ORGANIZATIONAL INNOVATION IN THE COOPERATIVE SOCIETIES OF FISH PRODUCTION

Case of fish production cooperative society "The Patole"

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Abstract
This article exposes a theoretical-methodology focus on innovation and analysis of the El Patole Cooperative Society S.C. de R.L. de C.V. In which it is remark that innovation in the productive process is important for the company to be more competitive in the market. In order to assist El Patole to become even more efficient in the volatile commercial activity in which the company develop and continue to offer their products.

Keywords: Cooperative Movement, Productivity, Cooperative Society, Innovation

JEL: D23, L1, M14

Resumen
Este artículo expone un estudio teórico-metodológico centrado en la innovación para el análisis de la Sociedad Cooperativa de Producción Pesquera El Patole, S.C. de R.L. de C.V. En donde se puede observar como es de suma importancia innovar en los procesos productivos de la empresa para que sea más competitiva en el mercado. Con el fin de ayudar a El Patole a ser más eficiente en el cambiante entorno en el que se desarrolla y continúe ofreciendo sus productos.

Palabras clave: Cooperativismo, Productividad, Sociedad Cooperativa, Innovación

1. Introduction
The context of the XXI century is constantly changing. Companies must adapt not only to the quality demand from their customers but also to government regulations and the implementation of more efficient ways of their products or processes. There is an important sector for the Mexican economy and is fishing, the main entities engaged in this sector are cooperatives. These organizations are composed of groups of people who develop activities in order to benefit themselves and society. Such is the case of the Cooperative Fish Production "The Patole", Civil Society (S.C.) of Limited responsibility (R.L.) of Variable Capital(C.V.)

This company has worked for over thirty years in the market. Its main product is the white shrimp. The cooperative members of The Patole are aware that to be more competitive and efficient required implementing innovative production processes. Therefore they have decided to change a system of fisheries extend to one semi-intensive so as to be meet the above. The Patole produce high quality shrimp and want to continue offering its products to market any longer for that reason continuous dynamics to adapt to market changes and in this case improve its production system.

2. Background
Rural families living in rural Piaxtla de Abajo (Lower Piaxtla) in the late 1970s were facing a serious problem because the population increased and could not survive in a dignified manner. Therefore the Cooperative Fish Production "The Patole" SC de RL of CV was founded. The objective of the cooperative was to be a source of employment for parents of rural families. On December 17, 1978 began operating the Patole and June 27, 1980 obtained its registration with the relevant authorities.
3. Problem delimitation

Consumers of this century have shown a trend towards greater demands on their goods or services. Innovation continuously appears as synonymous with progress, technological development, job creation, improvement of living conditions (Confederación Empresarial de Madrid de Madrid, 2003; Business Confederation of Madrid in Madrid, 2003). The economic system in Mexico is divided into sectors as exposed by Anda (1996: 157) the primary sector has been assigned agriculture, forestry and fishing activities. The secondary sector activities develop the mining and processing industries, and the tertiary sector of services. The cooperatives are located in the primary sector hence its importance in the Mexican economy.

In the fisheries sector, the main producer of shrimp is cooperative societies. According to the General Law of Cooperatives, a cooperative is a form of social organization composed of individuals based on common interests and the principles of solidarity, self-help and mutual aid, in order to satisfy individual and collective needs, through carrying out economic activities of production, distribution and consumption of goods and services (Cámara de Diputados, 2009: 1). The cooperative movement is important because it provides seafood to consumers and likewise, provides employment for families who are engaged in the work.

Innovation is the introduction of a new or significantly improved product, good or service, a process, a new marketing method or a new organizational method in the internal practices of the company (OCDE, 2005: 56. OECD, 2005: 56). The Patole to remain competitive in the market requires innovation in its organizational and production processes in order to increase its efficiency and maintain the quality of its product. Therefore, The Cooperative Society the Patole implements organizational innovation in its production process to stay in the competitive market of crustacean.

