

Regional development through knowledge creation in organic agriculture

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Abstract

Purpose – Rural regions have rarely been the topic of inquiry in economic development studies or research related to knowledge management. Most studies on knowledge management have focused on high-tech regions. The purpose of this paper is to present a case which illustrates the mechanism and factors of learning regions with knowledge-based development engaged in growing agricultural activities such as organic agriculture.

Design/methodology approach – The paper is a case study of a Mexican cooperative.

Findings – The case study illustrates how organic agriculture standards and the attractiveness of the market change the rural setting by promoting knowledge creation and application in the field. The results of such knowledge generation are endogenous growth practices for people who otherwise abandon agriculture as a means of living. Learning, innovating and networking are requirements and outcomes of following organic standards. Simultaneously, the creation of efficient institutions and the solidity of local governance are promoted within the region.

Research limitations/implications – This paper focuses on the description of the case rather than the theoretical features. This paper highlights characteristics and critical elements present in an agricultural success through the depiction of knowledge creation within a cooperative and surrounding community, that pose elements which consequently can be extended to promote regional development in other rural settings.

Originality/value – Characteristics of the organic industry place a region in a competitive position and encourage community involvement to coordinate, to learn, and to improve processes. The organic agriculture industry requires a knowledge foundation essential for meeting industry standards and, thus, requires organization of the community including farmers as well as local institutions.

Keywords Knowledge creation, Rural regions, Agricultural products, Community development, Organic foods, Mexico

Paper type Case study

Background

Not all agricultural regions promote community-wide learning environments; however, when such environments do occur, knowledge dissemination creates positive externalities directly related to prosperity and development. Organic agriculture is a sophisticated industry where many actors play a role in avoiding the use of non-natural inputs into products as well as meeting numerous standards defined by the industry's international norms. The restrictive nature of organic agriculture requires farmers and the surrounding community to utilize creativity in adapting the standards to their local agricultural processes. Farmers, government institutions, laboratories, and research and development centers join forces and learn from the requirements of the industry and from the experiences in the locality, knowing that they will receive a price premium as a reward and eventually economic prosperity in the community. In other words, the demanding nature of organic certification agencies and consumers feeds the motivation for learning and knowledge capacity of the production community.

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The first part of this paper explains the externalities created by the organic industry. The paper then depicts a specific case describing how innovation and learning encourage development in a rural agricultural region in Mexico. Conclusions explore how this case represents a valuable example of knowledge-based development which can be applied to extend growth opportunities to other developing regions.

Knowledge and the concept of learning regions

The concepts of knowledge and learning regions are very much intertwined since one is part of the other (Morgan, 1997; Asheim and Dunford, 1997; Simmie, 1997; Johansson *et al.*, 2001; Scheff, 2001). Boekema describes a learning region as a paradigm in which a learning region “is the physical expression of the understanding that economic growth is dependent on innovation, which in turn is dependent on the creation, dissemination and application of knowledge . . . [translated into] learning . . . and generally learning processes are connected with space” (Boekema *et al.*, 2000, p. 3). Similarly, Maillat and Kebir (2001) define a learning economy as one that has the capability to learn permanently and expand the knowledge base with cooperation and trust.

The regions focused on knowledge creation and learning go beyond individual firms, including inputs and infrastructure, where tacit knowledge is best exchanged face to face (Florida, in Asheim, 1998). The exchange of information, knowledge, and the responses to global markets create a virtuous cycle of competitiveness for the region and all its actors. Maskell *et al.* (1998) assures that the dynamism in an industry is socially embedded and driven by innovation with constant knowledge creation. Even in countries with low technology and high costs, it is feasible to maintain competitiveness through the development of local capabilities, difficult to imitate for others and key for the place and their economic activity (Maskell *et al.*, 1998). The industry tends to agglomerate entrepreneurial activities and innovations, and specialize according to the local environment. In unison, the exchange of knowledge under prosperity can also stimulate entrepreneurship and innovation, creating a local culture and behavioral patterns that, in turn, disseminate know-how (Maskell *et al.*, 1998). Knowledge not only pertains to technology but also to logistics, organization, marketing, sales, distribution, and relations. With any type of knowledge, trust is vital to ensure the effectiveness of the collectivity and to increase competitiveness through the sharing of tacit knowledge.

