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Journal Economic Development

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The works must be unpublished and refer to topics of trade, international economic activity, aspects of international trade and finance, international relations and international political economy, general aggregate models, quantitative approach, mixed approach and other topics related to Social Sciences.

Presentation of Content

In the first article we present *Determination of competitive advantage: human capital in the footwear industry, Plaza Azul, San Mateo Atenco, Mexico*, by ZENTENO-BONOLA, Ana Luisa, CALDERÓN-RÍOS, Norma Otilia, PALOMAR-FUENTES, María del Pilar and OLVERA-PÉREZ, Alejandra, with adscription in the Instituto Tecnológico de Toluca, with a second article, *Personnel management as a competitive measure in a mining advisory company*, by MARTÍNEZ-TORRES, Rosa Elia, RIVERA-ACOSTA, Patricia and HUERTA-GONZÁLEZ, Juana María, with secondment in Instituto Tecnológico de San Luis Potosí, as third article we present *Smart warehouse management using IIoT to optimize inventory control*, by RUIZ-MELO, José Esteban, MARTÍNEZ-CARRILLO, Irma and JUÁREZ-TOLEDO, Carlos, with affiliation at the Universidad Autónoma del Estado de México, as fourth article we present *The quality of an intangible value as a competitive advantage*, by HERNÁNDEZ-FLORES, María Juana, with adscription at the Tecnológico de Estudios Superiores de Ixtapaluca.

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Determinación de la ventaja competitiva: capital humano en la industria del calzado, Plaza Azul, San Mateo Atenco, México

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Abstract

In San Mateo Atenco, Mexico, the traditional marketing system has been maintained. Shoe stores continue to handle products at a low price and, most critically, at a low competitive level. In the last 3 years the economic situation of the municipality has been affected because it is more frequent each year that workshops and shoe stores are forced to close. The problem in question lies in the lack of recognition of the situation: more than 70% of the families are dedicated to the production of footwear and depend on this line to be able to cover their expenses. Hence the relevance of analyzing the competitiveness of footwear SMEs. Therefore, the objective of this research was focused on determining the competitive advantage from the area of human talent. Considering that of the resources that make up an organization, human capital is the one that can make a significant difference. The work is of a descriptive transactional type. The results obtained were the design of strategies to improve the personnel integration process, the formalization of a training and development program aimed at certifying skills and the establishment of an incentive plan.

Resumen

En San Mateo Atenco, México se ha mantenido el sistema de comercialización tradicional, las zapaterías siguen manejando productos a bajo precio y lo más crítico, a bajo nivel competitivo. En los últimos 3 años la situación económica del municipio se ha visto afectada debido a que anualmente es más frecuente que talleres y locales de zapatos se vean obligados a cerrar. El problema en cuestión radica en la falta de reconocimiento de la situación: más del 70% de las familias se dedica a la producción de calzado y dependen de este giro para poder sufragar sus gastos. De ahí la relevancia de analizar la competitividad de las PyMES de calzado; por lo que el objetivo de esta investigación se enfocó en determinar la ventaja competitiva a partir del área de talento humano, considerando que de los recursos que conforman una organización, el capital humano es el que puede hacer una diferencia significativa. El trabajo es de tipo descriptivo transeccional. Los resultados obtenidos fueron el diseño de estrategias para mejorar el proceso de integración de personal, la formalización de un programa de capacitación y desarrollo tendiente a la certificación de competencias y el establecimiento de un plan de incentivos.

Competitive advantage, Personal, Footwear industry

Ventaja competitiva, Personal, Industria del calzado

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Introduction

In the municipality of San Mateo Atenco, State of Mexico, there are a large number of producers of leather footwear and other leather goods, the economy of the municipality is based on the economic activities of manufacturing and marketing of their products, thus contributing to the secondary and tertiary sectors that are the ones that contribute most to the state economy.

In recent years the economy of the municipality has declined, producers face a number of challenges such as lack of recognition of the situation in which they find themselves and their lack of updating their sales methods, as well as generate and publicize new trends in fashion and design, to try to survive in these situations the producers of the municipality have grouped in different places to market their products and strengthen with a more unanimous representation to their problems one of them is the Plaza Azul, which is the place where our study focuses.

The objective of this research is to analyze the variables that describe the characteristics of the human capital of the manufacturers that commercialize their products in the Plaza Azul, in San Mateo Atenco, State of Mexico.

The methodology used is SWOT Analysis, through the method and technique of diagnosis applicable in organizations, the SWOT matrix allows evaluating the strengths, opportunities, weaknesses and threats; through a descriptive study, the variables that describe the characteristics and evaluation of the competitiveness of the human capital of the footwear manufacturers in the Plaza Azul, in San Mateo Atenco, State of Mexico, are analyzed.

The contribution of the research is to inform the footwear producers in Plaza Azul, the design of strategies necessary to raise the competitiveness of human capital by improving the process of personnel integration, the formalization of a training and development program aimed at the certification of competencies and the establishment of an incentive plan.

The first section of this study contains the theoretical framework that supports the study, the description of the applied methodology detailing the parts of the procedure starting from the identification of the analysis criteria, determination of the real performance conditions in relation to the internal and external variables of the analysis, assignment of a weighting for each of the strengths (F), opportunities (O), weaknesses (D) and threats (A).

The calculation of the results and the determination of the strategic balance form the central part to present the optimization factor that will indicate the favorable position of the organization with respect to its competitive assets that are potentially and can be the source of a competitive advantage in the near future; the risk factor shows an unfavorable position of the organization that limit the competitive position of the organization. Optimization Factor = $F + O$ and Risk Factor = $D + A$. The strategic balance of an organization is better as long as the difference between the optimization factor exceeds the risk factor.

Once the surveys with the answers of the interviewees were applied, they were concentrated in a SWOT matrix to later present the results graphically and from it the necessary strategies were proposed to increase the competitiveness of the human capital of the footwear industry of Plaza Azul, San Mateo Atenco, State of Mexico.

Finally, the elaboration of proposals is presented according to the results of the general situation of the footwear industry with respect to Human Capital, as well as individually for each of the variables studied.

It should be noted that this article is the product of a research project focused on the Plaza Azul footwear industry in San Mateo Atenco, Mexico, which is still in progress. For this reason, the background of this sector described in the frame of reference was taken from the article Zenteno *et al* (2019). Strategies of the Marketing Mix of the Footwear Industry in San Mateo Atenco Plaza Azul, because they are the same facts that are reported. Said article is mentioned in the section on sources of consultation.

Frame of reference

The earliest records of footwear manufacturing in Mexico date back to the 17th century. In the state of Guanajuato, the oldest data that the Municipal Historical Archive records regarding the manufacture of footwear in the Villa de Leon is from the year 1645. And Andrés González Cabildo is the name of the oldest shoemaker, according to information from the archives of the Chamber of the Footwear Industry of the State of Guanajuato (CICEG).

It is important to review the history and evolution of the footwear industry in Mexico. Some facts from the CIGEC archive will be highlighted. In 1719, the first census of the Villa de León was taken, showing the existence of 36 houses in which shoes were made by Spaniards, Indians and mulattos. Later, in 1869, there were 50 "shoe factories", that is to say, workshop houses in which families formed units of artisan production. The first formal shoe factory on record began operations in 1872. By 1900, 17% of Mexico's economically active population worked in the shoe industry, making it, along with the textile industry, the most important economic activity in León.

Small - scale manufacturing establishments were the pivot for the development of footwear manufacturing in Mexico between 1920 and 1930. The creation of productive workshops began to take place at a dizzying rate due to demand, with local capital acting as the main responsible for those areas becoming the main regions of the national footwear industry from that time on. On May 24, 1926, the Union of Shoe Manufacturers of Leon was constituted, whose founding president was Mr. Jose Padilla Moreno and the first secretary was Mr. Ignacio L. Hernandez.

"It should be remembered that the spread of small domestic establishments does not necessarily obey the logic of reproduction, where only the consumption needs of the domestic unit are taken into account, but, in many cases, it is also reconstructed from the situation that the storekeeper himself manages in the market. The proximity between productive units that manufacture footwear and productive units or people that manufacture certain processes supports the emergence and reproduction of productive units without a technological base." Iglesias (1998)

The consolidation of the footwear industry in Guanajuato came with World War II, due to the fact that the United States was one of its main consumers. By 1941, 47.39% of the economically active population was dedicated to this activity and the city of Leon had 1,315 establishments employing a total of 19,940 people.

In the 1950's, the mechanization of the production process began and the technical principles brought from abroad were integrated. Footwear manufacturers promoted their products individually. At the end of the decade, the directors of the National Chamber of the Footwear Industry began to organize a product exhibition, following the example of the North American model of commercial fairs. The first national exhibition was held in Mexico City in 1956.

In 1966, at a time when it was necessary to reactivate the sale of footwear, the X National Footwear Exhibition was held in Leon, already known as the Mexican Footwear Industry Exhibition, an event that the local press announced as the one that would show "all its industrial potential in the most ambitious exhibition held until then". The event, the result of the efforts of several visionaries, ceased to be held due to differences between the representatives of the different Chambers. However, the model was so successful that the Leonese producers decided to continue it.

The manufacturers of the Footwear Chamber of the State of Jalisco initiated in 1977 their "Spring National Exposition", being the venue the city of Guadalajara, Jalisco. Five years after SAPICA opened its doors in Leon, ANPIC, the first international supply show, was born in 1979.

Thanks to this path and the structure that was established over the years, the Chamber of the Footwear Industry of the State of Guanajuato planned and programmed the implementation of a special department that would serve as support for the activities that the committee in turn determined to carry out. Based on this programming, in 1980 the first steps were taken to incorporate human and material resources that would constitute the department in charge of the exposition.

Thus, as of the 8th. Thus, from the 8th Leather and Footwear Exhibition (SAPICA), the Chamber already had the foundations to achieve its objective. It was in 1982 that SAPICA was named the National Footwear Fair. The acceptance of this product in the domestic market was such that the National Chamber of the Footwear Industry (CNIC) reached its historical maximum production level with the production of 317 million pairs of shoes, of which 7.5% were exported to the U.S. market. However, the national crisis of the eighties irremediably affected this sector and Zarur (1993) comments: "While in 1980 per capita consumption was estimated at 5.6 pairs; in 1989, at the end of the decade it was 2.5 pairs of shoes, due to the loss of purchasing power of consumers, while footwear prices rose significantly, given the increases in production costs".

In 1999, on its 25th anniversary, SAPICA expected 10,000 buyers with visits from 25 countries around the world, and signed an agreement with CUOROMODA, then the first fair in Latin America, in order to make the two fairs known in neighboring countries and in their own.

According to INEGI figures, at the end of the 90's, 70 million pairs were produced per year and there were 73,439 workers in that direct employment, and in order to position the sector as a globally recognized producer, actions had to be taken to promote it, which were carried out by businessmen, chambers, research centers and government. Because of this, and because it is a basic consumption item and an important source of employment in the country, the footwear industry was given priority in the National Industrial Development Plan of the Federal Government 2000-2006, during the term of President Vicente Fox Quezada.

The 2009 economic census (INEGI) captured 7,398 economic units dedicated to footwear manufacturing, representing 1.7% of total manufacturing industries. They employed 112,727 people, accounting for 2.4% of total employment in the manufacturing sector. The micro establishments of this sector represented 78.5%, employing 19% of the total personnel and generated 6.2% of the total gross production. In comparison with large companies, which only represented 1%, they employed three out of every ten people employed and generated almost 40% of production.

As for the total footwear production, 87% was destined for private consumption and the rest was for intermediate demand (domestic or foreign) referring to commerce, freight transportation, fabric manufacturing, to the manufacture of footwear itself, paint manufacturing, coatings, adhesives and sealants, among others.

In comparison with the years 2013, 2014 and 2015, the footwear industry only generated revenues in the amounts of \$17, 436, \$17, 462 and \$18, 013 (million pesos) and in terms of employed personnel, the figures were 93, 291; 92,877 and 94, 601, respectively. The contribution to the GDP decreased, as it averaged 0.6% in those years. According to data provided by the federal government.

The slowdown in the economic figures generated by the footwear industry is evident, and some situations can be observed that have contributed to this. The first important fact is the entry of the country of China to the World Trade Organization (WTO), at the end of 2001 and the other, the entry of Mexico to the Trans-Pacific Economic Cooperation Agreement on February 4, 2016, called the Trans-Pacific Partnership (TPP).

Referring to China and its incursion into the WTO, this country has managed to enter and maintain important advantages in sectors such as footwear, textiles, electronics, toys, information technologies, among others. The strategy generated by this country, according to Kerber (2002) "[...] in the case of labor-intensive industries, was often focused on learning the *modus operandi* to replace foreign producers with domestic producers in the medium term and then displace them from the markets they dominate. This is the case of the footwear industry where Chinese brands have been progressively incorporated." Other data that are highlighted are enunciated below. Esquivel (2015) "China is the world's leading footwear producer, manufacturing 5.5 billion pairs of footwear and exporting 3.1 billion pairs annually. In order of importance, China ranks first in foreign sales, followed by India with 682 million, Brazil with 520 million, Italy with 425 million, Indonesia with 318 million, Turkey with 270 million and Mexico ranks seventh with 170 million. Ten years ago Mexico imported only 3.0% of its domestic footwear consumption, now that consumption has increased to 20% of the total."

Olvera (2018) "Trade exchange between Mexico and the United States fell from 81 percent in the 1990s to 63 percent in 2016, a year after Republican President Trump issued since the campaign a protectionist speech. In contrast, Mexico's trade with China rose from -1 percent to 10 percent in 2016, according to the National Autonomous University of Mexico's Center for China-Mexico Studies that has researched the trilateral U.S.-China-Mexico relationship." And it adds that in 2017 while China sold us 67 billion 741 million dollars (computer and communication technology products, clothing, footwear, electrical appliances), Mexico only exported 6 billion 61 million dollars to it (computer, electronic, communication and auto parts products).

It is important to mention the Asia-Pacific Economic Cooperation Forum (APEC), whose member countries adopted the Bogor objectives, and whose commitment is that by 2020, the economies of the region should have implemented public policies aimed at the total liberalization of markets in order to achieve free and open trade. Both Mexico and China are members of APEC.

As for the TPP, the member countries are: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Vietnam. They accounted for about 40% of world GDP and 25% of international trade, and sought to create a new economic bloc in the Pacific by reducing approximately 18,000 customs tariffs. The objective: to change the rules on the exchange of goods and services. However, at the end of January 2017, the United States withdrew. This led to a rearrangement of the treaty and on March 8, 2018, it was signed again, but under the name of Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), with the eleven remaining countries. In an interview conducted by *Expansión Magazine* in February 2018 with Mr. Alejandro Gómez, executive president of the Guanajuato State Chamber of Industry, he commented "We are much more concerned about the CPTPP, because as it is drafted it will allow Vietnam to produce footwear using inputs from China (which are up to 50% cheaper than those available in Mexico) and export them to the Mexican market duty free. In addition, wages in Vietnam are up to 50% lower than those paid in the sector. We will not be able to compete with this mix of cheap inputs and low wages."

