Puebla Automotive Cluster

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Executive Summary

Internationally, since the seventies the industrial sector in general and in particular the automotive and auto parts sector have experienced evolving deep and rapid growth, which has impacted in the global economy, especially in development countries. The main features observed worldwide highlights the increased globalization of economic activities on the expansion flow of international trade, the opening of financial markets and increased technology transfer.

Major assembly companies such as Daimler Chrysler, Ford, General Motors, Volkswagen and others have raised their supply strategies to the lowest cost of production globally. From a global production the perspective, this group of companies has brought new models of joint production logistics, which make possible to control the degree of dependence and independence in a context of horizontal integration with each member of the production system highly fragmented.

In the automotive sector in particular, the new schemes of joint logistics require that all chain links operate on the basis of an homogeneous production system, subject to uniform specifications and using parts, components and intermediate inputs purchased anywhere in the world. In this regard, the availability of automotive components in the assembly site, supply management and inventory control becomes of paramount importance.

Unfortunately, there are several companies identified in the outdated approach of value creation, seeking to optimize short-term financial performance, leaving to assume the existence of social and environmental problems that exist in the society, besides the ones they generate. In recent years, companies have created successful developments accompanied by significant social impacts. Enterprises have increased the economic value and have been able to increase the social economic value. The main objective is to present the current situation of the automotive cluster in Puebla México within the global trends of the automotive sector.

There are several specific purposes that justify the work. First, to present an excerpt of the most relevant aspects of the global automotive industry at a national and state level; Secondly, to identify and analyze the comparative position of México and Puebla in the overall competition, apart from analyzing the sources of competitive advantage, those are derived from the location of firms, sectors and their interrelationships. Finally, to present trigger project proposals for the automotive cluster in Puebla, together with the generation of shared value projects for this cluster.

1. Introduction

1.1. The Automotive Industry in México

For decades, México has remained as one of the most attractive countries for investment in the automotive sector, particularly for companies seeking to enter new markets and strengthen their presence in America. Today, our country is a destination for the Chinese industry and a key element in the internationalization strategy for companies looking to break into the “big leagues” of the global automotive market.

The automotive industry is one of the largest in the country. Unlike other sectors, the automobile has been a clear winner of the entry of México to the Free Trade Agreement (NAFTA). This can be seen in the positive development since 1994 for it has had such diverse indicators as total output, gross value added, share of GDP, trade balance, foreign direct investment and materialized employment.

In the last decade, México has emerged as one of the world's most competitive places for growth in terms of production capacity of the automotive and auto parts industries. Companies such as General Motors, Ford and Chrysler-Fiat have taken advantage of the benefits offered by the country to increase their productivity and tackle the challenges facing the sector worldwide.

Actually México is among the top ten producers of cars, trucks, parts and components worldwide. Our country has a mature and dynamic industry that continues to growth. In 2008, domestic production exceeded 2 million units, an increase of 4 percent over 2007. In the past five years, automotive leading companies in México have devoted their expansion strategies within the country. Firms like Nissan and Volkswagen have expanded their operations and product lines to maintain their leadership not only in the local market but also in markets across Europe and Asia, while Japan's Mazda is to install a new plant that will bolster the competitive position of México in the global automotive industry.

The fact is that México has earned the trust of major multinational companies, whose brands support the promotion plans and actions that have been implemented within the country to foster the sector's development. Currently, an opportunity to consolidate México as a strategic partner for the development of the industry is being explored with China. During the last five years, the Asian country has drawn up an aggressive plan to internationalize its automotive industry, which includes actions such as acquiring global brands and investing in production facilities in other countries.

México’s products have positioned the country as a platform for the development and manufacture of vehicles, parts and components with more global growth and strict international quality standards. There's a whole domestic and foreign business network in the Mexican automotive industry that affords new investors understanding of how to operate, market and distribute units within the local market and abroad. It's no coincidence that has been a magnet for new investments in the sector, exceeding 10 billion USD over the past five years.

The automotive industry consists of a terminal and auto parts industry. The terminal sector (OEMs) is a group of companies established in México that manufacture and/or assemble cars, trucks, tractors and integrated buses. The auto parts sector is a group of companies that produce parts and components for original equipment market and spares. Unlike the terminal area, in which all firms are from the foreign auto parts sector, we find a variety of types of companies in terms of capital origin (domestic, foreign, joint venture), size (large, medium, small) and market orientation (from local factories of parts to assembly plants).

