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Presentation

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In Pro-Research, Teaching and Training of human resources committed to Science. The content of the articles and reviews that appear in each issue are those of the authors and does not necessarily the opinion of the editor in chief.

In Number 1st presented an article Productivity improvement model; Case: chocolatier company in the state of Tabasco by MOREJÓN-SÁNCHEZ Juana María, ELISEO-DANTÉS Hortensia, PÉREZ-PÉREZ Iris Cristel and REYES-POHLENZ Lorena with adscription *Department of Industrial Engineering. Instituto Tecnológico de Villahermosa*, as folling article Competitiveness of micro and small enterprises in the municipality of Lerma and their impact on local development by OLVERA Edgar, MUCIÑO Eduardo, LÓPEZ Roger as folling article Linkage to face global challenges by ORTIZ-SERRANO Francisco Javier & MARTÍNEZ-CASTELLANOS María Elena as folling article Strengthening strategies between universities and companies for the incorporation of university students into the labor market by RUÍZ-VALDÉS Susana, RUÍZ-TAPIA Juan Alberto, SÁNCHEZ-PAZ María de la Luz and GONZÁLEZ-GARCÍA Guadalupe with adscription *Universidad Autónoma del Estado de México*, next article Systems Reengineering using the Cyclic model. Practical Case: The Financial University System (SUF) of the Universidad Autónoma del Carmen by PEREZ, José, REDING, José, TASS, Benjamin and AKE, Marisol with adscription *Universidad Autónoma del Carmen*.

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Article **ECORFAN Journal**
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Productivity improvement model; Case: chocolatier company in the state of Tabasco

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Abstract

Background: The cacao tree is a native of tropical and rainy regions of the Americas. In Mexico as a daily beverage consumption there at least since pre-Hispanic times. The aim of this research is to generate a representative of the chocolate industry sectors diagnosis, since the state of Tabasco is large-scale producer of cocoa, for which a study is conducted at a company of comprehensive development in the sector pointed to obtain a model of improving productivity, which will trigger in this industry. The method used is the approach to structural analysis because the experts was attended, for the factors that are affecting productivity in the previous work is essential to view them as they focus on the situation of the stage and given the priorities of the study, basic for productivity analysis. the results obtained by the research and the solution to this problem are verified. The problems have been detected in Foods Derived Cocoa is the low productivity of the crop in its current form and lack of modernization of tabasqueñas companies engaged in grain processing and conversion into products that can not reach directly to the scales larger. That is why the proposal presented fully activate this sector.

Productivity, structural analysis, cocoa, experts

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Introduction

At present, most studies point out that companies need to establish, develop and perfect their own systems of Planning, Organization, Direction and Control, in order to achieve high levels of satisfaction among the individuals who work in it, based on an effective system Of internal and external information that allows him to anticipate and deepen the changes that have been taking place in his environment. What do our users demand?, How are we and our competition responding to new needs? These are some of the many questions that the company should be able to answer. It would serve little or nothing to generate products or services at a low cost if these aspects are not taken into consideration.
Companies should focus on including productivity, total quality, competitive advantages, and value chain and innovation strategies in their administrative models, which are focused on the daily scope of competitiveness. These factors or strategies help to measure how competitive an organization or company can be compared to a national and international market. Companies have to be constantly changing to face the world of globalization and determine how competitive or could not be in the market.

Description the m ethod.

Structural analysis is a tool of great importance and will be used as the basis of the methodology to be used in the research, so that during the course of this will collect a series of data that will be of great relevance and significant to identify which are The key points in the application of this. Au

Through the application of the methodology, a diagnosis was made, so it was necessary to organize a reflection meeting with experts, with the aim of detecting the problems that affect the company in its cocoa food.

Among the participants, the variables that affected (economic, cultural, technological, environmental, social and political) the research variable were analyzed, from which a number of factors emerged that are likely to affect the competitiveness of foods derived from cocoa.
In addition to this tool, the Quality Innovation model was used for the generation of the Productivity Improvement Model. It is a self-diagnosis tool since it serves as a guide for future decision making, even, it could motivate a change of the objectives pursued or the strategies used, which will lead the company to the quality of chocolate and therefore to be a Competitive organization.

Self-diagnosis is an exercise in which the members of the company identify and qualify the main elements of the organization and the progress they have in their development process. In addition, it is the essential basis for the integral planning of the organization.

The criteria used in the Institutional Self-Diagnosis Instrument are:

1. Customer satisfaction
2. Leadership
3. Staff Development and Management of Intellectual Capital
4. Information and technology management
5. Strategic Planning
6. Process management and improvement
7. Impact on society
8. Results.

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Each of the criteria is determined by a different number of indicators. In which there is a scale of 10 to 100, where 100 represents the highest degree of progress in the reality of the company.

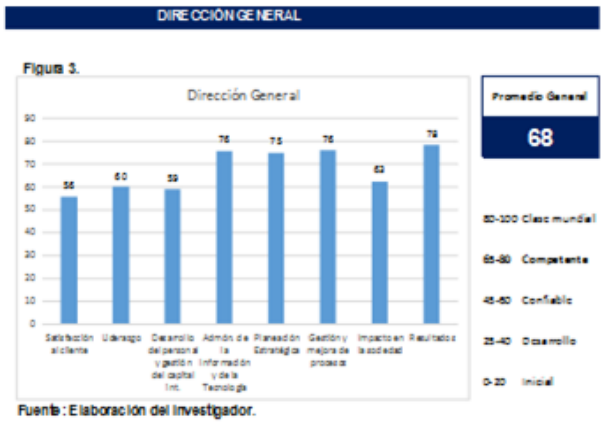
With the answers that are obtained, graphs are made, which facilitate the interpretation of the current situation of the company.

It is worth mentioning that it is possible to decide to perform a Diagnosis without the need for the organization to live a crisis, prevention is a powerful tool for maintaining the health of organizations. Symptoms are detected and possible causes are investigated. Surely this diagnosis will provide important information that was not taken into account at the time of decision making.

The self-diagnosis was applied to the directors of the chocolatier company of the departments of General Management, Production and Quality, Sales 1, Sales 2 and Administration and Finance.

Analysis

After applying the self-diagnosis in the company Chocolatera to the departments mentioned in the previous section, the following graphs were obtained:

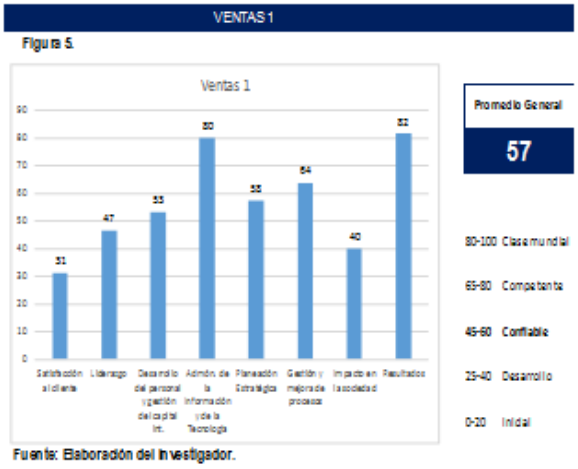


Graphic 1 General. Source: Chocolatera Company in Tabasco (2016)

The graph indicates that customer satisfaction is the lowest evaluated, so it is urgent that the

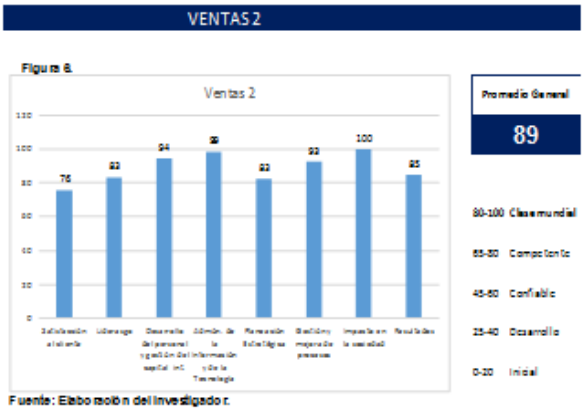
Corrective measures in this criterion

According to what is expressed in this graph2, it is identified that the problem element is Impact in society counts only with 10%, and the highest data is concentrated in Leadership with 53%.



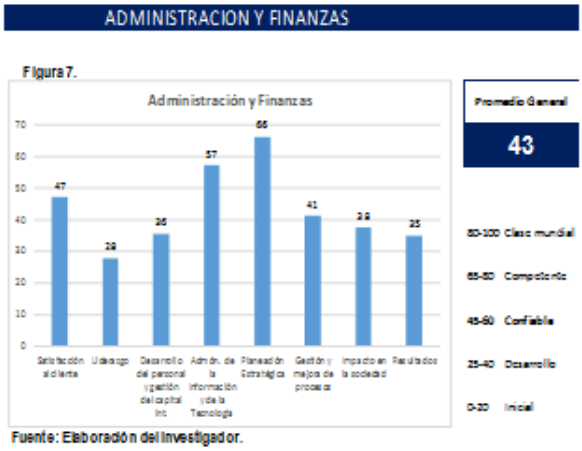
Graphic 3 Sales 1. Source: Company Chocolatera in Tabasco (2016)

In general in this graph 3 it can be seen that the elements that most affect the Sales department 1 are: Customer satisfaction, with 31%, hence Impact on society with 40% and lastly Leadership with 47%. Therefore some indicators should be designed to improve the productivity of these criteria.



Graphic 4 Sales 2. Source: Company Chocolatera in Tabasco (2016)

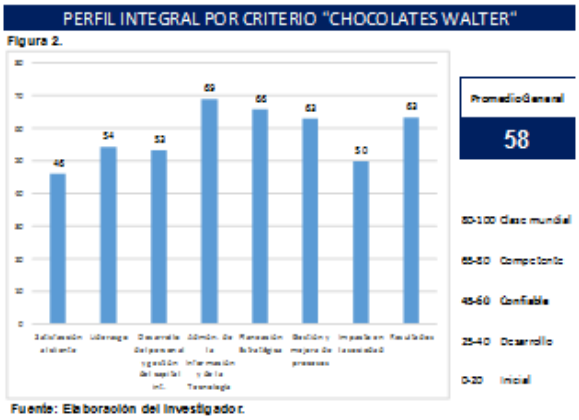
In this chart it can be observed that in sales 2, the chocolate company is stable in all the criteria.And it is in a position to be competitive.



Graphic 5 Administration and Finance. Source: Chocolatera Company in Tabasco (2016)

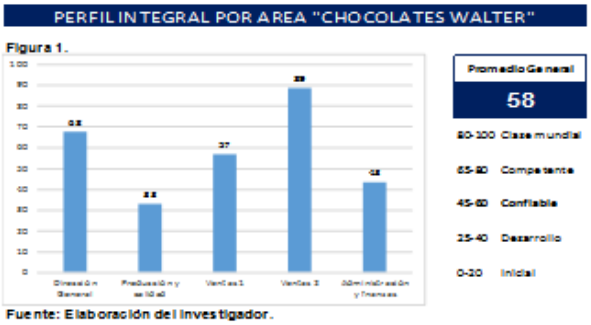
It is important to note that the leadership in the chocolate company is causing problems in the Administration and Finance, so it is convenient to design strategies to improve this criterion. And if there is no effective leadership in an organization, it is difficult to achieve the objectives of the organization and it can not be productive.

Results



Graphic 6 Integral Profile by criteria. Source: Chocolatera Company in Tabasco (2016)

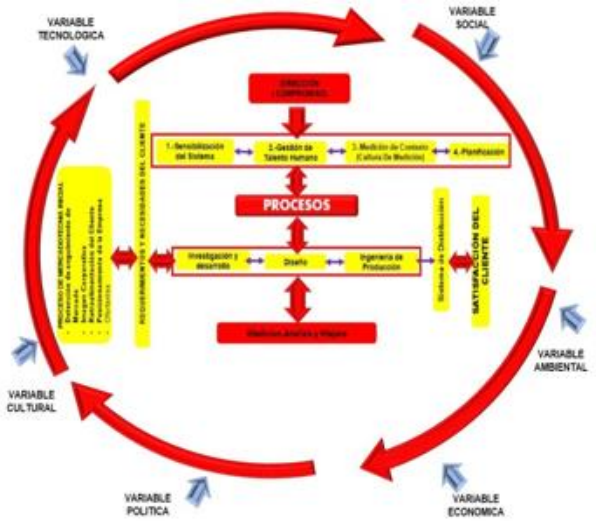
Although 46% and 50% of customer service and the impact on society are reliable, it is necessary for the company Chocolatera to strengthen these two criteria with indicators that will come to incenter the productivity of the same.



Graphic 7 Integral Profile by areas or departments. Source: Chocolatera Company in Tabasco (2016)

In this graph 7 it can be seen that the area with the highest percentage of progress towards quality is the sales department 2, however, the area of production and quality is the area that needs to be given more attention. With 33%, and is an area currently under development.

Proposal



Graphic 8 Model Productivity Improvement. Source: Contribution of the researcher. (2016)

Given the results obtained, for the current diagnosis of the Chocolatera Company for its food products derived from the caco, it can be observed that this model focuses on the Directorate, it is impossible to think of a business without a leader that directs its way, Constitutes the first element in this scheme. Management is a function that must be exercised, always defines the path and is the first to understand a problem, clarify it and decide the best alternative to solve it. In addition, it must act with a sense of responsibility in making decisions, facing consequences and risks in a possible failure.

