooperative groups have many more services associated with information dissemination. Finally, even where consultation has always been present in the collegial bodies through the assemblies, we believe that the appearance of the cooperative groups also encouraged other consultation tools, such as evaluation of the technical assistance to better adapt to the new agricultural context. Asking members for their opinions about the effectiveness of the technical assistance service can help to adapt a cooperative's offering to the demand.

Identification of two types of cognitive communities in technical assistance

As part of the three associative practices emphasized in the technical advice, there are interactions between the technicians and associates in the three cases (information, training and consultation), and there also are exchanges between technicians and associates. Analyzing these interactions through the prism of the cognitive communities helps to understand the impact of technical assistance work on the cooperative-associate relationship in the cooperative groups. Through this study, we have identified functional groups, which came about during the implementation of technical advice activity within the cooperative groups.

The functional groups form the basis for the traditional models of the organizations such as, for example,

marketing, finance, human resources or accounting. The functional groups are communities whose objective is to disseminate knowledge (Cohendet *et al.*, 2003). The members are recruited by the hierarchy of the company based on the homogenous knowledge recognized by a title. The members of the functional groups therefore, have homogenous knowledge about a particular topic. We have found two functional groups around technical assistance activity that are in charge of experimentation and commercialization. These functional groups are made up of engineers, technicians and professionals with knowledge of agriculture. The purpose of the groups is to create new technical-economic solutions to satisfy the demands of their members, as previously explained in the stylized facts. The first functional group is that of agronomy. It is responsible for creating the contents of the technical assistance and disseminating the information to other members of the organization. This community is made up of advisors in the back-office (research and experimentation and agro-environmental technicians). These technicians share with the front-office technicians through training and dissemination of information by means of documents such as technical manuals created for them. Their exchanges can unintentionally produce new knowledge. Therefore, this type of community does not happen or does not create new knowledge voluntarily, but instead guarantees its dissemination among the members of the community. The second functional group is that of commercialization, consisting of members with knowledge in that field. Its objective is to create an offering of advice and to set more attractive prices for users. This community is also responsible for carrying out surveys among the associates to identify their demands and opinions about the technical assistance.

A community of practice is one that shares knowledge in a specific area, to develop abilities or find "best practices" or the solution to a problem (Brown and Duguid, 1992; Lave and Wenger, 1991; Wenger, 1998). Three characteristics of communities of practice are: mastery of a field of knowledge, the fact that this knowledge enables interaction among the members of the community and that this interaction leads to the generation of resources. Communities of practice exist for their members (Brown and Duguid, 1991; Lave and Wenger, 1991). They improve



individual abilities through the exchange and dissemination of a directory of shared resources (Wenger, 1998). In our case studies, we have identified a type of community of practice in the 5 cooperative groups, which arises through interactions between technicians and members. The technicians and associates share the same area of knowledge: agricultural production. The members of this community seek new solutions to improve production. The forms of interaction include individual visits, group sessions, telephone calls, distribution of documents, e-mail, SMS, etc. This interaction also leads to the creation of new resources, including experiments, tools, possible solutions to common problems, etc.

The organization of agricultural technical assistance activities within the cooperative groups can be represented by functional groups and communities of practice. In the following section, we focus on the interactions among these two groups of different types of communities in order to understand the knowledge management model specific to the cooperative groups.

The main role of the technicians in solving the identity crisis of the agricultural cooperative groups

Our case studies have led us to conclude that the role of the technicians is that of translation between the two communities and thereby to promote the dissemination and creation of knowledge within the agricultural cooperative groups. In the following section, we show that it is mainly the portfolio technicians who participate in the intermediation of the different types of communities within the agricultural cooperative groups.

### ***Understanding knowledge management through interaction of the cognitive communities of different natures.***

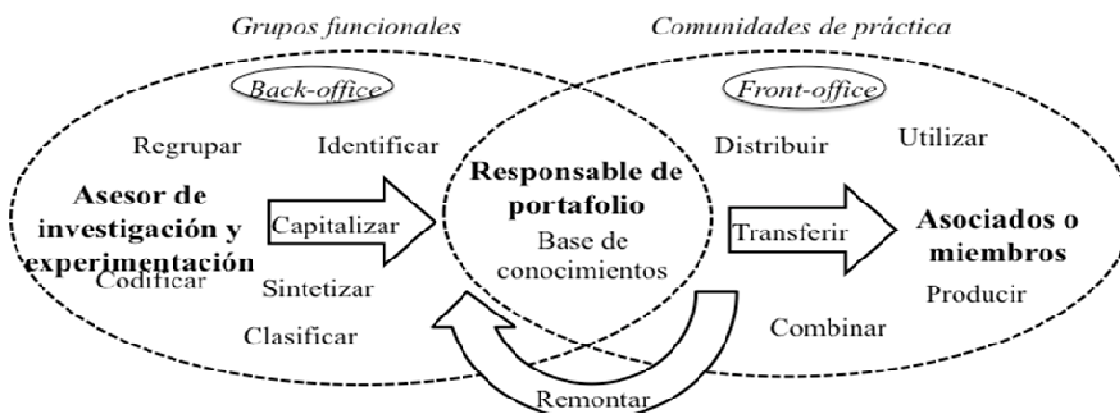
The exchange between the two communities occurs through the associative practices. The information and training practices are carried out in the framework of technical assistance and facilitate dissemination of the knowledge of the functional groups to the farmers and, therefore to the communities of practice (top-down), thanks to intermediation by the technicians. The functional groups send documents, inform and train the farmers through interventions by the technicians or the use of ICTs. These information and training practices show that the communities are united through information dissemination, as in any other organization.

