Article
ECORFAN Journal
December 2016 Vol.2 No.3 7-24

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

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Received January 7, 2016; Accepted June 15, 2016

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

Citation: OLVERA, Edgar, MUCIÑO, Eduardo and LÓPEZ, Roger. Competitiveness of micro and small enterprises in the municipality of Lerma and their impact on local development. ECORFAN Journal-Republic of Cameroon 2016, 2-3: 7-24

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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:

$$r_{xy} = \frac{s_{xy}}{s_x s_y} \tag{1}$$

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:

December 2016 Vol.2 No.3 7-24

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

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).

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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.

ISSN-On line: 2414-4959

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).

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

December 2016 Vol.2 No.3 7-24

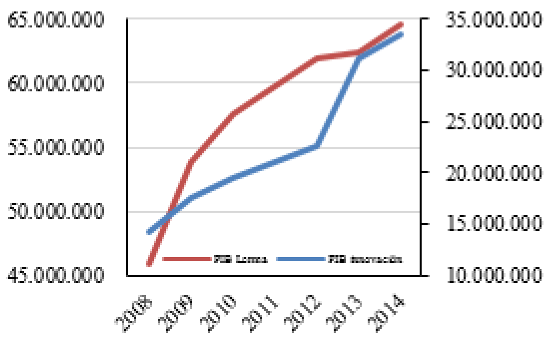

Figure 1 GDP of the municipality of Lerma, thousands of pesos of GDP in 2014 and innovation sectors (right) Source: Prepared based on information from "Urban Competitiveness Index 2016" IMCO

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.

ISSN-On line: 2414-4959

December 2016 Vol.2 No.3 7-24

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	10.094402*	0.027709**	0.207624*	0.415661*	-0.051815*	-0.003625*
	(0.441585)	(0.013902)	(0.013597)	(0.03033)	(0.017252)	(-0.000176)

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

ISSN-On line: 2414-4959

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.

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