The Management implies commitment, leads us to the Sensitization of Systems where all members of the Company must participate in the planning, implementation and execution of the processes of their respective areas, becoming aware of the importance of quality in the provision of services of the company and in the elaboration of its products.

In the model it is important to consider that the economic, cultural, technological, environmental, social and political indpendent variables affect almucio products derived from cacao and that through the structural analysis it was possible to detect that the most affected are the cultural variable and Technological development. Because the attitude of the staff, their lack of values, as well as obsolete processes and obsolete machinery, it is necessary for the chocolate company to update them.

Conclusions

With the Improvement of Productivity Model, it is intended to publicize the variety of products handled by the Chocolatera Company where it is expected to increase its market share and brand recognition among its potential customers.

As it was observed in the results, the criterion that is affecting more is the customer service and the area most affected is the Production and quality. Therefore, there is a great responsibility for the management of the company Chocolatera to improve the productivity of its Food products derived from cocoa. The proposed model comes to answer, so that the affected criteria as well as the areas are improved.

Increasing productivity is the way companies must follow to achieve sustainable growth that allows them to strengthen and expand into new markets.

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This can be thanks to technological and technical improvements, the introduction of incorporated and disincorporated changes in production and the better use of resources, which allow to generate the highest real efficiency of the organization, and with a minimum of errors; In addition to having a lower or sufficiently competitive cost function compared to the other competing companies, in order to maximize profits.

References

BAIN, D., (2007), Productividad: La Solución a Problemas de la Empresa. México. Edit. McGraw Hill.

GUTIÉRREZ (2005). Calidad Total y Productividad. Editorial McGraw- Hill México.

PROKOPENKO, J, (1991). La Gestión de la Productividad. Editorial Noriega Editores. México

SILICEO, A., (2005). Liderazgo para la productividad en México. Noriega Editores.

MERCADO R. (2010) Productividad. Mexico Editorial Noriega.

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Competitiveness of micro and small enterprises in the municipality of Lerma and their impact on local development

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Abstract

Micro and small enterprises account for 98% of economic units in Mexico; in the town of Lerma, Mexico is 99.3%. The aim is to identify success factors according to the variables of competitiveness of the World Economic Forum and the urban competitiveness index 2016 IMCO to promote the improvement of business of the municipality and its permanence. Derived from a systemic analysis, this research an analysis of how one of the most productive areas of the state depends on MSEs, where professional lag affects the commercial success and its proper management is presented, and how they can improve their development perspective considering the twelve variables established by the World Economic Forum to identify their level of competitiveness and impact on the local economy, so that lines of action for their stay planted and commercial improvement of the municipality is promoted.

Micro and small enterprises, development, stay in the market, business improvement

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Introduction

According to surveys it has been observed that most of the companies that are created close before the two years of operation, in the municipality of Lerma, State of Mexico of the universe of companies 99.3% are micro and small, reason why It is very important to identify factors of success according to the variables of competitiveness, to remain in a local market that faces global demands.

Up to now, studies of competitiveness have dealt with national themes and rarely have a detail of the local perspective. The municipality of Lerma is one of the most important productive regions of the State of Mexico, and its population depends on it. Identifying the variables that increase their competitiveness will strengthen the local economy.

It examines the perspective of the World Economic Forum and contrasts with the indicators of urban competitiveness of the Mexican Institute of Competitiveness, analyzed by the coefficient of correlation that once calculated there will be a greater association in the same direction for both variables.

Faced with the universe of elements that compose competitiveness, it is important to identify the key factor to be promoted, which will be possible to determine where the efforts can be focused for the decision-making of the public public management, and then improve the permanence of companies, its competitiveness and promote the commercial improvement of the municipality.

The present research presents the perspective of competitiveness from the global, global, the factors that influence it, the twelve pillars proposed by the World Economic Forum and look for the coefficient of relation to identify the key factor of success.

Methodology

To analyze the correlation coefficient, which is defined as a statistic that measures the association between two variables (x and y) will be used first. This statistic has the advantage that it oscillates between -1 and 1, independently of the units of measurement of the variables used. The Pearson correlation coefficient for one sample and two variables is defined as:

$$r_{xy} = \frac{s_{xy}}{s_x s_y} \quad (1)$$

Where s xy is the covariance between x and y, s x is the standard deviation of x and s and the standard deviation of y. The closer to 1 is the correlation coefficient calculated there will be a larger association in the same direction for both variables. The closer the coefficient to -1 there will be a greater inverse association between the two. A coefficient of zero indicates no association at all.

A "generalized linear model" type regression is then used. This procedure, as an extension of the traditional linear regression model, has the advantage that previous assumptions of the distribution of the dependent variable are not required, and the normality of the dependent variable is not required. It is also pointed out that three components are included: random that identifies the response variable and its systematic probability distribution, which specifies the explanatory variables and a link function as a function of the expected value of the dependent variable expressed as a linear combination of Independent variables. The resulting estimators have the characteristic of being robust when obtained by maximum likelihood (Nelder and Wedderburn, 1972). The above is expressed as:

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$$E(Y) = \mu = g^{-1}(X\beta) \quad (2)$$

Where E (Y) is the expected value of the dependent variable Y, μ is the mean of the distribution of the dependent variables X, Xβ is a linear predictor expressed as a linear combination of unknown parameters β and finally g is the link function.

Perspective of competitiveness

To understand the concept of competitiveness, we must understand the scope of action under which companies have established and conceived of the enterprise as a productive economic unit made up of human, material, and technological resources (Méndez, 2007). In addition we visualize that the companies have been conceived by a person or group of people who have detected a necessity within a social context by obtaining information and making use of the means suitable for the definition of that satisfactor; Which together with complementary activities can generate profit.These factors act in relation to the processes of transformation to convert them into tangible and intangible goods by encouraging their exchange with other economic units. This is how the economic unit transforms raw material through labor, which in turn relies on capital and information technologies on products (tangible and intangible) that will be used to consume between companies or individuals.

This consumption takes place in the market, where transactions of purchase and sale of goods and services occur, and establishing supply and demand. Flowkner (1995) establishes that the market is an element of the capital system, where transactions occur in the purchase and sale of goods and services as well as factors for the transformation of inputs, it is here where supply and demand represent.

For this exchange Prices are also fixed for the good or service offered.

Within the market are variables that, when interrelated, cause changes in supply and demand.These variables are: The goods or services that are bought or sold; The supply that is the production of economic units; The demand that means quantity of products (services) that can be acquired individually or collectively is the relationship between the prices and quantities of a product (service) that consumers are willing to buy and the last component Is the price, this solves the problem of the circulation of goods and services. The price, Mendez (2007) solves it as the expression in money of the value of the merchandise, which contains the costs of the inputs and activities performed for the preparation of the product or service.

It is towards the market, where the companies orient their efforts, at this point, there is a concurrence among these for the achievement of their objectives, this concurrence favors a confrontation between suppliers and demanders of products or services, reason why this struggle implies a Behavior toward obtaining better conditions within the market, and in this way, achieve their business goals.

According to the above, we can say that competition is generated within the market, as the demand for products or services are in a position to choose between different options. Within the market, we find the confrontation of social forces that seek their particular interest trying to achieve, on the one hand, the maximum welfare for the product acquired or the maximum profit for the product offered (Méndez, 2007).

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Competitiveness in worldwide

In the context of a world in constant development, globalization has become an integrating element of both national and regional economies. Throughout this century, globalization has been culturally penetrating our traditions, institutions and essentially the way of conceiving the organization of the economy and society. (García Esteban, Serrano J. Coll, 2003). On the other hand, the emergence of new industries in the market contributes to the generation of competition inserted in a global environment. How organizations respond to the force of globalization; the advantages and disadvantages of global competitiveness, and where industries can locate to benefit from the emerging global economy are some of the challenges in the world economy.

In reviewing the world history and the magnitude of the different historical events that took place in it, it is undoubtedly the end of World War II that marked the regulation of competition in the market, which was based on satisfying a need where The products were acquired in the nearest region and where the competitiveness could not be glimpsed before such historical context.

The term competitiveness has been the subject of multiple debates in different areas of knowledge, in this respect a large number of thinkers have been given the task of limiting the term to the economic sector causing great controversy in this area due to the great complexity involved in providing a definition of it. (Clark, 2004)

Goldin (2012) argues convincingly that such meanings contradict many of the postulates of neoclassical economics.

In the same way, Clark (2004) states that the term competitiveness will have no greater meaning or effect on economies of scale within a context in which companies have access to information in a perfect way, access to situations, trends and expectations Both as bidders and as plaintiffs.

On the other hand Porter (1990) describes the term of competitiveness as an approximation of productivity, remembering that productivity is the result of the resources used to create the satisfactor. So from this context, productivity must be separated from competitiveness, since being productive does not ensure competitive. Within the market, it is the reflection of what the company is looking for, it will be oriented towards the achievement of profits, these must be converted into utilities, and to generate a greater number of utilities, high efficiency and productivity are prerequisites. When the company achieves this, it allows generating areas of opportunity through the generation of slack in the variables to be established within the market to be chosen by the plaintiffs.

In order to establish the concept within the context of the competitiveness market, the essence of competitiveness is the ability of companies, industries, to grow and generate profits (also seen as profits) within markets subject to seizure of the claimants, and Whether local, regional, or international.

Competitiveness uses elements that allow the company to obtain a participation in the market that allows its profitability, considering the profitability with the exercise of profits to achieve business objectives. For this reason, there are tensions between market players. Our context causes these tensions to be emphasized due to the location of the production centers and the final market for their products.

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There have been significant changes in this relationship, in the past, the production center, was close to the final market, Capo (2002) They expose that there are systemic relations between the organization, the production process and the market, coming to generate a symbiosis Between the members of the productive chains.

The current structure, where there is a centralization of the means of production, has distanced the market, emphasizing the distribution tasks to reach the demand within these, this situation leads to a dysfunction in the behavior in the market due to the increase of The separation between the place of production and the geographic reach of the markets, generating an unbalanced mobility of capital with respect to demand. Therefore, the objectives are reoriented towards the achievement of demand and capital, which has caused companies to focus their efforts to increase their participation within a structure oriented towards variables of communication technologies, information, and production technologies.

Competitiveness in Globalization

This reorientation generates changes in the way in which the means of production of the market interact, generating trade in an intense international way, so that the companies are affected by this environment towards a globalization, having as a consequence the presence by new competitors for the Demand within the market. Each bidder must make improvements to its product in an integral way to stay within the demand and thus to be able to achieve its business objectives.

This globalization requires an adequate qualification through standards that allow the organizations to be chosen by the plaintiffs.

Competitiveness is immersed in market phenomena, so it is not only limited to obtaining a larger portion of the market, but to keep growing within it, which involves a continuous improvement towards the processes. Arostegui (2008) states that competitiveness was initially applied in the company, then to a single economic sector, indicating that for the qualification of competitiveness, there must be a direct relationship between the supply of goods or services in an integral manner and efficiency.

The AECA (Spanish Association of Accounting and Business Administration) defines competitiveness as the ability of an organization to systematically obtain and maintain comparative advantages that allow it to reach, sustain and improve a certain position in the socioeconomic environment in which it operates.

We are in a global context in which competitiveness has increased exponentially, within which companies have a concern to generate elements that allow them to face competition, this situation leads to entrepreneurship towards constant innovation, and a concern for Anticipate the changes that are presented in the market, prioritizing the requirements of the plaintiffs; This relationship generates dynamism in uncontrollable and unpredictable moments.

Factors affecting competitiveness

Given this situation, access to information becomes an important factor in the precursors of competitiveness, so it is necessary to use tools to generate scenarios through the management of information to anticipate sudden changes in markets. As a result, information and communication technologies generate added value for competitiveness.

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The conditions for a company to be competitive are represented by the personnel it counts on, the salaries they offer, the infrastructure for communication, access to adequate energy for the operation of any type of process, availability for receipt of investments, Adequate legal environment.

Porter (2015) indicates that the factors that generate competitiveness are innovation, training, education, and technological development, emphasizing that access to labor, working capital, natural resources are not factors to generate a constant and increasing utility , Because, due to the global environment, these are accessible to any organization, so competitiveness is the result of the ability of companies to perform a location of production centers in addition to efficiency to offer products and services to the market That meet or exceed your expectations. From here arise the attributes related to quality.

As it has been established, from the economic aspect, those who compete are the companies to maintain or to increase their presence in the market, when they are in environments of threats and challenges will be more competitive. Also within a local structure, when there are demanding customers the company will have to be more competitive.

Faced with some inaccuracies in order to determine the factors that promote competitiveness, the Center for Development and Global Competition of the World Economic Forum, through its report on competitiveness, have established that competitiveness is the result of the combination of institutions, policies, And elements that determine the level of productivity of a country (Schwab, 2016).

So the level of productivity establishes the level of prosperity that can be obtained by an economy, reason why to a greater competitiveness the economies tend to produce higher levels of income for its inhabitants.

It is here that it establishes that the competitiveness of companies depends on the generation of scenarios for their development that must be established by the regions (countries), reflecting the amounts of income that are obtained by the investments made are physical, human and technological within Of an economy, so for a company the amount of return per investment is paramount, if we take it to a region, these return amounts per investment are the primary result for the growth of an economy, so that the An economy its growth and rapidity is also, greater and longer term.