4. Theoretical Background

In Mexico the business environment is highly competitive. As such may be considered innovation as an element that helps to counteract the problems of business environment. Innovation contributes to improve the activities of companies (Maqueda, 2010). Companies that do not modernize their products or services tend to be overcome by their competence and slowly lose their positions in the fast changing and even more with existing customers who are very demanding.

There are two classifications of factors that influence the implementation of innovation in a company, internal and external factors. The first are when top management cooperates with departments and have highly trained and motivated staff. Alike, the company has material and financial resources protected by the legal framework attached to the staff working who achieves the adequacy and adaptation of the organization to the environmental change. External factors are the programs conducted by organizations supporting organizations to implement innovation in their products or processes (Martinez, 2006).

Innovation is the transformation of a good or service capable of meeting the needs of existing market or created by the employer (Schumpeter, 1963: 98). Economic entities in order to continue functioning in the economic environment must be adapted to the needs of their customers. Pavón and Hidalgo (1997) argue that innovation is a process consisting of commercial, technical and industrial steps aimed at using new technical processes in commercial enterprises or new products manufactured in industrial enterprises. Innovation can be used on any type of company that wants to improve its functions.

According to Escorsa (1997) innovation is a process of an invention or idea or fact of recognizing a need, as such it develops a technique, a product or a service that is accepted by consumers develops. The constant change existing in the consumer market is demanding updating, modification or even the introduction of new goods or services. The implementation of new procedures that are beneficial to society is a key feature in innovation (West and Farr, 1990).
It can be observed that innovation is not only the implementation of something new but positive modification of something existing. Innovation comes in six different ways: Incrementally, radially, technological way, in business management, products and processes. Incremental innovation seeks to provide small changes designed to enhance the performance and functionality of the company. In isolation are not significant over continuously presented as remarkable progress in the company. Radical innovation is a scientific progress that arises frequently and breaks the preliminary technology. It can be mentioned as an example the appearance of cell phones.

Technological innovation as its name says it focuses on improving the technology used by companies to meet the needs of their consumers. The incremental innovation, radical innovation and technological innovation are highly influenced by the originality wanted to be implemented by the organization in their goods or services while innovation in processes, products and innovation of business management are focused on the results thrown (Rodríguez, 2005). This originality requirement is what is observed in the changing business environment.

Innovation in business management methods is the change that provides access to the use and knowledge at its best resource it can have the company. It serves of great support and empowerment to current organizational innovation in organizational, commercial and financial area. Product innovation is when the market is offered an improved or new product in order to improve the image and quality of the counterpart to customers.

Process innovation is implemented in sectors such as breweries, chemical and glass manufacturing in order to increase market efficiency (Harvard, 2004). The innovation process is done by implementing a new way of working in order to reduce costs and increase efficiency in the company (Lopez et al., 2007). This innovation changes the way to perform the tasks in an organization so that the organization is always in continuous adaptation to improve and become more competitive in its sector (Lopez, 2014). The characteristics of the Cooperative Society the Patole the force require the use of this innovation.

Innovation is needed in business because it is a process of adaptation to the changing business environment. Process innovation was implemented in the Cooperative Society of Fish Production The Patole because it realizes improvement in its production processes of shrimp aquaculture. This article explains how the process and organizational innovation has benefited the Cooperative Fish Production The Patole to remain competitive in the market of crustaceans.

5. Contextual framework: Fish Production Cooperative Society the Patole, SC of RL de C.V.

Companies principally engaged in the fishing sector are cooperative societies for that reason they are an important part of the economy in Mexico. According to the yearbook of The State of World Fisheries and Aquaculture 2014 the Food and Agriculture Organization of the United Nations (FAO) reports that Mexico is at number 16 of producing countries of marine species 1,467,790 tons in the 2012. It can be seen the global importance of fisheries to the United States of Mexico. Also, it affects the national and state economy. The Cooperative Society the Patole is this important sector and this fact lays its importance as a company.