The industry has generated a variety of forms of organization to respond to this complexity. It highlights three elements for structuring and simplifying the production chain:

- Grouping of components into systems. It is used to classify those components that perform the same function in the car.
- Production levels or "tiers". It organizes providers with a supply chain in a pyramid structure that is listed by levels according to its proximity to the terminal industry.
- Inventories just in time. It is a system which aim is to achieve a continuous flow of production process, integrating the businesses of all levels of the production chain, from easier raw materials to the sale of the vehicle.

Today, 42 makers have official representation in the country with nearly 400 different models, making México one of the most varied and fulfilled automotive markets in the world.

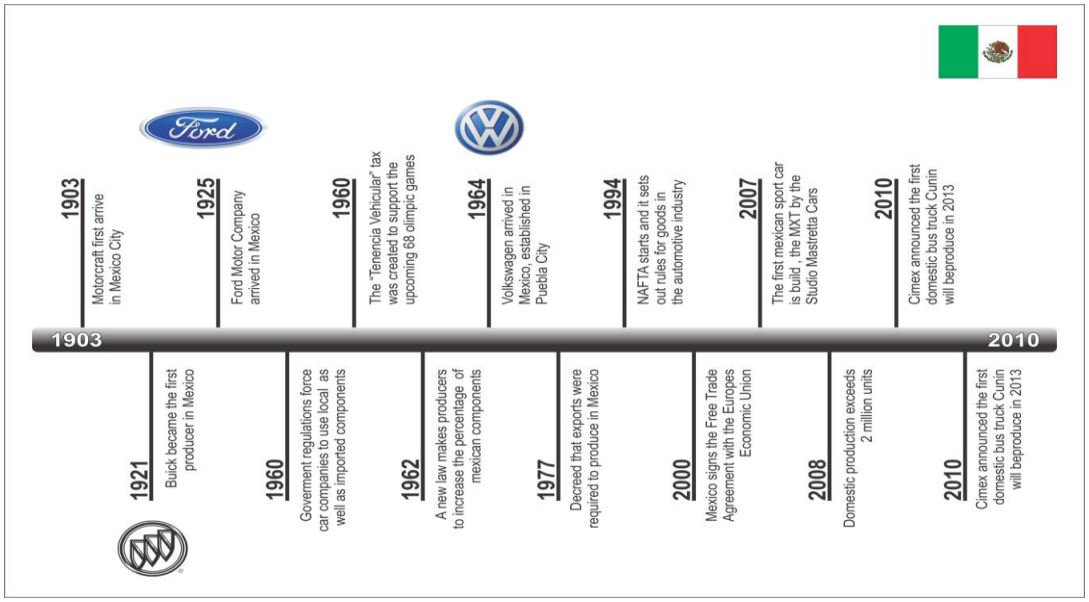


Figure 1. The Automotive Industry Timeline in México
Source: www.inegi.org, www.proMéxico.org

1.2. History and Evolution of the Automotive Cluster

The history of the Mexican automotive industry (Figure 1) dates back to when Ford established assembly lines in the country. Ten years later, in 1935, General Motors, the largest vehicle manufacturer the world at that time, arrived in the country. By 1938, the Automex company, which later became Chrysler, began its operations. During the 1950s and 1960s, companies around the world opted to open plants in México. Nissan opened its first manufacturing center in México in 1964, while Volkswagen, Ford and Chrysler also invested in production facilities in the country during the year.

From 1977 to 1989, México's auto industry began to favor trade competitiveness by promoting exports. Between 1990 and 1993, the country sought to modernize the sector based on deregulation policies and burgeoning acceleration of foreign investment. Today México is experiencing a new phase with the signing of international free agreements and the gradual liberalization of the industry. Figure 2 shows the market share by brand in México

