

## Innovation focused on the agroindustrial sector (literary review)

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### Abstract

The following article focuses on a review of the scientific literature based on the subject of agroindustrial innovation with the objective of knowing the current state of such relevant concept for all countries, it was proceeded to realize this review on scientific platforms such as Thomson Reuters, which contemplates the scientific literature from 2013 to 2017, it was also considered the degree of impact of the journal where such articles are housed, within the main findings, it was found that exists different elements that intervene in the creation of innovative agroindustrial companies within which they stand out; the intellectual capital, culture, business cooperation, institutional frameworks, innovative behavior, business and market orientation, university - industry relations, vocational training centers, entrepreneurial orientation, geographical concentration and technological capacity. It was detected a knowledge management model focused on the agroindustrial sector; however, it does not take into account the elements mentioned before in the structure of the model.

### Agroindustry, Innovation, Competitiveness

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## 1. Introduction

There is innumerable literature on the relevance of the term competitiveness as a key factor for companies to remain in the preference of customers and therefore remain in force in the current and increasingly fluctuating markets, in short, the preferences of customers continuously change and companies are forced to be flexible in every way, whether in the manufacturing process, innovation process, organization, business model, etc., those efforts aimed at achieving competitiveness, Michel Porter one of the most iconic characters In terms of strategy and competitiveness, he mentions that the competitiveness of companies in a given country lies in their inherent capacity to innovate and improve in the products and services offered (Porter, 1996).

Porter includes a relevant factor, ability to innovate. Innovation is highly recognized as one of the main drivers of business success and economic development in the knowledge-based economy today. Researchers have found that innovation contributes significantly to economic growth, since it is the basis for increasing productivity, both through incremental improvements and change of progress (Pavitt, 1969). Innovation is also widely recognized as playing a central role in creating value and maintaining competitive advantages (Jamrog, 2006).

The concept of innovation was initially defined by the economist Schumpeter as "a process of creative destruction, where the search for innovation pushes constantly breaking the old rules to establish new ones, which implies the introduction of new products, new processes, the opening of new markets or the introduction of new forms of organization "(Zhen et al., Pag. 3. 2014).

The previous argument leads to consider the content of the Oslo Manual, innovation is divided into four major areas, product innovation, which consists in the introduction of a product or service with improvements in its technical characteristics and that are appreciated and perceived by consumers, process innovation focused on the improvement of production or distribution processes, marketing innovation that relates to new marketing methods and finally innovation in organization consisting of the introduction n a new method of organizing the workplace and even the external relations of companies (Oslo Manual, 2005).

Companies require skills to acquire and apply innovative knowledge to create new products and services, marketing practices and the opening of new markets, technology and organization of production, forms of organization and business management. Also, to create new ways of relating in business networks and value chains and with providers of business development and financing services, universities and other potential for innovative knowledge (Cummings, 2013).

The current context in which technological innovation is found is one of constant change. The generation, access and adaptation of knowledge, coupled with the emergence and accelerated diffusion of new technologies, require permanent adaptations, which undoubtedly constitutes a challenge for society as a whole. Economic and social growth, the maintenance of employment and competitiveness, inevitably go through innovation and technological transfer. (Zarazúa, Solleiro et al, 2009).

## 1.1 Justification

Once the importance of innovation and the different areas of innovation have been highlighted, it is important to point out that the present research proposal will take as a subject of study the agroindustrial sector, this sector so important for most of the countries refers to a social construct and historical, that is to say, a set of processes and social relations of production, transformation, distribution and consumption of fresh and processed foods, in different spatial scales. The above arguments highlight the global relevance of the agro-industrial sector and, therefore, the need for this sector to be highly competitive (Ocón, 2015).

## 1.2 Problem

The main problem detected derived from this literary review is that until now scientific research has focused on the study of elements or variables that directly affect the formation of innovative agroindustrial companies, these elements were studied in isolation, however these Elements must be considered together.

## 1.3 Hypotesis

The main hypothesis that arises is that currently the agroindustrial sector is in an outstanding development phase in developed countries while in developing countries this concept is precarious, which causes that most of the companies do not manage the good administrative and operational practices that affect the formation of highly competitive organizations at the global level.

## 1.4 Objectives

### 1.4.1 General objective

The objective of the present proposal consists in the detailed literary review on the subject of agro-industrial innovation with the objective of knowing the current state of such a relevant concept for the different countries.

## 2. Theoretical framework

Competitiveness means, in general terms, the ability to enter a market and position itself in it. It is necessary to have some kind of advantage over potential competitors in terms of price, quality, quantity, opportunity, presentation, packaging, delivery conditions and financing (Corpoica, 2000).

To gain competitive advantage between organizations, agroindustrial companies collaborate with other supply chain partners through participation in knowledge exchange routines, that is, not only the incorporation of new companies in the sector, but also in a sustainable way to guarantee the service of added value, this context establishes the key guidelines to achieve a cycle of technological innovation within the agro-industry.

