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Technological innovation of the footwear sector companies in Cucuta and its metropolitan area

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Abstract. The objective of this research was to analyze the technological innovation of footwear companies in Cúcuta and its metropolitan area. A sample of 32 companies that are currently working (legal character) was selected. For the analysis of the technological innovation of the footwear sector companies, an information gathering instrument was applied where they were asked about the different organizational aspects, their technological innovation capabilities and innovation processes. In the dimension of innovation capacity, the level of human talent training, the orientation of human talent towards innovation, the financial liquidity for investment of R & D projects and the activities of collaboration and interaction with other organizations were addressed. In the innovation processes, the companies evaluated the development of new products, participation in technological innovation projects in process, participation in projects of technological innovation in product and existence of a Department of R+D+i. In the analysis, it was identified that companies in the footwear sector must strengthen their skills in human talent training and implement a culture of innovation within the organization that allows them to strengthen their innovation.

1. Introduction

Economists were the first authors to develop innovative works, Shumpeter mentioned that innovation can be defined as the introduction of new goods or a change in quality, a new method of production, opening markets, obtaining a source of raw materials or the creation of a new organization [1].

It can also be mentioned that Oslo Manual defines innovation as the introduction of a new or improved process, product, organizational method or marketing [2].

For Shapiro [3], innovation can be defined as the capacity that has an organization to achieve a permanent change in itself. Innovation is also the adaptation of the organization to a new environment, which varies constantly and at a great speed at present. Therefore, innovation demands from organizations the ability to adapt to external ways by means of a transformation of their internal processes. In the scientific literature there are different classifications of innovation: technological and administrative innovation [4].

Innovation is also classified depending on the degree of innovation as incremental and radical. However, the OECD and the European Statistical Office (Eurostat) made an effort to standardize the concepts about innovation in terms of products and processes, towards areas such as marketing and the organization [5].



For authors like Porter, the competitiveness of a nation, its industrial and economic development falls on the ability of organizations to innovate and improve. Thus, innovation activities together with human capital constitute one of the important factors that determine competitive advantage [6].

It is also important to address the culture of innovation, as a dimension of the organizational culture that allows knowing if the organization is conducive to the development or adoption of innovation or if it resists this process [7].

For the purpose of the present investigation that takes as a technological innovation the footwear sector of Cúcuta city, the innovation capacity and the innovation activities will be addressed. The ability to innovate is the result of four processes: knowledge creation, the absorption of knowledge, the integration of knowledge and the reconfiguration of knowledge. The four processes mentioned above are supported by: human capital, leadership, structures and systems, and organizational culture [8].

Equally the capabilities of an organization are the elements that provide opportunities offered by the market. Therefore, accumulated knowledge is the most important capacity of an organization, which is located in the processes and in the human resource [9]. The technological capabilities developed by companies can also be classified into investment, production, investment and support capabilities [3].

The factors of success or failure of technological innovation processes in organizations depend on factors that help or hinder their development such as: economic variables; attitudinal, cultural and educational; organizational, competitiveness, infrastructure and government policies [9-14].

The footwear sector in Colombia is highly intensive and contributes a large percentage of employment in the country. In 2013, the production of sales of the footwear sector in the domestic market registered a decrease of -6.3% and -11.3%. Total sales and sales in the domestic market registered in 2014, a variation of 4.9%, 6.2% and 7.9%. The increase of the behavior of the variables obeys to the measure taken by the national government of the decree 456 of 2014 with the aim to decelerate the imports of footwear to low prices. For another part in 2014, the footwear sector recorded exports of approximately 42.7 million dollars, with a variation of -17%, compared to exports recorded in 2013 [15].

In 2015, there was a variation of -5.8% and -3% in the production and sale of footwear in Colombia. The exports during the year 2015 corresponded to the value of 38.4 million dollars, presenting a reduction of -10.2% with respect to the same period of the year 2014 [16].

The manufacturing sector, located in the secondary sector that contributes to the Gross Domestic Product (GDP) of Norte de Santander, does not escape the economic backwardness currently due to the great dependence of its economy on Venezuela, which has resulted in a decrease in its annual GDP less than the National GDP.