The notions of innovation, learning, and networking are closely related to the concept of knowledge-based development. The organic agriculture industry and the case study of an organic vegetable organization in Baja California Sur, Mexico further illustrate and clarify these concepts. The organic agriculture elements are shown first and the case study second.

Organic agriculture industry

The organic agriculture environment has an institutional framework as well as networks that are attractive to farmers. Such networks provide farmers with the opportunity to become global players and to create or participate in an environment that requires constant knowledge creation, dissemination and benchmarking. Significantly, the organic agriculture industry requires a key ingredient from all its participants: learning. In other words, producing organic products can help develop participating regions through innovation,

following international norms, and by becoming part of a global network. Table I outlines the characteristics of the determinant factors of a learning region working in the organic industry.

The organic agriculture movement can generate development by innovating, by following norms and standards, and by networking. All three tools can be related to the learning region concept and are also useful for describing the knowledge environment in a developing area (Boekema *et al.*, 2000). The following three subsections describe how the organic agriculture strengthens each determinant factor.

Innovating

Organics is an alternative for production not only due to different production procedures, but also because of distribution and marketing innovations required to successfully place organic products within the market. As a new trend, farmers participate in a corporate fashion in order to guarantee sales throughout the year. Furthermore, farmers are privileged with more resources for innovation. For example, 900 scientists are available to farmers producing organic brands for General Mills alone (Pollan, 2001).

Innovations in the organic industry are ubiquitous. Farmers must learn new and improved production techniques involving machinery, equipment, procedures, raw materials and inputs. Additionally, the market demands different varieties, different specificities (e.g. color, size, durability), which encourage organic producers to find solutions and new products. Science and innovation play important roles in overcoming processing and production challenges of organic products. Such products involve technical agricultural issues as well as managerial and logistical procedures for the development of both local and international markets. For example, distribution procedures of organic products have forced transportation companies to innovate containers and handling procedures in order to meet the norms and standards of innocuousness and isolation to avoid contamination required by the organic industry.

Changes in the organic industry are constant, and thus communication must be constant. When a product or a plot is found contaminated, all farmers and handlers must be informed quickly to either stop the use of inputs or to put in quarantine immediately, in order to continue producing and guarantee minimal loses. On the other hand, local soils require constant adaptation to the weather and to new crops. When researchers or farmers find

Table I Summary of factors in the organic industry

<i>Determinant factor</i>	<i>Characteristics in the organic industry</i>
a. Innovation and learning	Constant innovation adapted to local needs New and indigenous methods of production Technical, managerial and procedural aspects Constant research and development by specialized researchers and formal lab tests Collaborative learning where all improvements benefit the organizations involved as well as the region Families involved in production pass on know-how quickly The cooperative nature of the organizations producing organics
b. Institutions and governance	Global norms defined by USDA, IFOAM, European Union International certification agents Organizations involved with local governments, traders and international organisms
c. Networks	Global networks Networks developed around farmer associations

Source: Morales Galindo (2004)

better practices they are immediately passed on to the organization or community in order to assure quality and increase productivity.

Also, market-needs of organics induce for innovations similar to those of the high-tech industry; the main difference being that the organic industry is market driven and the high-tech industry is supplier driven, using Gereffi's interpretation (Gereffi and Korzeniewicz, 1994). Farmers and distributors must constantly monitor changes in market preferences in order to secure demand. In turn, these innovations develop new and better ways of competing (Boekema *et al.*, 2000).

To sum up, the organic industry involves more than the farmers in the learning process; it involves the management team, logistics suppliers, local government, and certification agents as well. The constant evolution of the industry sparks both innovation and learning, while the global nature of organics encourages the sharing of knowledge and common practices.