In the cooperative groups, these changes are not only based on dissemination of the knowledge of one community to another, but can also serve as the basis for the creation of new knowledge through interactions. Participation by the members of the technical assistance of the functional groups (bottom-up) through the practice of technical assistance (evaluation of the technical

assistance, for example) enables a return by the communities of practice to the functional groups of the cooperative. In our case studies, we have seen that the functional groups of the cooperative groups can create technical assistance services based on the results of the evaluations made by the associates; in a top-down process, knowledge is extended to the associates. This distribution is mainly made by the portfolio technicians, who have direct contact with the farmers. The associative practices of information, training and consultation can therefore facilitate not only the dissemination but also the creation of knowledge within the agricultural cooperative groups.

It is through consultation that the agricultural cooperative groups have communications channels to find out about the needs of their members. Consultation is carried out through virtual feedback from the associates and also through feedback to the technicians. As part of the service relationship, technicians and associates exchange knowledge of different types (tacit or codified). These exchanges enable the technicians to gather new knowledge that is returned to the functional groups in a bottom-up process. The interaction between technicians responsible for the front-office and those of the back-office capitalizes the information, in other words summarizes, classifies, indexes and codifies the knowledge. This codified knowledge is then normally transferred in the form of technical documentation, through the use of ICTs and tools for accompaniment in decision-making (OAD). Empirical analysis of the knowledge creation process within the agricultural cooperative groups leads us to validate knowledge creation model 3. The following figure makes knowledge creation explicit thanks to the interaction between the functional groups and communities of practice.

The figure describes model 3, showing the members of two communities and demonstrating that knowledge creation occurs in a spiral process (Nonaka and Takeuchi, 1995). This implies that the tacit knowledge of the farmers is codified in the functional groups, and that knowledge already codified by the functional groups is then used to create new tacit knowledge. In fact, new codified knowledge (bulletins and information materials, in particular) in the functional groups is distributed among the members by the advisers or those responsible for portfolios. Thanks to intervention by the technicians, intermediation of the two communities is carried out in a top-down and bottom-up fashion. This process is possible because of the specificity of the hybrid management of the agricultural cooperative groups. This shows that, through the practice of technical assistance, cooperatives can involve their members in decision-making and specifically in creation of the technical assistance, which is implied in the creation of knowledge within the agricultural cooperative groups.



**Figure 4.** Creation and diffusion of knowledge in the activity of technical assistance in agricultural cooperatives

Source: author

**Table 3.** Results for agricultural cooperative groups

Nivel	Nivel de intervencion de los técnicos	Nivel de desarrollo de la estrategia de asistencia técnica
Elevada	GC3	GC4
Relativamente elevada	GC4	GC1
Intermedia	GC5	GC5
Moderada	GC1	GC3
Débil	GC2	GC2

Source: author

Technical assistance in resolving the identity crisis of agricultural cooperative groups.

In order to evaluate the role of technical assistance in resolving the identity crisis of agricultural cooperative groups, we decided to quantify two indicators of measurement of interactions in the two cognitive communities identified above. Thus, we measure the level of intervention (frequency of interactions) and the level of development of the technical assistance strategy (forms of exchange). The table below summarizes the results.

Three trends are observed in this table:

- A good GC4 position both with regard to the proposal for technical assistance services offered by the portfolio manager rather than the OADs and the strategy of the technical assistance organization seems to be favorable for the interaction between the groups Functional and cognitive communities. This interaction also helps to maintain the cooperative-associated link.

- GC2 difficulties in the two indicators. This situation is not conducive to the interaction between functional groups and cognitive communities. In fact, GC2 is a new group

that presents governance problems. It is observed the difficulty of agreeing on the organizational strategy of the two cooperatives that formed GC2 after a merger. Communication between the two communities is not efficient because the translation process becomes difficult.

- The intermediate position of GC5, which is at a medium level in relation to other agricultural cooperative groups. In this context, the interaction between functional groups and communities of practice also allows the diffusion and creation of knowledge. However, the group can further improve the relationship with partners to facilitate the negotiation of the beliefs and interests of both communities.