And it is highlighted in the published article that Vietnam is the second largest footwear manufacturer globally, after China. And the bulk of its production is for export. So far, Vietnamese footwear pays a tariff to enter Mexico, which allows balancing the low costs. But once the CPTPP is signed, Vietnamese footwear will enter a phase of tariff relief. This has Mexican manufacturers worried, as the Asian product could displace the 235 million pairs sold in Mexico.

In view of this scenario, Ernesto Acevedo Fernández, Mexico's Undersecretary of Industry and Commerce, stated in a conference (February 25, 2019) that in view of the adverse situation faced by the footwear economic activity, the following actions were immediately proposed: the signing of two Presidential Decrees that would temporarily establish a 25 percent or 30 percent tariff on footwear imports. This was published in the Official Gazette of the Federation on April 10, 2019.

After this background and facts that have impacted the footwear industry, we proceed to describe the object of study, which is composed of 366 footwear manufacturers and traders established in Plaza Azul, which is located in the Municipality of San Mateo Atenco, State of Mexico.

The State of Mexico is divided into 125 municipalities, of which only 6 are in the footwear economic sector and are home to 81% of the establishments and 80% of the employment. These municipalities are Cuautitlán, Cuautitlán Izcalli, Naucalpan, Tlalnepantla, San Mateo Atenco and Toluca, among others, being the most important of them due to the number of companies and the level of employment it generates: San Mateo Atenco.

Eighty-seven percent of the companies in the footwear industry in the State of Mexico are classified as micro-companies, almost 7% as small companies, 4.55% as medium-sized companies and 1% as large companies. Most are located in San Mateo Atenco, which is home to slightly more than 40%.

This municipality has a population of approximately 73,000 inhabitants and 75% of the families are dedicated to shoemaking, both artisanal and industrial. The history of the shoe industry in this jurisdiction is divided into three periods:

ZENTENO-BONOLA, Ana Luisa, CALDERÓN-RÍOS, Norma Otilia, PALOMAR-FUENTES, Marfa del Pilar and OLVERA-PÉREZ, Alejandra. Determination of competitive advantage: human capital in the footwear industry, Plaza Azul, San Mateo Atenco, Mexico. *Journal Economic Development*. 2021

- 1900-1912, the production was carried out manually.
- 1913-1931, mechanical machines are used: the first one, to sew the cut, the second one, to sew the sole and the third one, a machine with a pedal.
- 1932-1959, electric machines were used and the first shoe factories were established.

San Mateo Atenco has also suffered from the events described above regarding China and treaties with other countries. The impact can be seen in the serious decrease in sales. The president of the San Mateo Atenco Footwear Producers group (Procasma), Mr. Luis Gonzaga González Tapia, at the end of June 2019 has stated to the media that the footwear industry in this municipality is at risk due to flooding in the area and the sale of pirated footwear from China, which has caused the closure of 20% of footwear workshops.

"It has been very complicated to shield a border so that shoes do not enter clandestinely because, with the tariff measures, if they entered legally, prices would rise, but it is contraband and it is unfair competition, because we struggle with the payment of taxes, insurance affiliations and other obligations as taxpayers," said the representative of Procasma.

Pérez, J. (2020) Regarding the contingency situation originated by the SARS-CoV-2 that causes the COVID-19 disease, the representative of Plaza Azul, Ismael Gutiérrez Sánchez pointed out and exposed that, in spite of carrying out all the sanitary measures imposed by the Secretary of Health of Mexico, the business is still not rising because the attendance is "lukewarm" and many visitors arrive and leave without making any purchase in spite of prices that become a bargain.

In addition to this, the leader added: "The situation will not improve in the short term, there is no improvement in attendance of buyers and sale of products", so they are still waiting for the local city council to deposit the money they promised to manufacture 4,500 pairs of shoes for Atenco students of preschool, elementary and high school within the framework of this pandemic to reactivate the economy of shoe workers and other merchants in the municipality.

The Plaza Azul vendors are responsible for the manufacture of these four thousand five hundred pairs of shoes of the almost 10 thousand that the mayor's office requested from other manufacturers at a uniform cost of 350 pesos per pair; however, the prolongation of the start of classes until now indefinitely also originated the postponement of the deposit to the shoemakers. Therefore, the situation is serious.

In view of this scenario, this research proposed to determine the competitive advantage of this industry through the resource theory, which states that the success of organizations has its origin in the resources and capabilities that make it up. And it is through these that the competitive advantage is generated, which is the ability to achieve a favorable position that generates a superior performance to competing companies.

Diaz (2009) "For his part Gluck points out that competitive advantages are the characteristics that favorably differentiate the company from the current and potential competition, some authors relate the competitive advantage with the possession of resources, skills or distinctive competencies that allow the company to perform better and cheaper activities than competitors".

For Hamel and Prahalad, precursors of the resource theory, in their article "Strategic Purpose" (2005) mention that competitive advantage is the need to accelerate the organization's learning to outperform competitors in building new advantages. And they emphasize that priority should be given to the internal conditions of the organization. It is a process of mastering essential competencies and overcoming the barriers of the environment to achieve an advantage that allows it to achieve its objectives, although these may be in the longer term.

Rubio and Aragón (2008) argue that resources are the inputs available to the company to carry out its activity. Capabilities are precisely the ability to adequately manage resources to perform a given task within the firm. In short, capabilities are the way in which the company combines its resources; this increases the stock of intangible resources, enables it to carry out its basic activities more efficiently than its competitors and, finally, allows it to adapt to changes by implementing strategies in advance.

Ojeda (2007) "Each SME develops its own potential based on its strategic (valuable) resources, alone or in combination, to adapt to the demands of the environment. These resources represent those tangible and intangible assets that neutralize threats. This approach is based on the resource theory itself, which emphasizes the importance of the entrepreneur being aware of the potential synergies that can be created between resources and how to use them appropriately in the formulation of strategies."

While Porter (2007) states that competitive advantage results from the ability of organizations to execute required activities at a lower cost than rivals or to execute some activities in a unique way that creates value for the customer and allows the company to position itself, he also establishes within the value chain concept the need to have a mechanism to detect the potentiality of resources as a source of sustained competitive advantage.

Considering then the theory of resources, this research focused on human capital, taking into account that of the resources that make up a company, the collaborators that integrate it are the ones that can make a significant difference in the achievement of the objectives and the fulfillment of the organizational mission and vision. Highlighting that Hamel and Prahalad (2005) argue that to create a competitive advantage it is necessary, among other aspects, "to provide employees with the skills they need to work effectively."

The present research combines the principles of resource theory with the human capital variables established by Chiavenato, (2020) to evaluate the competitive advantage of the human resource in the footwear industry in San Mateo Atenco, giving an important contribution to this area of study.

There are several proposals regarding the classification of the resource theory, which are shown in Table 1.

Resource theory approach		
Author	Barney, (1991)	Human Capital Physical Capital Resources Resources
	Grant, (1996)	Human Tangibles Intangibles
	Hamel and Prahalad, (2005)	Workers Capabilities
	De la Cruz, Morales and Carrasco, (2006)	Technology Marketing Human Resources Financial Resources Production Logistics

Table 1 Resource theory
Source: Own elaboration

As for this research we focus on human capital, which according to Gonzalez et al. (2017) in the Mexican administrative world was incorporated without apparent problem as a result of the strong globalizing trend that organizations are experiencing.

Naumov (2018) defines capital as "The capabilities, knowledge, skills, abilities, aptitudes and experiences that a person accumulates throughout his life, personally and professionally, making him more valuable every day in the application of his activities and responsibilities."

Chiavenato (2020) highlights that people and their knowledge, skills, abilities, attitudes and competencies become the main basis of the new organization.

Rubio and Aragón (2008) "The literature recognizes that human resources management in SMEs has a series of singularities that make it different from the management carried out by large companies. Regarding the impact of this resource on the competitiveness of SMEs, most studies point to a positive relationship (Viedma, 1992; Huck and McEwen, 1991; Yusuf, 1995; Wijewardena and Cooray, 1995; Luk, 1996; Gadenne, 1998; Warren and Hutchinson, 2000) and even qualify it as the key resource to compete".

The human capital variables used in the SWOT matrix are those established by Chiavenato (2020) in the human talent integration process. These are: recruitment, selection, hiring, training, policies, procedures, motivation and remuneration (see Table 2).

Human talent integration process		
Variables	Recruitment	Communication process to attract candidates in the talent market.
	Selection	It works as a filter that only allows people with the desired characteristics to join the organization.
	Contratación	Formal incorporation of the new employee to the organization where rights, responsibilities and obligations are established.
	Training	It is a medium that adds value to employees, the organization and customers.
	Policies and procedures	Guidelines that guide the actions of employees in the performance of their duties.
	Motivation	Increase individual and team awareness and responsibility within the organization.
	Remuneration	Reward system capable of increasing employee commitment to the organization's business.

Table 2 Integration process

Source: Own elaboration based on Chiavenato (2020)

Problem statement

Footwear manufacturing in Mexico has a history of more than 400 years, according to data published by the Ministry of Economy, and has been perfected to become an industrial chain of supply-leather-footwear of national and international renown and prestige. The main states where production is concentrated are Guanajuato, with 78%, Jalisco 12%, 3.5% in the State of Mexico and Mexico City, with 2.4%.

However, and according to figures from the National Institute of Statistics and Geography (INEGI), in 2017 the total factor productivity and contribution to Mexico's economic growth of this sector had an annual growth rate of -0.33% and in January 2019, based on the Monthly Survey of the Manufacturing Industry (EMIM), the percentages of personnel employed in the production of footwear was -1.5 and 0.5 referring to the plant capacity used.

This alarming situation highlights the crisis faced by this economic activity. In the State of Mexico; more specifically in the municipality of San Mateo Atenco in the last 3 years the economic situation of the municipality has been affected due to the fact that every year it is more frequent that shoe stores are forced to close. The problem in question lies in the lack of recognition of the situation; not only are the small and medium-sized shoe businesses in the municipality closing, but also 70% of the families are dedicated to the production of footwear and depend on this business to cover their expenses.

And if to this scenario, we add the worldwide contingency that began in 2020 originated by SARS-CoV-2 that causes the COVID-19 disease, the economic consequences are shocking and the footwear industry, object of study of this research, was not the exception, so the problem of the decrease in sales became more acute.

Methodology

This is a descriptive transectional study because it is intended, through the analysis of the variables that describe the characteristics of human capital, to propose strategies to enhance the performance of human capital in the footwear industry, specifically the manufacturers who sell their products in Plaza Azul. Based on what is established by Hernández, Fernández, & Baptista (2010), the type of study corresponds to the so-called descriptive one, which seeks to specify the properties, characteristics and profiles of people, groups, communities or any other phenomenon that is subjected to analysis. Trans-sectional descriptive designs aim to investigate the incidence of the modalities or levels of one or more variables in a population; they are purely descriptive studies. The procedure consists of locating one or more variables in a group of people, living beings, objects, situations, contexts, phenomena, communities, etc. and providing their description.

This research focuses on the evaluation of the competitiveness of the human capital of the footwear producers of Plaza Azul in San Mateo Atenco, using the SWOT Analysis methodology. Of the diagnostic methods and techniques applicable in organizations, the SWOT matrix allows the evaluation of strengths, opportunities, weaknesses and threats, highlighting the procedure to follow for its analysis and derivation of strategies for its enrichment. According to the various classifications of the types of research that exist, this work corresponds to a descriptive type of research; according to Hernández, Fernández & Baptista (2010) descriptive research works with factual realities and its fundamental characteristic is to present a correct interpretation, which may include the following types of studies: surveys, case studies, exploratory, causal, developmental, among others.

Based on the study problem posed and in correspondence with the state of the art, the procedure proposed by Ramirez (2009) will be taken as a basis; this procedure does not contemplate the necessary elements to give validity to the research, elements that are incorporated in the present research. In addition to the determination of the strategic balance, the SWOT matrix is elaborated where the proposals of strategies to potentiate the human capital in order to increase the competitiveness of the footwear producers will be developed.

In order to facilitate understanding and practical application, a breakdown of the procedure that was carried out is presented.

Application of the procedure:

1. Identification of the analysis criteria. The evaluation of the variables considered by Chiavenato (2020) as fundamental for the human capital integration process was determined, namely: Recruitment and Selection, Training, Motivation, Policies and Procedures, Hiring and Remuneration.

2. Determination of the actual performance conditions in relation to the internal and external variables of the analysis.

2.1. Delimitation of the field of action. The study was carried out taking as its universe the producers of the Plaza Azul in San Mateo Atenco. When counting the footwear producers

that have activity within the Plaza Azul in San Mateo Atenco, it was determined that the exact number is 324 manufacturers; information provided by Mr. Ismael Gutiérrez Sánchez, president of the Plaza Azul Association.

2.2 Determination of the sample size

Since the number of footwear manufacturers in Plaza Azul de San Mateo Atenco is known, the formula for determining the sample size of a finite population was used (Münch & Ángeles, 1998). (Münch & Ángeles, 1998)

$$n = \frac{k^2 * p * q * N}{(e^2(N-1)) + k^2 * p * q} \quad (1)$$

Where:

N=324

k=1.96 Z-value for 95% confidence level

p=0.5 probability of success (determining the strategic Human Capital Balance Sheet)

q=0.5 probability of failure (determining the Strategic Human Capital Balance)

e=0.05 maximum permissible error

$$n = \frac{(1.96)^2 * (0.5) * (0.5) * (324)}{((0.05)^2(324-1)) + (1.96)^2 * (0.5) * (0.5)} = 176.01 \quad (2)$$

Given the current conditions of the COVID-19 pandemic caused by the SARS-CoV-2 virus, it was practically impossible to conduct the number of surveys mentioned above. It was decided to work with a 90% confidence level and to accept a 20% error.

Thus, the sample size was determined as follows:

$$n = \frac{(1.645)^2 * (0.5) * (0.5) * (324)}{((0.20)^2(324-1)) + (1.96)^2 * (0.5) * (0.5)} = 16.12$$

n = 16

Where:

N=596

k=1.645 Z value for a confidence level of 90%.

p=0.5 probability of success (determining the strategic Human Capital Balance Sheet)

q=0.5 probability of failure (determining the Strategic Human Capital Balance)

e=0.20 maximum permissible error

2.3 Collection of information. The structured interview technique was used, for which a questionnaire was designed consisting of a set of strategically designed questions regarding the variables to be measured according to Hernández, Fernández, & Baptista (2010). The interviews were carried out using the available media: Google Duo platform, WhatsApp and Zoom.

Given that the list of strengths, weaknesses, opportunities and threats was very extensive, only the two most relevant in each section were considered.

For the selection of the elements that make up the sample (footwear manufacturers), convenience sampling was used, in which the elements to be sampled were selected because they are accessible through existing contacts.

3. Assignment of a weighting for each of the strengths, opportunities, weaknesses and threats. For each of the factors mentioned in point 1, the interviewees were asked to assign a rating according to the following scale: where 5 denotes the highest level of performance, 3 the medium level and 1 the lowest level. In this way, the differences between them were established, which made it possible to rank them in order of importance.