Norms and standards

International norms and standards required for organic products are well-defined and well-known to leaders in organic communities. Following norms involves a costly strategy for development. Becoming "organic" is costly due to the expenses that farmers incur for certification; clean-up; book keeping; and investments to assure innocuousness. Once a group of farmers have decided to produce organic products, learning is set in motion almost immediately. Farmers must learn the process, the norms, the market, the certification agencies, and the production itself. Transforming soils into organic soil may take three to four years. The upside of this situation is that it gives the organization of farmers enough time to learn about the markets and to identify specific clients for future sales, while selling in traditional markets and testing production techniques. New clients will require a specific delivery-schedule throughout the year (for example, a specified number of boxes weekly), and this forces the organization to plan annual production in advance, promoting professional procedures not generally used in small-scale agriculture. Some organics are sold at market price, but most industry actors in Mexico have contracts with agreed prices at an annual basis to avoid the risk (Gómez Tovar *et al.*, 2000).

Organic certification is offered for products, packaging, processing plants, intermediaries or handlers, and restaurants that serve organic foods. Certain standards and norms define the process and requirements for farms and producers that choose to carry the label. Because the organic label distinguishes the quality of organically produced agricultural products from conventional ones, producers are able to assign a higher price to their organic products. The ultimate purpose of certification, therefore, is to provide consumers with certainty that the products they purchase are indeed organically produced and thus warrant higher prices. At the same time, certification is a procedural requirement utilized to identify organic products which meet certain importation standards. As farmers identify their potential international markets, they must choose the appropriate certifying agencies accepted by the countries to which they will export their products.

There are at least 200 certification agents in the world. Each agency follows norms according to its country of origin as well as international norms. The International Federation of Organic Agriculture Movements (IFOAM) is the founding institution of the organic movement in Europe. The IFOAM only accredits organizations in charge of certifying and does not certify actual products. Organic certification agencies have to be approved by higher-level institutions in order to have credibility when issuing labels and certifying farms. The major institutions include IFOAM and the US Department of Agriculture (USDA) that follow specifications based on the National Organic Standard Board (NOSB), and the National Organic Program (NOP), under the norm ISO 65 (quality norm for agricultural products). Most institutions use the list from the Organic Material Review Institute (OMRI) to select approved inputs. Other institutions include the Conseil d'accréditation du Québec, Costa Rican Ministry of Agriculture and Livestock, and Japan Agriculture Standards.

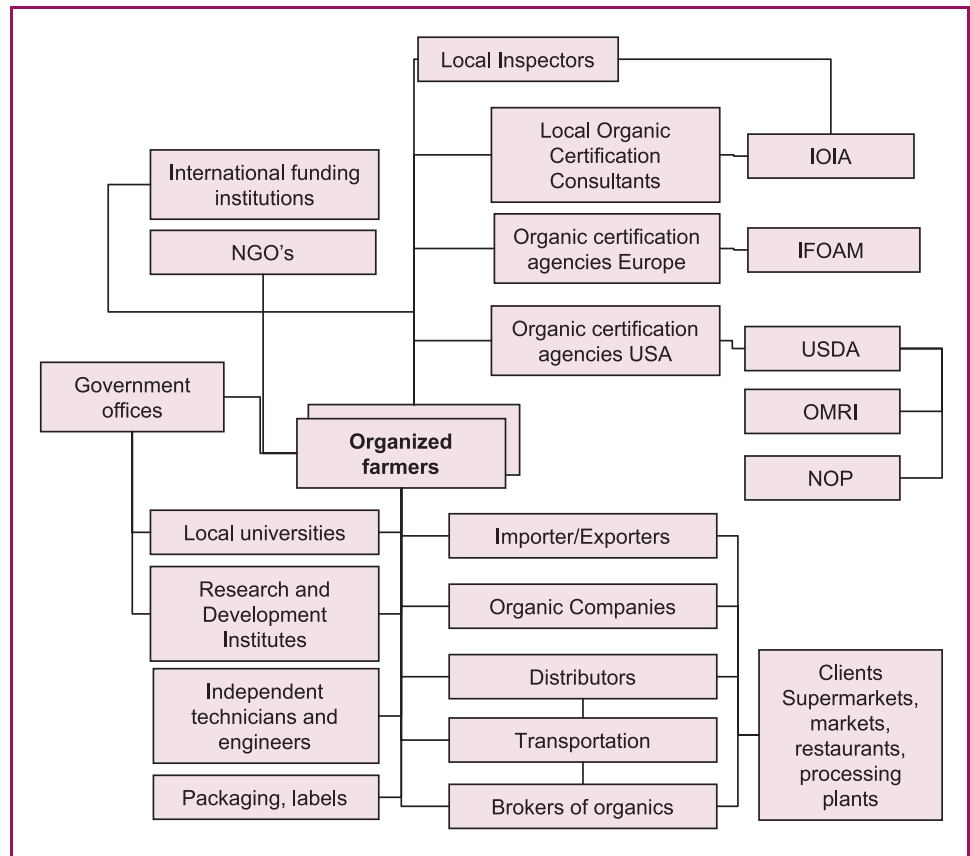
Information is crucial for organic agriculture. Information about the product is vital to the industry as well as information about norms on inputs, fertilizers, processing, packaging, transportation, and labels. By following norms, organic producers and agencies are able to remain informed about new laws and requirements that constantly and rapidly change to meet new export standards. The fact that no chemicals may be used in the production of organic products and that all material must be recyclable demonstrates much sophistication in the industry (Gómez Tovar *et al.*, 2000).