The World Economic Forum states that the concept of competitiveness involves static and dynamic components; however, the productivity of a region clearly determines availability to maintain high income levels; it is also one of the central factors for the return of investments; is an indispensable factor in explaining the potential growth of the economy (Schwab, 2016).

Calva (2006) describes the existence of several determinants to bring productivity and consequently to be competitive. I understand the behavior of these factors, which lie behind the processes, has been the problem in which scholars of economic phenomena have dealt with, starting with Adam Smith who focused on the specialization and division of labor to neoclassical economists Which emphasize the importance of capital investments, and infrastructure. The World Economic Forum notes that interest in other factors such as education, training, technological progress, macroeconomic stability, better governance, corporate superiority, among others has recently been addressed.

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Globalization is a process of interaction between people, companies, and governments of different nations; A process led by international trade and investment, in turn complemented by information technology.

This process has effects on the environment and culture; in political systems; In economic development and prosperity; And in the welfare of different societies around the world.

Although globalization is not a new phenomenon. For millions of years, people - and later corporations - have been buying and selling land over great distances, such as the Silk route through Central Asia that connected China and Europe during the middle Ages. For centuries people and corporations have invested in companies in other countries.

In fact, most of the characteristics of globalization are similar to those prevailing before the breakup of World War I in 1914 (Arostegui, 2008).

In recent decades, policies and technological development have increased in border treaties, investment and migration in such a way that many observers believe that the world has entered a new phase in economic development.

Since 1950, for example, the volume of world trade has increased by 20%, and from 1997 to 1999 the flow of investment doubled from 468 to 827 billion dollars. Thomas Friedman states that globalization is more distant, faster, cheaper and deeper. (Cuervo, 2000)

The current wave of globalization has been driven by policies that have expanded both domestic and international economies.

Since World War II and especially over the last two decades, most governments have adopted free market economic systems, which has increased their potential and created new opportunities for international trade.

Governments have also negotiated the impressive reduction of barriers to trade and have established international agreements to promote trade in products.

The advantages of new opportunities in foreign markets, corporations have established and established foreign industries in addition to creating agreements with other nations. An essential feature of globalization is its financial and industrial structure. (Cuervo, 2000)

Technology has been the main driver of globalization. In particular advances in information technology have undoubtedly transformed economic life. Information technologies have given all sorts of economic actors (consumers, investors, traders) valuable new tools to identify and take advantage of economic opportunities, including analysis of market trends around the world; Easy achievement of economic objectives and collaboration with other markets.

However, globalization is a controversial issue. Supporters of globalization argue that it allows poor countries and their citizens to grow economically and raise living standards.

On the other hand, globaliphoids argue that the creation of the free market has benefited multinational corporations in the Western world. Resistance to globalization has played a part in both the popular aspect and the levels of government because both seek to manage the flow of capital, labor, goods and ideas that constitute globalization.

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The comparative advantages of a nation are the stimulus for economic development; but it is more significant to create competitive advantages that denote the creative capacity of the human being, concrete of a specific nation. (Calva, 2006)

In order to understand the creation of competitive advantages, it is necessary to have the natural resources to generate comparative advantages through the benefits presented in each region, combined with large investments, to prepare human capital to develop talent to maintain the organization.

Competitiveness within a country represents the possibility for its inhabitants to reach a high and increasing standard of living through productivity. (Calva, 2006)

The practice of international trade is based on competitive advantage, whose antecedents are in the theory of absolute advantage, comparative advantage, and the theory of factor endowment, among others.

From this situation we must understand the context in which the absolute advantage described by Adam Smith argues that countries, by specializing in the production of the goods they can produce more efficiently than the others, are in a position to increase their economic welfare. (Soros, 1999).

If a country has the absolute advantage of producing a good, there is the possibility of winning with trade; The greater the capacity of a country to specialize in the production of the good it produces more efficiently, the greater its potential gains relative to national welfare. (García Esteban, Serrano J. Coll, 2003)

Competitiveness in accordance with the WEF

To avoid ambiguities in determining the factors that promote competitiveness in a region, which is not exclusive to its application within organizations, the World Economic Forum has grouped them into twelve bases or also called pillars.

First pillar: Institutions

The institutional environment is determined by the legal and administrative framework in which individuals, companies and governments interact to generate income and wealth in the economy.The importance of a fair and harmonious institutional environment has become more evident during the economic crisis due to the direct increase in the role of the economy in many countries.

The quality of institutions has a strong relationship in competitiveness and growth. This pillar influences investment decisions and the organization of production, as well as being a key piece in the way societies distribute the benefits and face the costs of development strategies and policies.For example, landowners, corporate investors, or intellectual property are unwilling to invest in the development and maintenance of their property unless their rights as owners are not protected.

The role of institutions goes beyond the legal framework. Government attitudes towards markets and the efficiency of their operations are also important, excessive bureaucracy, overregulation, corruption, dishonesty in public contracts, lack of transparency and reliability, and political dependence on the judicial system affect The economic costs in business and therefore, diminish the process of economic development.

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In addition, proper management of public finances represents a critical factor in ensuring reliability in a national business environment. Indicators related to the quality of government management of public finances are included below to complement measures of macroeconomic stability. Although the economic literature has focused mainly on public institutions, private institutions are an important element in the process of wealth generation.

The recent economic crisis has underlined the importance of accounting and reporting standards, as well as promoting transparency with the aim of preventing fraud and mismanagement, thus ensuring good governance and maintaining the trust of both the investor and the consumer. An economy is properly managed when investments are conducted honestly, where directors are guided by strong ethical practices in their dealings with government, other companies, and in the long run with the public. Transparency of the private sector is indispensable in business and can occur through the use of standards as well as auditing and accounting practices that ensure access to information in a timely manner.

Second pillar: Infrastructure

Extensive and efficient infrastructure is an important element to ensure the functioning of the economy because it is a determining factor in the location of economic activity and the different activities or sectors that are developed within a specific economy. The well-developed infrastructure reduces the distance between regions as it integrates the national market and connects it cheaply with other countries and regions. In addition, the quality and extension of infrastructure networks impacts economic growth and affects inequality and poverty in different ways.

A well-structured transport and communication network is a prerequisite for access to less developed communities for the purpose of carrying out economic activities and services.

Having effective modes of transport, including the quality of roads, railways, ports and air transport allows employers to purchase goods and services in a safe and timely manner that allow them to facilitate the mobility of employees to more jobs Appropriate. Economies also depend on the supply of electricity free of interruptions and short so that factories can work in freedom.

Finally, a strong and extensive telecommunications network allows the rapid flow of information which increases economic efficiency, since it ensures that business can communicate quickly, and decisions are made by economic actors using the most relevant information available to respect. In this area where the crisis could generate positive effects in the long term given the importance of the resources framed in the infrastructural development by the national stimulus packages.

Third pillar: Macroeconomics

The stability of the macroeconomic environment is important in business and, therefore, within the competitiveness of a country. However, it is true that macroeconomic stability alone can not increase the productivity of a nation, it is also true that the disorganization of macroeconomics affects the economy.

The government can not provide services efficiently if it has to pay high interest on its past debts.The fiscal deficit limits the government's ability to get involved in business cycles.

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Companies can not operate efficiently when inflation rates are out of reach. In short, the economy can not grow sustainably unless the environment is stable. This aspect has been discussed by many economic thinkers who envision exit strategies in order to reduce spending.

It is important to mention that this pillar evaluates the stability of the macroeconomic environment, so it does not take into account the way in which public accounts are managed by the government.

Fourth pillar: Health and basic education

Having a healthy workforce is vital to the productivity and competitiveness of a country. Sick workers can not put their full potential to work and therefore will be less productive.

Poor health raises costs in the workplace, that is, sick employees are absent from work or operate at very low levels of efficiency.

Investing in the provision of health services is therefore an important element in the economy as well as moral conditions.

In addition to the health factor, this pillar also takes into consideration the quantity and quality of the basic education received by the population, which is the basis of the economy in our days.Basic education increases the efficiency of each worker.

In addition, workers who have received little formal education can only perform manual labor and for them it can be very difficult to adapt to the more complex production processes and techniques.

The lack of basic education represents a barrier in the development of businesses with companies that find it difficult to move in the value chain by generating more sophisticated or more valuable products.

In the long term, it would be essential to avoid significant reductions in the distribution of resources in these areas; despite the government's budget cuts needed to reduce public debt by stimulating current spending.

Fifth pillar: Higher education and training

The quality of higher education and training is crucial for economies that want to move in the value chain behind the simple processes and products. In particular, the globalization of the economy requires countries the train highly skilled workers who are able to quickly adapt to the changing environment and needs of the productive system.

This pillar measures enrollment rates as well as quality in education through the economic community. The size of the number of workers is also taken into account the importance of job training in order to ensure the steady development of the skills of workers - which is rejected in many economies.

Sixth pillar: Goods and efficiency

Countries with efficient markets are well positioned to produce the right mix of products and services provided depending on the conditions of supply and demand and to ensure that these assets can be traded in the economy.

Healthy market competition, both domestic and foreign, is important in driving market efficiency and therefore productivity market.

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The best climate for the exchange of products requires a minimum of obstacles in business through the intervention of business. For example, competitiveness is hampered by burdensome taxes and restrictive or discriminatory rules on foreign direct investment - thus limiting the foreign-owned as well as international treaties. The recent economic crisis has highlighted the degree of interdependence of the global economy and the rate of growth depends on the free market.Protectionist measures have the opposite effect to what is to be achieved, as they reduce economic activity.

Market efficiency also depends on demand conditions that are based on customer orientation and buyer sophistication.

For cultural or historical reasons, customers may be more demanding in some countries than in others. This scenario can create a competitive advantage because it forces companies to innovate and focus on the client, above the discipline is imposed to generate the necessary for efficiency gains in the market.

Seventh pillar: labor market efficiency

Efficiency and labor market flexibility are important elements to ensure that workers are in the right place to perform efficiently in the economy and provide incentives to give their best in their work.

Therefore, labor markets should have the flexibility to move workers from one economic activity to another activity inexpensive and allow fluctuations in wage does not cause social protests.Difficulties with rigid labor markets that some countries have faced in recovering from the recent economic depressions.

Efficient labor markets must ensure a clear relationship between worker incentives and their efforts as well as equity in business environment between men and women.

Eighth pillar: Financial market development

The recent financial crisis has highlighted the central role of the financial sector in economic activities. An efficient financial sector allocates resources generated by the members of a nation as well as those from abroad for productive use. This sector allocates resources to those business or investment projects with the highest rates. The key element in this is a complete and adequate risk assessment. The investment is an essential element in productivity. Therefore, economies require complex that can generate capital and make it available to the private sector investment through bank loans, properly regulated exchanges, entrepreneur capital and other financial markets financial products.

The importance of such access to capital was highlighted by the experienced liquidity in the public and private sector in both developed and developing. In order to fulfill all these functions, the banking sector needs to be reliable and transparent financial markets need appropriate regulation to protect investors and other stakeholders in the economy.

Ninth pillar: Technology

In the globalized world in which we live, technology has become an essential element in companies to compete and prosper. This pillar measures the agility with which an economy access existing technology to strengthen the productivity of your industry with emphasis on its ability to fully include in our everyday technologies of information and communication technologies (ICT) in order to increase activities the efficiency and competitiveness in production processes. ICT has evolved in general purpose technology of our era.

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Because spills in other sectors and their role an industry with a wide structure. Thus, ICT is the means of access to technology in all regions of the world.

If the use of technology has been developed or not within the borders it is irrelevant for their ability to increase productivity. The central point is that these companies operate in the country and have access to products and pre-advanced and above all the ability to use them. Among the main sources of foreign technology has established itself as a key player.

It is noteworthy that in this context, the level of technology available in a country is a function of the ability to innovate and expand the frontiers of knowledge. That is why we make a separation between access to information and innovation.

Tenth pillar: Market size

Market size affects productivity since the markets take advantage of economies.

Traditionally, the markets available to firms have Siso limited by national markets. In the era of globalization, international markets have come to be replaced by domestic markets, mainly in small countries.

There is vast empirical evidence showing openness to trade is positively associated with growth.Even if the latest information held in a general sense that trade has a positive effect on growth in countries with domestic markets.

Therefore, exports can be seen as a substitute for domestic demand in determining market size based companies in the country.

By including domestic and foreign market as market size, we give credit to those based on export and geographic areas (such as the European Union) that are divided into several country but ultimately are one market economies.

Eleventh pillar: Business Environment

In business management favors high efficiency in the production of goods and services, which means increased productivity, strengthening the competitiveness of a nation. In business management it refers to the quality of a company's operations and strategies.

This is particularly in countries with highly developed where the most basic sources of productivity improvement have been largely exhausted. Quality, business networks of a country and companies, is an important factor for a lot of reasons. When companies and their suppliers are interconnected geographically they create great opportunities for innovation and the barriers are reduced.

Operations and business strategies (labeling, marketing, presence in the value chain and the production of certain products) lead to the implementation of modern and sophisticated processes.

Twelfth pillar: Innovation

The last pillar of competitiveness refers to technological innovation. Although substantial achievements obtained by improving institutions, building infrastructure, reducing macroeconomic instability, or improving human capital, all of which are aimed at diminishing utility. The same applies to labor efficiency and markets.

