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Organisational learning for innovation in agriculture: 25 years of experience from organic agriculture in Spain

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Abstract

In order to remain competitive and stay in the market in the near future, farmers will be compelled to adopt a portfolio of strategies that include a series of innovative proposals, with the active participation and commitment of everyone involved. To achieve this, enterprises must bet on knowledge and learning as main element to integrate experienced knowledge (from farmers) with expert knowledge (technical-scientific). Integrating these two kinds of knowledge through research will change paradigms and contribute to rural modernization and to rethinking collective proposals that generate governance, prosperity and resilience. This work analyzes the processes and strategies related to knowledge management and organizational learning in the field of organic farming in an agricultural cooperative in the area of Murcia, Spain. It is a successful model of organizational learning, as 25 years of experience are managed in order to adequately influence the organizational level, generating prosperity and sustainable development.

Keywords: Organisational learning; Spain; organic agriculture.

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1. Introduction

Knowledge management refers to knowledge that has been acquired, created, processed and used, which in most cases is from "tacit" origin; that resulted in a "know what" and a "know how", product of the business experience (King, 2009). Thus, knowledge management "implies an understanding of the underlying theory and / or a range of experience, which includes many cases of anomalies, interaction effects, and norm exceptions and conventional wisdom of an area" (King, 2009: 8). Organizational learning is a series of processes in which it is possible to determine the practices and behaviors that contribute to achieving goals, which translates into "continuous improvement". These processes are identified by the organization, which are implemented and institutionalized (King, 2009).

This study analyzes how at an organizational level knowledge and learning generate innovation. In a constantly evolving world, learning is defined not only as the acquisition of knowledge and skills (Illeris, 2009); but, nowadays, social and emotional dimensions (Illeris, 2009) are also included, as well as the capability to manage the existing challenges in different areas (Illeris, 2009).

At the rural development level, the incorporation of these concepts as usual practice will represent a positive change, by incorporating "tacit" and "explicit" knowledge. In the case of the European Union, in rural areas, agriculture is a high-risk business.

For all of the above, and taking into account the importance of knowledge for innovation and development, the objective of this research is to analyze the influence of knowledge and learning, in order to establish knowledge management and organizational learning in a Society of Agricultural Transformation (SAT) Camposeven, with more than 40 years of experience in Murcia (Spain). This organization, created in 2007, is a successful model despite the crisis.

The analysis was based on the methodology of the conceptual framework of the Working with People (WWP) model, which contemplates three dimensions: Technical-Business, Political-Contextual and Ethical-Social; With the objective of identifying how SAT Camposeven currently incorporates this methodology to the needs of knowledge and learning. This proposal contains key elements of planning such as social learning, and is the product of more than 25 years of experience in rural projects in the European Union and in emerging countries (Cazorla et al., 2005, 2013; De los Ríos et al., 2011, 2016).

Knowledge and learning are based on knowledge management and organizational learning, these elements are analyzed with the partners, and others involved, which results in knowing the communication mechanisms, the resources available, strategic alliances, public-private collaboration, Networking, and how the innovation that characterizes them is generated. In addition, the influence of social interaction on the success of the business was identified.

2. Materials and Method

RETHINK, explored the close connection between agricultural development, society, and its way of achieving goals through policies that promote prosperity in rural areas (Rethink, 2016).

This analysis is based on a set of common research questions. The SAT Camposeven case study will help to understand: knowledge and learning as a basis for knowledge management and organizational learning (Rethink, 2016).

SAT Camposeven, was created by seven farming families; Who started their company in 2007. Camposeven opted for ecological and biodynamic production, giving priority to the health and wellbeing of consumers.

Its work model is based on values such as transparency and trust; these bases have successfully adapted to different challenges, while promoting prosperity and resilience in the area (De los Rios et al, 2016). Camposeven has managed to work as a team, incorporating tacit and explicit knowledge. Various actors are involved in this value chain.

SAT Camposeven has the following characteristics: "1) Promotes social learning processes among organic producers, companies, research organizations and local and regional governments; 2) is considered as a successful associative experience, oriented to the transformation of ecological products; 3) has an innovative business strategy recognized with different awards; 4) There are different university-enterprise partnerships for I +D+R projects "(De los Ríos et al., 2016: 378-379).