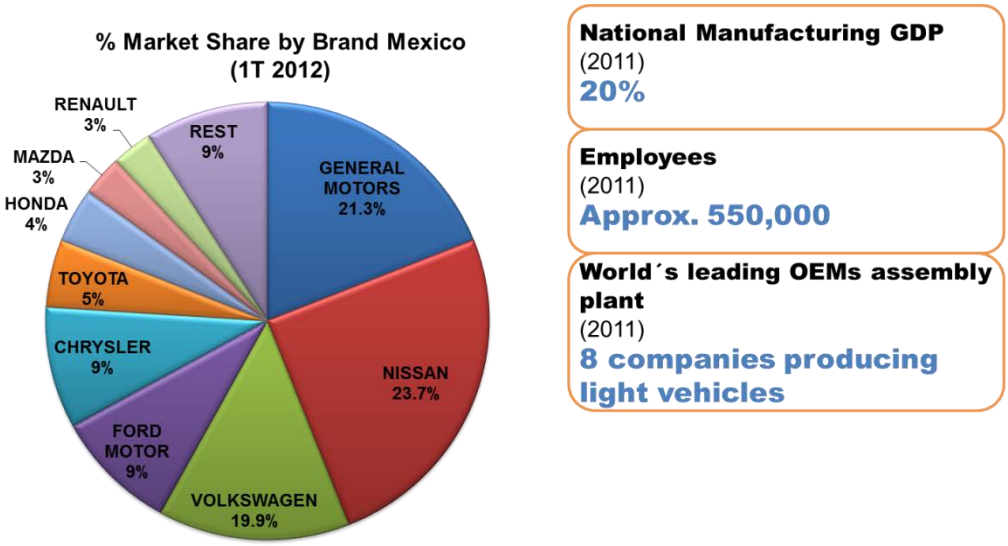


Figure 2. Market Share by Brand in México

Source: Based on data from OICA

http://www.grupored.com.mx/morelos/programaCompetitividad/MorelosCompetitivoCapitulo5.pdf

2. Global Automotive Market and Competition

2.1 Global Automotive Market

In recent years, the global automotive industry has undergone major changes. One is the growing trend for major car assemblers and major auto part producers to move part of their production to emerging economies. Analyses of the Compound Annual Growth Rate (CAGR) from 2006 to 2010 show that developed countries have reported negative growth within the sector, compared to the emerging economies which show positive and rising balances.

Between 1999 and 2011, vehicle production in México registered an increase of 65%, from 1.5 million units per year to more than 2.5 million. During that period, the country attracted significant investment. Between 2005 and 2011, cumulative foreign direct investment (FDI) in the sector was 10.3 billion USD and expectations for 2012-2015 are encouraging. In 2011, México grew 15 percent, while production rose more than 14 percentage points. Also, in 2011, 2.14 million 140 thousand vehicles were exported from México; out of two million 680 thousand exported vehicles, 903,000 were from the domestic market. Figure 3 presents the automotive world production.

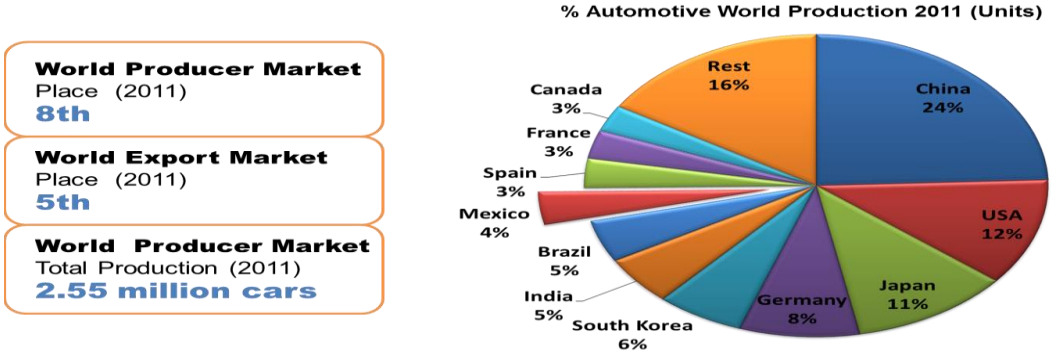


Figure 3. Automotive World Production

The automotive industry worldwide is one of the most dynamic and manufacturing sectors due to the economic spill-over, its integration with other industrial branches and high competitive levels. This industry has grown with an annual average rate of 2.7% between 2000 and 2011. In this period the light vehicle production went from 58,374 million of units to 75,508 million units (Figure 4).