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In the long term, living standards can be improved by using innovation in technology. Innovation is particularly important in the economy while approaching the frontiers of knowledge and the ability to integrate and adapt technologies that tend to disappear.

Although the least developed countries can can still improve their productivity by adopting existing technologies or making improvements in other areas; for those who have already reached an optimum level of development that is not enough to increase your productivity.

Companies in these countries must design and develop new products and in turn processes to maintain a competitive advantage. This requires an environment conducive to an activity characterized by innovation supported by the public and private sectors.

In particular, this means sufficient investment in research and development mainly in the private sector; the presence of high-quality institutions in scientific research; Extensive research collaboration between universities and industry; and production of intellectual property. Immersed between the uncertain economies, it would be important to resist the pressures to reduce spending on investment in research and development in both sectors which involve maintain sustainable growth in the future.

Although the twelve pillars are addressed separately, it is important to mention that these elements are not independent, that is, they tend to support each other and a weakness in one area has a negative effect on other areas.

For example, innovation (pillar 12) would be very difficult without a workforce well trained (columns 4 and 5) who are willing to access technology (pillar 9) without sufficient funding (pillar 8) for research and development in a market that makes it possible to bring a number of innovations to the market (pillar 6).

While the pillars are kept in a single index, measures are reported separately because such details provide meaning in a specific area in which a given country should improve.

The economic theory of stages of development indicates that in the first stage, the driver factor, economy and countries compete based on their donation factors: unskilled labor and natural resources. Companies in the base price and the sale of products or goods, with their low productivity reflected in low budgets.

You maintain competitiveness at this level of development is based primarily on the proper functioning of public and private institutions (pillar 1), a well developed infrastructure (pillar 2), a stable macroeconomic system (pillar 3) and a healthy workforce that has received basic education (pillar 4).

When a country becomes competitive, productivity is increased and the budget will rise with advancing development. Countries will move to next stage, management efficiency, when they must begin to develop production processes and increase product quality because budgets have increased and can not increase prices. At this point, competitiveness conducted by higher education (pillar 5) markets efficient goods (pillar 6), the smooth functioning of labor markets (pillar 7) financial market development (pillar 8), the ability to leverages the benefits of existing technology (pillar 9) and a large market both domestic and abroad (pillar 10).

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Finally, countries move to the last stage of innovation, budgets have increased so much that will be able to sustain such budgets associated with living standards only if their businesses are able to compete with unique products.

At this stage, companies must compete by producing new and different goods using a complex production (pillar 11) and through innovation (pillar 12).

GDP considers these stages of development by attributing more weight to pillars than others, given their particular stage of development. That is, although all 12 pillars are important for all countries, the relevant importance of each depends on the stage of development in which it is located.

Analysis: Competitiveness in the municipality of Lerma

In order to make an approach to measure competitiveness in the municipality of Lerma, it has been consulted information from the database "urban competitiveness Index 2016" published by the Mexican Institute for Competitiveness. Among the variables included in this study it has considered the following:

thefts	Amount reported in theft of goods in pesos 2014
water consumption	Water consumption in cubic meters
clean companies	Number of companies certified as "clean industry"
Scholarship	Population schooling to 25 years
Higher education	population over 25 years with higher education
Health	Employed population with access to health
Salary	average monthly salary of full-time workers
average product of labor	average product of labor, hours year
Loans to companies	Loans to companies
High growth sectors	Production of high-growth sectors
FDI	Foreign direct investment
companies ISO	Companies certified with ISO-9000 and 14000
GDP innovation	GDP in innovation sectors
Total productivity	total factor productivity
GDP	Gross domestic product of the municipality

Table 1 indicator of competitiveness for the municipality of Lerma, calculations based on information from "Urban Competitiveness Index 2016", IMCO Variables

With the information described in Table 1 and since it has been established that the concept of competitiveness is broad, and is due to a number of factors acting feeding back each other, generating a synergistic action that causes and promotes competitiveness, it gets a exploratory analysis of the relationship that can exist between all the variables presented in Table 1 for the period you have available data, between 2008 and 2014.

With respect to the municipality of Lerma, who between 2008 and 2014 has grown at an average rate of 5%, GDP can observe their evolution by graphic 1. 1

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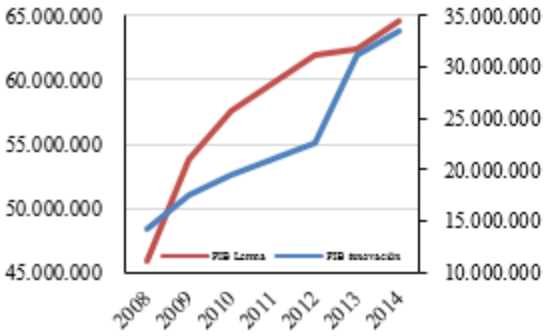

Figure 1 GDP of the municipality of Lerma, thousands of pesos of GDP in 2014 and innovation sectors (right) Source: Prepared based on information from "Urban Competitiveness Index 2016" IMCO

The IMCO defines competitiveness as "the ability of Mexican cities to attract and retain talent and investment". As a result of achieving competitiveness, it is conceivable that an improvement will be achieved in production conditions and ultimately increased production. Then to implement the exploratory analysis a correlation matrix, in which the degree of association of all exposed variables shown, with special emphasis the association of these variables with the GDP of the municipality of Lerma is presented.

Table 2 (Annex) certain conclusions can be drawn regarding the association of variables determinants of competitiveness, GDP of the municipality of Lerma. First there is a negative and significant association of GDP with the theft of goods, which is an indicator that insecurity is detrimental to production and adversely affects competitiveness. a positive relationship with high water consumption, because it is raw material for the industry of the municipality, causing increased production generates increased consumption of water is then evidence. This aspect should be understood to ensure water supply will favor competitiveness. A greater amount of certified as "clean industry" companies also reflects improvements in competitiveness.

In accordance with the theories of economic growth that include human as determining capital growth (Mankiw, Romer and Weil, 1992; Barro and Lee 2010), the degree of schooling understood as the average years of education with those who have older people 25 years Lerma, a positive association with increased schooling GDP growth is seen. With respect to the upper (university) education corresponding correlation coefficient it is positive but with a very small magnitude. This may be because as the population with higher education as a proportion of the total population in the same age range, is still small, therefore achieving better coverage of higher education could generate better conditions for competitiveness.

The association of municipal GDP with the employed population with health coverage has a negative sign and a moderate magnitude, because the figure reported by the IMCO shows a downward trend. The salary shows a moderate positive association, this being manifest that increases in production for better competitive conditions, can lead to higher wages. The average product of labor shows a negative sign next to a weak correlation, this may be due to increases in labor productivity, make fewer hours required to produce, suggesting improvements in competitiveness.

Credit granted to companies manifests a strong positive correlation with production, because the financial sector is key for productive development in the municipality, to channel funds to productive activities. The high growth sectors, foreign direct investment, the number of companies with ISO 9000 and 14000 certification (management indicators and environmental management service) and GDP innovation sectors also show this pattern of association with production. In contrast, the indicator of total factor productivity shows a modest but negative correlation with production.

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Fuentes, Osorio and Mungaray (2016) to study the micro-enterprise competitiveness in Mexico, using variables survey results in determining the impact of a set of aspects such as physical resources and intangible capabilities that act in synergy towards increase profits companies, which would be the manifestation of achieving their competitiveness. Next, in Table 3, the results of a regression appears to make sense of causality for variables representative in its impact to the production of the municipality of Lerma.

Explanatory variables:	Constant	average product	companies ISO	High growth sectors	Scholarship	FDI
Dependent variable: GDP of Lerma	10.094024*	0.027709**	0.207624*	0.415615*	-0.051815*	-0.003625*
	(0.441585)	(0.013902)	(0.013597)	(0.030333)	(0.017252)	(.000176)

Table 3 Regression for production in Lerma, 2008-2014
Source: Prepared based on information from "Urban Competitiveness Index 2016" IMCO. Standard errors in parentheses. * Significant at 1% Coefficients. ** Significant at the 5% Coefficients. Waste by Jarque-Bera test is checked normally distributed

The variables included in the sample covering the period from 2008 to 2014, show that there is an explanation of the production growth of the municipality of Lerma, for variables associated with the business, because this sector would be the most dynamic in the generation of competitiveness, falling behind schooling as an explanation of increased production, despite having grown both in the sample period. From this it follows that aspects related to human capital formation with higher education to meet the challenges requires increased competitiveness, is the issue that remains and constitutes an element to pay attention by public policy oriented the achievement and improving competitiveness.

Conclusions

As mentioned by developing the concept of competitiveness, being an aspect that depends on various factors act synergistically, can ensure that issues such as the successful development of sectors of innovation, improvements in the quality of enterprises and achieving a greater educational coverage, would help shore up the foundations of competitiveness. From the results found in the analysis of data relating to the municipality of Lerma, you can extract the productive sector generates the basis for competitiveness in the period, but that education does not have the impact it should, so be it precisely education and professional training of the inhabitants of Lerma is a vein to exploit potential gains in competitiveness. Regarding FDI, it shows a negative effect but reduced magnitude, being an aspect that remains for the research agenda of future research that address competitiveness the municipality of Lerma

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1 It should be mentioned that with respect to State Competitiveness Index reported by the IMCO, the State of Mexico from 2010 to 2012 shows an improvement up 5 post and going from place 21 to 16 of 32 in Toral, but still remains a place below the national average. It is emphasized that the progress he had is due to improvements in aspects of government and labor market.

References

Arostegui, J. L. (2008). Globalizacion, posmodernidad y educacion: la calidad como coartada neoliberal. España: Ediciones Akal.

Barro, Robert J. y Lee, Jong-Wha (2010). "A New Data Set of Educational Attainment in the World, 1950-2010", NBER, Working Paper 15902.

Clark, G. L. (2004). Global Competitiveness and Innovation An Agent-Centred Perspective. New York, N. Y.: PALGRAVE MACMILLAN.

Calva, J. L. (2006). AGENDA PARA EL DESARROLLO. VOL. 13: POLITICAS DE DESARROLLO REGIONAL. México: Miguel Angel Porrua.

Capo, V. J. (2002). Economía del conocimiento, ciudad y competitividad. Investigaciones Regionales, 139-161

Cuervo, G. L. (2000). Ciudad Competitiva en todas partes. Territorios, 34-37.

Flowkner, D., & Bowman, C. (1995). The Essence of Competitive Streategy. United Kingdom: Prentice Hall.

Fuentes, Noé; Osorio, Germán y Mungaray, Alejandro (2016). "Capacidades intangibles para la competitividad microempresarial en México", Problemas del Desarrollo. Revista Latinoamericana de Economía, vol. 47, núm. 186, julio-septiembre, pp. 83-106, Universidad Nacional Autónoma de México, Distrito Federal, México.

García Esteban, Serrano J. Coll. (2003). Competitividad y eficiencia. Estudios de economía aplicada, 423-450.

García Esteban, Serrano J. Coll. (2003). Competitividad y eficiencia. Estudios de economía aplicada, 423-450.

Goldin Ian; Reinert Kenneth (2012) Globalization For Development, Trade, Finance, Aid, Migration, And Policy. New York, N. Y.: Oxford University Press

IMCO (2016). Índice de Competitividad Urbana 2016, Reelección municipal y rendición de cuentas: ¿Cómo lograr el círculo virtuoso?, México.

Mankiw N. Gregory, Romer David y Weil David N. (1992). "A Contribution to the Empirics of Economic Growth", Quarterly Journal of Economics, Vol. 107, No. 2, pp. 407–437.

Méndez, M. J. (2007). La economía en la empresa. México: Mc Graw-Hill Interamericana.

Nelder y Wedderburn (1972). "Generalized Linear Model", Journal of the Royal Statistical Society. Series A (General), Vol. 135, No. 3, pp. 370-384.

Méndez, M. J. (2007). La economía en la empresa. México: Mc Graw-Hill Interamericana.

Porter, M. (1990). Competitive Advantage of Nations. Harvard Business Review

Porter, M. (2015). Ventaja competitiva. Creación y sostenimiento de un desempeño superior, México. Editorial Patria

Schwab, K. (2016). The Global Competitiveness Report 2015-2016. Worl Economic Forum

Soros, G. (1999). La crisis del capitalismo global. La sociedad abierta en peligro. México: Plaza & Janes.

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Linkage to face global challenges

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Abstract

As a result of this analysis, the need to develop a specialty in aviation module for racing mechanics and mechatronics is determined. The impact of this project has been of great importance for the institute for students in residences, professional practices, by making stays abroad, by making agreements with companies, external training, and development of research projects.

Linkage, globalization, education

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Introduction

Higher education has been a central institution in globalization processes given its direct connection with the production and dissemination of knowledge as well as science and technology development, while at the same time it is further recognized its contribution to the economy (Stromquist 2008).

Its plants of scientists and experts who support and promote much of the international mobilization and its coordination are key. The important role of Technological Institutes within the National Technological of Mexico (TecNM) has increased due to the need to have: "... a homogeneous global market that requires a uniform system of education and training based on a common set of qualifications" (Grediaga, 2006).