The survey was formulated in order to gather the perceptions and experiences of the actors involved. To this end, it was established as a priority to identify: the sources of knowledge and the role it plays in the organization; The knowledge update needs of the organization and the effective networks to impart knowledge and learning, as well as how these factors influence the development of Camposeven.

The WWP contextual framework methodology allows knowledge management and organizational learning to be generated from the knowledge and learning, expert-experimented from a project from the organization, in SAT Camposeven the dimensions were identified:

- Technical-Business is oriented to the generation of goods and services; Where quality standards, diversification and innovation are considered. This implies that knowledge and learning are basic elements from which the following is derived: effective knowledge use, effective patterns in project management, good practices, the existing agricultural system in Camposeven, as well as its land use.
- Contextual Policy, this dimension allows the organization to adapt its priorities. In this case governance is key, which implies to have clear how far the Cooperative's competencies go and how it relates to the public and private sectors, in the creation of strategic alliances managing to develop a successful business.
- Ethical-Social, here we consider behavior, attitudes and values; which promote the resilience and prosperity of all involved, which implies the creation of networks for which the following elements were previously identified: adaptability, trust, mutual effort (RETHINK, 2016).

Finally, the three dimensions are integrated, resulting in social learning (Friedmann, 1993).

Based on this methodology and prior to the compilation of historical information of SAT Camposeven, two participatory processes were carried out: 1) Direct interview with the main actors; 2) WWP Workshop Seminar (De los Ríos et al., 2016). For the interviews, a questionnaire was drawn from the European RETHINK project (Darnhofer et al., 2014), which was validated by a panel of experts from 14 countries.

The whole process was participatory and documented visual information was obtained. The priority of this research was to analyze the agricultural system, land use, networking, cooperative role, effective use of knowledge, strategic alliances, effective patterns in project management and public-private partnership (PPP); In addition to the social learning linked to understanding how to incorporate this innovative model in other scenarios (Rethink,, 2016).

Four questionnaires were proposed depending on the role played by each of the actors (partners, workers and environment (public sector, private sector and civil society)).

This case study is about SAT Camposeven is located in Murcia-Spain. Murcia is the autonomous community of Spain, with more area dedicated to organic farming (INFO, 2014).

The region of Murcia has fertile soils with a high level of productivity, but the climate of this region is arid with little rainfall. (Strategic Plan Murcia, 2007). It only has 3% of the water in Spain (De los Ríos et al., 2016). This represents a high risk in terms of production and a high economic investment.

SAT Camposeven has since the year 2014, an organic agricultural productive area of 490 hectares; Which produce 19280 tonnes of 19 different products, their sales correspond to 19,078,545 euros, about 90% of the production is destined for export in countries such as England, Italy, France, etc. (Rethink,2016; De los Ríos et al., 2016).

Camposeven, founded in 2007 by a group of seven farmers with more than 30 years of experience, who decided to think differently and start to produce biodynamic agriculture, ecology, and organic agriculture with high quality standards based on values such as ethics, teamwork and transparency. One of the keys to this success has been the implementation of the I+D+R system (innovation, development and research). In 2009, the Agrifood platform, which includes the co-founder of the Polytechnic University of Madrid, performs the different scientific and technical research (De los Ríos et al., 2016); In this way, in 2013, the research project: Plant Response Biotech (bio-plant response) and Biobusinesses were integrated, with the aim of developing innovative approaches to protect plants against pests and pathogens, Sustainability needs in crop protection (De los Ríos et al., 2016).

3. Results and Discussion

We analyzed and identified current training strategies, organizational communication, methods of knowledge transfer, the integration between "tacit" and "explicit" knowledge: expert-experienced. How knowledge and learning are integrated into knowledge management, and organizational learning using by the methodology of the Working With People model, which incorporates the dimensions (technical-business, political-contextual and ethical-social).