Considering the importance of innovation in the production system of Norte de Santander, an analysis of the technological innovation of the footwear companies of Cúcuta city and its metropolitan area was carried out in order to know their capabilities and innovation processes that will help guide future strategies where to direct efforts to improve productivity and competitiveness in the market.

2. Methods

The population of the present investigation consisted of 32 companies of the footwear sector of Cúcuta city (Colombia) and its metropolitan area, which are currently functioning (legal nature). The research was developed in the following way: an information gathering instrument was applied where the different organizational aspects of footwear companies, their technological innovation capabilities and innovation processes were investigated. In the dimension of innovation capacity, the level of human talent training, the orientation of human talent towards innovation, the financial liquidity for investment of R & D projects and the activities of collaboration and interaction with other organizations were addressed. In the innovation processes, the companies evaluated the development of new products, participation in technological innovation projects in process, participation in projects of technological innovation in product and existence of a Department of R+D+i.

3. Results

3.1. Capacity for technological innovation

Regarding the concept of capacity from the organizational point of view, this has been developed by scholars of the theory of resources and capabilities and refers to dynamic processes, specific to the firm and dependent on their trajectory, which cannot be obtained in the market, they are difficult to copy and accumulate through continuous learning [17].

3.1.1. Level of human talent training. Human talent capacities are cross-cutting activities of the chain, which allow potentializing competitive sales, creating differentiated value offers and improving processes, making them more efficient and effective. The workers training level in footwear companies of Cúcuta city in Colombia, is given mostly in secondary education with 67%, 18% Elementary, 8% technician, and 2% University (see Figure 1). However, their experience in footwear companies of Cúcuta is the factor that adds value to the process, due to the knowledge in the development of the work acquired empirically through the experience obtained from generation to generation, since the training and continuous improvement activities are not carried out in the companies of the sector. According to Romer [18], technological innovation is created in research and development (R & D) using human capital and the stock of existing knowledge.

With this also agree Porter and Stern [19], who used information from patents to study the effects of innovation and conclude that innovation is related to human resources. Likewise, Hausman identifies the existence of a positive relationship between the innovation of companies and the level of studies [20].

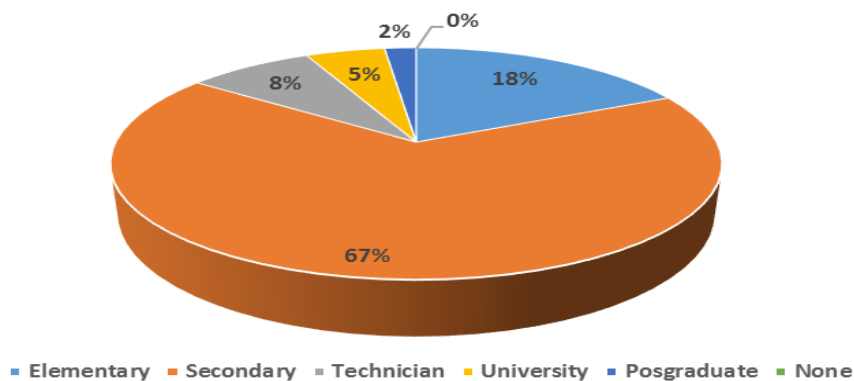


Figure 1. Workers' training level of companies in the footwear sector of Cúcuta city.

3.1.2. Orientation of human talent towards innovation. Companies have not given importance to train human talent in the different stages of the process, technical updates, and other dynamics related to the value chain, to improve the characteristics and properties of products and obtain higher rates of productivity. However, the knowledge acquired by human resources in the development of their work has been empirically based on the experience gained. The top management of companies in the sector should focus on innovation as a strategic process in the face of globalization. Maidique and Hayes express: that one must understand how technology works, the speed of change and the available options [21].

Therefore, the culture towards innovation must be present in all areas of the organization, as well as in its mission, vision strategies and in all the processes of the company. This means that innovation must be part of the overall strategy of the organization and interact with all its components [22].

3.1.3. Financial liquidity for investment of R & D projects. With regard to the financial profile of the companies, they are characterized by having a low level of liquidity and leverage that does not allow companies in the footwear sector to make investments in R & D and the continuous improvement of the organization. Therefore, the financial level of companies becomes an obstacle that limits their technological level and learning capacity to provide value to their products in the market.