Networking

Participating in the organic industry carries the additional benefit of access to several networks pertaining to education, small loans and credits, medical services, and communitarian stores (Gómez Tovar *et al.*, 2000). An initial contact is established with international networks of other organic organizations such as certification agencies and organic consumer networks, with the intention of obtaining information on labels or market preferences. Inspectors, researchers, and technicians also are contacted to evaluate and transform certain regions into areas which produce organic products. Eventually other NGOs, distribution channels, and traders are added to the network. Relationships become very valuable while language differences become a minor concern due to the collaborative nature of networks.

Figure 1 depicts the network of organic production and demonstrates how organized farmers are closely and directly related with government, certification agencies, research and development centers, and commercialization channels. The organics network has farmers at the center resulting in increased benefits when compared to the traditional, horizontal, chain where the information and monetary value is diminished in the long production chain (Dussel Peters, 2002) towards the final consumer. Closeness to the

Figure 1 An organic farmer network



market allows farmers to adjust promptly and therefore securing sales, and in some cases, avoiding added costs, that in turn could benefit in increased profit margins.

Aside from the certification agencies mentioned previously, other institutions related to the organic movement in the world include: Organic Trade Association (OTA), Organic Farmers Marketing Association (OFMA) Produce/Perishables Committee, and the Independent Organic Inspectors Association (IOIA). Also NGO's such as "Buy Local" and "Fair Trade" movements are closely linked to farmers.

Ultimately, the organic agriculture industry silently promotes innovation, international norms and networking where knowledge is the bonding element. These ingredients become cultural essentials for an endogenous growth system. Development and entrepreneurship surge locally and organically through time, becoming later a virtuous cycle of development from within. Following, the case study of an organic vegetable cooperative in Baja California Sur, Mexico exemplifies these determinant factors further in an actual rural setting.

A case in Baja California Sur

In order to illustrate rural development under knowledge structures, the case of a Mexican cooperative-like structure is valuable. According to the true local story, in 1985, a farmer/tourist from the USA arrived at Baja California Sur on a bike carrying vegetable seeds in his hand. This farmer allied himself with six local farmers, and together they produced and exported US\$52,000 worth of organic vegetables and fine herbs in the first year. The following cycle, this bi-national group increased to 18 members and farmed a territory of 40 hectares (ha), increasing their sales by six times. By 1987, 40 members had joined the group of organic farmers; and in 1988, 167 farmers represented the company. Significantly, both years yielded a 100 percent growth margin in production and sales. By 1989, sales were up to US\$1 million and approximately 160 members were working in the organization. Two members from the USA had become in charge of commercialization. Production continued, and in 1990, a restructuring of the organization resulted in a decrease of membership to 141 members. The producers and commercial agent who left the organization created a new company elsewhere in the state of Baja California.