In accordance with the "National Technological of Mexico" (TecNM) objective to "Strengthen the quality of educational services" to foster and consolidate its international position established in the Institutional Program for Innovation and Development 2013-2018, and considering that currently more than 60% of the Mexican aerospace industry, is operating in the northwestern part of the country (Sonora, Chihuahua and Baja California), and approximately 85% of the industry's jobs are graduates of TecNM.

This paper describes the project of linking the Technological Institute of Mexicali with the aerospace industry, from which a series of academic actions are derived, giving rise to institutional strategies in a more globalized knowledge society.

Methodology

The methodology to address the changes within the organizations and used in this project, starts with a vision, followed by the integration of a work team that establishes an objective and implements the actions; With the aim of facing the challenges of globalization.

The Institution's vision was to have more relevance to the aerospace industry in order to satisfy the pressing competencies of the industry; since it represents one of the axes of greater impact in the economy of the country.

The team was integrated with teachers with experience in the aerospace industry, members of the institute's metal-mechanic academy and honorary members (technical experts) of the aerospace companies, in figure 1 some of the members of the team work:

- GKN Aerospace.
- UTC Aerospace.
- UTC Aerospace.
- Gulfstream Aerospace.
- Honeywell Aerospace.
- Honeywell Turbo Technologies.
- Collins, EMMSA.

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Figure 1 Part of the team at the Air Force Aerospace Forum Mexico 2015

Teamwork began with a diagnosis to know how many students per career have made residences in the aerospace industry, according to historical data of the last year, which showed that the largest number of students were mechanics and mechatronics, results are shown in figure 1.

Based on this result, an analysis of the competences acquired by the students of the mechanics and mechatronics career and the skills and abilities required by the aerospace industry was continued. This analysis determines the need to design a new specialty in "Aeronautics" for these careers. Which complies with the skills and abilities required by the aerospace industry; in accordance with the current regulations in the National Technological of Mexico, established in the Guidelines for the Integration of Specialties (Lineamientos Académico Administrativos, 2011).

In this way the work team was given the task of reviewing the contents of the curricula of these careers and performing a gap analysis with the requirements of the aerospace industry, to determine what contents should have the new specialty.

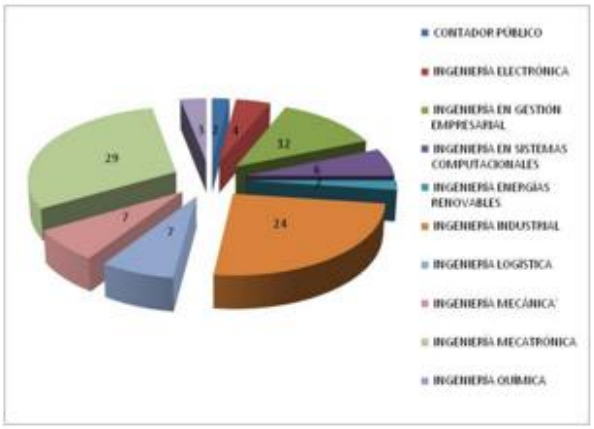

Figure 2 Number of IT Mexicali students per career in the aerospace industry

The document of the design of the new specialty, was integrated by the equipment according to the Guideline for Integration of Specialties (Lineamientos Académico Administrativos, 2011), with the following requirements:

Elaboration of the region diagnosis, considering the following aspects:

a. Socioeconomic activities of the region.

b. Public, social and private companies that operate in the area and that influence the environment.

c. Development programs and projects of these agencies.

d. Present situation of the production of goods and services.

e. Characterization of regional natural resources.

f. Prospects for development of the previous points.

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g. Development of the current and emerging disciplines in the local, regional, national and international environment, related to the curricula offered by the Technological Institute.

h. Needs for professional skills in the environment.

Study of the Institute's capacities, listed below:

a. Number of students in the generic structure curriculum.

b. Failure and desertion indexes.

c. Socioeconomic conditions as well as training and work expectations of the students.

d. Academic staff: profile, as well as professional and teaching experience.

e. Technical and administrative personnel. Indicating the personnel in charge of laboratory, administrative and support personnel to the specialty.

f. Physical infrastructure: classrooms, laboratories, rooms and adequate spaces that encourage student learning. Technical infrastructure: laboratory equipment, audiovisual equipment, specialized computer systems, specialized software, sources of information and specific requirements for the operation of the specialty.

g. Prospective analysis of the increase or decrease of each of the previous aspects.

Development of the contents of the subjects that integrated the specialty, was developed based on the results of the gap analysis previously done by the academy and technical experts of the aerospace industryal.

Design of the specialty contemplated the following aspects:

– Definition of the specialty profile and its contribution to the egress profile of the educational program.

– Definition of the generic and specific competences of the subjects that make up the specialty.

The content of the subjects established by the team, which make up the specialty, and in this case were:

– Aeronautical structures and dynamic systems.

– Special materials and processes in aeronautics.

– Aircraft systems.

– Quality systems in aeronautics.

– CAD applied to aeronautics.

– Advanced aeronautics manufacturing.

Elaboration of the subjects of the specialty; Considering its integration with the generic structure of the curriculum from the sixth semester onwards, with the current methodology for the design of plans and curricula by professional competencies, and the generic structure of the curriculum shown in figure 2.

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The credits of the specialty assigned were in accordance with the range established in the line of integration of specialties (Lineamientos Académico Administrativos, 2011).

Figure 3 Generic structure of the curriculum

Results

Specialty in aeronautics is located in the careers of mechanics and mechatronics in figures 3 and 4, the respective curricular map is shown.

Figure 4 Curriculum map of the mechanic's career with the specialty in aeronautics

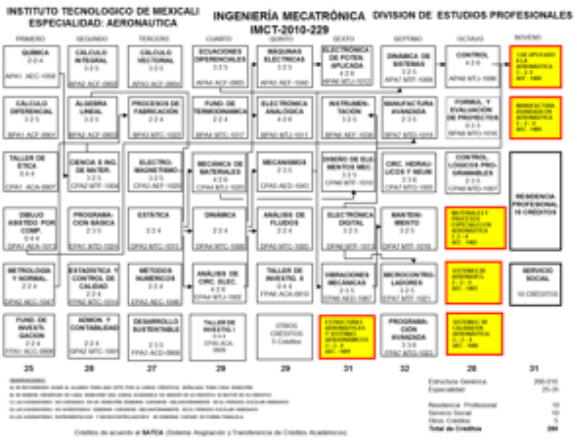

Figure 5 Curriculum map of the mechatronic's career with the specialty in aeronautics

This project's impact has been of great importance for the institute, since it has allowed 65 students to make their professional residences in the aerospace industry easier, also gave rise to a new scheme of practices in the aerospace companies; This scheme consists in that students who are not yet in a position to start their residences were accepted by these companies as Practitioners, which allows them a setting and a pre-training in aerospace projects facilitating their insertion as Residents. The number of students who have realized residences and practices in the different aerospace companies, can be visualized in the table 1.

Another positive aspect of this project is that the institute has signed new agreements with 10 companies in the field, opening doors to the provision of external training services of the institute in this area has been increased and research projects have been developed with the support of the National Council Of Science and Technology. The scenario of residence projects was also expanded in a new form of residence abroad, due to the link established with this project, presenting new development opportunities for students and positioning of the institute.

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HONEYWELL AEROSPACE DE MEXICO S. DE R.L. DE C.V.	**66**
Practitioner	51
Resident	15
INTERIORES AEREOS S.A. DE C.V. (GULFSTREAM)	**1**
Resident	1
IVEMSA (DIV. GKN AEROSPACE CHEM-TRONICS MEXICALI)	**7**
Practitioner	6
Resident	1
LMI AEROSPACE	**1**
Practitioner	1
SKYWORKS SOLUTIONS DE MEXICO, S. DE R. L. DE C. V.	**11**
Practitioner	4
Resident	7
SUNTEK MANUFACTURING TECHNOLOGIES	**2**
Resident	
TT ELECTRONICS	**1**
Resident	1
UNITED TECHNOLOGIES AEROSPACE SYSTEMS (GOODRICH AEROSPACE DE MEXICO)	**2**
Resident	2
UTC AEROSPACE	**3**
Practitioner	3
Total Residents	**65**
Total Practitioners	**31**
TOTAL STUDENTS IN AEROESPACIAL INDUSTRY	**96**

Table 1 Number of Residents and Practitioners in the aerospace industry with a specialty in aeronautics

Conclusions

Since one of the trends within the program of improvement of the Higher Education Institutions (HEIs) of today is the internationalization of higher education; was the engine that generated this project inside the institute, but its expression is the result of a more comprehensive and universal transformation, walking towards globalization, as a process of interconnection of the world today.

In this context, the project described in this paper proposes a linking strategy, as an example for the institutions of higher education to replicate and join this universal historical phenomenon called globalization, which leads to the development of nations, science and technology.

The effects of globalization on higher education, as we have seen in this project, have allowed us to increase the linkage of institutions with regional, national and global environments, improving knowledge, has also been a stimulating factor for the acquisition of languages as a component of professional profile and the essential element of employment.

Globalization in higher education is largely related to academic mobility, which undoubtedly is the training of professionals who require countries to work and direct the processes of change towards sustainable development that has as a center the human being (Domínguez, 2004).

The context of global openness and globalization in which we develop, as well as the greater dependence of our economy with the American (mainly) test our structures and processes. The challenge is to become competitive and develop in a world with much wider borders. The modernization effort of the system includes the updating of methods, technology, teachers and links with the productive system, in addition to responding to the growth of educational demand and the improvement of administration (Sánchez 2004).

The challenge of globalization calls for the educational model to be more complete, with a long-term vision, open, dynamic and effective, linking the student in both his personal and social dimension; without leaving aside technological updating.

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References

Domínguez Menéndez J.; 2004. La Educación Superior en América Latina Frente a la Globalización: Internacionalización o Transnacionalización. Revista Cubana de Educación Superior, (10), pp 77-88.

Grediaga Kuri R.; 2006. La Internacionalización de las Universidades en México". Revista de la Educación Superior. XXXV (1) No. 137, pp 133-142.

Lineamientos Académico Administrativos Versión 1.0. 2011. Lineamiento para la Integración de Especialidades. México D.F. Dirección General de Educación Superior Tecnológica, Dirección de Docencia.

Tecnológico Nacional de México. 2014. Programa Institucional de Innovación y Desarrollo 2013-2018. México, D.F.: M. Quintero, E. Chuayffet.

Sánchez Hidalgo M.A. 2004. Algunos desafíos del sistema educativo mexicano ante la globalización. Revista Panamericana de Pedagogía: Saberes y quehaceres del pedagogo, (5), pp 15-28.

Stromquist Nelly P. 2008. La Internacionalización: Entre la Promesa de la Calidad y el Riesgo de la Homogenización. Revista De la Educación Superior. Vol. XXXVII (1) No. 145, pp 88-99.

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Strengthening strategies between universities and companies for the incorporation of university students into the labor market

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Abstract

The transfer of knowledge has become a key element in the relationship between universities and companies to promote educational innovation and socioeconomic development of the country. The main objective of this research is to establish a connection between university-business becomes an indispensable process of being driven under directly involved in an industry, improve educational plans and programs based on the demand for labor, help in solving academic problems for the productive sector, have trained human resources and respond to the environment to contribute to the development of society for incorporation into the labor market. In this context it seeks to help the university to create the conditions to meet the needs demanded by society and the productive sector in particular; while companies may seek to reliable sources of knowledge as determinants for economic growth of a society factors.

Relationship, university-company, innovation, know-how

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Introduction

This research proposes a program for the transfer of knowledge as a strategic alliance between universities and companies for innovation to generate knowledge and contribute to the construction of a more competitive production system. Establishing a connection between university and business becomes a necessary process of being promoted by virtue of participating directly in an industry, improving educational plans and programs according to the demand for work, having trained human resources and responding to the environment to contribute To the development of society.

It is sought that the university can create conditions that respond to the needs of society and the productive sector in particular; So that companies can use reliable sources of knowledge resulting in economic growth in society. Therefore, the main objective is: To develop a proposal for a connection between university and company to promote educational innovation and competitiveness in companies through relationships and cooperation agreements between university and company.

Being buzzed in an environment of constant change, companies and universities are ineludible to deepen the creation of differential value by means of concrete and measurable actions, so they have continued to interweave more effectively with social reality And economic development of the country.

Faced with the pressure of companies to renew, optimize and continually improve their knowledge and technologies to ensure their long-term survival and prosperity (Ali, 1994), universities emerge as an alternative for the development of competitive capacities of these organizations, which Must provide human capital.

Understood in terms of the competencies and necessary skills of an individual. This situation makes it inexcusable to delve into the bi-directional relationships of collaboration that can be developed between companies and universities that contribute to boosting educational innovation and competitiveness in companies.

The value of knowledge as a factor of development in society has made the relations between these two actors acquire a special importance and become a key piece for the promotion of formative innovation; Whose development dynamics is determined by the capacity of the different actors to interact and consolidate learning networks that strengthen the scientific-technological capacity of the country and increase the competitiveness of organizations in constant development giving answers to their current and future problems.

This is why the present research proposes a knowledge transfer program as a strategic alliance between universities and companies that allows generating knowledge and contributing to the construction of a more competitive production system.

Methodology

This research work leads to investigate the transfer of knowledge as a strategic alliance between universities and companies. The study will approach a basically qualitative vision, the purpose is to get to the root of an educational problem, not to explain it but to understand it through the information provided by the subjects of study, transforming that reality for the improvement of the results in education.