3.1. Technical-business dimension in terms of knowledge and learning

The technical-business dimension refers to key elements at the organizational level, which generate goods and services with high quality standards. This dimension includes production processes, work guides, strategies and policies established by the organization (De los Ríos et al., 2016). The topics of the survey that involve the business technical dimension are:

- Demand of knowledge in the organization
- Learning Tools
- Knowledge and learning methods currently used in Camposeven
- Media used in Camposeven

3.1.1. Demand of knowledge in the organization

This section tries to know which are the demands of knowledge in Camposeven. The 70.58% of the members see the need for an update in the training. 29.41% of the members believe that an update is not necessary in their training, they see the updating of training as an unnecessary expense. 100%, if they agree that there is an update in the training, can be seen in Table 1.

Need to update their Yes% No% training

Partners 70,58 29,41

Workers 100 0

Table 1. Need to update knowledge in the organization

The update allows the growth of the organization; in addition to the adoption and establishment of regulations that will generate greater efficiency in the management of resources and innovation of the existing processes.

SAT Camposeven is characterized by constant teamwork focused on trust and capacity building. "Learning is inevitably involved in the acquisition of knowledge, but it is also involved in the acquisition of an identity" (Brown & Duguid, 2001).

The following question was formulated to the partners, the following training topics were defined: Technical, Marketing, Management, Planning, Social. These were measured in levels, being 1 as the least interest and 4 as the most interesting. The results are presented in Table 2 and are expressed as a percentage.

Table 2. Priority training topics for partners, expressed as a percentage

Proposed Topics	High	Medium	Low	N/A
Technical	4/28,5%	2/28,5%	1/28,5%	14,3 %
Marketing	0	2/42,3%	1/42,3%	14,3 %
Management	4/28,5%	3/28,5%	2/28,5%	14,3 %
Planning	4/28,5%	2/42,3%	1/14,3%	14,3 %
Social	4/14,3%	3/42,3%	2/28,5%	14,3 %

The 28.5% of the partners have technical topics, management and planning as a priority.

The 42.3% of the partners consider that training topics of medium interest are marketing, planning and social issues.

The 14.3% of partners believe that planning is the topic of less relevant training.

The results reveal the need for proper management of resources: water and soil, which affect productivity at the local level. Every day, the partners face technical challenges that are overcome thanks to the proper management of agricultural technology, which represents a significant economic investment. The update on these issues could present an increase in the productive level, and the establishment of processes for efficient management of resources and inputs.

Topics related to marketing, planning and social issues, directly influence the proper functioning of SAT Camposeven.

Planning involves anticipating the results that the organization wants to achieve, and determining the measures necessary to reach the target in the desired time. These topics are covered in the technical-business dimension of the WWP methodology, which is integrated into SAT Camposeven (De los Ríos et al., 2016). Proper planning will determine success in financial terms, in relation to objectives. This tool will be key to the governance of the organization, based on this, it establishes the strategic planning that allows the actions to move towards the desired medium or long term goal.

Camposeven, since its inception as an organization, put corporate social responsibility as a priority, which is integrated into the WWP model, in the ethical-social dimension (De los Ríos et al., 2016). Implementing this value has contributed to the prosperity, governance, and resilience of the organization. This model of sustainable development is the key to meeting the social, economic and environmental needs. However, training all those involved in this tool will be able to renew strategies, respond to internal and external needs. These measures strengthen the commitment of all members of the organization; influence the improvement of the work environment (stress reduction).

3.1.2. Learning tools

As for learning tools, the main tools are: talks 22%, internet 22%, newspapers newsletters and magazines 19%, conversations with other farmers 11%, conversations with technical advisors 11%, conversations with other agents in the sector 7 %, Emails 4% and travel 4% as shown in table 3. The technical talks have been welcomed, everyone involved believes that it is a valuable learning tool. Doubts are solved, there is an interaction between the participants and the technician, besides there is

a feedback of knowledge (Table 3). Currently, there is a lot of information available, but many cases do not have scientific support to cover the needs of farmers. Although it is affordable and economic information in most cases, the source is not reliable, nor is there a technical Answer Therefore, it must have a list of websites, which can be endorsed and validated to appeal in case of emergency.