4. Calculation of the results. To calculate the results, a matrix was prepared with the totals of each factor, as well as the individual contribution of each variable.

5. Determination of the strategic balance. The strategic balance is the ratio between the optimization factor and the risk factor.

The optimization factor indicates the favorable position of the organization with respect to its competitive assets and the circumstances or events that can potentially be the source of a competitive advantage in the near future.

The risk factor shows an unfavorable position of the organization, i.e. it shows a competitive liability coupled with conditions that limit the organization's competitive position.

$$\text{Optimization factor} = F + O$$

$$\text{Risk factor} = D + A$$

The strategic balance of an organization is better as long as the difference between the optimization factor exceeds the risk factor.

6. Elaboration of the SWOT matrix. The answers of the interviewees were concentrated in a matrix to be later plotted. With the list of the answers of the interviewees classified and weighted, the SWOT matrix was elaborated and from it the necessary strategies were proposed to increase the competitiveness of the human capital of the footwear industry of Plaza Azul, San Mateo Atenco, Edo. de México.

7. Elaboration of proposals. With the analysis of the results, conclusions are obtained regarding the general situation of the footwear industry with respect to human capital, as well as individually for each of the variables studied. Subsequently, these will form the basis for the elaboration of proposals for strategies to strengthen human capital in order to achieve a competitive advantage.

Results

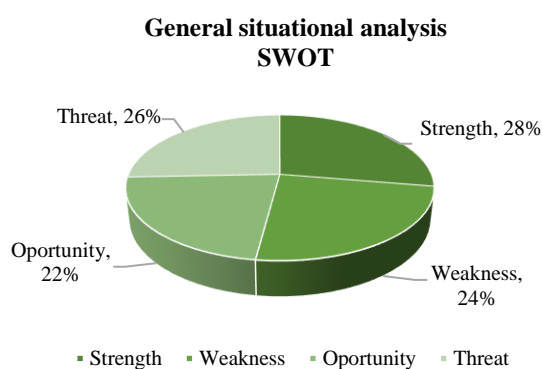
To contextualize the results presented in this section, regarding the evaluation of the human capital variables used in the SWOT matrix: Recruitment and Selection, Training, Motivation, Policies and Procedures, Hiring and Compensation, 16 structured interviews were carried out, according to the questionnaire technique, with questions designed to measure these variables, the result of the questions were assigned a weighting for each of the strengths, opportunities, weaknesses and threats.

To calculate the results, a matrix was prepared with the totals of each factor, of the 6 human capital variables, as well as the individual contribution of each variable with the weighting of 5, 3 and 1 where 5 represents the highest level, 3 medium level and 1 low level for the strengths, opportunities, weaknesses and threats as shown in Table 3.

Variable	Fortress	Weakness	Opportunity	Threat
1. Recruitment and selection	74	62	52	76
	28%	23%	20%	29%
2. Training	58	48	52	60
	27%	22%	24%	28%
3. Motivation	54	66	58	47
	24%	29%	26%	21%
4. Policies and procedures	68	54	50	43
	32%	25%	23%	20%
5. Hiring	64	48	48	58
	29%	22%	22%	27%
6. Remuneration	64	60	48	70
	26%	25%	20%	29%
Total	382	338	308	354
	28%	24%	22%	26%

Table 3 Overall situational analysis and by variable
Source: Own elaboration: Own elaboration

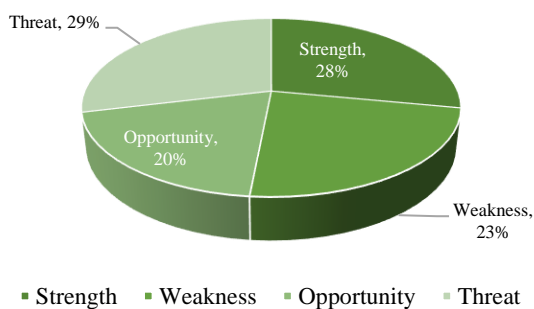
The sum of the variables in general is the SWOT situational analysis and it is shown in the following chart 1.



Graphic 1 General SWOT situational analysis by percentage
Source: Own elaboration

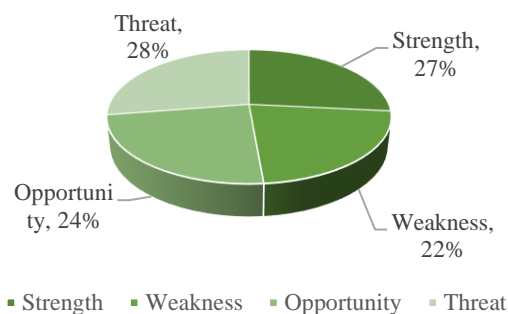
The percentage of each variable horizontally shows us the participation of the impact that the internal and external conditions of the company have, and they are shown in graphs 2, 3, 4, 5 and 6.

1. Recruitment and selection



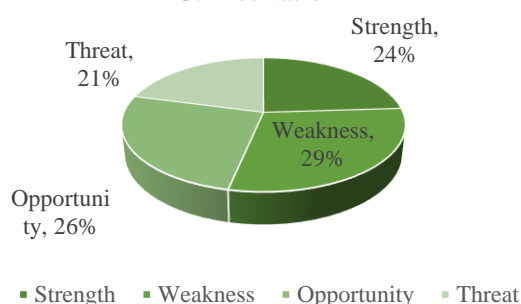
Graphic 2 Situational analysis of the variable Recruitment and selection
Source: Own elaboration

2. Training



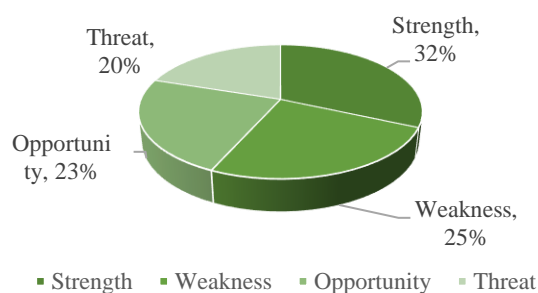
Graphic 3 Situational analysis of the Training variable
Source: Own elaboration

3. Motivation



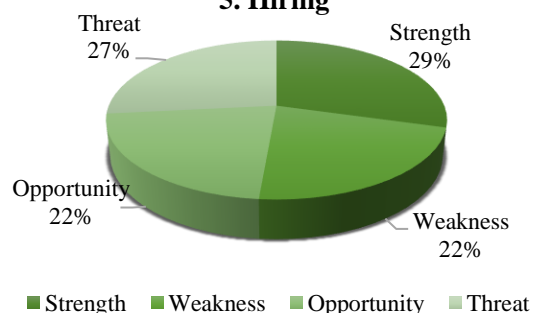
Graphic 4 Situational analysis of the Motivation variable
Source: Own elaboration

4. Politics and procedures

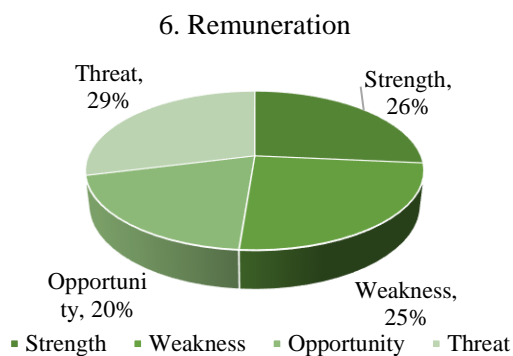


Graphic 5 Situational analysis of the variable Policies and procedures
Source: Own elaboration

5. Hiring



Graphic 6 Situational analysis of the variable Hiring
Source: Own elaboration

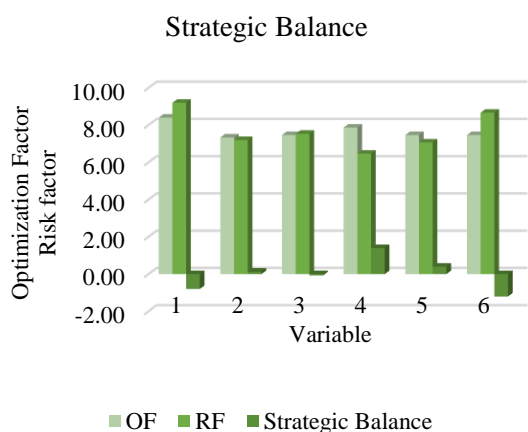


Graphic 7 Situation analysis of the variable Remuneration
Source: Own elaboration

Subsequently, the strategic balance is determined, which is the relationship between the optimization factor and the risk factor. It is calculated by subtracting the risk factor from the optimization factor. The results are shown in table 4 and then plotted (graph 8).

Variable	FO	FR	Strategic Balance
1. Recruitment and selection	8.40	9.20	-0.80
2. Training	7.33	7.20	0.13
3. Motivation	7.47	7.53	-0.07
4. Policies and procedures	7.87	6.47	1.40
5. Hiring	7.47	7.07	0.40
6. Remuneration	7.47	8.67	-1.20
Total	46.00	46.13	-0.13

Table 4 FO: Optimization Factor and FR: Risk Factor. Overall strategic balance and by variable
Source: Own elaboration



Graphic 8 Strategic Balance by variable
Source: Own elaboration

Figure 1 below shows the SWOT matrix based on the results obtained from the instruments applied and presented above.

Factors internal	Strengths	Weaknesses
	<p>F1. Extensive knowledge in recruitment and selection of personnel.</p> <p>F2. A formal remuneration system is in place.</p> <p>F3. Personnel hiring is planned.</p>	<p>D1. There is no written contract</p> <p>D2. There is no human resources area in the company.</p> <p>D3. Loss of trained personnel due to lack of budget.</p>
Factors external	Opportunities	Threats
	<p>O1. Recruitment of new talent.</p> <p>O2. Training of personnel using the platform of the Ministry of Labor and Social Welfare (STPS).</p> <p>O3. Implementation of new systems and processes.</p>	<p>A1. Partial or total closure of activities caused by the contingency situation (COVID-19).</p> <p>A2. Subcontracting with little experience and seriousness.</p> <p>A3. Change in tax legislation</p>
	<p>F3, O1: Generate agreements with higher education and technical institutions regarding job placement.</p> <p>F2, O2: Implement the STPS training, education and productivity plan and programs (DC-2).</p>	<p>D2, O3: Automate the management of the human capital area.</p> <p>D3, O3: Implement internet sales system.</p> <p>D3, A3: Establish a hiring policy to take advantage of the benefits of the personal income tax.</p>

Figure 1 SWOT Matrix
Source: Own elaboration

Conclusions

By applying the proposed procedure and using the described techniques, it was possible to determine the competitive position in terms of human capital of the footwear producers of Plaza Azul. The global strategic balance with 90% confidence is between -0.16 and -0.10. The ideal strategic balance between the opportunity factors and the risk factor in each case is not 50% and 50% between them, but rather, the former should exceed the latter, in search of the best condition to operate. In this case, it can be observed that the strategic balance is negative, which shows a weak position in relation to competitors.

The analysis by variable allowed to visualize that the potentialities, present in the highest optimization factors are in recruitment and selection of personnel, followed by policies and procedures; on the other hand, the variables where the main competitive weakness is determined is the remuneration system.

The competitive advantage of the Human Capital of the Plaza Azul footwear industry located in San Mateo Atenco, Mexico, resulting from this research is based on the strategies proposed in the SWOT matrix. Regarding the "Max-Max" quadrant and with respect to strategy F3, O1, it is suggested that the Plaza Azul footwear association establishes a link with the educational institutions of higher and technical education with the objective of consolidating an agreement that allows the graduates of these professional or technical careers that have the requested profiles to be candidates for employment in these footwear industries through the labor exchange of these institutions, managing to capture new talent according to the personnel hiring planning required by the companies.

Continuing with the same quadrant and with the other proposed strategy (F2, O2), it is suggested to elaborate the procedure for training and development of human capital in which it is established the conformation of the training plan, training and productivity of the personnel of the organization based on two sites: National Registry of Training Courses (RENAC) and National Registry of Competency Standards (RENEC), both belonging to the STPS. This allows, on the one hand, to train the company's personnel by considering an incentive program for those employees who comply with the training plan and, on the other hand, to comply with the provisions of the same secretariat in relation to the delivery of such plan through the DC-2 format. It should be noted that the courses offered are affordable, and some are even free of charge.

Regarding the "Min-Max" quadrant and strategy D2, O3, it is necessary to highlight the importance of having the human resources area in the organizational structure, since the functions of human capital integration (recruitment, selection, hiring, training, evaluation and compensation) are essential in every company; therefore, it is proposed that the footwear industry obtain software that has the tools for personnel management.

Currently there is a diversity of software designed for SMEs and even some of them are free and others are quite accessible. In this way they would have the necessary elements to help them make assertive decisions in this department.

Continuing with the same quadrant and with the other proposed strategy (D3, O3) it is urgent to increase sales in this industry so the idea of implementing or reinforcing the Internet sales system is presented. Design an attractive web page that contains a catalog with the products that are manufactured and above all a diversity of payment and delivery methods. They can be supported by graphic design students for this activity through professional practices.

Related to the "Max-Min" quadrant and the F2 strategy, A1 highlights the situation originated by SARS-CoV-2 that causes the disease COVID-19, as a response to this contingency, government authorities decided to establish an epidemiological risk traffic light to move towards a new normality; it is a monitoring system for the regulation of the use of public space according to the risk of contagion. At this moment, a return to normal activities is being initiated, respecting the indicated capacity, so it is required that all the members of Plaza Azul develop a cleaning, disinfection and sanitization protocol so that the general public can attend with the certainty that there are basic prevention measures for the care of people. This leads to an increase in sales and impacts on the proper planning of payroll.

And to conclude with the same quadrant and with the other proposed strategy F1, A2, it is suggested to take advantage of the experience that these companies have regarding the recruitment and selection of personnel to design a comprehensive human capital management system, which would consider an analysis to determine the elements that the software mentioned in previous paragraphs should have.

Regarding the "Min-Min" quadrant and strategy D3, A3. Due to the economic impact that the Plaza Azul footwear industry is facing due to low sales, it is proposed to take advantage of the tax benefits that are being granted to companies that are established in the territory of the State of Mexico in terms of the tax on expenses for remuneration of personal labor.

The benefit consists of a 100% subsidy in certain periods of time and applies when hiring human capital under certain circumstances. The period can be from 12 months to 36 months. Taking advantage of this strategy can have a favorable impact on these organizations.

Finally, the importance of strengthening the Plaza Azul footwear industries located in San Mateo Atenco is highlighted, and it is hoped that the results and strategies proposed will help this sector to emerge from the critical situation in which it finds itself.

References

Cámara de Diputados LXIII Legislatura. Recuperado 25 de febrero de 2018 file:///C:/Users/User/Downloads/CESOP-IL-72-14-TratadoTranspacífico-280118.pdf

Cámara de la Industria del Calzado del Estado de Guanajuato. Recuperado 20 de febrero 2019 <https://www.ciceg.org/historia/antecedentesdelaindustria.pdf>

Chiavenato, I. (2020). *Gestión del Talento Humano. El nuevo papel de los recursos humanos en las organizaciones*. México: Mc Graw-Hill.