Pérez (2008) mentions that qualitative research is revered as an active, systematic and rigorous way of searching.

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Inquiry and inquisition of information; emphasizes that the core of curiosity in qualitative research lies in the construction of detailed descriptions of situations, events, people, interactions and observable behaviors, incorporating the participants' own voice, their experiences, attitudes, beliefs, thoughts and reflections as Are expressed by themselves.

The heuristic methodological instrument for the knowledge and transformation of socio-educational contexts and practices is called action research; this type of research, according to (Halsey: 1972), refers to a smaller-scale interference in real-world functioning and to a close examination of the effects of such intervention. It should be noted that the information collected and recorded form transversal axes in order to generate reflective spaces and appreciation of achievements and constraints that arise in the development of research, to reform, optimize and deepen decisions on the actions to be pursued.

Therefore, one of the main reasons for carrying out this type of methodology is the improvement and understanding of the educational practice and the approach to reality: linking know-being and know-how. The intention is to understand and to interpret social practices (systematic, critical and public inquiry) to change them (informed, committed and intentional action) and to improve them (valuable purpose).

Parallelism between University-Business

The university-business correlation has its origins in relational marketing. Relational marketing emerges as a refutation to the need for differentiation and added value; It is based on the recognition that building and maintaining relationships is fruitful for any organization (Plamer, 2002).

Barroso and Martín (1999) refer that relational marketing establishes a way of targeting the target market, which seeks to establish a long-term loyalty correlation and from which a positive impact on economic performance is expected of the participants.

Based on these definitions, it can be inferred that university-company correlation is a correlation between knowledge and economics, as an impulse ingredient for the bilateral and sustained transfer of technologies, experiences and physical resources to support the strengthening of development in society. The correlation responds to an alliance that strengthens the competitive capacities of the company and the university, so that new opportunities for development are generated for both players, without harming and altering their own missions. The purpose is the coexistence of their relations, not the fusion between them (García 2000).

University-company correlation in the current context

The university-business correlation is a relatively little studied subject; as mentioned above, an approximation to the definition of university-business correlation can be expressed as that interaction between universities and companies that is based on the trust and commitment of the members that integrate it, allows the expansion and propagation of competences and skills with the purpose of creating differentiated and aggregated value in the long term; this correlation is a movement that involves the transfer and commercialization of the know-how to raise the competitiveness of the actors involved, so it should not be considered as an isolated process, but as a system that allows a dynamic correlation between them for compliance of objectives.

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Although this university-company correlation is a key factor for national and local development in the country, activating relationships is a rather weak activity in this context, since today companies and universities have had to face certain barriers derived between the knowledge society, the needs of the current market, the role of industry, government and universities themselves. From an academic perspective, universities as generators of research and development (R & D) do not provide the appropriate knowledge exchange to foster the innovative development of companies; while companies in need of such knowledge lack an appropriate approach to cooperate with higher education institutions in order to benefit from the knowledge they produce and thus increase their competitiveness on the basis of innovation.

This disconnection means that new professionals are not hired by companies and the few hired do not offer better opportunities for development. The labor market requires human capital with new skills developed to meet the demand for innovation generated by society; So that from a social point of view it is not enough for universities to try to incorporate professionals into the labor market, but rather to provide training in the needs of the labor market and to apply the knowledge, skills and abilities received during their university stay, contributing to provide them with opportunities to obtain higher remuneration, with possibilities to transform their environment and their country.

Foster development networks, can be an advantageous element to favor the professionalization of management and prevent the loss of the "know-how" acquired. In this sense, it is not a question of the University leaving aside the community commitment that has characterized it, but incorporates within its scheme a more direct correlation with the economic activities of the country.

At this point, it is worth underlining that there is no single model of successful university-society connection. Companies are increasingly pressured to survive and grow in a global market. Hence the imperative need to find the competitive advantage that will enable them to achieve these goals, as Drucker pointed out in his time; "The competitive advantage of any organization is its human capital, because it is where knowledge resides."

For this reason, intellectual capital is a fundamental aspect for the survival of organizations, which serves to safeguard their competitive strength since it integrates structural aspects of capital (integrated by the organization, relationships and intangible assets), and human training (Conforming competence, attitudes and intellectual agility). A system of connection becomes remarkable and imperious, for it must be recognized that it is not the University that determines what important knowledge is, rather it is about social concepts that are continually reformulated in response to social and technological changes.

Advantages of university-business correlation

They are diverse and recognized the advantages that, for both agents, implies this correlation (Fernández et al., 2000, García, 2000) make reference to some of them:

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University Company	University Company
It provides for the creation of joint research teams. It benefits the flow of personnel from the company to the university.	It provides for the creation of joint research teams. It benefits the flow of personnel from the company to the university.
It benefits the flow of university personnel to companies. Access the course to students and highly qualified staff.	It benefits the flow of university personnel to companies. Access the course to students and highly qualified staff.
Forge additional income. Conceptu a technical support and researcher.	Forge additional income. Conceptu a technical support and researcher.
Provides the purchase of real estate Compresses R & D expenses.	Provides the purchase of real estate Compresses R & D expenses.
Form the universities in their economic and social environment. It perfects the adaptation of human capital to business needs.	Form the universities in their economic and social environment. It perfects the adaptation of human capital to business needs.
Provides a profile of human capital demanded by companies. Improve your public image.	Provides a profile of human capital demanded by companies. Improve your public image.
It increases the scientific production, both of articles published, as well as of presentations in congresses.	It increases the scientific production, both of articles published, as well as of presentations in congresses.
Extends the number of patents and licenses of products and / or processes.	Extends the number of patents and licenses of products and / or processes.
Provides support for conducting doctoral theses.	Provides support for conducting doctoral theses.
Enables graduate employment opportunities	Enables graduate employment opportunities

Table 1 Advantages of university-business correlation. Own elaboration from Fernández et al., (2010) and García, (2000)

Advantages explained above are based on the degree of collaboration established between the two main agents involved in the correlation. This requires a specific and concrete approach to visualize the impact of establishing bilateral relations over their environment and thus organize their resources and capacities to adequately address the challenges for generating value between them.

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Vinculation barriers

Cazado (2000), mentions that among the main obstacles that are presented for an effective connection are: 1. - The little interest to generate connection by the business sector as well as by the educational sector. 2. - The difficulty to establish a communication between both due to the cultural difference of the same. 3.-The discrepancy between the purposes that encourage the parties, since what is valuable for the education sector, may not be for the business sector.

It is therefore imperative to emphasize that cooperation between universities and companies has been limited since their actions are antagonistic, as can be seen below:

Company University	Company University
They do not take sufficient risks to technological innovation because they are usually cautious. Insufficient connection with the socio-economic needs of the country.	They do not take sufficient risks to technological innovation because they are usually cautious. Insufficient connection with the socio-economic needs of the country.
Request for protectionist measures. Excessive incorporation of the activities, with a marked atomization of means and projects.	Request for protectionist measures. Excessive incorporation of the activities, with a marked atomization of means and projects.
Tendencies to the reflexive systematizations that transfigure the companies in the businesses. Little development in activities in advanced studies.	Tendencies to the reflexive systematizations that transfigure the companies in the businesses. Little development in activities in advanced studies.
Favoritism for the short-term procedures and high security, which uses preference of external technology. Prioritization is considered in extensive training, on intensive training.	Favoritism for the short-term procedures and high security, which uses preference of external technology. Prioritization is considered in extensive training, on intensive training.
Energetic individualism and independence that hinders teamwork. Identity crisis due to factors such as massification, devaluation of titles, etc.	Energetic individualism and independence that hinders teamwork. Identity crisis due to factors such as massification, devaluation of titles, etc.

Table 2 Antagonistic role of the company and the university in the bonding. Own elaboration from Espinoza, (1999); Cazado, (2000)

It is necessary, therefore, to discern those origins that allow to originate, to strengthen and to contribute to the solutions to problems, offering the results of the investigation in the solution of this one. The university, through the generation of knowledge and its dissemination, will have a greater impact in the search for social welfare (Espinoza, 1999).

Types of linking

In Mexico, culture in the formation of a connection network between company and university is at a basic level, which is based on two aspects (Casalet y Casas, 1998):

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a. Recruitment fairs. For the sake of recruitment, some companies are notified at fairs to get qualified personnel who can meet the needs of your organization. These fairs can be given through events with some public universities or with government, for their diffusion.

b. Social service and / or professional practices. This is done, basically as support to revise academic aspects, being used in a reliable but limited way. In this way, students know and perform some basic function within the company.

Types of linking	%
Professional practices	76%
Technical stays	54%
Social Service	78%
Visits to companies	83%
Professional residences	40%
Entrepreneur program	41%

Table 3 Types of linking. Source: Casas y Casalet (1998)

This demonstrates the lack of interest in establishing bilateral agreements for the development of the country. Thus, establishing a connection network is not an easy task and must be approached from a holistic and integral approach, between university, government, company and society, which will bring great benefits for the parties that comprise it, this means that this connection can achieve a wider dissemination of know-how through access and contribution of science and knowledge that can be translated into basic innovations and technical support that allows it to generate products with high technological content. In the same vein, Muiño (1996) expresses that the connection network is a tactic that will allow the technological updating of micro, small and medium-sized enterprises to be increased in order to increase their competitive capacity and performance index of this sector.

Which promotes cultural and political growth in society.

Triple helix model. Correlation between university and business

The Triple Helix (TH) model is one of the models that explains the study of the connection between university, industry and government. This model was first presented by H. Etzkowitz and L. Leydesdorff in 1993. The model of the Triple Helix proposed by Etzkowitz and Leydesdorff (2002), is based on a triad that considers the connection as an evolutionary result of the process of Innovation, which is built between tensions-balances, agreements-disagreements that build a correlation between the university and the company with the participation of government.

Within this framework, in order to form a university-business-government connection network, there must first be demand for knowledge from universities, secondly, for these links to be maintained, there must be active participation of the government, prior knowledge of the companies and the transfer or flow of this knowledge within the network that has been formed between these agents.

The connection model considers that when establishing relations between university-company must be taken into account:

a. Institutional actors (university-business).

b. The connection system you set in them.

c. The role each actor will play through the influence of each of the components that make up the network.

d. The type of connection to establish the link.

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e. The effect of exchanges between networks.

Connection model is proposed from a perspective on the needs of cooperation, with the aim of broadening the tactics that help to strengthen and generate the diversification of new knowledge, through the transfer of knowledge by the actors involved in the network. Interconnection relations between them must be balanced and homogeneous, expressing the complementarity required to respond adequately to the demands of the environment.

In this sense, the university must test the specialized knowledge on the basis of the current needs of the industry and provide a highly suitable, qualified, prepared and skilled human capital supply; Companies must offer the capacity to conceive environments for continuous improvement and economic growth in society, thereby raising the country's competitiveness. It is important to mention that each of the members of the connection network must assume a role for the other party, this means that the connection network must plan equivalent forms of action.

Connection forms between university and company

The connection between university and business can be diverse and changing; this will depend largely on the institutional framework. The inertia of the different connection loops for the transfer of know-how presents different peculiarities that depend on composite factors, among which stand out: the specificity of each productive sector, the localization zones, the disciplines involved, the stability of the Contracts and organizational flexibility.

Some links between university and business that could be used are: first level (basic) link, second level (middle) link and third level (advanced) link, each taking into account the alignment of the correlation, the Formality, space-time, the type of knowledge transferred (know-how), the number of actors involved and the institutionality.

2.3 Design and technical structure in the bonding process.

To achieve a favorable outcome in the linking process, the actors involved in the network must consider the key components for the link between them.

- Clarity of Objectives.
- Determine skills and competencies required.
- Realistic Perspectives.
- Realignment of the university assignment.
- Commitment and Responsibility among network actors.
- Establishment of activities to be carried out.
- Clarification of resources and services offered.

Methodological tool

Delimitation of the unit of analysis and design of the sample

Population under study. To determine and to know the correlation that exists between universities and companies.

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The study population is taken to the university campus of the Valley of Toluca, State of Mexico, as well as companies of the private sector also located in the Valley of Toluca, State of Mexico.

Determination of the sample. An intentional non-probabilistic sample was taken; this type of sampling is characterized by a deliberate effort to obtain representative samples in which the researcher selects directly and intentionally the individuals that are easily accessible. The representative sample of the studied population of the university field of the Valley of Toluca, State of Mexico was the Faculty of Accounting and Administration of the Autonomous University of the State of Mexico. On the other hand, the representative sample of the study population of companies from the private sector of the Valley of Toluca, State of Mexico were Pepsico, Comerdis, Kener and RCI.

Validation and Application of instruments

Due to the specific needs of the object of study and according to the objectives of the research, two indispensable tools were designed for the collection of the information of the object studied: the questionnaire and the interview that operate through the formulation of questions by the researcher and the issuance of responses by the people participating in this research. With the intention of obtaining relevant information about the origin and development of our research object, a questionnaire was applied to 51 students elaborated under the modality of open questions that study the last semester of its degree, which was considered enough to appreciate how They perceived the university-enterprise correlation as a strategy for the incorporation of the graduates into the labor field and thus obtain significant data for the research work.