Table 3. Learning Tools Currently Used in SAT Camposeven

	Learning Tools
Internet	22
Courses / Talks	22
Newspapers / Magazines / Newsletters	19
Other Farmers	11
Advisers / Technicians	11
Otros agentes del sector	7
emails	4
traveling	4

The conversations between partners and technicians is a tool that is currently used, therefore it is essential to strengthen this tool, inducing activities that leave the monotony, with current issues encouraging feedback, research, problem solving and brainstorming, to Continue with innovation.

The use of emails has a 4% acceptance as a tool, although it is a practical and economical tool, there is a high probability that they will be ignored many times due to lack of time.

Several members of CS, belong to some association in the area as FECOAM or AMOPA, receive training. Farmers have also received some training from the AKIS. Three important aspects have been identified: learning tools, the media and recommendations.

3.1.3. Knowledge and learning methods currently used in Camposeven

The actors involved in the relationship use the following means: 23% use e-mail (23%), as well as for personal meetings or talks, second to telephone calls (16%); (6%), fifth (6%), fifth (with similar percentages): letters by ordinary mail (3%), the sixth place (3%) and publications in newspapers, magazines or newsletters (3%) as shown in Table 4.

Table 4. Media currently used in SAT Camposeven

	Broadcast media	
	%	
Email	23	
Meetings / Personal Visits	23	
Phone	16	
Web	10	
Internet	6	
Fields of test / field (holdings)	6	
Courses / Conferences / Conferences	6	
Leters	3	
Offices	3	
Newspapers / Magazines / Newsletters	3	

Compared with learning tools and their preference, while it is true that e-mail is the most widely used medium, it is in turn the tool that those involved believe is not very valuable. At the moment there is the option to make webinars that are lectures recorded in a network that could be involved in free moments, would not be a source of stress and could be an internet-related but more active tool. Personal meetings are a widely used means of dissemination for those involved in Camposeven.

Phone calls, talks, letters, etc. They are very useful as a means of dissemination, so one or two media should be established, in this way those involved would capture the messages and their level of response could be much greater. The information would not be scattered, it would be timely, it would focus according to the audience.

3.2. Ethical-social dimension in terms of knowledge and learning

The ethical-social dimension is a key element for knowledge and learning, it involves behaviors, attitudes and values, which promote the proper management of the project (De los Ríos et al., 2010;). The specific points identified are:

- Transfer of information within Camposeven
- Perspective of the stakeholders towards Camposeven

3.2.1. Transfer of information within Camposeven

The behaviors, attitudes and values of those involved define the dynamics of information transfer at the organizational level. The question was asked whether it shares the information with other farmers. As a result it was obtained that: 52.5% of the partners did share information with other farmers and 6.5% of the partners did not share information (see Table 6).

The majority of producing members of Camposeven have more than 30 years of experience, some have professional training and others do not, (De los Ríos, 2016). The exchange of information is the basis of governance, resilience and socioecology; Features of SAT Camposeven. 41% of the members did not express themselves in this question.

3.2.2. Stakeholder perspective towards SAT Camposeven

This section was linked to the ethical-social dimension by analyzing the dynamics of Camposven partners, which are characterized by the empathy relationship between all members of the cooperative. Decisions are based on trust, information is not hidden from members, and knowledge is shared between them. Knowledge is linked only to the people involved with the cooperative. SAT Camposeven is part of a federation of cooperatives and the director of Camposeven is related to other actors and later communicates to the other partners the external panorama.

One of the most important questions in this research was related to the sources of information (formal or informal: local, traditional, community, etc.) and the role they play among the different local actors. It was necessary to know which ones are applied, and which are not, in this case study.

For the analysis it was possible to locate the groups that are linked to associations, learning networks, networks of farmers or others; and how they are contributing to their formation. As a result it was found that 60% of the farming partners are not members of any association. Camposeven has a horizontal and flexible structure in which social learning plays the leading role.

According to the results it was obtained that 40% of agricultural partners are informed or acquire their knowledge in the lunches. The working day is full time, the income is at 7:00; therefore there is a recess at 10:00 am, at that moment it is where the workers meet to have a coffee with other workers, they share spaces and it is there where there is the exchange of knowledge and information. In addition to social meetings held by members on weekends and holidays, where there is an exchange of information (De los Rios et al, 2016).