At the beginning of the XXI Century on 27 November 2000 public a decree declaring protected natural area wildlife in the region known as the Plateau Cacaxtla. This region is located between the towns of San Ignacio and Mazatlán in Sinaloa state. Cacaxtla Plateau consists of 50 hectares 862-31-25 in this space the Lomas del Mar (Hills of the sea) Patlal fishing camp is located. This decree influenced in which the cooperative had to modify its objects and adapt to new environmental problems.

The social object of Patole is fishing, extract and capture collectively interior and national waters; and industrialization, sales and transport of the products obtained and aquaculture production of crustaceans, mollusks and all kinds of fish. The implementation of new technologies, globalization and environmental protection are the challenges of this century of the cooperative and the cooperative members are looking for the best way to continue their work and adapt to new challenges.

The specific objectives of Patole are:

A. Extending its facilities to conserve its products and offer the best quality it can provide to its customers.

B. Increase the production efficiently.

In line with the objectives the mission of producing shrimp using aquaculture of excellent quality for national, local and international markets, seeking higher rates of return and better development of the resources of the cooperative, appears particularly the human resources emphasizing the care of natural resources sustainably. According to the cooperative mission, it presents a vision of a developer of a productive activity in social and economic areas, with a competitive and efficient administration and proper management of resources held by the Patole.

The objectives, vision and mission of Patole are in line with current market requirements in terms of quality and optimal development of services or goods. The cooperative has worked for over thirty years and plans to continue in its efforts to offer its products with the best quality in the market for as long as possible. Therefore, it has the need to innovate in its organizational and production processes to be more efficient. The cooperative members have understood the importance of implementing innovation in the production processes in order to be more competitive in the market.
Since it began operating the Cooperative Fish Production "The Patole", SC R. L. de C.V., the partners have committed their production of white shrimp caring its human resources, fishing, materials and environmental resources according to circumstances that have lived. In the early 1980s it was awarded the Patole financial support to continue its work. With permission of the federal government, there were built "tapos" and control works of levels. Also, it was provided technical advice and assistance to the Government of the State of Sinaloa and to the Ministry of Environment and Natural Resources (SEMARNAT). These works were completed on the year 1987.

Once the farm began operations, The Patole signed an agreement through the Federal Attorney for Environmental Protection with SEMARNAT. This was done in order to complete the administrative procedure for having met with clearing and restoration of damage that may have caused the aforementioned project. On June 14, 2005 it was reported compliance with the agreement and similarly performing forestation of one area in constant communication with the Sinaloa Institute of Aquaculture (ISA) and the National Forestry Commission (CONAFOR).

After the elapsed time ISA informed to the cooperative society that had not paid its entire agreement and unfortunately the plants died. Yet the Patole knowing the importance of environmental stewardship proceeded to transplant button mangrove on the shores of its main estuary the Tazajal but had no professional advice to do such work. With the installation of the pump and sump under construction Patole had to register as a hazardous waste generating entity in the general form (SEMARNAT-07-004) and the number of Environmental Registry (PPPTX2501611) on 14 June 2005.

Once a week, the cooperative sent the variations of hydrological parameters in 25DSE-00285/1101 and 25DSE-00284/1101 documents. To support the care of marine turtle it was instituted a monitoring committee as responsible for protecting and to predate the species. Continuous tours are dome in the area when a turtle comes up to make the nest and place it elsewhere, keeping track. It is cared for new nests and returns when hatching them. In recent years, there have seen the birth of the species in captivity, then children living in the village take them to the sea bear.

In late 2006 the legal representative of Patole José Natividad Torres Salazar invited the SEMARNAT to evaluate the cooperative. SEMARNAT used the Federal Delegation in the State of Sinaloa (DFSEMARNATSIN) for this work. This made the Environmental Impact Statement on the modality (MIA-P) to throw in the Structure Rehabilitation and Operation of the Farm the Patole for Shrimp Farming project to be developed in a property of total area of 495- 76-65 hectares located in the estuary The Tazajal in the town of Lomas del Mar Piatxla, San Ignacio, Sinaloa.