In correlation with the interviews, these were applied to four executives from public and private higher education institutions and to four private sector companies, whose purpose was to investigate the opinion and feelings of each of them in the way they perceived the Correlation between company and university for the incorporation of the graduates to the labor field, as well as to analyze their perspective on the educational model and the development of labor competences of its graduates for the incorporation to the labor field.

It is possible to mention that in action research the instruments are not validated by a statistical program, but it is sought to rescue the pertinent information to be able to have elements to transform the problematic lived in the schools interpreting the data according to the opinions of the experts or respondents.

Results of the linking program

The program proposed in the research was applied as pilot in a private university located in the State of Mexico, as well as of a company located also in this zone; by reliability policies the names of the participants are not provided. It is worth mentioning the lack of availability to make the connection between university and business, due largely to fear, uncertainty, rejection, among other factors, a situation that makes evident the need to strengthen the task of fostering relationships between university-business and The benefits this generates together.

It was accepted to carry out the pilot test of the connection model through a basic connection; That is, through the flow of human resources by the university to the company, the transfer of personnel was established in correlation to vacancies in the company, to cover them.

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The connection correlation would be initially established informally, that is to say without signing a binding agreement, with the purpose of evaluating and knowing the behavior of the linking model, in order to give way to a series of pertinent modifications between both actors and establish Later on, a formal link (through signing of agreements and contracts by the authorities of both parties: university and company). The recruitment of students was done in a formal and fixed time, covered by a monthly salary stipulated among network actors to not affect the work situation of students. The system connection was unidirectional.

This first basic connection approach is considered as a central nucleus of bilateral relations between actors, which must be configured as one of the basic pillars for the transfer of know-how. It is therefore of the utmost importance to know the perspective of the students in the labor field because the school is the place where the different educational programs or projects are implemented, it must also be the ideal space to build competencies, skills and areas of knowledge Indispensable for the private sector; Because to the extent that their needs are met, other stronger links can be established in the relations between the actors.

It is clear, then, that from a university approach it is recognized that the primary objective of the connection is to move towards the improvement of educational programs and to think of it as an agent through which it is possible to make changes aimed at contributing to The demands of the labor sector, to foster the development of relevant, meaningful, useful learning related to the current and future life of the students, achieving greater coverage, permanence, promotion and real learning.

The opinions expressed by students and the person responsible for human resources of the company serve to evaluate the functions and purpose of the model, to be applied in different areas and to use a certain type of tools that correspond to its purposes or intentionalities and serve as reference framework, Which will allow it to assess whether it is acting with relevance, efficiency and effectiveness in the management of the model.

With the above, the objective is to promote the exchange of experiences and activities among the participating members of universities and companies in order to promote the transfer of research results, as well as to promote and foster relations between the members of the Network for the exchange of knowledge and its application to innovation processes.

Conclusions

Universities undoubtedly play a fundamental role in the creation of knowledge and in the development of the country. However, the role of the university has been changing significantly, acquiring new functions in coherence with the changes that have occurred in the economic structure and in the modern society, which has made it one of the main agents of the processes of change, both social and economic.

Challenges associated with the new productive models that are articulated around knowledge, technology and innovation put the university before the challenge of rethinking and remodeling its characteristics to remain a fundamental pillar of economic development in the country. University is called to collaborate proactively with the productive sector and respond to certain demands of the sector in this matter, in exchange for financial resources or the stay of qualified human resources in companies.

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Therefore, the connection with this sector in activities related to the transfer of technology and knowledge must be considered as its new mission.

In this context, consolidating innovation systems and achieving greater synergy between the agents involved becomes a subject of renewed attention, which is reflected in recent educational plans. From a systemic perspective of innovation, it is recognized that the university sector is not alone responsible for establishing the channels that will bring the knowledge to the companies, but also they play a fundamental role in defining their scientific and technological needs together with Universities, by specifying their requirements and developing the internal capacity required to absorb knowledge.

Thus, the research approach used "Research-Action" allowed to link the study of the problems faced by universities and companies in a given context with social actions, so as to simultaneously achieve knowledge and social changes. It is for this reason that establishing a connection between university-business becomes an essential process of being promoted by virtue of participating directly in an industry, improving educational plans and programs according to the demand for work, helping in the solution of academic problems for the productive sector, human resources trained and respond to the environment to contribute to the development of society.

It is considered as a possibility of improvement to suggest that companies can grant 50% of the total grade at the end of each semester to students who practice their professional practice and the other 50% is assigned by teachers so that each semester students can rotate in the different departments of the company.

Additionally, teachers can carry out a research project in the company where the students can put their knowledge and the experience of the teachers into practice.

References

ALI, A., (1994). Pioneering versus Incremental Competition: Review and Research Propositions. Journal of Product Innovation.

CARR, W. Y KEMMIS, S., (1988). Teoría crítica de la enseñanza. Barcelona: Martínez Roca.

CAZADO, J.L., (2000). Relaciones Universidad y Empresa. Investigación y Marketing.

DRUCKER, P., (1999). Los desafíos de la gerencia para el siglo XXI. Editorial Norma, Bogotá.

ESPINOZA, R., (1999). Naturaleza y alcance de la Correlación Universidad Sector Productivo. Maracaibo. Venezuela: Editorial de la Universidad de Zulia.

ETZKOWITZ, H., y LEYDESDORFF L., (2002). The triple Helix of University-Industry-Government, Implications for Policy an Evaluation. Workingpaper. ISSN 1650-382. 2

FERNÁNDEZ DE LUCIO L., CASTRO, E., CONESA, F. y GUTIÉRREZ, A., (2000). Una visión crítica de las relaciones universidad-empresa: el papel de las estructuras de intercorrelación. Instituto de Gestión de la innovación y del Conocimiento. INGENIO.CSIC.

GALEANO, M., (2004). Diseño de Proyectos en la investigación cualitativa. Fondo Medellín, Colombia. Editorial Universidad EAFIT.

ISSN-On line: 2414-4959

GARCÍA, R., FERNÁNDEZ, J.C., (2000). La orientación de las universidades hacia la empresa y la sociedad: evaluación de la calidad universitaria. EsicMarket,

GRÖNROOS, C., (1996). Relationship Marketing: Strategic and Tactical Implications. Management Decision.

GUMMESSON, E., (1994). Marketing-orientation Revisited: The Crucial Role of the Parttime Marketer. European Journal of Marketing.

HALSEY, A.H., (1972). Research Methods in Education, Routledge, London.

HAKER, M.J., (1999). Relationship Marketing Defined? An Examination of Curet Relationship Marketing Definitions. Marketing Intelligence&Planning.

HERNÁNDEZ, R., Fernández C. Baptista L. P. (2010). Metodología de la Investigación. Ed. Mc Graw Hill. Chile.

LATORRE, A., (2003). La investigación–acción. Conocer y cambiar la práctica educativa. Barcelona: GRAO

MARTÍNEZ, M., (2000). La investigación-acción en el aula. Universidad Simón Bolivar. Agenda Académica Volumen 7, Nº 1, Año 2000.

PALMER, A., (2002). The Evolution of an Idea: An Environmental Explanation of Relationship Marketing. Journal of Relationship Marketing.

PÉREZ G., (2008). Investigación cualitativa. Retos e interrogantes. Tomo I-II. Métodos. 5ta. edición, Madrid: Editorial La Muralla.

ROSALES, E. Y GÓMEZ, R., (2010). La conexión una estrategia de colaboración académica sector productivo. Caso de Éxito. México SINNCO

SÁNCHEZ, M., CLAFFEY, J. Y CASTAÑEDA M., (1996). Conexión ente los sectores académico y productivo en México y Estados Unidos. México: ANUIES.

REVISTAS CONSULTADAS

COLMENAREZ, L., (2004). Construcción teórica de la conexión universidad sector productivo Revista Compendium, Diciembre, vol.7, número 013 Universidad Centro – Occidental Lisandro Alvarado. Barquisimeto, Venezuela pp. 5-24.

MARTÍNEZ, F., (1998). Vinculación: Nuevo nombre de un viejo reto. En Revista de educación superior núm. 108. Artículo 5. México: ANUIES.

MUIÑO, J., (1996). La Transferencia de Tecnología en la Pequeña y mediana Empresa en Alemania. Revista Educación Superior. No 99, México, ANUIES, Julio septiembre.

SOTO R., CASTAÑOS H., GARCÍA 0., PARRA P., ESPINOSA J y VÁSQUEZ, J.L., (2007). Conexión Universidad – Empresa – estado en la realidad actual de la industria farmacéutica mexicana. Edusfarm, revista de educación superior en Farmacia. No.2.

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Systems Reengineering using the Cyclic model. Practical Case: The Financial University System (SUF) of the Universidad Autónoma del Carmen

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Abstract

The Universidad Autónoma del Carmen has an application called the Financial University System (SUF), which administers budgetary control in the institution, being a fundamental part of the daily activities. Due to the urgent needs to have this program, in its beginnings skipped several phases of development. This system was growing, so it was a priority to complete the parts of it. For this, an analysis was made of the main models of reengineering that exist, which identified the Cyclic Model as the one most suited to the SUF. In this way, the work of identifying, documenting and modeling the phases that marked this tool was carried out, which is presented in this article, resulting in the documentation of the analysis, the system model and the implementation of two new modules that are currently Functional, allowing an improvement in the administration of the current components and in the growth of the system without complex structural problems.

Cyclic model, Reengineering systems, analysis and design, Financial University Systems

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Introduction

The Autonomous University of Carmen (UNACAR) has implemented a software called Financial University System (SUF), this program began in the Department of Computer Systems Development Administrative Coordination in the institution. It was designed to meet the administrative and financial needs of the different departments that make up these areas. This system allows the budgetary allocation of the University based on four catalogs that make the accounting by funds, these are the following:

1. Catalog of responsible units.

2. Catalog of programs.

3. Subfund catalog.

4. Account catalog.

These catalogs are the basis of the system, which allow to feed it from the different departments of the University as can be seen in figure 1.[Ake,2015]

Figure 1 Catalogs and activities of the Financial University System

Several factors have led to the lack of documentation of analysis and design, based on the need for a functional system, which has been supported by the experience of the initial programmers of the system to support the growth it has had in this years. Due to this, work began on the revision of the main models of Reengineering Systems that exist for which the following points were defined, which allowed to find the model of Reengineering that more adapted to the type of system that has:

1. Extraction of the requirements of the system based on the modules of the same.

2. Extraction of the requirements based on the interviews with the final user.

3. A stage of documentation or re-documentation of the legacy system, making a modeling of the requirements.

4. A stage for the migration and restructuring of system data.

5. Contemplate the redesign of the architecture on which the application will be developed.

6. Consider a testing stage.

Taking into account the above, Table 1 was elaborated, which allows identifying the Cyclical Model as the one that meets the needs to develop the analysis and design of the Financial University System [Pérez, 2015].

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Etapas que debe tener el modelo	OAR	Herradura	Cíclico	Sommerville
Extracción de los requerimientos del sistema con base a los módulos del mismo.			X	X
Extracción de los requerimientos con base a las entrevistas con el usuario.	X	X	X	
Una etapa de documentación o re documentación del sistema legado, realizando un modelado de los requerimientos.			X	X
Una etapa para la migración y reestructuración de los datos del sistema.		X	X	X
Contemplar el rediseño de la arquitectura sobre el cual se desarrollara la aplicación.		X	X	X
Considerar una etapa de pruebas.			X	
Porcentaje de Compatibilidad para el SUF.	16.66%	50.00%	100%	66.66%

Table 1 Evaluation of Systems Reengineering Models

In this way, once the Reengineering Model was identified, the development work was started, which allowed us to obtain the analysis and design of the SUF, as well as the implementation of two new modules in the system.

Problem Statement

UNACAR receives each year a significant amount of economic resources from both the State Government and the Federal Government, which is known as state subsidy and federal subsidy respectively. To these 2 amounts is added a third one that is obtained by the own UNACAR, known as Own Income which is obtained by collecting tuition to the students of the various levels to each educational programs, as well as audiovisual room rent, among other activities.

The sum of these three concepts integrates the University Budget. Within the Finance Department specifically the Budget Department, is in charge of carrying out the control between all the responsible units that make up the Universidad Autónoma del Carmen.

The distribution of this resource is done by capturing activities that are scheduled to be carried out next year. Each of them is allowed a certain amount of money. The authorization is made in consensus by the H. University Council, later approved and allocated the budget that each area or department will exercise next year. Thisisshown in Figure 2.

Figure 2 Creation, approval and allocation of the university budget

Currently this department is made up of two people: the person in charge of the department and an assistant. On the basis of the little staff that counts there are occasions that only have time to focus on the attention of assignment requests, advances and extensions of budget, as these arrive in large quantities daily.

To carry out these tasks mentioned above there is a program called Financial University System, known in UNACAR by its initials as SUF.

This system arose because of the need of UNACAR to meet the requirements requested by the National Association of Universities and Higher Education Institutions (ANUIES), which requested all universities to work with accounting by funds or matrix, as well as the unification of The three most important areas, the Institutions, based on:

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1. FinancialArea.

2. SchoolArea.

3. Area of Human Resource.

The University Financial System has its origins in the SAIES software that emerged in the 90's as a solution to the requirements of ANUIES. The Universidad Autónoma del Carmen acquired this software and tried to adapt it to its processes. Subsequently and due to the number of delays and problems to customize the system, the development of the Financial University System (SUF) was started and in this way, a system fully adapted to the needs of the Institution was created.