We did the analysis to know how knowledge and learning contribute to innovation and resilience in Camposeven. In addition to how these networks of agricultural knowledge were formed. All this in order to understand two important points: how social learning is performed and how the different actors involved interact in SAT Camposeven.

The interviews had the following results: the main source of information is the exchange of information among Camposeven farmers. Weekly meetings or governing boards are held, including lunches, during daily recesses or other similar situations. Direct consultations are also made to the technicians of the cooperative, visits are made to the different farms.

In addition to the above, there is training, through training courses involving 80% of the farming partners. Finally, as far as communication is concerned, it is based on the relationship between farmers, which could even be defined as a friendly relationship, since there is a high frequency of formal and informal meetings. Currall and Judge (1995) and Glaeser et al. (2000) argue that "bonds of friendship encourage shared knowledge to be learned, through existing emotional ties."

The partners recommend that there be a concentration of supply and an increase in the size of the cooperative, (Table 5). This shows the following expectations: to have a stable market, new markets, increase of capital, and income of new partners. All the partners had as priority the analysis of market, financial, economic and productive. According to Augier and Teece (2009; 412) "for analytical purposes suggest that we observe: the ability to detect opportunities, the ability to take advantage of opportunities and the ability to manage threats through combining, re-combining and re-configuring according to existing resources And their respective limitations."

Table 5. Stakeholder innovation expectations for SAT Camposeven

	Recommendations	
	%	
Concentration of supply / Larger cooperatives	21	
R + D / Innovation / New techniques	16	
Training of farmers / entrepreneurs	16	
Solving water problem	11	
Eliminate bureaucracies	5	
Quality Brands	5	
Empowering rural development (ecotourism)	5	
Adaptability	5	
Care and respect for the environment	5	
Better Farmer Organizations	5	
Less State and Higher Civil Society	5	

The R + D / Innovation / New techniques has a 16% recommendation. This implies making agreements with other institutions or organizations on various topics of agricultural interest.

Topics related to: eliminating bureaucracies; quality brands; differentiated products, certificates of origin; Promoting rural development (ecotourism); adaptability; care and respect for the environment; improving farmer organizations; less state intervention and greater intervention by civil society. They each represent 5% of interest from the partners. Cooperatives are a way of promoting asset accumulation and shareholding (Kelly, 2012; Restakis, 2010).

On the other hand, topics regarding: quality marks; differentiated products and certificates of origin. They propose to innovate the current products, aiming at more demanding markets. This would imply a market analysis.

The issue of rural ecotourism and adaptive capacity. Look for parallel alternatives, which involves economic growth and local resilience.

Care and respect for the environment. It is a topic that should always be present, in all of the training. Sometimes, due to lack of knowledge, people cause serious environmental damage which effects could affect producers in the short, medium or long term.

Less state intervention and greater intervention by civil society. All actors have their role and level of importance. Within the WWP conceptual framework, (Cazorla et al., 2013), all actors are important and play a fundamental role.

3.3. Political-contextual dimension in terms of knowledge and learning

The political-contextual dimension is a key element for the success and sustainability of the organization. It is based on elements related to the insertion and identification of the actors. This area encompasses factors and skills of the organization, related to public administration. The topics of the survey related to this dimension are:

- Information transfer with actors outside Camposeven
- Associates entailment to other institutions or organizations.

3.3.1. Information transfer with Actors outside Camposeven

35% of the members do share information with other sectors. 24% of partners do not share information with other sectors. The rest of the partners did not express themselves in this question.

An exchange of information and feedback with various sectors is important so knowledge can be expanded in several aspects; establishing priorities, paying attention to possible changes and increasing adaptability to such changes in a timely manner. Adequate knowledge management and organizational learning is also important.

3.3.2. Associates entailment to other institutions or organizations

Regarding Camposeven's association with other institutions or organizations, 76.5% of Camposeven's members do not belong to any association, while 23.5% of members do. Camposeven belong to other associations such as Murcia Federation of Agricultural Cooperatives (FECOAM) or the Murcia Association of Agricultural Producers (AMOPA), Table 6.