CPTPP: el histórico acuerdo comercial firmado por México, Chile, Perú y otros 8 países del pacífico para reducir sus barreras comerciales. (08 de marzo de 2018). BBC. Recuperado de <https://www.bbc.com/>

Cruz, G. Álvarez, C. (2014). Los modelos de producción ¿fuente de ventaja competitiva?. Un acercamiento a la industria del calzado. *Teukenbidikay*, 5 (30), 207-228. ISSN 2215-8405.

Díaz, F. (2009). Enfoque de Porter y de la teoría basada en los recursos en la identificación de la Ventaja Competitiva: ¿contraposición o conciliación? *Economía y Desarrollo*, 144 (1), 101-114. ISSN: 0252-8584.

Esquivel, E. (08 de junio de 2015). Crisis de la industria del calzado provocada por el comercio desleal de China. SDP Noticias. Recuperado de <https://www.sdpnoticias.com/>

Florido, R. (2009). *Alternativas de crecimiento productivo de las PyMEs; un análisis a partir del estudio mesoeconómico para identificar una Aglomeración Productiva Local de la industria de cuero y calzado en San Mateo Atenco* (tesis maestría). Universidad Autónoma Metropolitana, Unidad Azcapotzalco.

Fuster, G., Martínez, M., Pardo, A. (2009). Las estrategias de competitividad de la industria del calzado ante la globalización. *Revista de Estudios Regionales* 10 (86), 71-96. ISSN: 0213-7585.

González, M. et al (2017). *Planeación e integración de los recursos humanos. Capital Humano*. México: Grupo Editorial Patria

González, O. (2014). *Desarrollo económico local en el Municipio de San Mateo Atenco periodo a analizar 2010-2012* (tesina licenciatura). Universidad Autónoma del Estado de México.

Hamel G. Prahalad, C. (1990). El propósito estratégico. *Harvard Business Review*, 41 (34), 75-94. SSN 0210-900X.

H. Ayuntamiento de San Mateo Atenco. Recuperado 10 de junio de 2019 <http://www.sanmateoatenco.gob.mx/>

Hernández, A. (2007). Retos y perspectivas de la industria mexicana del calzado ante la apertura comercial. El impacto de la competencia con China. *Revista Espiral*, 14 (40), 95-121. ISSN 1665-0565.

Hernández, S. Fernández, C. Baptista, L. (2010). *Metodología de la Investigación*. México: McGraw-Hill.

Iglesias, E. (1998). *Las industrias del cuero y del calzado en México. Instituto de Investigaciones Económicas*. México: Universidad Nacional Autónoma de México.

Instituto Nacional de Estadística y Geografía. Recuperado 19 de marzo de 2019 <https://www.inegi.org.mx/contenidos/saladeprensa/bol-etines/2019/emim/emim2019-03.pdf>

Kerber, V. (2002). China y el calzado mexicano. *Revista Comercio Exterior (Bancomext)*, 52 (10), 900-906. ISSN 2395-8324.

- Lavariega, M. (10 de abril de 2019). Oportunidades de negocio en la red cuero-calzado en México. *El Economista*. Recuperado de <https://www.economista.com.mx/>
- Morones, C. (2014). *Impacto de las importaciones de calzado de China en el nivel de empleo de la industria en México* (tesis licenciatura). Colegio de la Frontera Norte.
- Münch, L., Ángeles, E. (1998). *Técnicas de Investigación*. México: Editorial Trillas.
- Naumov, G. (2018). *Gestión e innovación total del capital humano*. México: Patria Educación.
- Ojeda Gómez, Julieta. (2007). Ventaja competitiva: El reto de las PyME en la industria del calzado. *Revista Venezolana de Gerencia*, 12 (40), 513-533. ISSN 1315-9984
- Olvera, D. (15 de febrero de 2018). El comercio en México con Rusia y China creció con Trump; alertan que EU va a tomar represalias. Sin Embargo. Recuperado de <https://www.sinembargo.mx/>
- Ortiz, A. Martínez, A. (2000). Factores de competitividad, situación nacional y cadena productiva de la industria del calzado. *Revista Economía, Sociedad y Territorio*, 2 (7), 533-568. ISSN 1405-8421.
- Pérez, J. (25 de noviembre del 2020). Ventas bajas, despidos y quiebras por pandemia en industria del calzado de San Mateo Atenco. *Heraldo Estado de México*. Recuperado: <https://hgrupeditorial.com/>
- Porter, M. (2007). La ventaja competitiva de las naciones. *Harvard Business Review. América Latina*, 85 (11), 69-95. ISSN 0717-9952
- Porter, M. (2008). *Ser competitivo*. Barcelona: Ediciones DEUSTO.
- Ramírez, R. (20 de mayo de 2020). Procedimiento para la elaboración de un análisis FODA como una herramienta de planeación estratégica en las empresas. Universidad Veracruzana. Recuperado de: <http://www.uv.mx/>
- Rodríguez, I. (28 de febrero de 2018). El sector calzado: Podemos vivir sin TLCAN, pero no con TPP. *Expansión*. Recuperado de <https://expansion.mx/>
- Rubio, A. Aragón, A. (2008). Competitividad y recursos estratégicos en la Pyme. *Revista Europea de Dirección y Economía de la empresa*, 17 (1), 32-147. ISSN 1019-6838.
- Saavedra, G. (20 de mayo de 2020). Una propuesta para la determinación de la competitividad en la pyme latinoamericana. R. Científica. <http://rcientificas.uninorte.edu.co/>
- Sáez de Viteri, A. (200). El potencial competitivo de la empresa: Recursos, Capacidades, Rutinas y Procesos de valor añadido. *Investigaciones Europeas de Dirección y Economía de la empresa*, 6 (3), 71-86. ISSN 1135-2523.
- Saldaña, I. (04 de febrero de 2019). Advierten crisis en industria zapatera por bajar aranceles. *El Universal*. Recuperado de <https://www.eluniversal.com.mx/>
- Sánchez, N. Rozga, L. Martínez, S. (2015). Los actores de la innovación en el sistema productivo de calzado en San Mateo Atenco, zona metropolitana de la ciudad de Toluca. En Orozco, H. Velázquez, T. Campos, C. (Ed.) *Paradigmas del desarrollo social y territorial* (pp. 117-140). México: Universidad Autónoma del Estado de México.
- San Juan, M. (23 de agosto de 2016). Cierra 28% de las zapaterías de San Mateo Atenco. *El Economista*. Recuperado de <https://www.economista.com.mx/>
- Secretaría de Economía*. Recuperado 10 junio 2019 <https://www.gob.mx/se/articulos/conoce-mas-sobre-la-industria-del-calzado/>
- Secretaría de Gobernación/Diario Oficial de la Federación*. Recuperado 10 abril de 2019 https://dof.gob.mx/nota_detalle.php?codigo=5557468&fecha=10/04/2019
- Subsecretaría de Industria y Comercio /Secretaría de Economía*. Recuperado 25 de febrero de 2019 <https://www.gob.mx/se/prensa/participacion-de-la-conferencia-de-prensa-del-subsecretario-de-industria-y-comercio-ernesto-acevedo-fernandez?idiom=es-MX>

Zarur, O. (1993). Apertura comercial, modernización empresarial y su impacto sobre la industria del calzado en México. *Revista Gestión y Estrategia*, 27 (3), 68-71. ISSN 0188-8234.

Zenteno, B., Aguirre, B., Calderón, R., Ordoñez, H. (2019). Estrategias de la Mezcla de Mercadotecnia de la Industria del Calzado en San Mateo Atenco Plaza Azul. *Journal-Business Administration and Business Economics Marketing Accounting*, 3 (5), 24-37. ISSN 2531-3002.

Personnel management as a competitive measure in a mining advisory company**Gestión de personal como medida de competitividad en una consultora minera**

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Abstract

Herewith presented an investigation-action study inside the company "Minera Tierra Adentro, S.A. de C.V.". Located in the city of San Luis Potosi, Mexico, this company is a consultant in the Mining-metallurgical sector. This study has the goal of measuring qualitatively, the level of competitiveness that, as a microenterprise, MTA has in the practice as a staff- group management within the enterprises of the Mining-Metallurgical industry, analyzed from the personal management view, considering for this purpose, a descriptive qualitative approach, substantiated in an action plan that emerges from the experience, the moral optic and professionalism of the members that conform it. As the outcome of the investigation action, the strategic plan implementation, with a practical design of the personal management that incorporates the microenterprise, with defined parameters, the members of the company, are stakeholders of the construction, as well as responsible of the monitoring of it, seeking the creation of improvements that will lead to innovation and effectivity of the operational performance in the interest of the big and medium size companies.

Personal Management, Competitiveness, Strategic Plan**Resumen**

Se presenta una investigación-acción dentro de la empresa "Minera Tierra Adentro, S.A. de C.V.", ubicada en la ciudad de San Luis Potosí, México, desarrollándose como consultora en el sector minero-metalúrgico. Este estudio tiene como objetivo medir cualitativamente, el nivel de competitividad que, como microempresa, tiene en la práctica como una gestión de personal dentro de los corporativos de la industria Minero, considerando para este propósito, un enfoque cualitativo descriptivo, fundamentado en un plan de acción que surge de la experiencia, la óptica moral y la profesionalidad de los miembros que la conforman. Como resultado se obtiene la implementación de un plan estratégico, con un diseño práctico de la gestión de personal que incorpora parámetros definidos en donde los miembros de la empresa son partes interesadas en la construcción, así como responsables del seguimiento de la misma, buscando la creación de mejoras que conduzcan a la innovación y efectividad del desempeño operativo, de interés de las grandes y medianas empresas.

Gestión Personal, Competitividad, Plan Estratégico

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Introduction

Generally, microenterprises play a fundamental role in the economy of the countries. In Latin America they contribute 70% to employment generation; in the long run they have achieved a participation in the GNP of more than 50%. It is therefore relevant to perform research that springs from interdisciplinary analysis and accordingly achieves to integrate method with theory, enriching by the various areas of administration, economy, politics, history and sociology among others (Romero, 2006).

According to Landsberg (1994) the research in microenterprises poses serious obstacles, due to the privacy that is maintained in its activities and results, which usually are lacking in system and fixed formats, which he describes as afflicted by personal conflicts, managed in unprofessional ways, and additionally burdened by stigmas of inferiority.

Considering that a microenterprise may, through projects and advisory activities, endorse decisions of long range repercussion for medium, small and big companies, a research study with a descriptive focus of qualitative nature is proposed, the objective of which is to design a strategic work plan of a microenterprise, incorporating in it the strengths of its members, in such a manner as to potentialize the effectivity of the operating business proposals to clients generated.

The result of this study, which is developed through the method of research-action is a strategic plan that enables the qualitative measurement of competitiveness through the handling of personnel, utilizing as parameters the technical probity, the experience and the moral and ethical probity of the members of the microenterprise Minera Tierra Adentro, whose purposes are the operational advisory and consultancy services to the Mining-Metallurgical Industry in Mexico.

The scope of the study is the competitive strengthening, and eventually the growth of the microenterprise minimizing the obstacles that may arise from a traditional strategic planning; the qualitative measurement is focused on personnel management.

Theoretical basis

Competitiveness from the viewpoint of personnel management

A first approach to the concept of competitiveness is to define the concept of proficiency. Rey, (2014), describes that proficiency is the capacity to accomplish specific activities, since we understand that a person is able to do right or successfully an activity because he has the skills to do so. Concluding that proficiency exists, is done after a person completes the activity he was assigned to do, being this assignment, an acknowledgement and a demonstration of responsibility.

In relation to the concept of competitiveness, other definitions will be explored in order to give it a wider meaning, as there is no known establishment as to its conceptual formalization. The World Economic Forum (2010) describes competitiveness in relation to institutions, policies and factors which determine productivity.

Tello (2017) performed research on competitiveness based on the welfare of the members of the enterprise, and concluded, among other things, that to reach success, the competitive will of the individuals when they are included in environments of challenges, persons, objectives, changes, processes must be considered.

The Inter-American Development Bank (IADB) proposes areas of analyses and pointers in order to measure the competitiveness of microenterprises, among which one finds a *Strategic Planning* that has as pointers the process itself of strategic planning and its implementation, and additionally *human resources*, which include the general aspects as indicators, training, organizational culture, and health and safety (Solano, Perez, and Uzcátegui, 2017).

In the business environment there are tendencies to promote competitiveness, which unfold from the economic globalization, technological development, privatization, sustainable development, internationalization of the administration of human talent, styles of leadership (Prokopenko, 1998) and, to follow them strategic models, as the industrial one and those based on resources are proposed, taking advantage of the concept of cluster and of organizations such as sets of available resources and know-hows to promote development and growth respectively.

When the administration of personnel is considered as a basis for the measurement of competitiveness, indicators of development of human talent are identified by placing at this level the participation and communication of the persons involved, as, if the measurement of competitiveness is only focused on strategies, policies, infrastructure, technologies, processes, its development will be nullified, in view of the fact that they are direct indicators of the measurement of productivity. From this point of view other measurement parameters are contemplated, as are the engagement, the responsibility, the capability for growth and the attitude contributing to the positive results of the businesses (Montenegro and Alvarez, 2011).

Strategic plan

According to Ward (2006), strategic planning in microenterprises is defined as the development of a business strategy involving the firm, the members, and the environment, looking for growth; it additionally contemplates the vision and plans of action to reach the objectives set.

In the process of defining the strategy, the firm as well as the members must focus on the permanency, the participation in the activities of the firm, maintaining as a latent challenge the interdependence of both. The basis of this strategy is the shared vision of ownership and the business (Araya, 2017).

The strategy's purpose is to take advantage of the resources, capabilities and individual and collective competences in the firm, focused on reaching the goals in the competitive environment (Hitt, Ireland and Hoskisson, 2008).

In relation to this, Thompson (2012) asserts that the essence of this strategy will be the changes made in order to design, create and strengthen the performance of the firm in the medium and long range, thereby obtaining in theory a competitive advantage in relation to its competition, as much operational as financially.

The microenterprise should always be ready to face change, because its continuity in the long range will engender complications that may arise from the inclusion of the members in the business system, generating an unbalance between the demands and opportunities of the firm and the needs and individual wishes. To attain equilibrium several variables are taken into account as are members control in the firm's decisions, management of capital, control of conflicts, plans and actions (Araya, 2017). Strategic planning becomes then a forced development for the microenterprise, considering that it must count with an effective process that permits permeability of the inter-generational knowledge and the facing of the socioeconomic changes that enable it to be profitable and achieve members harmony.

Strategic planning provides objectives and goals, policies of compliance, promoting also studies of the business environment, threats and contingency planning. Several authors hold that it should be applicable to all kinds of businesses; there are studies however show that it is not considered a priority in relation to providing more business competitiveness (Aragón, Rubio, Serna, Chablé, 2010).

Business Organization of Minera Tierra Adentro

Minera Tierra Adentro S.A. de C.V. (MTA), family business established in 2012 in the city of San Luis Potosí, Mexico, has as its objective to provide high level professional services and offer training of an integral nature to the mining industry, through consulting and advisory services, operational as well as administrative, environmental, social, safety, etc. The objective is to establish value and presence in the mining districts of Mexico (Martínez y Rivera, 2018).