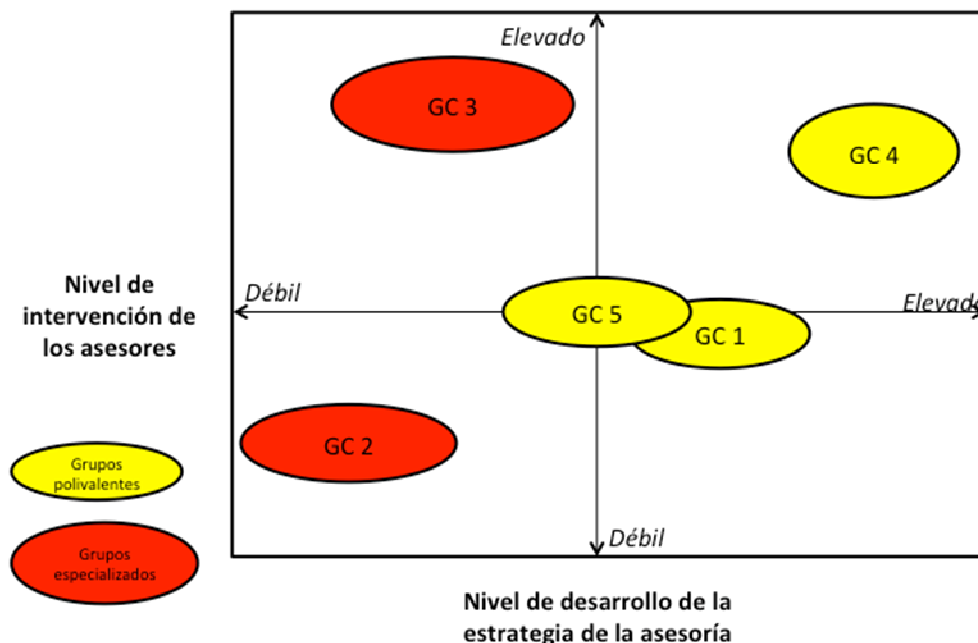
Once the level of each cooperative group has been identified in relation to these two indicators, the image inspired by the work of Cohendet and Diani (2003) is reconstructed to represent the cooperative identity of each of these groups (Table 4).

This table, inspired in the literature does not allow to position our 5 cases. In fact, GC5 has intermediate characteristics. Therefore, we propose a graphical representation in the form of axes in which we locate our 5

**Table 4.** Corporate identity according to the quality of interactions between cognitive communities

	Nivel de intervención de los técnicos (frecuencia de interacciones) <i>Débil</i>	Nivel de intervención de los técnicos (frecuencia de interacciones) <i>Elevado</i>
Nivel de desarrollo de la estrategia de asistencia técnica (formas de intercambio) <i>Débil</i>	Identidad débil <b>GC2</b>	Identidad (tacita) fuerte <b>GC3</b>
Nivel de desarrollo de la estrategia de la asistencia técnica (formas de intercambio) <i>Elevado</i>	Identidad (codificada) fuerte <b>GC1</b>	Identidad fuerte <b>GC4</b>

Source: author



**Figure 5.** Cooperative identity of cooperative agricultural groups

Source: author

cases of study (level of intervention in abscissa and level of development of the strategy in ordinates).

In the end, the selection criteria we have set for our sample (including variety) are relevant to the extent that we are in the results of all possible situations of cooperative identity. This also allowed us to identify new cases not specified in the literature (through group identity).

- In the figure, three groups are identified that differ from the others. GC4 having both high levels, GC5 which is in the middle of the axis and GC2 having both low levels.

- If we make an analysis regarding the type of production (polyvalent / specialized), we find differences. On the one hand, the specialized groups (in red in the figure) are in a limited level of development of the consulting strategy (rather low). However, they find in the two possible situations of intervention level; GC3 on the raised axis and GC2 on the bass. On the other hand, the polyvalent groups present rather a strong level of development of the technical assistance strategy and a variable level of intervention. In fact, three polyvalent groups are in the

three degrees of the axis (greater for GC4, medium for GC5 and weak for GC1).

## CONCLUSIONS

Our research has contributed to a better understanding of the role of technical assistance and its effects as a management mechanism for agricultural cooperatives. The impact of the development of this activity on cooperative groups was confirmed empirically, both in the contractual dimension and in the cognitive dimension. In fact, we present as a consequence of the increase of size of the agricultural cooperatives the rupture of the cooperative-associated bond. This context causes an identity crisis that raised questions about its new hybrid governance.

Several studies have questioned the appropriateness of the management of these new structures (cooperative groups) (Chiffolleau, 1999, Côté, 2005, 2009, Couter, 2002, Deroys and Thénot, 2012, Forestal and Mauget 2000, Gianfaldoni and Richez-Battesti, 2008). While some emphasize the importance of strengthening the link (Côté, 2005), none has investigated the role of technical assistance in this new context. Our approach is original because it can reveal the solution of the identity crisis through technical assistance. Thus, our results confirm the role of technical assistance as a mechanism of cooperative governance, as it contributes to the creation of value in the company through associative practices. These practices include: training and information practices that facilitate exchanges between technicians and members, leading to a discussion of the organization's strategy and consulting and practice of consultation that allows the identification of the needs of partners. However, the results of our case studies show that information is the most developed associative practice, followed by training and consultation. We have shown that, although the practice of consultation should be the most important in this type of organizations, it is the least developed.

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