Table 6. Camposeven associates entailement to other organizations

Belong to association	Yes %	No %	
Partners	23,5	76,5	
They share information with other farmers	Yes%	No %	N/A %
Partners	52,5	6,5	41
Share information with other people from other sectors		No%	N/A%
Partners	35	24	41

Partners who do not belong to any association, limit their technical progress by depending only on the training from Camposeven. Brown, (2001) argues that in an association, unifying analysis and paying attention to common needs, may represent an advantage for the company over the market, since it implies a dynamic in knowledge, despite their differences.

Camposeven production is aimed at organic and biodynamic production, which implies additional cultural work and investment in traditional agricultural production. Therefore, the lack of producer entailment to various associations in the near future could pose a significant risk. "The purpose of an organization is to enable and facilitate collective and individual coordination and effort," (Augier & Teece, 2009: 410).

It is an enormous responsibility for the manager and the main partners to be up to date and stay informed in order to provide coherent approaches to the demands of the market without drastically affecting all those involved. In a globalized world, the sources of innovation require companies to adopt

a global approach to the innovation process in order to be competitive and sustainable (Augier & Teece, 2009.)

4. Conclusions

Knowledge and learning play an important role and promote innovation, which means that proposals and plans become actions in favor of rural modernization, resulting in better living conditions in rural areas thus generating prosperity and resilience.

Knowledge management and organizational learning are important processes that influence and activate elements such as governance and innovation, which have contributed to the strengthening and success of the organization since the formation of the SAT Camposeven in 2007.

When integrated, objectives, mission, vision, and values, are translated into economic results that represent prosperity. One of the keys to Camposeven's success has been transparency as well as adequate communication. All this process is the main result of the collective work and commitment of the partners. Which build trust, good relationships and continuous communication, contributing to the resilience of all involved and representing a valuable contribution to the social learning of the organization.

In order to remain in business, constant evolution and innovation is essential. These are achieved due to knowledge, research and extension of results obtained in the field. The WWP methodology in the technical-business dimension allows analysis and incorporation of all the present elements acquired through more than 25 years of experience. It is important to emphasize that the commitment of all the partners, the daily sharing of experiences and the active participation in meetings with all involved, represent fundamental gears that promote and project the success of the business for Camposeven.

It can be evidenced that tacit and explicit knowledge interact daily in the weekly meetings of Camposeven partners. The ethno-social dimension of the WWP methodology has allowed an adequate knowledge management, allowing adequate use of the acquired knowledge by the organization. However, it is imperative that the results obtained in the various Plant Response Biotech investigations be transferred and promoted to all those involved so that there is an actual usage of resources and feedback in which "expert-experienced" (university, farmer, scientist etc.) participate. To a certain extent, Camposeven has succeeded in establishing an adequate method of communication between farmers and technicians-scientists, which contributes and shows a gain in terms of research, scientific validity as well as social learning.

The use of various technological tools such as video conferences, webinars, emails, electronic magazines, among others, represent a significant contribution in the communication of the various actors. Although feedback, analysis and monitoring is of great importance. Collective and individual activities with stakeholders must be consolidated. It is important that there is formal planning in terms of achieving objectives, in a concrete and practical way, without losing the relationship of trust among those involved.

Local government collaborates with Camposeven, who receive help from the European Union, as long as their production is ecological. In addition, the organizational level of Camposeven represents a valuable business model and social learning. All actors (politicians, farmers, civil society organizations, research and extension), participate actively and continuously. The trust relationship promotes accessibility and legitimizes all the knowledge acquired. The commitment to biodynamic agriculture fosters a culture of care for consumer health and the environment, a significant achievement in SAT Camposeven's innovation.

"The adaptive complex of the Ecology-Social system may be less or more resident in terms of social learning capacity" (Davoudi et al., 2013, Rethink, 2015: 15). "Social learning is a process that includes: new relationships, new management and new business relationships; as well as new methods of learning, exchange of information and knowledge "(Rethink, 2015: 15). "100% of the actors of CS, agree that social learning is an essential element in the organization because social learning that is a strength

arises from it, leadership from the administrative director of the organization, who each week empowers those involved and monitors activities, caring for people and providing lessons learned through feedback. Social learning includes field visits when necessary, and 100% access to information through the use of various resources such as telephone, internet, personal communication, etc." (Rethink, 2015: 15).

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