In the corporation's legally registered deed it has two partners, whose family relations promote it as a family business; in addition to this it is formed of three persons, who contribute technical know-how and diverse business functions. In addition to this, MTA's scope of services extend to external services of consultants in related Earth Sciences and of multidisciplinary support, when the client's projects so require them.

The organization chart for the MTA business is depicted in figure 1. It contains also the general functions which the personnel of the family enterprise perform.

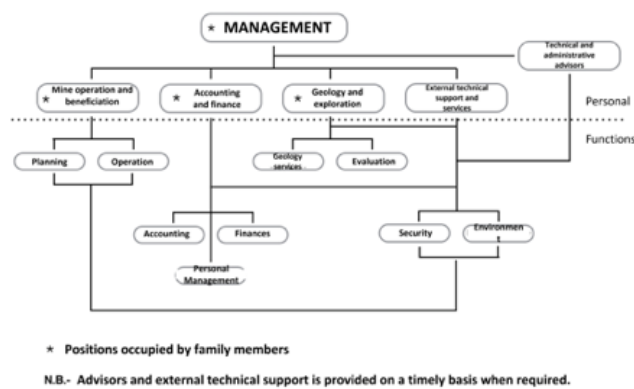


Figure 1 Functional organization chart of Minera Tierra Adentro

Investigation-action: methodology

For the purposes of this study, a measurement instrument made by Díaz (2012) with the purpose of determining the relationship between strategic planning and the performance of members of the enterprises in a place in the state of Puebla was applied. In this study the aspects identified by Romero (2006) as pertains the focus of the dynamics of members of relationships and their effect on the firm, as well as the basis of the aforementioned authors, who sanction the strategic planning as measured from the viewpoint of human resources or personnel supervision based on defined parameters as are individual experience and expertise of the persons, professional training, and technical and moral integrity. Considering this constraint, the statements of the instrument are extracted and are adapted for the appropriate information looked for in this study.

The instrument is applied to the three active members of the business and to two persons that constitute the staff of direct support, which makes a total of five cases from which to extract the desired qualitative information. Emphasis is placed on the method of research-action, in due consideration of the fact that investigators in this study were part of the activities and decisions that were realized.

Identification of the parameters to be measured.

To measure the competitiveness of the microenterprise, the listed fields of knowledge are joined: economy, organizational theory, international economy, strategic direction, finances, marketing and industrial organization (Camisón, 2014), from which theory of organization and strategic direction are extracted to conform the field considered.

Taking into account the measurement instrument and the literary basis, to measure the competitiveness of MTA the following parameters proper to personnel supervision are considered:

- 1) Level of schooling, training and use of communication technologies, personnel rotation, in order to formalize *technical probity of the individuals*,
- 2) Strategic planning, control of external organs and advisers, in order to conform the *individual and firm experience*,
- 3) Policy of human resources, control systems and management of performance, business-family norms, family environment and culture, communication and leadership, to describe the *moral and ethical probity*.

Results

After the analysis by the investigators and the carrying out of some proposals for practical work with the Director and his assistants, an exercise was performed to review the gathered information. This exercise was formalized with the presence of five members considered the "base", who in session were informed and analyzed the data and, based on it, presented proposals to develop a specific strategic plan that would promote the fortifying and the conceptual and practical transparency of the business relationship.

Additionally, the measurement of competitiveness was conscientiously registered based on the parameters shown:

Technical probity of the individuals

On the basis of the measured parameters, it is deemed that the technical probity can be gauged as a function of the level of studies, this being multidisciplinary, but with a clear focus towards the mining-metallurgical sector, with which proposals, budgets, preliminary studies become efficient as well as promptly prepared and delivered, which generates clients' trust; additionally, this probity gives MTA the opportunity to offer technical-operational support to the mining sector in interrelated and necessary areas: finances, environment, safety, efficient personnel management, use and handling of explosives, and so forth.

A basic premise can be considered. When the case is of projects in development (advisory to a mining society), the selection of external personnel to take care of them is necessarily based on their professional profile (related to earth sciences); however, for support of some services experience in the field suffices, training being a value-added characteristic to this parameter.

It may be mentioned that this training does not occur within MTA; however, the personnel counts within extended theoretical and field knowledge, derived from in situ training, through personal initiative or acquired during previous assignments. An important principle to be taken into consideration is that all members of the firm, internal or external, have a minimum of higher level verifiable academic studies, as frequently there is a requirement to officially endorse projects, documents, certificates, official minutes and meetings generated on work finished.

The utilization of technologies is applied in its totality, and in relation to personnel rotation this has not happened, and as for external advisors, they do not really influence this parameter as they are people contracted when the nature of the project in case requires their participation.

Experience

The parameter of strategic planning produces several differences in the responses, as an operation axis exists that however is only known to the members of the firm. In the joint exercise, the strengths, weaknesses, threats and opportunities expressed were examined and classified and, for their ease of handling were classified under two headings: beneficial conditions and conditions of opportunity (figure 2).



Figure 2 Conditions to establishing the strategic planning of MTA

There are no organisms or protocols that regulate the operation of MTA; in relation to the external advisors, the support they provide is considered invaluable and necessary, but their functionality has not been formally described.

The dexterity, knowledge and expertise that the MTA personnel denotes has managed to balance the lack of parameters evaluated by the business strategic planning, as proved by the years of experience, individual and accumulated by the advisors on which the company relies, members headed by the Director, and external ones, which are invited to work because of the know-how and effectivity they have proved on the job. It is considered that the experience proved constitutes a competitive advantage over other companies that provide advisory services in the mining-metallurgical sector, which in addition allow it to offer integral services and not only point by point.

Ethical and Moral Probity

This parameter has its foundation, basically, in the members harmony which has values that unanimously have expression in terms like the respect between advisors, and clearly towards the Director, who in turn expresses trust and union towards the rest of the team, as well as external to it.

Business interests and members ones, as well as codes of behavior and of ethics have not been documented; a commitment has been undertaken in developing this study, in which dates of meeting to formalize some premises that may be expressed as value added, so that in this way clients recognize it.

Competitiveness as a function of personnel management

Throughout this study, the Director and the other participants and occasionally active members of the business, recognize a medium level of competitiveness, generating commitments of participation in those parameters that have not been complied with or haven't been adequately formalized. The qualitative description of the measurement parameters of competitiveness arise from this evaluation, a particular scheme of operativity that distinguishes the doings and compromise with MTA's (figure 3) clients of the mining sector to which it offers integral specialized services.

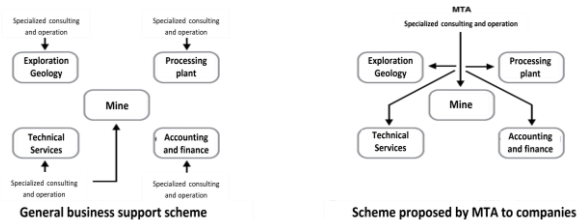


Figure 3 Tradition flow diagram vs Innovation diagram of MTA

Conclusions

The measurement of competitiveness as a function of qualitative parameters of personnel management is analyzed and structured in an improved manner through the insertion of a strategic plan; this study, made partial as described, signified effectivity to the investigators when presented to the Director and founder of the microenterprise, as in spite of his disposition, a comfortable thought remains of control in regard to the operativity of the projects developed with the various clients.

The acceptance of the interpretation of the data collected, and, before that, the disposition of the members of the enterprise to generate them, gave the investigators the opportunity to fulfill the initial purpose of the study, upon measuring the competitiveness level.

During the development of this study, various operative and strategy concepts not considered and others not formally considered are made explicit, which represents for MTA the opportunity to establish systemic management controls, having established a first phase of business strategy planning, as a function of personnel management.

The work strategy of MTA is flexible; it depends on the operativity and requirements of the small, medium and big units of the mining-metallurgical sector which have deposited their trust so they morph into projects that are managed from their beginning or as a continuity project, as required, and thereby implemented in situ by MTA. Therefore it is a result considered as value added in this study.

The plan of work of MTA is flexible; it depends on the operativity and needs of small, medium and big units of the mining-metallurgical sector that have deposited their trust in MTA, so that they are converted in projects that are managed from the start or are continued, depending on the situation, and MTA implements it in situ. Therefore the creation of a scheme of innovation to look after the needs of the clients is a result considered as a value added of this study.

References

- Aragón A., Rubio A., Serna A., Chablé J. (2010), *Estrategia y competitividad empresarial: un estudio en las MiPymes de Tabasco*, Investigación y ciencia [On line], www.redalyc.org/articulo.oa?id=67413393002, Access date: 25.02.2019.
- Araya A. (2017), *Modelos de planeación estratégica en las empresas familiares*, Tec Empresarial, No. 1, p. 23.
- Camisón C. (2014), *La Competitividad de la Empresa Familiar y Sus Factores Determinantes: Un Modelo Explicativo*. Colección Notas de Investigación, No. 1, p. 111.
- Díaz H. (2012), *La planeación estratégica en las empresas familiares de Tehuacán y su contribución a la mejora del desempeño*, Memoria electrónica Teoría de la organización, México.

Hitt M., Ireland R., Hoskisson, R. (ed) (2008), *Administración estratégica: Competitividad y conceptos de globalización*, Pearson Prentice Hall, México.

Martínez R., Rivera P. (2018), *Prácticas de gestión ambiental en industria minero-metalúrgica. Caso de estudio en San Luis Potosí, México* [in:] Wyd, SAN (ed.), *Firmy rodzinne-zarządzanie, rozwój, przedsiębiorczość*, Piasecki, Marjanski, Safin.

Montenegro W., Álvarez L. (2011), *Aproximación al concepto de competitividad organizacional*, Revista Memorias, vol. 9, núm. 16, p. 39.

Prokopenko J. (ed.) (1998), *Globalización, competitividad y productividad*, Boletín Cinterfor, No. 143, p. 33.

Rey B. (2014), *En torno a las palabras. "Competencia y Competencia profesional"*, Propuesta Educativa, No. 42, p. 28.

Romero L. (2006), *Competitividad y productividad en empresas pymes*, [On line], www.redalyc.org/html/206/20605708/, access date: 10.01.2019.

Saavedra M. (2012), *Una propuesta para la determinación de la competitividad en la pyme latinoamericana*, [On line], www.rcientificas.uninorte.edu.co/index.php/pensamiento/article/viewFile/4898/2999,_date of access: 06.06.2017

Solano J., Pérez, M., Uzcátegui C. (2017), *Metodologías de Medición de la Competitividad*, [On line], www.eumed.net/libros-gratis/actas/2017/empresas/10-metodologias-para-medir.pdf_Access date: 10.01.2019

Tello E. (2017). *Percepción de competitividad personal. Un estudio desde la perspectiva de la felicidad, el bienestar y la educación en egresados universitarios*, Revista de Estudios Empresariales, No. 1, p. 34.

Ward, J. (ed.) (2005), *Unconventional Wisdom. Counterintuitive insights for family business success*, Jonh Wiley & Sons Ltd., England.

Ward J. (ed.) (2006). *El éxito en los negocios familiares*. Editorial Norma, Bogotá.

World Economic Forum (2010). *The global competitiveness report 2010-2011*, Suiza.

Smart warehouse management using IIoT to optimize inventory control

Gestión de un almacén inteligente usando IIoT para optimizar el control de inventario

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Abstract

Product flows within warehouses require detailed work in many ways, one of these is linked to fluctuations in demand, since this is uncertain, it is not possible to specifically predict the safety stocks that certify the supply. This can lead to production problems in different departments and consequently low productivity. This article proposes the optimization of merchandise warehouse flows by evaluating its inventory system, its integration and interoperation with emerging technologies based on the Industrial Internet of Things (IIoT) as well as artificial intelligence methods, with the aim of to know and adequately plan the stock needs, allowing to generate ideal inventory policies through an adequate prediction model, since a recurring problem is having outdated inventories among other reasons because the demand is uncertain, so it is not possible to predict from specific and timely manner security stocks. For this purpose, a methodology based on the experimental design of a management system is proposed that allows analysing inventory information through neural networks, being able to establish an automatic reorder point, with the aim of turning the warehouse into a dynamic unit that through self-learning allows you to create forecasts to make internal processes more efficient, improving decision-making.

Smart warehouses, Inventory control, Neural network

Resumen

Los flujos de los productos dentro de los almacenes requieren de un trabajo detallado en muchos sentidos, uno de éstos está ligado a las fluctuaciones de la demanda, dado que esta es incierta, no es posible predecir de manera específica las existencias de seguridad que certifiquen el abasto. Esto puede traducirse en problemas de producción en diferentes departamentos y, en consecuencia, una baja productividad. Este artículo propone la optimización de los flujos del almacén de mercancías mediante la evaluación de su sistema de inventario, su integración e interoperación con tecnologías emergentes basadas en el internet industrial de las cosas (IIoT) así como con métodos de inteligencia artificial, con el objetivo de conocer y planificar adecuadamente las necesidades de stock, permitiendo generar políticas ideales de inventario a través de un modelo de predicción adecuado, pues un problema recurrente es tener inventarios desactualizados entre otros motivos debido que la demanda es incierta, por lo no es posible predecir de manera específica y oportuna las existencias de seguridad. Para este fin se plantea una metodología basada en el diseño experimental de un sistema de gestión que permita analizar la información de inventarios mediante redes neuronales, pudiendo establecer un punto de reorden automático, con el objetivo de convertir al almacén en una unidad dinámica que mediante autoaprendizaje permita crear pronósticos para hacer más eficientes los procesos internos, mejorando la toma de decisiones.

Almacenes inteligentes, Control de inventarios, Redes neuronales

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Introduction

Different industries are facing great changes, caused by megatrends such as globalization, individualization, and demographic change. The boost in globally connected business activities increases complexity within industry networks, where volatile demand and customized products influence their planning and production processes (Bartodziej, 2017).

The supply chain management (SCM) aims to guarantee the appropriate interactions of the logistics elements to present optimal flows of products and information that allow cost reduction and an increase in customer satisfaction (Correa et al., 2010). As shown in Figure 1.

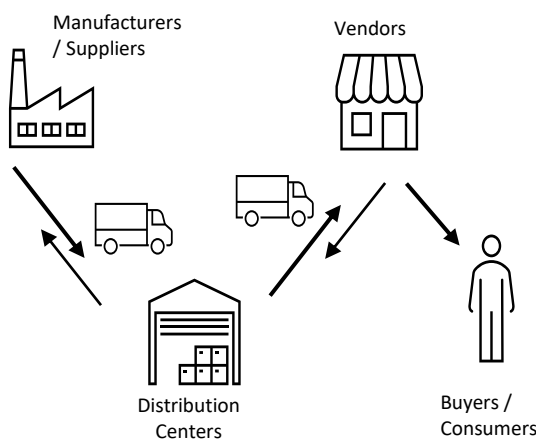


Figure 1 SCM flows
Source: Own elaboration

The rapid growth of online product transactions has revealed important areas of opportunity at the logistics level, especially in distribution operations, in this sense, the expansion of interconnected devices creates opportunities to obtain valuable information more quickly, so IIoT solutions create new routines and drive smarter operations from the data collected.