3.1.4. Collaborative activities and interaction with other organizations. The companies of the footwear sector of Cúcuta city have received support from the National Learning Service SENA, the Chamber of Commerce of Cúcuta and Procolombia in relation to their production process, but the relationship with regional research groups and government institutions to the development of research activities and business strengthening is nil (see Figure 2).

Therefore, studies developed in small and medium-sized enterprises (SMEs) of several countries in the world, especially in developing countries, show that the interaction and articulation of companies with other institutions are important for innovation, promotion and increase in innovation skills for SMEs [23-24]. Likewise, for SMEs, it is very important to have contact with other public research organizations and companies to overcome barriers such as the low investment capacity of R&D&I resources [25].

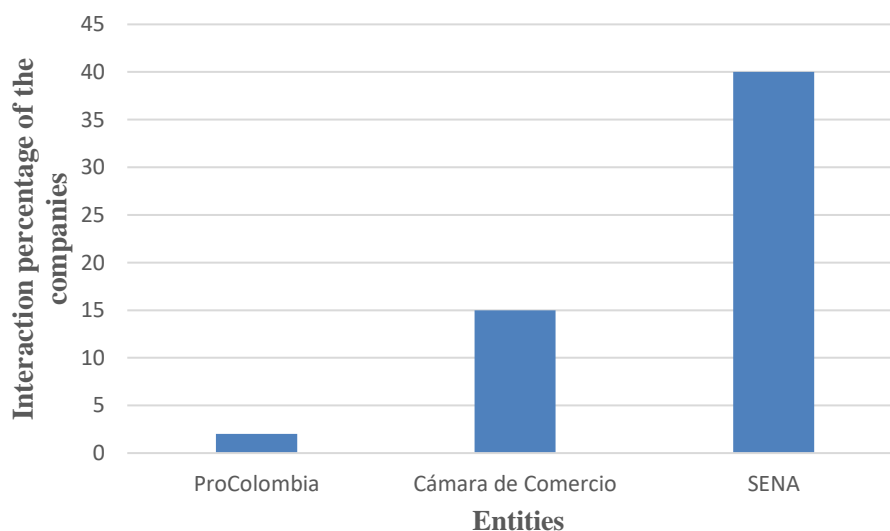


Figure 2. Activities of collaboration and interaction with other organizations.

3.2. Innovation processes

Regarding the activities of technological innovation in product and process, the level of this activity in the footwear companies sector in Cúcuta city is very low. The offer of products with higher added value is a robust advantage within globalized markets.

3.2.1. Innovation in products. The Footwear sector is no stranger to this situation, taking into account that footwear companies sector of Cúcuta city have to compete with companies in the sector of the different regions of the country and against imported products that, in addition to offering a variety of designs, also offer at low prices. The variety of designs will be accompanied by the quality of the product, in markets where there is variety primacy, quality levels and prices, implies that consumers prefer variety and higher quality [26]. On the other hand, innovation is not only based on novel ideas, but also on the implementation of new improvements in the process and the product [27].

3.2.2. *Department dedicated to research and technological development.* In footwear companies there is no department dedicated to these functions, they neither have partnerships or participation in any project that promotes innovation in products or processes, nor have partnerships for their development. Unlike with large companies, SMEs do not have formal processes for the development of new products because they do not have financial and human resources for Research and Development activities [28]. Other authors affirm that the benefits of innovation in R & D increase profitability and help business growth [29].

3.2.3. *Innovation in processes.* The use of technology in the production process in footwear companies sector of Cúcuta city is largely carried out manually, and no new technologies are implemented in their production processes. However, when the organization has favorable results in products that are perceived by the client, the activities or processes that were part of the result are not considered [30].

4. Conclusions

Companies in the footwear sector of Cúcuta and its metropolitan area must strengthen their innovation capacities in training human talent to encourage innovation in the different stages of the production process and product design. It is important that organizations implement a program of culture towards innovation and involve all areas in their processes and align innovation with the strategy of the organization. It is also important that companies increase their network of strategic allies that allow them to grow substantially and through innovation to be competitive and productive.

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