The efforts earned a result and the Environmental Impact Statement was accepted on March 12, 2007. It proceeded to the execution of works and activities that are explained below. The project consists of maintenance, construction and operation of the project. This project was developed in four stages of the regularization project, site preparation, construction, operation and maintenance stage. The regulation of the project is when the project is presented and meets the requirements of SEMARNAT.

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<td>Steps for building, operation and maintenance of the project Environmental Impact Statement.</td>
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<td>Regularization Plan</td>
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<td>Site layout</td>
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<td>Step operation and maintenance</td>
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A. **Disposal site.**

1) Surveying. It consists of making the contour of the ground for a better distribution of the required works.

2) Introduction of required equipment. Introducing necessary machinery for cleaning, stroke and farm leveling is performed.

3) Cleaning and removing weeds. Proceeding to cut, uproot and remove grass and weeds within the site.
B. Building.

1) Introduction of equipment and materials. This step is the introduction of materials, machinery and equipment required for the function used.

2) Rehabilitation of ponds. There are three ponds used by society in its work on land rehabilitated.

3) Rehabilitation of camp and guard houses. Floors and stucco are repaired; areas are: kitchen, sanitary latrines and dining.

4) Cold room. With a capacity of 65 cubic meters is completed with the exception of thermal door to be acquired as soon as possible.

5) Spillway. Is used for the excess of rain water and thought it away through the screen which prevents the exit of the shrimp toward the sea missing the product.

6) Canal filling. It is responsible for supplying seawater quality for pumping.

7) Living Area mouth. It consists of concrete five gates and the channel is covered with concrete. It is critical to service the front of the batteries and build batteries for placing condoms, whose function is to filter the numerous predators of the product.

8) Construction of pumping carcamo. It is needed to build a lift station to pump 40 inches in diameter and 120 HP engine.


C. Operation and maintenance.

It is when extensive shrimp farming is done in ponds. It consists of the following activities:

1) Water supply. The Pacific Ocean’s water flows through the pouring mouth and into the estuary of Tazajalito be distributed between the ponds where shrimp are located.

2) Acclimation. The implemented protocol is required by the Centre for Aquaculture Health of the State of Sinaloa (CESASIN) and the ISA. It is used the necessary equipment to maintain the required acclimation by the product parameters such as: pH, salinity, temperature and dissolved oxygen. This stage lasts about a week and a day, time during which the larvae grow to obtain the required size. Once the stage concludes, the surviving product is analyzed and emptied from the acclimation tank to the ponds.

3) Seeding. It is proceed to fill the ponds with seawater, where is planted the surviving larvae from the previous operations. The estimate of survival is 80%.

4) Fatting. The Patole makes an extensive cultivation for those reason larvae exploit the beneficial algae that exist in ponds. Once the correct development of larvae is observed, they are provided the required balanced feed your needs.

5) Replacement of water. The renewal of tidal water is supplied through pouring the Tazajal’s estuary.

6) Monitoring of water quality. It proceeds to reduce risks to afford an increase in the survival rate of the crustacean population until harvest time. The monitored parameters are the ones above mentioned.

7) Biometric sampling. Weekly, the development of larvae is monitored and recorded the height and weight. The information provided yields the data necessary for proper food and water conditions.

8) Harvest. It is determined based on the records of the biometric sample. Crops are usually performed at 160 days after planting and during periods of low tide. This process begins with the emptying of the ponds in the night and new batches are placed at the outflows of the gates. Also, the cooperative use the atarrajeo process and the products obtained is placed in boxes or bags of harvest with capacity between twenty to thirty kilograms. The shrimp is stored to be transferred to the plant production process. The process takes on average about twelve hours for completion.

9) Maintenance of facilities. It is performed periodically to increase their lifetime.

10) Maintenance of machinery and equipment. Outboard motors and pumps require corrective and preventive maintenance for better performance.

These points that were mentioned are very important for innovation of the cooperative’s production process because it steps up from using an extensive aquaculture system to a semi-intensive aquaculture system. Previously The Patole used very little technology and in some cases that might harm the ecosystem of the Plateau Cacaxtla. Therefore the partners in the cooperative observed the need to implement the innovation of semi-intensive farming. In addition, an economic benefit is received because society becomes more productive.