Warehouse management is a key activity of the SCM, because in addition to storage, the warehouse also provides custody, verification, and supply of merchandise within the supply chain (LD Logística Dinámica, 2020). The existence of volume and variety of merchandise makes it necessary to implement systems that allow effective asset management, with the aim of streamlining operations and minimizing human errors.

Among the resources available for warehouse management, in addition to handling equipment, the information systems stand out, which allow the registration, administration and control of the information generated by the processes (Figure 2). The term supply chain execution (SCE) reflects a shift toward comprehensive logistics applications where warehousing is one of its components. Always knowing the status of the merchandise in the warehouse is important because this constant supervision facilitates the planning and organization of flows and operational processes, to avoid product shortages, reduce improvised purchases, avoid uncertainty in the elaboration of the processes that are related to the supply of supplies, in this way it contributes to boost sales, promoting a reduction in delivery times and compliance with customer requirements.

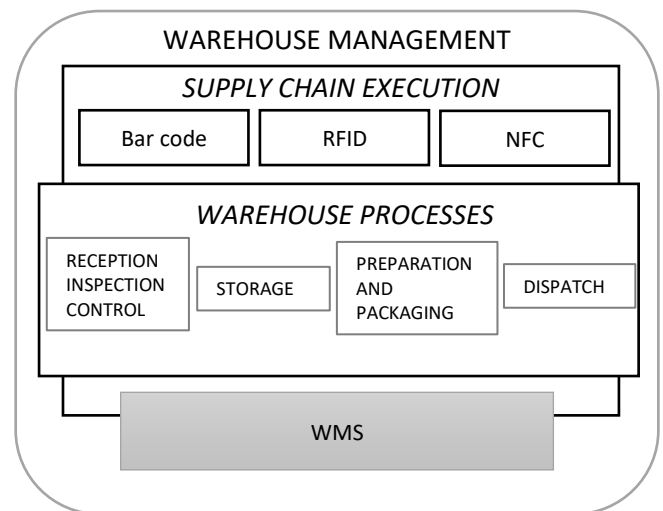


Figure 2 Technologies in warehouse management
Source: Own elaboration

Although RFID technology-based techniques have been available for a long time that allow for an interconnection between information management systems and goods found in warehouses or circulating through supply chains. The IIoT, in logistics 4.0, condenses the implementation of real-time systems that allow to automate and efficiently manage the entire logistics process, from the manufacture of the product to its final delivery, through storage and distribution tasks (IAT, 2021).

Thus, IIoT is constituted as a non-deterministic and open network in which self-organized intelligent entities and virtual objects are interoperable and capable of acting independently pursuing their own objectives (or shared objectives) depending on the context, circumstances, or the environments. According to the ISO/IEC 2382 Information Technology Vocabulary (ISO, 2000), interoperability is defined as the “capability to communicate, execute programs, or transfer data among various functional units in a manner that requires the user to have little or no knowledge of the unique characteristics of those units”.

Interoperability in the IoT facilitates communication and data exchange between objects regardless of their brand. According to Yzquierdo & González (2009), the guarantee that the systems are interoperable means that you can access more information and useful functionalities from a single environment in a practical and reliable way. In this way, efficiency and profitability are possible, by guaranteeing open connections of the company's products. So, a company need all systems to communicate with, and understand, each other to be able to leverage the advantages of technology solutions.

The warehouse, presents constant challenges, being technological innovations a tool to face them, which is why the move towards an "intelligent" entity based on automation is evident both to integrate and manage inventories (Ruiz et al., 2021). It is important to note that inventories are integrated into the financial statements of the company as a reflection of its economic operation, therefore, determining the optimal quantity of orders is one of the main aspects in inventory management that can facilitate this run at optimal cost (Senthilnathan, 2019).

Artificial intelligence (AI) is related to the development of mechanisms that behave intelligently. These systems that think have programming that accumulates information that can then autonomously use this knowledge (Transped, 2021). Platforms with AI engines may also influence logistics, automating routine tasks, extracting data and insights, interacting with customers significantly and influence decision-making.

This article presents a model for a smart warehouse architecture that combines neural networks as a learning system on product information, and RFID system for an inventory management system. The study closes by mention the advantages brought by this possible solution that allow the different systems to automatically manage the input and output of warehouse data based on the user demand in order to increase the productivity and its control, being able to share strategic information.

Methodology

This research shows the results of warehouse processes analysis, in this way, a balance can be made between the items that enter and leave the warehouse to know their availability. Inventory control requires considering fluctuations in demand, delivery time and the operation of the business to define the number of products that are needed to properly serve the customer.

This work is done in two stages. The first part consists in an IIoT-based system that uses RFID, to identify and track the labels attached to products, it is complemented by a microcontroller that will track the inventory movements, recording the entry and exit of merchandise in real time using and IoT platform.

The second part will use AI technologies because they can provide real-time visibility and analysis by training machine learning (ML) models with supply chain data. AI-driven logistics optimization enables companies to solve complex cost and delivery constraints by utilizing in-depth insights and analytics (Malhotra, 2020).

1. WMS

The WMS as a software application that controls inventory and warehouse labour resources in real time.

2. ANN

ML is based on learning algorithms, artificial neural networks (ANN), as a part of ML, are computational models that are connected to each other to transmit signals obtaining the prediction of the possible desired output, this technology has been successfully applied in many business areas.

ANN are interconnection structures among artificial neurons that are modelled to mimic biological neurons using activation functions.

3. Inventory control

In this article, we propose an ANN enabled IIoT architecture with the vision of manage the warehouse stock from any device, for quick access.

To implement the inventory control, the gather data will be concentrated into an ANN model, the results will be sent to the cloud allowing its concentration and access to it from any location and by any device connected to the internet.

Numerical analysis software (Scilab) will be used to measure, collect, analyse and report the data, and the toolbox Local Linear Model Trees (LOLIMOT) is a model from the neural network family able to learn every kind of non-linear relationship (Figure 3).

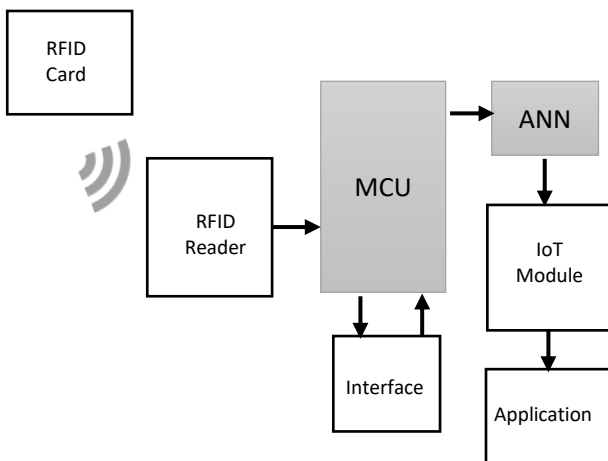


Figure 3 Block diagram
Source: Own elaboration

It is convenient to develop the solution using an inventory model, in this case, Economic Order Quantity (EOQ).

4. EOQ

EOQ is a set point designed to help companies minimize the cost of ordering and holding inventory. The cost of ordering inventory falls with the increase in ordering volume due to purchasing on economies of scale. However, as the size of inventory grows, the cost of holding the inventory rises. EOQ is the exact point that minimizes both inversely related costs (CFI, 2021).

The model considers a known a priori demand that is constant, and based on this it tries to know by the cost of maintaining an inventory and the cost of ordering the order, the optimal quantities to be ordered, all this minimizing the inventory cost to the max, as follows (Abdullah, et al., 2020):

$$Q * EOQ = \sqrt{2DS}/C \tag{1}$$

Where, $Q *$ = the quantity of goods at each order, D = Number of requests for raw materials in a period, S = Cost every time you order, and C = Storage cost per unit.

Implementation

This model will work with a software application capable of joining data that is not typically combined. A lot of scenarios are simulated for each request, obtaining the best solutions for specific management in real-time. Thus, the warehouse can obtain valuable information on the evolution of demand and the prediction of stock optimal levels.

The proposed architecture comprises of monitoring the inventory goods of a warehouse using an MCU-RFID, categorizing using ANN to enhance a reorder point accuracy and analysing with Scilab (Figure 4).

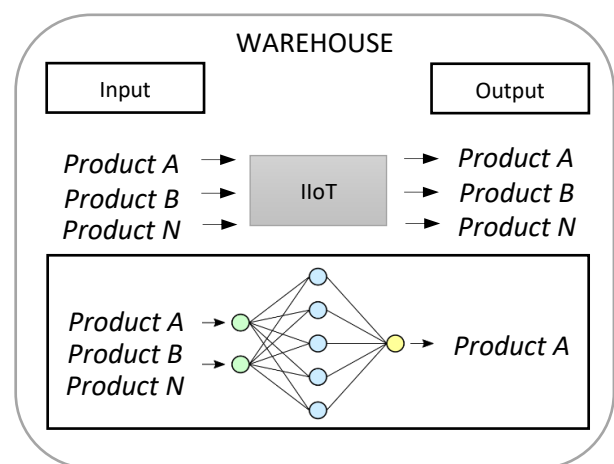


Figure 4 IIoT inventory control with ANN
Source: Own elaboration

The purpose of doing a maximum inventory calculation is so that the company can avoid the occurrence of shortages or excess inventory. A visible and transparent, thanks to the large amount of information available, warehouse processes improve efficiency, reduce waste, and enable traceability.

The constant flow of data through the ANN allows verifying the status of the warehouse through indicators that describe its operation, such as: inputs, outputs, registrations, cancellations, income, costs, etc. which are interpreted in a personalized environment using descriptive statistics.

Various ANN configurations are studied taking as input variables the daily series of the movements of entries and exits in the merchandise warehouse. Different ANN structures are trained using the historical data series, where a part of it is used for training and the rest for prediction (Figure 5).

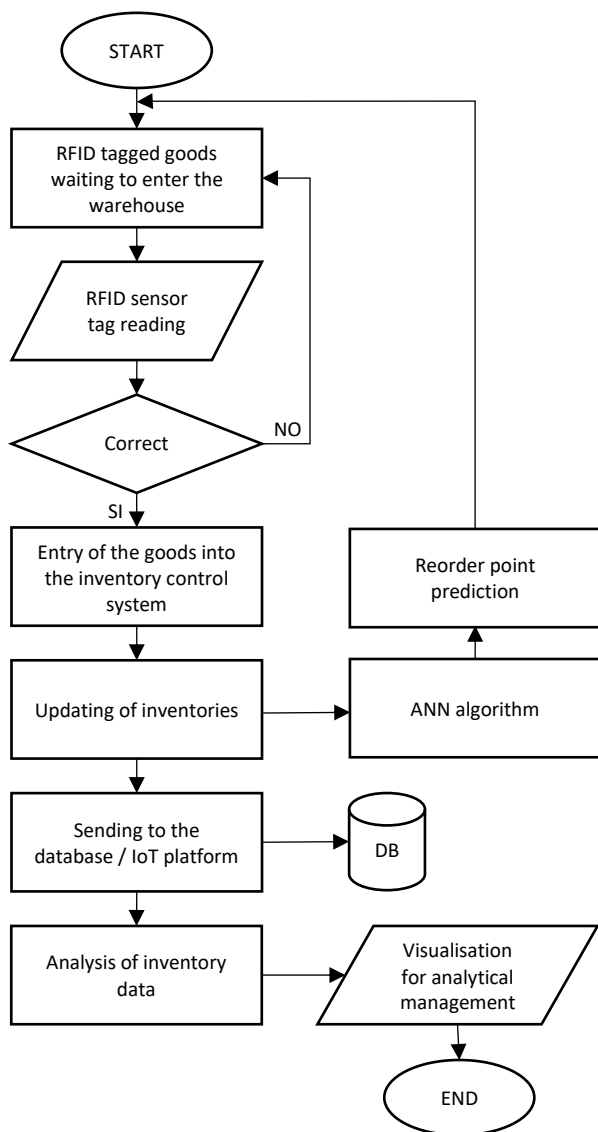


Figure 5 Process flow diagram of the proposed model
Source: Own elaboration

The models for inventory control are diverse, however, an intelligent control based on IIoT and AI linked with other WMS provide optimization in the model, being able to predict reorder points that minimize costs in inventory management.

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Conclusions

The WMS applications will be derived from expansion into other business operations, so it touches intralogistics, supply chain and even retail store operations.

In the supply chain, using IIoT managers will be able to monitor the status of shipments and with sensors, RFID tags and RFID readers, sees in real time the exact location of the box within the warehouse, the point of origin and other physical factors of interest.

Thanks to the ability of objects to report data in real time, users can make decisions more quickly and accurately, through offering continuous remote monitoring facilities inventory control. The results of the application of new trends technologies have repercussions not only in the logistics sector but also in society.

References

Abdullah, R., Bahar, S., Dja’wa, A., & Abdullah, L. (2020). Inventory Control Analysis Using Economic Order Quantity Method.

Bartodziej, C. (2017). The concept industry 4.0. An empirical analysis of technologies and applications in production logistics. Berlin: Springer.

CFI. (2021). EOQ. Recovered: december 1st, 2021, from <https://corporatefinanceinstitute.com/resources/knowledge/finance/what-is-eoq-formula/>

IAT. (2021). IOT en Logística, Gestión de Almacenes y Transporte. Recovered: december 1st, 2021, from <https://iat.es/tecnologias/internet-de-las-cosas-iiot/logistica/>

ISO. (2000). ISO/IEC 2382-7:2000. Recovered: december 1st, 2021, from <https://www.iso.org/standard/7241.html>

Gharehbaghi, K. (2016) Artificial Neural Network for Transportation Infrastructure Systems, MATEC Web Conf., vol. 81, p. 05001.

RUIZ-MELO, José Esteban, MARTÍNEZ-CARRILLO, Irma and JUÁREZ-TOLEDO, Carlos. Smart warehouse management using IIoT to optimize inventory control. Journal Economic Development. 2021

LD logística Dinámica (july 2nd, 2020). Cómo Hacer una Gestión Inteligente de nuestro Almacén. LD Logística Flexible. Recovered: november 27th, 2021, from <https://www.ld.com.mx/blog/noticias/como-hacer-una-gestion-inteligente-de-nuestro-almacen/>

Malhotra, S. (2020). Sizing the Potential Value of Artificial Intelligence in Logistics. november 24th, 2021, from OodlesAI Web site: <https://artificialintelligence.oodles.io/blogs/artificial-intelligence-in-logistics/#!>

Mbida, M. (2019). Smart Warehouse Management using Hybrid Architecture of Neural Network with Barcode Reader 1D / 2D Vision Technology. International Journal of Intelligent Systems and Applications. 11. 16-24.

Ruiz, J., Martínez, I., Juárez, C., & Huitrón, A. (june, 2021). Management system of smart warehouses using IIoT for optimize inventory control. Journal of Technologies in Industrial Processes, 5, 1-8. ECORFAN-México.

Senthilnathan, S. (november, 2019) Economic Order Quantity (EOQ). SSRN Electronic Journal.