In 1993, the organization aimed to make management more efficient, and thus separated the activities of commercialization and production. Commercialization was managed by the initial founding member from the USA and was based in the state of California, USA. For production and packing activities, the organization created a formal legal structure referred to as a Social Solidarity Society (SSS). A SSS is a mode of cooperative including a professional administrative team independent from the cooperative's members. In 1993, the SSS included 141 members in eight communities and covered 350 ha with one packing plant in San José del Cabo. In recent years the organization continues to operate with the same number of members in the SSS, yet now have three more packing plants and is associated with 450 other producers (a total of 591 farmers involved) with a constant, annual growth rate of 20 percent between 2000 and 2004. For each member there is one worker at the packing plant and two additional producers. One region alone has 53 members, there are 24 temporary workers and 76 associated producers, benefiting 153 families at the packing plant. In total, 1,500 families have benefited directly or indirectly from the production of organic vegetables and fine herbs. The producers, whether members or not, have obtained individual organic certificates since 1990, and now have a total of 1,200 Ha certified for future use.

Learning and innovation in the SSS

The initial innovation was to produce only organic agricultural products. Learning was not difficult, and organics was the natural way to produce crops in this particular region during the 1980s. The wealth accumulation through the sales of organic products became the learning incentive in Baja California Sur, which in turn persuaded other farmers in the region to follow the norms of organic agriculture. The major change that occurred in the region was that instead of using chemicals to control pests, the farmers began to use their own labor and the work of their families to control each plant by hand. The family nucleus has become

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the labor force and in turn has promoted a faster dissemination of knowledge that has evolved into providing new opportunities for children. At the same time, knowledge remains in the region because the SSS hires local engineers for the administration staff and packers for all three packing plants.

The modernization and improvement process is motivated by the needs of farmers and the requirements of the market. For the former, the many problems and needs of the farmers become the daily duties of the administrative and technical staff. In this way, the SSS staff plays a vital role in solving the region's problems. The learning process is problem based. In other words, when a problem or difficulty arises in a parcel, the staff's technical team unites to work on solving the problem as soon as possible. In this way, the workers have learned to master most problems themselves.

The nursery (or greenery) is in constant evolution and uses a quarter of a hectare to test new plants, new varieties of basil and tomato, and to produce all the plantlets for the cycle. Additionally, the nursery tests different types of irrigation systems and produces compost using local soil and sands. In 2003, the nursery hired an Israeli geneticist to obtain a local cherry tomato variety exclusive to the region. As a part of the research, 109 lines of tomato were tested. The nursery is currently working on controlling insect plagues and creating composts and natural pesticides such as garlic and onions. Projects at the nursery also include demonstrative varieties of vegetables, tryouts to lengthen the productive life of the plant, and testing new vegetables (e.g. zucchini, eggplant, cucumber) for the summer season. The market dictates the new varieties desired, and the greenhouse tests the vegetables that can most likely adapt to the region's climatic and soil characteristics.

Twenty percent of all parcels use irrigation systems that make the consumption of water more efficient, the rest use more traditional methods with innovative adaptations to avoid waste. Technology-use in parcels is low due to the fear of losing it along with the infrastructure in the hurricane season almost every summer. On the other hand, the packing plants are more responsive to technological alternatives to increase productivity and decrease costs.

Most learning has occurred with modernization efforts in aspects other than the agricultural activity. In the pre-production line (greenhouse) the plantlet trays have evolved constantly using new and more resistant materials in compliance with organic norms. Also, internal transportation has improved over the years through facilitating the system to move vegetables and herbs in bulk. The technical team continuously tests new materials for containers to increase effectiveness, organize space, and decrease costs. The packing process itself has also gone through modernization. The line has gone from packing eight boxes in eight hours to now packing three to four boxes an hour. One person alone went from packing eight boxes a day to 30-35 boxes a day. The SSS formalized their training program in order to assure productivity and reduce rotation that in turn increases awareness on quality standards.

The export process requires precise paperwork daily. The administrative staff has internally designed software programs and databases to keep historical records and to complete forms and formats consistently and systematically. The administrative team has mastered procedures and programs in such a way that has helped the organization to systematize their operational statistics and the definition of internal processes.