Beyond the strategic intention and the organizational structure, in general, an agroindustrial company must establish a set of processes that promote innovations and increase the success of the company. Develop the ideology of a company to seek the creation of innovation with every aspect that the organization, requires to maximize the benefits and minimize the risks associated with new innovations (Dyer and Singh, 1998).

The incorporation of different types of innovation depends on the capacity of the companies, this capacity is expressed by certain inherent characteristics of the producers, production unit or company and its relationship with the operating environment, to the extent that these characteristics support innovation (Nossal and Lim, 2011). Similarly, it must be recognized that the effect or impact of each innovation on the performance of the company is different.

The most important and complex issue that an agro-industrial company can face is the simultaneous incorporation of the 4 types of innovation. This can be seen as a consequence of the fact that the process of innovation in agroindustrial companies tends to be sequential (Nossal and Lim, 2011).

The use of technology in the agro-industrial sector has historically served as a mediating tool between man and nature. Its basic function in theory is to contribute substantially to transform nature for the benefit of the people who live in the countryside, in the West the use of technology has been handled in discourse as the axis converting from the traditional to the modern. (Herrera, 2006), the traditional is supplanted by technological innovation, this brings with it a series of economic and sociocultural situations that many authors have worked in terms of their impacts and implications of social order, thus, technology is understood as " set of specific knowledge and processes to transform reality and solve a problem "(Lara, page 2, 1998). Seen this way, technology is positioned as a key element in the development of the agricultural sector and clearly necessary to increase the degrees of competitiveness facing other national or international productive forces.

Taking into account the previous argument, which typifies innovation in terms of degree of technology assumes that innovations are not equal from the point of view of the characteristics of the technologies incorporated, the impact and technology required (Ariza et. Al. , 2013).

### 3. Research Methodology

For the present research proposal, a review of the scientific literature was carried out, taking as a guiding principle the topic of innovation in the agroindustrial sector worldwide.

The review was carried out in the Thomson Reuters platform, it was considered in the first instance the level of impact of the journals containing the articles consulted, the most current literature consulted on the subject of study was from 2013 to 2017, it was also considered the classic literature on competitiveness and innovation as are the writings of Schumpeter and Porter.

#### 3.1 Type of Research

It is a descriptive investigation, its intention being to refer the state, the characteristics and phenomena that occur naturally, without explaining the relationships that are identified among the different factors that determine it, that although it tries to analyze the relationships between categories (technological strategy and management processes), to determine the behavior of the product, has no explanatory or correlation claims, that is, it is not about finding causal relationships between these two elements.

#### 3.2 Development methodology

Authors	Aporte
Castilla, Sánchez and Gallardo (2017)	The research points out the characteristics of this type of agro-industry and shows the importance of adopting a responsible orientation in the promotion of reputation to create sustainable competitive advantages.
	Cognitive-organizational proximity is a positive determinant of business cooperation with other organizations, while social and institutional proximity are negative determinants. It also establishes that business cooperation is a positive determinant of business innovation. In addition, it is observed that the levels of business cooperation are lower in micro-enterprises, a result that differs from developed countries.
Geldes, Heredia, Felzensztein and Mora (2017)	The institutional framework that legitimizes technological innovations are conditions of success for agroindustrial models, emergence of new "innovative" social actors.

Gras and Hernández (2016)	The research proposes and develops the concept of technological complexity (TC) as a useful and simple tool to group key attributes that add value to a product (multinomial logistic regression model with mixed effects)
Cotes A., Muñoz and Cotes J.M. (2016)	Innovative companies obtain better results both in economic and productive terms. In addition, the innovative behavior of the agri-food sector has been less affected by the economic crisis than the rest of the economic sectors.
Zouaghi and Sanchez (2016)	The main significant factors of the competitiveness of the agroindustrial sector are identified; geographical concentration, specialization of companies, scope of viable and relevant businesses, privileged position, complementarity through the use of by-products, cooperation among cluster companies, uniformity of technological level, culture adapted to the cluster, evolution before new technologies, results strategy oriented to the cluster.
Sarturi, Augusto, Vargas, Boaventura and dos Santos (2016)	The authors propose a model to measure the technological capacity of the agroindustrial companies since the Technological Capacity plays an important role in the efficiency of the productive process of the company and in the degree of innovation. It is associated with the skills and knowledge necessary for a company to absorb, use, adapt, develop and transfer technologies
De Mori, Batalha and Alfran (2016)	Dimensions: A) Resources; research intensity, human resources, infrastructure
Mirzaei, Micheels and Boecker (2016)	B) Technological update; preprocessing, processing, controls, environmental aspects.
Mujeyi, Mutambara, Siziba and sadomba (2015)	C) Processes and routines; Product engineering, process engineering, monitoring and project management, planning and control.
Bitzer and Bijman (2014)	D) Learning mechanisms; internal, external acquisitions, socialization and coding
Storer, Hyland, Ferrer, Santa and Griffiths (2014)	E) Coordination and accessibility; interaction with the environment, relations with suppliers, accessible sources of information, intensity of participation.