Transped (september 14th, 2021). Artificial Intelligence in Logistics. Recovered: november 25th, 2021 from <https://www.transped.com/en/artificial-intelligence-in-logistics/>

Yzquierdo, R. & González, H. (june, 2009). Interoperabilidad entre los Sistemas Informáticos. ResearchGate.

The quality of an intangible value as a competitive advantage**La calidad de un valor intangible como ventaja competitiva**

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Abstract

From a global approach currently the trends mark the importance of having within the Companies the best prepared personnel, whether they have professional, technical or basic studies, same, that at the end of the day have an experience, acquired at the moment they enter the workplace. As part of its offered service, it applies skills and abilities, which with the path of its labor performance are improved; but that in many cases a specialization is required, which can be acquired by the company or independently. There fore, it is necessary to generate a thorough analysis of the employees who are integrated and remain in the organization, this in order to achieve the objective of all companies, which is to generate a profit. But how is this achieved?, it can be achieved with the application of the theoretical models of the various authors who have proposed the improvement of productivity from the quality granted by the intangible value, in the services it performs.

Quality, Intangible Value, Competitive advantage**Resumen**

Desde un enfoque global actualmente las tendencias marcan la importancia de tener dentro de las Empresas al personal mejor preparado, ya sea que cuente con estudios profesionales, técnicos o básicos, mismos, que al final del día poseen una experiencia, adquirida en el momento que se ingresan al ámbito laboral. Como parte de su servicio ofertado aplica habilidades y destrezas, las cuales con el trayecto de su desempeño laborar se van mejorando; pero que en muchas de las ocasiones se requiere de una especialización, la cual puede ser adquirida por parte de la empresa o de manera independiente. Por ello se requiere generar un análisis minucioso de los colaboradores que se integran y permanecen en la organización, esto con la finalidad de lograr el objetivo de todas las empresas, que es, generar una ganancia. Pero ¿cómo se logra esto?, se puede alcanzar con la aplicación de los modelos teóricos de los diversos autores que han propuesto el mejoramiento de la productividad a partir de la calidad otorgada por el valor intangible, en los servicios que desempeña.

Calidad, Valor Intangible, Ventaja Competitiva

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Introduction

Companies within their organizational philosophy, seek to maintain a mission and vision, in which they are glimpsed as growth entities; but, this would not be possible without the individuals, who are the foundations of the company, which we call, Resource or Human Capital, they generate and apply quality in the company, so from this vision, Roben Kaplan and David Norton in their book "Strategic Maps" [1] distinguish this human resource as intangible capital of the company, but accounting in the financial part, since as part of the accounting, the personnel is appreciated as an asset, in the salary and salary account, without considering that this human resource, rather than being part of the operation of the company, must be added an added value, for being one of the pillars of the company.

That is why under the premise of Michael Porter, who explains about competitive advantage, from various approaches, it is sought that the intangible capital of which Kaplan and Norton speak, becomes a competitive advantage of quality, for a company. It is necessary to understand that if a company, today disappeared, as a cause of an accident, the part that would remain existing would be human capital, called intangible capital, which is why from the hiring must be carried out a high quality selection process.

The competitive advantage [2], can be applied in companies, both to products or services, offered in a market where the client meets their needs, based on their requirements, that is why companies seek to apply and deliver the best quality, in their products or services, by meeting the expectations, required to meet the need of the client.

Michael Porter, in his book Competitive Advantage [3], explains the competitive advantage depends on several activities, which the company must have, so he distinguishes two levels, in which the company must be divided: 1) Primary Activities and 2) Support Activities; where the former, develop the sequence to generate a product or service, and make it reach the customer, while the second, establishes the structure of resources necessary, to make the product or service possible.

Therefore, the focus on support activities, presented in the first line of the value chain scheme, is the infrastructure of a company, within which the human resource is located, from the recruitment phase, to the hiring of the same. Just as it has been explained the importance that will correspond to the product or service, to generate a competitive advantage over them, in the same way the quality must be focused on human capital which is called intangible value, as a competitive strategy. From this it is considered that the staff must have a training of habits integrated by skills, attitude and knowledge; generating synergy with the company, thus applying total quality, in the area in which it develops as a collaborator, keeping in mind the personal and organizational philosophy. This seeks to forge a value to the staff, determined as intangible value, which is often not very relevant to the company. When achieving a company-collaborator synergy, the important thing will not lie in filling a vacancy, which meets the requirements of the area, here the transcendental thing is that an employee or collaborator, becomes the internal client, to which you have to talk about the benefits it has, being in the company, know, the why?, he is interested in the company, this through systematization, where quality is applied, in order to satisfy his staff and reduce its turnover.

Competitive advantage, applicable in the quality of an intangible value.

The competitive advantage applied in the quality of an intangible value (human capital), is complex because the resource or human capital, is considered since the company is created, as an accounting part, established in assets of the company, and that at the time, is only considered as a current expense, but it is important that within the company, that resource or human capital is considered as an intangible value.

International Accounting Standard No. 38 (IAS 38) [4] considers resources, like all those, that can be transformed into assets for the company, but not the person who elaborates them, generates the idea or innovates to create them. But in the book "Strategic Maps" by Roben Kaplan and David Norton he generates a different perspective, to be able to focus, the value towards human capital, creating a sequence, at the moment that the individual decides to select the company where he requires or wants to work.

This approach must first appreciate, knowing the organizational philosophy of the company, which can be aligned with the personal philosophy of the person.

The quality process [5] is a process that has been used to generate productivity in a company, in this work we seek to focus quality on the intangible value (human capital), which is found, in a company or organization. Quality as a foundation in the company, will be applied at the time of selecting the staff for the position, since it will consist of a methodology, within which it is required that the human capital has a series of attitudes and aptitudes, which will serve as tools to develop the tasks entrusted, these tasks will lead to achieve the objective of the company, thus achieving applied processes of adequate tide.

Currently, although many of the companies are innovating in the production processes, they have left aside the processes of selection of human capital, which when entering the company becomes an intangible value, although in a financial way it is accounted for.

From this Michael Porter establishes his model "Competitive Advantage", by means of which he will establish a margin, which will be given, from two aspects, the primary activities and the support activities where, the administration of human resources is estimated as a support activity, but this should be taken into account as one of the primary activities, since it is the one who will provide the specialized personnel, so that the main activities of the company are developed, and thus the organizational objectives are achieved.

With this it is identified that the administration of human resources is taken as a secondary activity, so it will be essential that the motivation that the human resource will give, generates a competitive advantage so that with it is achieved, the delivery of intangible value of quality for the company. The combination between competitive advantage and the quality of intangible value will be applied when the development of human talent is executed by showing the highlights of the skills and abilities that each individual possesses, since in a way a conjunction is generated in what the company requires and what the collaborator can generate as part of their professional development.

This is how the application of the strategic value chain model, which provides a competitive advantage to an intangible product, represented from the talent provided by human capital, as shown in figure 1, represents the management of resources that seen from a quality process; the human capital must be selected, carrying out a study of the personal philosophy of each individual, who intends to enter, as well as the organizational philosophy that the company has so that from the moment the collaborator enters the company being an intangible value, establishes a quality process.

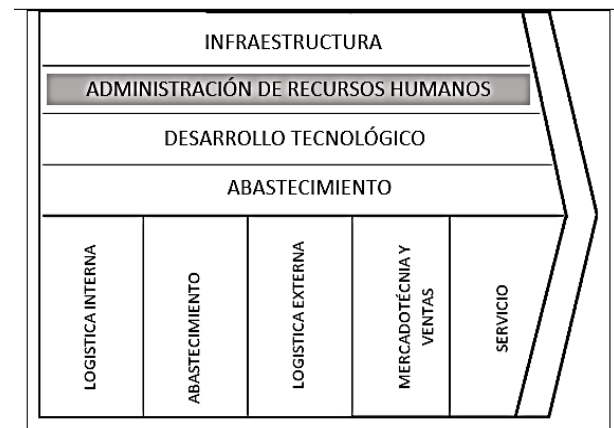


Figure 1 Value Chain

Source: Own elaboration Hernández Flores María uana, PORTER scheme, Michael E. (2015). *Competitive advantage*. (2nd edition). Mexico. Patria Publishing Group

It can be determined that one of the main premises, to apply a production process to intangible value, is motivation, which is focused on taking advantage of quality in human capital, from the perspective of an intangible value, generated as a competitive advantage to the company, because most companies focus on production or marketing processes; leaving aside the intangible value applicable in the skills and attitudes of human capital. Determining the importance of personal work, in terms of the activities it develops, which is intrinsically carried out by human capital, so that with it the extrinsic valuation can be taken and used in a better way, focusing on the productivity of the company and not on personal expectations based on human needs.

Quality of intangible value

The productive part of the intangible value is applied, from the performances achieved by human talent, which it generates when the company distinguishes the individual as an internal product of the company.

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With this, figure 2 is established, within which a personnel selection process based on the motivations is governed: intrinsic and extrinsic of human capital, since these will be in charge of the productive process as well as the quality of human talent, if those motivations of intangible value are taken care of, as if this were a product which was delivered to the client, there will be a commitment, which will involve fidelity.

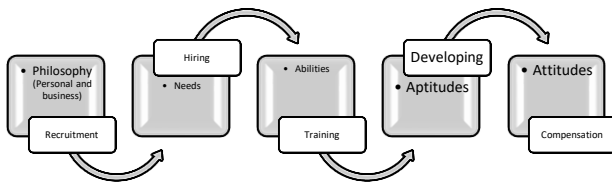


Figure 2 Quality in Intangible Value (Human Resources)
Source: Own elaboration Hernández Flores María Juana. (2019)

As observed in figure 2 to generate the basis of the intangible valuation of human capital, it is essential to focus on the recruitment of said capital, which will guide its motivation, because once the hiring is made a part of the extrinsic motivation is covered, so that by being involved in the training you are activating the intrinsic motivation, emphasizes that the orientation on the part of the company is indispensable, in the development that is applied by the individual, as well as the compensations to which it is credited, together these actions, will be part of a motivation, both intrinsic and extrinsic, this will achieve that both motivations are combined in a better development, both productive in any area of the company, as in the quality that through the individual demonstrates the organization.

From this process that is shown, it can be seen that it is very important that filters are generated, in order to determine and guarantee that quality of human talent in the company. Initially, both personal and organizational philosophy is established as a primary part to balance the requirements of the individual intangible value; as a next aspect, the needs are foreseen, which both the company and the individual will have, which can be covered from the motivation; followed by the skills that intangible capital will have to be applied in the company, as part of its labour development.

Finally, there are the skills and attitudes that will support the work performance and integration of intangible value, so that it locates that valuation that the company can grant it, as if it were the product that it delivered to its client.

Quality as a competitive advantage of intangible value

So, it is proposed that as a business strategy, that they are applied, models that have helped in the business field, to achieve successful productivity, in the training and development of human talent. It is necessary to use productive models, which generate a sequence to lead to the evaluation of productivity, which each individual contributes to the Company, with this a methodology is proposed from which these productive models are applied.

The proposed methodology [6] lies in three aspects described below: 1) Value of Human Talent, 2) Quality Personnel and 3) Competitive Advantage; these points will give the individual and the company a win-win; as shown in figure 3.

- 1) Value of Human Talent. The valuation of human talent is observed at the moment that, each of the characteristics that compose it, such as: values, attitudes, skills and knowledge are recognized by the company; in this way it generates the value that human capital has, by feeling motivated, both intrinsically and extrinsically. This from the moment that the requirements that each of the companies demand are known, the individual sees what his objective will be and what he gives him.
- 2) Value of Human Talent. The valuation of human talent is observed at the moment that, each of the characteristics that compose it, such as: values, attitudes, skills and knowledge are recognized by the company; in this way it generates the value that human capital has, by feeling motivated, both intrinsically and extrinsically. This from the moment that the requirements that each of the companies demand are known, the individual sees what his objective will be and what he gives him.

3) Competitive Advantage. This arises when competing with other organizations with the various resources that the company possesses such as the financial, material, technological, strategic, human and intellectual resources, including human and intellectual resources will combine human talent, which when it feels valued generates identity with the company as well as loyalty and loyalty for the organization, this giving an advantage to the company over other companies, as it will support a reduction in costs by minimizing staff turnover while training.

These typologies described are applicable in figure 3, since there is a progressive scale, that as long as they are covered, each of the points is given the valuation of Human Capital, therefore the quality of that Intangible Value is facilitated, to reach the competitive advantage, both inside and outside the company, thus achieving a proportional win-win, for the company as for the individual, satisfying both needs, achieving a high quality human talent.

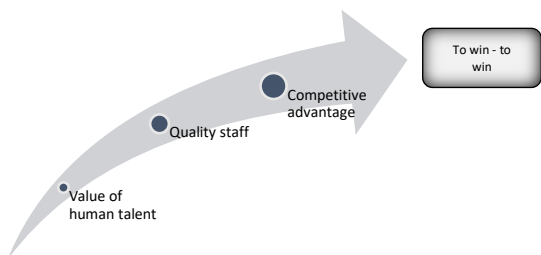


Figure 3 Valuation based on the Quality of Intangible Value (Human Capital)

Source: Own elaboration Hernández Flores María Juana. (2019)

In order to verify each of the above points, we resort to the study of a microenterprise, within which you can see, how motivation impacts on the Intangible Value that is given to human talent. The study is carried out in a microenterprise in order to know how the competitive advantage is established in this company based on the quality of the intangible value; this company has 20 employees who are the ones who undergo this study. The way the standard deviation of a sample is estimated before testing the sample members is by examining the scores and descriptive statistics of the dependent variable when it is variable.

Formula: (1)

$$n = \frac{Z^2 \cdot p \cdot q \cdot N}{NE^2 + Z^2 (p \cdot q)}$$

$$n = \frac{(1.96)^2 (.50)(1)(20)}{(20)(.05)^2 + (1.96)^2 (.50)(1)} = \frac{(3.8416)(.50)(20)}{(20)(.0025) + (3.8416)(.50)} = \frac{38.41}{9.60} = 4$$

In a population of 20 employees of the company, the sample formula was executed, to obtain the number of people to whom the survey would be applied, resulting in it being 4 people, since the population is small. Therefore, it is resorted to consider surveying more than half of the population so that the reliability of the results is acceptable, so the sample is 13 collaborators. Table 1 included the most notable problems, which to easily identify were classified into 6 items, where the item is mentioned as part of the strategy, as well as the questions that are applied in the survey, which lead to the problem, these items were used when applying, the survey itself as when graphing, can yield the expected results.