On the extensive process, the partners had to attract shrimp larvae from sea to introduce them at the mouth of the estuary system. This derived in a problem of high mortality of larvae and the difficulty of relying completely on the tides and whether banks had shrimp they could enter the estuary. Instead the innovation to the current semi-intensive system
The Patole purchases from a producer shrimp larvae and proceeds to sow and to care for them until they developed in an unacceptable size and weight. The partners seek to develop shrimp to the largest size and weight as possible to obtain a higher utility.

6. Method

The method used to analyze the results of the investigation is to review the various authors on the theory of innovation. Also, the descriptive analytical method for the cooperative society The Patole is made. This research collects literature, laws, books, decrees and official documents submitted for environmental protection in the same way the data provided by the National Commission of Aquaculture and Fisheries (CONAPESCA) were used.

The partners forming the Fish Production Cooperative “The Patole” provides the information required for this investigation. They have good attitude, availability and desire that studies are conducted for the benefit of their jobs and business. Similarly, they facilitate access to official documents of the cooperative society such as the charter, minutes of meetings of members and the reports that have been issued to the appropriate authority.

7. Analysis of results

The findings of the investigation are set out below. The objectives to be achieved in the environmental context were regarding the implementation of activities and work on the project that was implemented in accordance with the work program. These results are shown in Table 2 below.

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<td>Compliance procedure for the construction, operation and maintenance of the draft Environmental Impact Statement.</td>
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<td>Regularization Project</td>
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<td>Site preparation</td>
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<td>Urbanization</td>
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<td>Construction</td>
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<td>Operation and maintenance step.</td>
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Site preparation which consists of the survey, the introduction of machinery, cleaning and weeding was fulfilled by 100%. The rehabilitation of the site where is located the working area includes the introduction of machinery and materials was fulfilled to 100%. The rehabilitation of three ponds was fulfilled in 66.66%. Only two ponds have been rehabilitated. Unfortunately, the third remained pending for lack of funds. However, The Patole established a commitment to meet soon.

The rehabilitation of Camp and gatehouse was fulfilled at 100%. The cold room was fulfilled by 100%. The spillway was fulfilled to 100%. The filling channel fulfilled by 100% and kept in continuous dredging. The living mouth area had compliance in 50% because it was not yet repaired the front of the batteries and had placed due to the lack of economic resources. The Patole agree to conclude as soon as possible. Building of the lift station was fulfilled 100%.

The operation and maintenance of the work at all stages has a compliance rate of 100%, which are water supply, acclimatization, planting, fat, water exchange, monitoring of water quality was taken, biometric sampling, harvesting, maintenance of facilities and maintenance of machinery and equipment. As it can be observed there are few steps that could not meet the Patole. All these steps are in order to innovate in the production process of the cooperative to get a better product and be more competitive in the market.
8. Final thoughts and recommendations

Businesses in Mexico and the world are at a crossroads in order to stay in the taste of their customers in very competitive markets. Therefore, The Cooperative should be constantly implementing improvements and innovations in its products or production processes. This fact is not only in order to obtain higher profits but also to protect the environment so that the company is socially responsible and protect the ecosystem in which it operates. Derived from this, the partners in the Fish Production Cooperative "The Patole", SC of RL de C.V. agree on the dynamics that must adapt to changes to continue providing its to consumers. They also support studies that benefit and help implement innovations in production processes of the Patole. The fact of having gone from a form of extended semi-intensive cultivation was a needed drastic change.

This fact was required by the issue of environmental protection and to increase the productivity of the cooperative. In the form of extended cultivation, product mortality tended to be higher due to the fact there was no certainty on shrimp health because it was subtracted from the Pacific Ocean. However, in the case of semi-intensive farming larve developed by specialists are healthy because they are constantly monitored. The Patole meets innovation in their production processes and ecosystem protection; partners continue to work for their company competitiveness and to maintain its market presence.

References