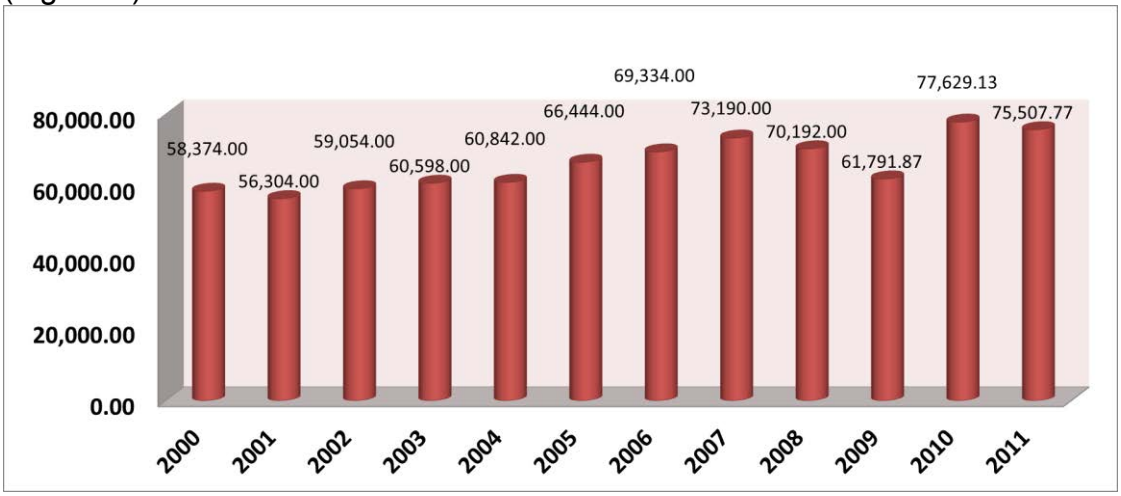


Figure 4. Annual Production of Vehicles in the World (million units)

Source: Based on data from OICA (2011)

3 The Competitiveness of México

3.1 México's Macroeconomic Environment

México has a free market economy in the trillion dollar class. It contains a mixture of modern and outmoded industry and agriculture, increasingly dominated by the private sector. Recent administrations have expanded competition in seaports, railroads, telecommunications, electricity generation, natural gas distribution, and airports.

Per capita income is roughly one-third that of the US; income distribution remains highly unequal. Since the implementation of the North American Free Trade Agreement (NAFTA) in 1994, México's share of US imports has increased from 7% to 12%, and its share of Canadian imports has doubled to 5%. The current administration continues to face many economic challenges, including improving the public education system, upgrading infrastructure, modernizing labor laws, and fostering private investment in the energy sector. President Calderon has stated that his top economic priorities remain reducing poverty and creating jobs.

3.2 México´s Competitiveness

The domestic auto industry is more productive than Brazil, and to produce a midsize car is more expensive in Brazil than in México, because the productivity of Brazilian workers is much lower than that of Mexican workers producing the same type of cars. While in México produces 10.6 cars per

worker employed in the factories of the segment in Brazil the equivalent number is 4.4 per year.

A comparison of auto production between México (Figure 5) and the US shows that production costs in México are 12% lower, a clear competitive advantage that is complemented by factors such as:

- Free trade agreements with over 44 countries that guarantee preferential access to markets on three continents.
- Geographical proximity to the US market and easy access to other key markets, thereby reducing transportation costs and delivery times.
- The country has assembly plants established by 19 of the major (automotive) companies in the global industry.
- The 300 major Tier 1 global suppliers have a presence in México, with a well-structured value chain organized in dynamic and competitive clusters.
- The domestic market is steadily growing and is based on a demographic structure that focuses on age groups with greater purchasing power.

Development of the Mexican automotive industry is the result of a series of events and transformations that include the alignment of the nation's industrial policy, coupled with the globalization needs. The automotive industry has always played a key role in the country's industrial development and since its inception has featured specific development programs.

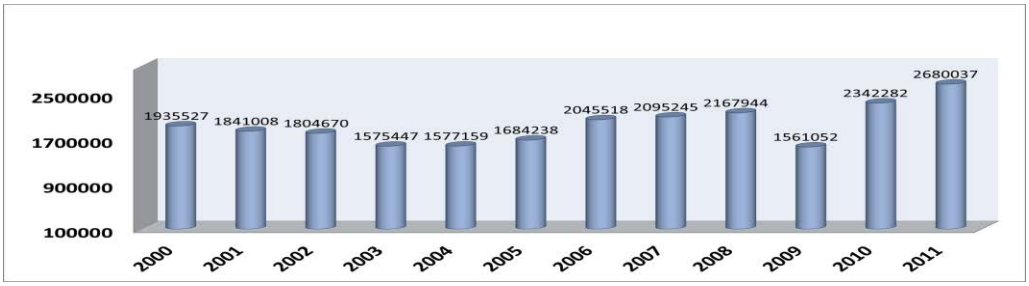


Figure 5. Annual Production of Vehicles in México (million units)