Learning occurs every day, and it is a cooperative process that takes place inside the family, the community and among institutions. The commercialization company absorbs new information and market trends, and in turn is passed to the SSS as an internal norm. The assortment of information and experiences has created a solid foundation of tacit knowledge. The collectivity in actions is additionally reflected in the learning process; knowledge is shared among farmers, their associates, and their families.

Institutions and governance in the SSS

There are many institutions in the region, not necessarily concentrated in governmental agencies. The strongest institution is the organization of farmers, the SSS. Additionally, government agencies in the municipality have adapted and evolved according to the needs of the exporters; which at the same time became the facilitators of the development of agriculture taking the role of visionaries. The local office of the Ministry of Agriculture (SAGAR) has been supportive in providing the export paperwork for shipments, even on weekends when their offices are not officially opened. Both local institutions have a preference for organic agriculture and most aid is directed to these efforts.

Locally, the SSS is actively involved in many regulations, especially concerning transforming the municipality into 100 percent organic. The certification director of the SSS is constantly involved in national forums where they have participated on changes and proposals for the new agricultural laws. The close link between the farmers, administrative staff and governmental institutions has enhanced local governance.

There are few written agreements or contracts governing the actions and commitments of the SSS with other institutions. Yet, there is a formal agreement between the commercial agent in California and the SSS. Most agreements are formal and voluntary, but not contractual. At the same time, farmers have informal agreements with their associates with a strong connection that assures compliance with standards and production quotas. All members have a commitment to produce as planned. The SSS commits to buying 100 percent of the planned production, so members also have a moral agreement not to sell organic products to another client on their own. Each cycle, a new plan is set with each member, and in turn members agree with their own associates on allocated production quotas.

The Local Bureau of Vegetable Health (the office in charge of certifying soil and plant wellbeing) has an informal arrangement with the SSS in order to have the certificates completed daily for exports; thus, both institution and organization help each other. Negotiations and agreements are uncomplicated because the SSS has been an active participant in the Bureau; they have, at times, members that are involved as vocals, commissioners, treasurer, or even occupying the presidency. Additionally, the local Bureau is an active participant in attacking pests in their jurisdiction; they monitor all transportation coming into the region with plants to avoid unwanted pollutants. The Bureau has funds for research on new organic methods of pest control valuable for the SSS and other farmers in the locality.

All members and associates have to be certified. The certification agency visit the state every year to supervise a sample of farms and continuously gives the SSS specific recommendations to be followed by each producer as well as in the packing plant. The strong relationship between the certification agency and the SSS has facilitated the application of all new USDA norms with few complications, assuring the continuance of operations.

The mode of governance has given the region the strength that the institutions individually do not have; while the proactive nature of participants and the willingness to grow and develop balance the lack of written norms. Informal agreements and conventions are shared by the organization, their families, the government and all farmers in the municipality. One important factor in the strengthening of local governance is the promotion of trust and self-management of farmers. For example, each member has the right to find and associate with other farmers that have an organic certificate, and coordinate production of both under

the member's code (ID number) by making individual and personal arrangements – members are the original 141 in the SSS, while associates are related with members only, not the organization.

Leadership in this case has been the key; one person had the vision to produce organic products and sell them in the growing market of organics in the USA at a premium price so that farmers could make a living from agriculture. The six local farmer-founders have been as committed to organics as well, and their involvement assures knowledge dissemination and creation. Over the years, all farmers have learned the administrative tasks that have to be performed by participating in the executive committee and leading the operations of the packing plant or nursery. They rotate the committee every two years to make it more democratic and avoid power accumulation and conflicts of interest.

Trust has been the key to the success of governance in this case. Agriculture is organized, the producers receive direct benefits, their families have better houses, and the quality of life has improved considerably. SSS members and all producers associated to them prefer to share knowledge on organic care rather than keep the information to themselves, since it will benefit the surrounding environment and avoid pests and contamination, while knowing that increased production of similar vegetables in the region will not affect their income or market price due to the annual contract signed ahead. For this reason, the impact of this SSS in the region has in turn invited many producers and entrepreneurs to take advantage of the benefits of exporting products at a premium price using a similar business model with diverse legal structures. New exporters and the SSS are not competing directly because the market is big enough for all to work in it. There have been up to eight exporters in the region in ten years, but three are the most consistent.