Table 1

The review of the scientific literature on issues of agro-industrial innovation leads to the detection of certain problems of which the following stand out: there is an imbalance in the development of different types of innovation, innovation in process is the one that develops least in agroindustrial companies, which is very important because experts in business competitiveness issues such as Porter mention that the competitive advantage lies in the processes and internal resources of an organization, coupled with this situation the agro-industrial companies have focused on the development of product innovation.

In addition to the above, different elements were detected that seek the generation of innovative agroindustrial companies, among which the following can be mentioned:

- Intellectual capital
- Cultural aspects
- Business cooperation
- Geographical concentration
- Institutional framework
- Innovative behavior
- Technological capacity
- Business and market orientation
- Technological surveillance
- Industry-university relationship
- Intellectual capital
- Entrepreneurial guidance
- Professional training centers

### Knowledge management model

(Pérez and García, 2013), propose a model for the administration of knowledge within the agroindustrial sector, specifically in Colombia in fruit and vegetable cultivation activities, the model is based on the formation of a network that promotes acquisition, production, dissemination and knowledge transfer, is firmly established in the center of such network is knowledge.

As such, it is understood that the solution to the problems of agro-industry is not based solely on infrastructure, which although considered necessary and especially biased by the fact that large investments are always required, is not the only factor involved in the development of the agroindustrial sector, an additional component is the implementation of this knowledge network that would work to manage shared knowledge through the interdisciplinary work of various actors that strive to obtain benefits for this sector of the agricultural economy.

The model proposed by the authors is Etzkowitz's traditional triple helix model, used as a metaphor to express a dynamic alternative to the model of innovation prevailing in the policies of the eighties of the twentieth century, while visualizing the inherent complexity of the processes of innovation (Etzkowitz, 2003).

The proposed model consists of three fundamental nodes to characterize the knowledge network in the fruit production chain of the department of Córdoba, as a strategy for generating innovation in this sector; These nodes are connected as follows: primary producer node; node of associations and the technological node, these nodes act as the points of transfer or interconnection through which knowledge flows, can be described as storage centers of information that are interconnected in a systemic way the nodes can be described as follows way:

Primary producers, most of the activity is concentrated in this node, which generates the primary product as a result of the internal application of the acquired knowledge, thus demonstrating the degree of effectiveness of the proposed strategy. In addition, the evaluation of various events that have occurred becomes a source of valuable information that can be applied in future experiences.

Association node, this node is associated as a repository or central knowledge node where related experiences are found, for example through the problems and their corresponding solutions. The way in which knowledge flows and spreads through all the components of the network can be established through this node or nucleus, in order to facilitate its effective implementation in the different nodes or components that require its use.

Technological node, this node serves as a channel that facilitates and promotes the intercommunication activity between the different actors, converting the technological component into a tool that facilitates the implementation and development of multiple possibilities. This shows how any idea, whether a positive or negative experience, can be accessed or disseminated.

The model also includes what the authors call facilitating agents, the objective is that these elements stimulate the performance of the personnel of the companies and accelerate the operative processes, taking into account the direct impact on the organization, these elements are classified as external facilitators. related to market conditions, cultural factors and sectoral elements, and provide elements for the regulation or management of agro-industrial activities. These components constitute the environment of this sector, and as such its dynamics have a direct influence on it. The external facilitating agents described in this proposed model are: markets, knowledge, strategy and self-management.

The internal facilitators or facilitators of the internal management of the supply chain: These agents are an inherent part of the production system and the supply chain during the harvesting and post-harvesting stages, and are involved with the node or core principal.

The internal facilitators are: disease prevention program, system of access to new markets, expansion in new environments. In this proposed model, each of the nodes is associated with a facilitating agent, but there is no restriction to associate them with others based on the strategy you want to set in motion. The internal facilitators of the primary nodes are: quality of the tools implemented, quality of knowledge, productivity, teaching, workshops and conferences. Internal Facilitators of the association node: performance of associations, modernization and continuous improvement. Internal facilitators of the technological node: Implementation of technology, Technical innovation.

The model also has several indicators established throughout the network that allows each event in a specific area to be monitored and registered and, in turn, the necessary corrections or adjustments of a specific performance can be made as required, based on in specific arguments and specific reasons, thus facilitating the management and control of the entire network in all its parts (Pérez and garcia, 2013).

## 5. Conclusions

The most current contributions of the topic of agro-industrial innovation argue that there are different elements that seek the generation of innovation and with it the management of robust companies in the competitive context, within which the following can be mentioned; intellectual capital, cultural aspects, business cooperation, geographical concentration, institutional frameworks, innovative behavior, technological capacity, business and market orientation, technology watch, industry - university relationship, intellectual capital, entrepreneurial orientation and vocational training centers.

Scientific research so far is limited to analyzing each of the aforementioned elements in isolation and individually, opening up a new research proposal that would consist of determining whether the aforementioned elements can relate to each other to work together and integral in a possible innovation management model specific to the agro-industrial sector with the aim of potentiating innovation in such an important economic sector.

The knowledge management model proposed by Pérez and García in 2013 makes considerable contributions to the subject of agro-industrial innovation, but does not include within this model the most current elements that manage the formation of innovative organizations, therefore, the relevance of A new research proposal is of relevant importance.

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