AUTHOR	HEADINGS (strategies)	QUESTIONS	VARIABLE	VARIABLE TYPES (answers)
Idalberto Chiavenato	Recruitment system..	What would you implement at the time of being hired?	Ordinal	a) Induction b) Contract and regulations c) Test and adaptation time
		How could you avoid rotation if you wanted to? Ordinal a)	Ordinal	a) Increasing salaries b) Improving the work environment c) That senior managers give more importance to staff
Idalberto Chiavenato	Capacitación e inducción.	What would contain a suitable induction for you in the company?	Ordinal	a) Course of the area to work b) General induction of the company c) Training on a specific topic
		What alternative would you propose to improve the organization in each area?	Ordinal	a) List of daily activities b) Set monthly goals c) Work as a team with other areas and propose ideas according to the work
Idalberto Chiavenato	Organization of activities.	As a worker, what should be implemented for the general organization of activities?	Ordinal	a) A general monthly calendar b) A blackboard with important activities c) That each area organize its activities
		As an opinion and regarding the observation in the administrative area, how would you do to improve the financial organization?	Ordinal	a) Hire a staff with administrative experience b) Take a course on the subject c) Other (Specify which)

Idalberto Chiavenato	Plant personnel.	What aspects do you consider in the company that lead to not having stable staff?	Ordinal	a) Salary (benefits, timely payments, bonuses) b) Not having the opportunity for professional growth c) The work environment and daily activities
		What do you think is the reason for not making progress in sales or creating new customers?	Ordinal	a) Lack of personnel in the area b) Not prioritizing new prospects (new customers) c) Lack of techniques or experience in the field
Lourdes Munch	Feedback meetings.	In your opinion, what problems do you consider the most important in the company?	Ordinal	a) Money inflows and higher profits b) Staff, their learning, motivation and productivity c) The organization, development and growth as a company d) Other (specify which)
Michael Porter	Updating of internal information.	What would be the best way to communicate important aspects between areas?	Ordinal	a) General weekly meetings b) Publication of the news in memoranda c) Simply tell the person to intervene
		According to the way the company has developed today, what could be generated to have a competitive advantage?	Ordinal	a) Good marketing b) Implement new technology in the product c) Give good service, product quality and guarantee

Table 1 Items on the structure of the survey
Source: Own elaboration, with data from IDESA S.A. de C.V.

From the analysis of the question, What would you implement at the time of being hired?, it is observed in table 2, that for a new employee, it is required to give him test time, as well as the time in which he can adapt to improve his activities when joining the company, thus showing the identity that is required, at the beginning of the contract.

		Frequency	Percentage
Valid	Induction	4	30.8
	Contract and regulations	3	23.1
	Testing and adaptation time	6	46.2
	Total	13	100.0

Table 2 Methods when hired
Source: Own elaboration, with data from IDESA S.A. de C.V.

In the analysis of the question, How would you do to improve the financial organization?, the answers represented in table 3, most of the employees answer, what should be hired to personnel with experience in the area, in order to have a better organization, in the administrative area, and to put into practice their skills and aptitudes, with what can be deduced, the quality required in the human talent that is hired, who will develop the intangible value.

		Frequency	Percentage
Valid	Hire a staff with administrative experience	8	61.5
	Take a course on the subject	4	30.8
	Other	1	7.7
	Total	13	100.0

Table 3 Financial organization
Source: Own elaboration, with data from IDESA S.A. de C.V.

When comparing tables 2 and 3, it is observed that both initiate figure 3 "Valuation based on the Quality of Intangible Value (Human Capital)", within the base point of the figure, where the **Value of Human Talent** is recognized, with these two tables referred to, it is verified that human talent itself, highlights the importance of having an assessment, The same as from the proposed methodology, an extrinsic motivation is generated for the individual by the company.

While for the **Quality Personnel**, the analysis is required, on the characteristics that said personnel must meet, which would initially lie in, giving a quality service to the company, which will be projected in an optimal work performance. This will require understanding the results of the following questions: first, How could rotation be avoided if so desired?, second, What aspects do you consider in the company that lead to not having stable staff? and third, what do you think is the reason for not progressing in sales or creating new customers?; together these questions provide relevant information to this research, to achieve a quality staff in the company.

In table 4, the results of the question are shown, How could rotation be avoided in case it was wanted?, to which the answers of the employees gave greater scale, that the high managers should give it more importance to motivate them and they feel part of the company wanting to be in it. So the result is inclined to an intrinsic motivation on the part of the collaborator, which impacts on the performance of this.

		Frequency	Percentage
Valid	Raising salaries	4	30.8
	Improving the work environment	3	23.1
	Que los altos mandos le den más importancia al personal	6	46.2
	Total	13	100.0

Table 4 Avoid rotation

Source: Own elaboration, with data from IDESA S.A. de C.V.

Through the analysis of the question, What aspects do you consider in the company that favor not having stable personnel?, in table 5 the answers are shown, considering that the factor that influences not having a stable staff, is not having an adequate salary according to the activities they perform, although it is true that it was established at the beginning of their hiring, this is where the valuation of human talent lies, as it is developing intellectual activities for the organization.

		Frequency	Percentage
Valid	Salary (benefits, one-off payments, bonuses)	10	76.9
	Not having a chance for professional growth	1	7.7
	The work environment and daily activities	2	15.4
	Total	13	100.0

Table 5 Plant personnel

Source: Own elaboration, with data from IDESA S.A. de C.V.

When analysing table 6, which shows the results of the question, What do you think is the reason for not progressing in sales or creating new clients, it is understood that the main cause is the lack of techniques to create sales or follow up new clients, which is why personnel with sales techniques or experience in the area will be required, which are part of the skills and abilities that they develop, which will set a functionality in the productivity of the area. The second response also stands out, being the lack of personnel in the area, this as part of the reflection on the analysis of table 4; both responses emphasise the quality that the company wants to project, from its main productive part, being this the valuation of human talent.

		Frequency	Percentage
Valid	Lack of staff in the area	4	30.8
	Not prioritizing new prospects (new customers)	3	23.1
	Lack of techniques or experience in the field	6	46.2
	Total	13	100.0

Table 6 Sales and new customers

Source: Own elaboration, with data from IDESA S.A. de C.V.

With the analysis, exposed in tables 4, 5 and 6, it can be understood that to have Quality Personnel it is necessary to have an emphasis on intrinsic motivation and at the same time with an identity, rooted on the part of the company, which is directed from the hiring, induction, orientation and permanence of the staff, so that this maintains a permanent balance between company-collaborator.

Considering the **Competitive Advantage**, as the last point in figure 3 "Valuation based on the Quality of Intangible Value (Human Capital)", competitiveness between companies is used, which will stand out in the following aspects recognized as resources: financial, material, technological, strategic; to which the human and intellectual will be complemented, who will be the repute in which to achieve greater recognition in the valuation of human talent.

From the question, What could be generated to have a competitive advantage?, is obtained as a result that 9 of the 13 employees consider, that to have a competitive advantage it is required to give a good service to the client, which emphasizes the quality of the product, with a guarantee of certifications that the product is really reliable of the aspects it says, shown in Table 7. In this way, the research will be followed up, in the sections on the value of human talent and quality personnel, within which it can be understood that motivation goes hand in hand with the quality that the company can show through its human talent.

		Frequency	Percentage
Valid	Good marketing	2	15.4
	Implement new technology in the product	2	15.4
	Give good service, quality in the product and guarantee	9	69.2
	Total	13	100.0

Table 7 Competitive advantage

Source: Own elaboration, with data from IDESA S.A. de C.V.

With these three aspects analyzed -Value of Human Talent, Quality Personnel and Competitive Advantage-, it can be understood that to achieve a Win (Company)-Win (Collaborator), it will be necessary to balance the two main entres, who in the development of each of their activities, will generate the quality that is sought to offer, in the products or services provided, and that at the same time an extrinsic motivation is achieved, impacting the intrinsic motivation, who simultaneously see themselves reflected in the value that can be considered in human talent. In the structure of figure 2, the motivation of intangible value will always be present, when it is represented by a need, which is covered once the mission, vision, objectives and values of both the individual and the company are covered, reaching a productive process where the quality of this is specified and that will be creating a work performance as well as the productivity of quantifiable quality.

As part of the results applicable to this research, Table 8 is shown, which explains the system or process that is carried out through the strategies analyzed, which provide information from the survey applied to the personnel who collaborate in the microenterprise, who when answering each of the questions select relevant aspects for this research.

What is it?	How is it done?	How is it evaluated?
Recruitment system (Recruitment process)	Follow the steps established in the selection process, so that the person hired meets the characteristics and decreases staff turnover.	It will be evaluated by global evaluation criteria where the points that were covered to compliance will be marked.
Training and induction (Induction Plan)	When hiring the person, they must give the induction based on the format so that they have no doubts about the company, their position and salaries. This will avoid future conflicts or poor job performance.	This aspect will be evaluated a few weeks later with a Check list that will be given to the contractor to evaluate that induction.
Organization of activities (Calendar of general activities of all areas)	All members of each area must write down in the calendar of activities, their projects so that all areas are aware.	According to the progress of the project of various activities that have been evaluated in a Graph of evaluations where it is indicated who has fulfilled and how they did it.
Plant staff (Requisition of personnel)	When new personnel are needed, the area that requests it must adhere to a position sheet, so that the human resources area is responsible for selecting the person indicated.	It will be evaluated with an Analysis of indicators how much of the personnel hired or interviewed complies with the request.
Feedback meeting and information update	To know what each area is doing and there is information communication, it is suggested to maintain the appropriate communication channels with the intention of avoiding loss of data or relevant information for the company, therefore delay in projects.	After the use of the communication channels, Feedback will be made to confirm that everyone will provide information and are complying with it.

Table 8 Headings on strategies

Source: Own elaboration, with data from IDESA S.A. de C.V.

In a company, what will meet your expectations under the *raison d'être* of the same, will always be the sales, which are delivered low the highest possible quality; this will be fulfilled once it is in a balance, the commitment under which it will be delivered to the client and the functionality of the company, achieved through human talent; provided that human talent maintains in a transcendent way, which for the company is one more value of it, which means that their skills, skills, attitudes and aptitudes, maintain an added value resulting in the valuation of human talent this affecting the motivation of the staff.

In microenterprise, the object of study, an analysis is generated, where it is observed, how the figure of the Value Chain of Michael Porter, can help to deduce, on the importance of motivation in the company, which will be visible at the margin of the value chain, in conjunction with quality, both margins will form the competitive advantage applied in the quality of intangible value. Figure 4 shows how secondary activities influence primary activities and that these will have an impact on the competitiveness that the company represents in the market. The administration of human resources as a secondary activity will be a gap in which it will be defined as the company rebounding in the face of competitiveness, which will be taken care of by human talent, through their work performance, but that this work performance will be driven by how the production process is executed, which is expected to be delivered with the best quality, but this is possible thanks to the delivery and development of the activities carried out by the collaborator, under the commitment that he is part of that quality that the client wants to grant him; being that in this way the system or process of human values, existing in the company, will help the growth of and rebound of the same.

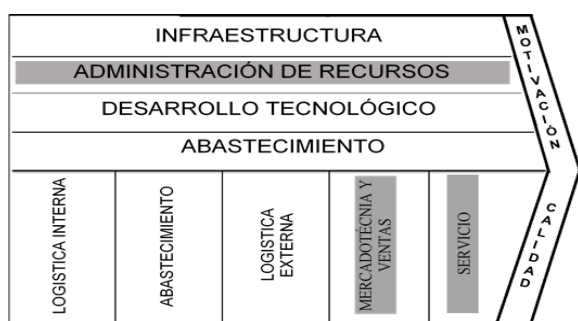


Figure 4 The competitive advantage applied in the quality of an intangible value

Source: *Own elaboration, with data from IDESA S.A. de C.V.*

Therefore quality is boom, of the competitive advantage applied in the quality of an intangible value, since to achieve a quality human talent, it is initially required the individual and in turn business valuation, at the time it generates, the need to be productive, so that in an egalitarian way, a win-win is generated and that both acquire growth benefits, worked through the achievement of processes, applied correctly.

Gratitude

The Tecnológico Nacional de México (TecNM), through our institution the Tecnológico de Estudios Superiores de Ixtapaluca (TESI), seeks to be in constant connection with the productive sector thanks to which the development of this research is possible. As well as each of the people and my family, who are always supporting me.

Conclusions

The motivation of an intangible value as a competitive advantage applied to the quality of intangible value, seen from the perspective of human capital is fundamental, since it will be visualized within a company, the moment in which the individual is able to identify his needs, as well as what he will offer to the organization, since he proposes to provide a service; once the professional or non-professional service is identified, which you can implement, you may have the possibility of differentiating what the contributions to the company will be, through the management of your skills, abilities, attitudes and aptitudes; from a series of contexts that will impact on the selection of the company, where it wants to perform its services. Focusing here on a competitive advantage of quality in the organization, since the more each of the values that involve quality are identified, the collaborator will be able to generate satisfaction, which leads him to perform his work better; impacting on the service offered from the creation of the product, to the delivery of that product, as a final chain, where the commitment on the part of human talent, expressed through the intangible value provide the best that product as part of established standards.

In this way, the company will be able to make an assessment of human capital, considering its intangible part (skills, attitudes, values and skills), as a quality productive advantage, compared to other organizations, as stipulated by Porter. At the time, far from determining the sequence of the value chain, as a secondary activity within the company, it is considered as a primary activity; as well as a basis for the organization, applicable from a sequential and specific quality process for human talent, in order to make a contribution in the search for a better service.

References

A. L. M. Antonieta, (2016) « International Official Accounting Standards - NIC,». [En línea]. Available: <https://www.mef.gob.pe/es/consejo-normativo-de-contabilidad/nics?id=5255>. [Last accessed: 17 August 2019]

D. I. T. M. L. Castañeda. (2013). Metodología de la investigación. México. Mc Graw Hill, México: Mc Graw Hill.

H. Gutiérrez Pulido (2014). Quality and productivity, C. edition, Ed. Mexico. McGraw-Hill education.

J. J. Tarí, (2000). Total quality: source of competitive advantage, University of Alicante. Publications Service.

M. E. Porter, (2015). Competitive Advantage, Second ed. Mexico. Grupo Editorial Patria, p.552.

R. S. y. N. D. P. Kaplan, (2004). " Strategy Maps, Turning intangible assets into tangible results.". Gestión 2000.

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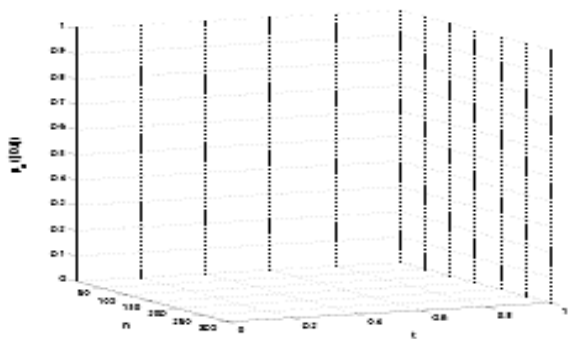
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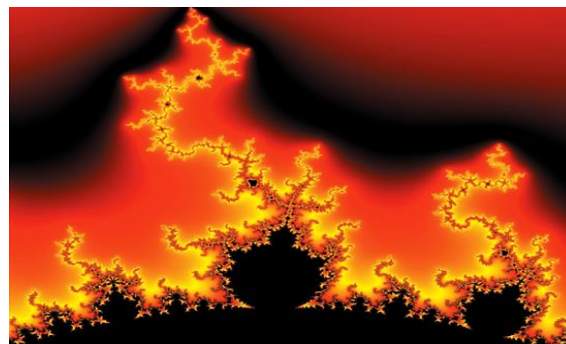


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