The market is highly demanding, thus forcing improvements. Farmers are aware enough of the standards and international norms. Even with few local and national norms, they base their activities on the norms set by the market. In the region, many initiatives are private as well as public, and many of the campaigns have been organized by farmers having the full support of the local government.

Social capital and networks in the SSS

All networks and organizations that have surged are based on trust. The benefits for the city and region are evident to all actors and in this way each has to trust others to do their best in an efficient manner in order for all to succeed. A motivation factor to all SSS members is that they own a growing and successful company, where they can direct and decide. The second motivation is the assured earnings throughout the year that have allowed them to accumulate capital for their families. Social capital is bonded by the attractiveness of making a good living. Although some producers may not be part of the SSS, most farmers in the region have the motivation of becoming organic to sell at a premium. Families work the land and very rarely hire someone external to attend production in the farm; only family members are committed to their own income. Alternatively, the managerial, transportation and packing activities hire many local and regional employees and professionals. The blend of families of farmers, technicians and professionals in this region has fortified the social capital that in turn has made the place more competitive.

The most important network embedded in the SSS organization is the organic industry network: the certifiers, inspectors, USDA, and the transportation channels. For the SSS, networking internationally across borders is an everyday activity. Their network grows according with needs, modernization, changes in standards, problems, and new clients. In the region, an increased number of entrepreneurs are easily connected with new potential customers in importing markets, taking advantage of the existing network.

Farmers and the SSS have slowly increased relationships with other institutions that can teach better practices or new technologies. Most research needs are met through contacting agricultural universities in Mexico and the USA. The strength of the network has allowed a clear and assured relationship with researchers regardless of their location, diminishing the need to have a research center locally.

Most engineers hired in the SSS are local or regional. Many agricultural engineers have few alternatives to work professionally on the state other than in tourism, while this SSS is attracting professionals. This employment practice is promoting education and training progress in the region.

The SSS is the intermediary between producers and the government and related institutions. The organization has teamed up with the Local Bureau of Vegetable Health, the local government, the only customs agent, labs and airlines. A success factor in logistics for the SSS is precisely their relationship with the airport and the agreements with airlines since it is the fastest gateway to arrive to their markets. On the other hand, one laboratory in the city is dedicated solely to soil indicators. The SSS has a contractual agreement with this lab to perform 30 weekly tests. This agreement assures delivery times for the SSS and demand for the lab services.

The organic market is seemingly unlimited – and it can grow a lot more. It is trendy to sell to restaurants in the US market, while in Mexico production is directed mostly for exports because the Mexican organic market is not mature enough to buy at a premium. The characteristics of network in this state smooth the progress of organic agriculture and exports.

Challenges and final remarks

Competitiveness is critical for regions to develop, and the state and private enterprises have mutual responsibilities. Globalization has created new conditions that require companies and regions to meet global norms and standards, and to accumulate knowledge to assure the greatest benefits.

With the case of the organic producers in Baja California Sur, it is possible to see that the organic agricultural industry has characteristics that foster the creation of learning regions through the creation of tacit knowledge, encouraging individuals and companies to organize in order to meet the global standards, creating added value and participating in globalization. The decision to grow organic agriculture transformed farmers and the agricultural region in Baja California Sur, in a way that they constantly searched to meet market needs and the certification standards.

An endogenous scheme was created and the outcome was economic growth, increased number of jobs and the continuous creation of companies, services and institutions. The organic agriculture also forced the region to relate with international public and private organisms transforming the local dynamic into a global one.

However, to learn from this experience and capitalize in similar regions present the challenge to identify who could become the bonding intermediary that can coordinate the diverse actors involved in rural regions; especially to involve authorities in a way that they can assume the visionary role and have the disposition to become facilitators for development. Organic agriculture *per se* is not the only alternative for development, although it is an attractive solution for many current environmental concerns. Still, a similar industry that involves such a global and comprehensive structure with the bonding ingredient of knowledge could be a special opportunity for rural regions to develop.

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