Due to the urgency of UNACAR to start the operations registry under the new requirements established and the limited staff of the Department of System Development, the SUF program, which allows controlling the purchasing operations of all the departments of The Autonomous University of Carmen began to develop without being able to carry out an analysis of the needs of the departments involved in this project. Nor was it possible to count on the necessary processes and the support of the people responsible for each one of the great processes that would be covered in this system, since they could not suspend the activities in order to be able to attend to the developers of the system.

Based on the above, the system does not have the necessary analysis and model that is indispensable in the development of any system. This causes the presence of the person in charge (programmer) of the system to be indispensable when any situation and / or doubt on the part of the users is presented since no one knows the background of the same.

This also causes delays in the development of the new implementations to the system since not having a model of the system at hand can not make decisions at the moment in which a user requests a new report or development since it has to be consulted first As the information stored in the database is stored in order to know if it is necessary to introduce new tables or if it is enough with those that are found.

With the new requirements that must be applied in the system due to the obligation to apply the criteria established in the General Law of Government Accounting (LGCG) is that the decision is made to carry out a reengineering with the purpose of complying quickly, Efficient and transparent changes that are requested.

Methodology. The Cyclic Model

The Ciclíco Model consists of 6 activities which are carried out in a sequential and linear manner, having the characteristic that in some occasions these can be modified, starting at any of its parts or repeating any of them as often as needed. In Figure 3 you can see the components of the model, having as a classic start the inventory analysis.

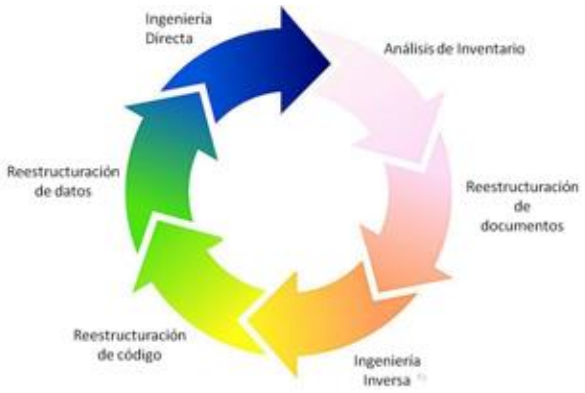

Figure 3 The Cyclic model and its main components

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Based on the parts indicated in the model, activities began to be developed taking into account the six components that were mentioned at the beginning and that complement the work of the cyclic Renigeneria.

In the inventory analysis two tasks of the six considered initially were carried out:

- Extraction of system requirements based on existing modules.
- Extraction of system requirements based on interviews with users.

A considerable advantage is that currently one of the developers of the start of the SUF is working, which is in charge of programming and adaptations.

In order to collect the information and obtain the current inventory that the Financial University System has, a file search was carried out.

This was done on the computer of the system developer, which provided us with a user manual, some minutes of agreements for changes and new implementations that have been made. It is worth mentioning that the provided user manual is obsolete and several adaptations have been made that are not embodied in it.

Interviews were also conducted with the developer through which the following information could be obtained.

The Financial University System meets the software development environment Delphi using as ORACLE database manager, which is used by most if not all departments that make up the Universidad Autónoma del Carmen.

- Process administrators.
- Departmental or final users.

These users are identifiable through the rights and / or actions they perform within the system. The system has 4 large modules, which have been identified according to the department that owns the processes. These are:

Figure 4 SUF modules

These modules are subdivided into submodules in the following way:

1. Budget
   - Budget Allocation
   - Budget Control
2. Material resources
   - SupplierCatalog
   - MaterialsCatalog
   - PurchaseQuoteRequest
   - Purchaserequisition
   - PurchaseOrders
   - Reception of Materials

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3. Expenses

- Per Diem
- Invoice
- Otherpayments
- Payments

4. Accounting

- Accountingpolicies
- Checking
- Financialstatements

With this information, the second phase of the Cyclical Model, Document Restructuring, was started: where the existing documentation described above was revised and based on the reengineering of systems, the information for the construction of the Technical Manual of the system is available, an important part that will allow The necessary components to be able to search for errors, make improvements or insert new modules, as well as update the user manual.

The Reverse Engineering stage allows us to work on an important part of what is needed. The documentation or re-documentation of the legacy system, making a modeling of the requirements.

This point consists in obtaining the greatest amount of information through a finalized system, in order to know its operation and how it was done.

So in this section will concentrate the documentation obtained from the Financial University System. Having as a resultthefollowingelements:

- SystemAnalysis
- Systemarchitecture
- User manual

Phase four Code Restructuring and five Data Restructuring of the Cyclic Model allowed to carry out the migration and restructuring of the data of the sistema.Ten as a result identify the modules that would be able to implement the requirements of new modules in order to have in The SUF government accounting. The following are the names of the components that already existed in the system and were used for this development:

The SUF had:

- Requestforquotation.
- Requisition of purchases.
- PurchaseOrders.
- Bills.
- Per Diem.
- Checking.
- Otherpayments.
- Pendingpayments.
- Payments.
- Accountingpolicies.
- Financialstatements.

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Taking as references this restructuring and having correctly identified the processes that are affected with the documentation that has of the system at that time two new components were developed:

- Budget policies
- Budget statements

Figure 5 shows the relationship diagram that was designed for the budget policy module. By having the programming of the components mentioned above, and the missing documentation of the SUF, a safe, simple and uncomplicated implementation was developed.

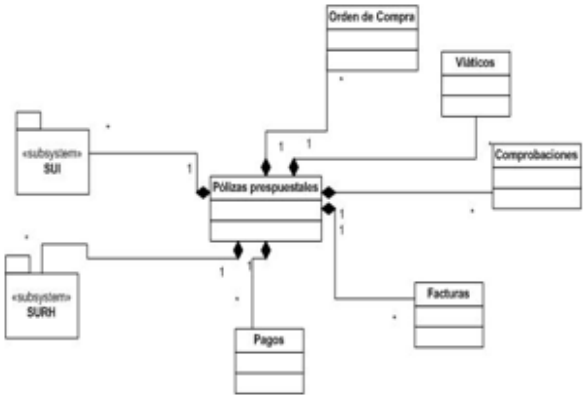

Figure 5 Relationship diagram of budget policies

Once you have the SUF model you can implement new functionalities in this way the task of Contemplating the redesign of the architecture on which the application will be developed is fulfilled. Based on the last component of the Cyclic Model. Direct Engineering.

At the moment the two new modules developed of the architecture have been implemented being of the following form:

Budget policies: this is one of the new modules, which will allow you to visualize each of the budget policies that are created according to the accounting moments that are generated in the transactions of the institution's daily activities (purchases, per diems, etc.).

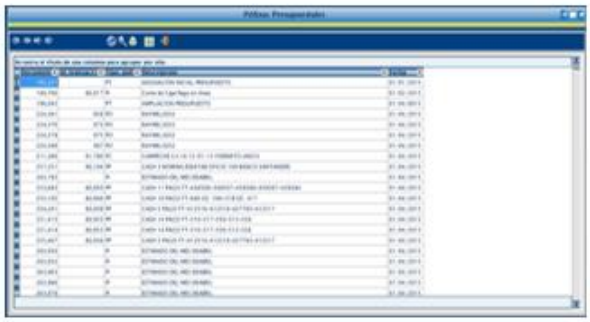

Figure 6 Budget Policies Module

Budget statements: new module in which the impressions and / or exports of the budget reports that are delivered to the public account will be made, as well as the reports that allow the supervision of the allocated, spent and available amounts of the responsible units.

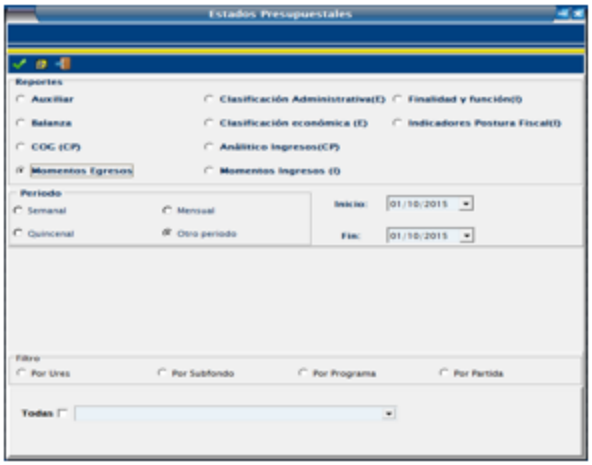

Figure 7 Budget Statements Module

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The generation of the reports for the public account that is obtained from the diagram in figure 5 and is implemented in the form of budget statements presented in figure 6 will generate as a complement the issuance of seven reports, which are:

- Budget assistant
- Balance
- Classification by Object of Expenditure (COG)
- Checkout
- AdministrativeClassification
- EconomicClassification
- AnalyticalIncome

To conclude this stage tests were generated for the new modules, in order to identify errors in some of the phases when implementing these new tasks of the SUF due to the importance of them.

For the budget policy module, direct tests were carried out called black box, which is based on the generation of a set of cases to verify if the result is the expected one.

- Capture of invalid transactions by the user to achieve the generation of a budget policy.
- Printing of the budgeted budget generated to verify if the correct movements were affected.

For the generation of the budget statements, direct tests were also carried out, as well as modular tests to corroborate the correct visualization of the formats and the information reflected in reports.

- Verification of the correct generation of budget policies, which is where the information will be obtained.
- Comparison of displayed formats with those provided by the process administrator.
- Comparison of total amounts between reports to corroborate that the information in them is correct.

Results

At the beginning of this work, we intend to develop the analysis and design of the Financial University System taking 6 components defined based on the needs of the current application. In order to do this, we had done the work of analyzing the most important models of Reengineering that exist having as a result the Ciclico system being the most compatible to achieve this task.

Once you understand the limitations of and the need to have documentation, the re-engineering of the SUF is started, based on gathering the necessary information, developing the analysis of the system, the architecture and the user manual with the updates that have been made Made to the application during these years. In order to develop these tasks the cyclic model is used, allowing to relate the 6 needs of the system with which they were identified with the phases of the reengineering model selected.
Given the need to implement the General Law on Government Accounting (LGCG) as a new functionality to the application, two new modules were developed:

- Budget Policies
- Budget Statements

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It generated 7 reports for the same that were measured as well as a battery of tests to complete this activity which allowed to solve this important need and to use for the first time the new model that was finished to design and document.

Conclusions

Having the experience of one of the initial programmers of the SUF is an important part of this implementation in the same way the ability of the system development team to understand the need to complete the documentation phases and the system model, Improving the SUF and allowing the basis for a migration to a new programming platform, having resolved with this activity to have the necessary documentation for it. Finally, mention the task of selecting the reengineering model, having in the Cyclic Model the tool to carry out the necessary activities to complete the Financial University System of the Universidad Autónoma del Carmen.

References

Ake, M. (2015). Modelo de Reingeniería del Sistema Universitario Financiero de la Universidad Autonóma del Carmen (Tesis maestria). Universidad Autonóma del Carmen,Ciudad del Carmen, Campeche, México.

Pérez, J., Reding, J., Tass, B. & Ake, M. (2015). Modelo para la Reingeniería del Sistema Universitario financiero. En Compendio Investigativo de Academia Journals Celaya 2015(3322). Celaya, Guanajuato México: Academia Journals.

Ley General de Contabilidad Gubernamental, Normatividad vigente. Recuperado 05, 2015, http://www.conac.gob.mx/es/CONAC/Normatividad_Vigente

Contabilidad Por Fondo.

BuenasTareas.com. Recuperado 09, 2014, de http://www.buenastareas.com/ensayos/Contabilidad-Por-Fondo/2907588.html

La contabilidad de fondos. Recuperado 09, 2014, de http://ciberconta.unizar.es/leccion/contpub002/300.HTM

Rodriguez, José. (2009). Modelo de Reingeniería de Sistemas de Información Heredados (Tesis maestria).Universidad Autonóma del Carmen,Ciudad del Carmen, Campeche, México.

Sommerville I. (2005), Ingeniería del Software, Madrid, España: Pearson Addison Wesley. 9a. Edición.

Kendall & Kendall., (2011), Análisis y Diseño de Sistemas. México: Prentice Hall. 8va Edición.

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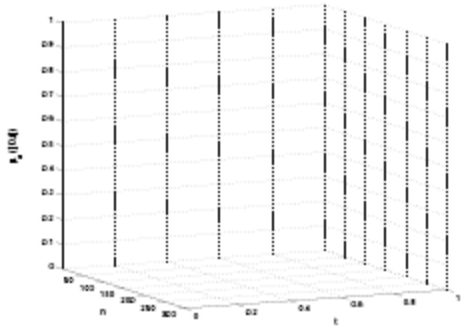

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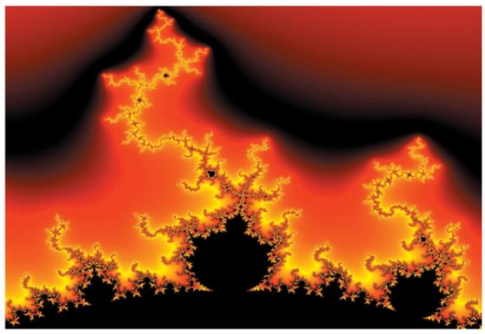

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