Source: Based on data from OICA (2011)

The low competitiveness of the Brazilian automotive industry to produce midsize cars (value between $25.000 and $35.000) was one factor that led Brazil to give a break to free trade relationship with México, and the cost of money (real) against the dollar, which is estimated at 1.6 reales per dollar.

According to a comparative study of IMCO of México with the BRICs, only China has a higher level of technology exports on Mexican exports, 32% versus 19%, while Brazil sells to the world 12% of products with high technology, followed by India 6% and 5% in Russia and South Africa. However, if México is compared against other nations (Figure 6 and 7), is behind: a Mexican produces annually about $ 20,000 of value added, while a Swiss, a Norwegian or a Dane generates an average of six times.

RANK	COUNTRY/ECONOMY	VALUE
1	United States	19.74
2	China	13.61
3	Japan	5.82
4	India	5.40
5	Germany	3.96
6	Russian Federation	3.00
7	Brazil	2.94
7	United Kingdom	2.94
9	France	2.90
10	Italy	2.39
11	Mexico	2.09
12	Korea, Rep.	1.97
13	Spain	1.84
14	Canada	1.80
15	Indonesia	1.39
16	Turkey	1.29
17	Australia	1.19
18	Iran, Islamic Rep.	1.12
19	Taiwan, China	1.09
20	Poland	0.97

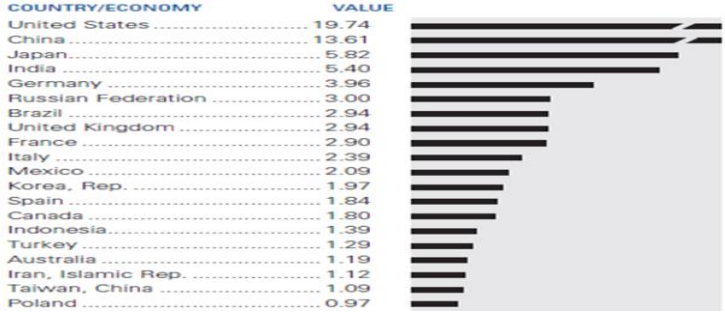
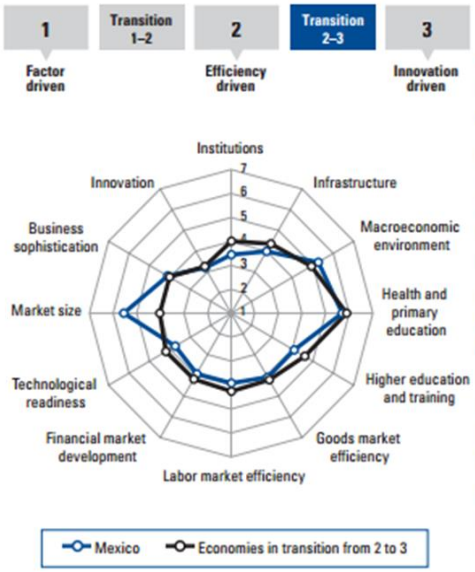


Figure 6. GDP as a share of world GDP

Source: Based on data from OICA (2011)



	Rank (out of 142)	Score (1–7)
GCI 2011–2012	**93**	**3.9**
GCI 2010–2011 (out of 139)	94	3.9
GCI 2009–2010 (out of 133)	n/a	n/a
Basic requirements (60.0%)	**102**	**4.1**
Institutions	106	3.4
Infrastructure	96	3.3
Macroeconomic environment	103	4.3
Health and primary education	86	5.5
Efficiency enhancers (35.0%)	**103**	**3.6**
Higher education and training	83	3.9
Goods market efficiency	98	3.9
Labor market efficiency	75	4.3
Financial market development	105	3.6
Technological readiness	78	3.5
Market size	122	2.4
Innovation and sophistication factors (5.0%)	**127**	**2.9**
Business sophistication	117	3.3
Innovation	128	2.4

Figure 7. Stage of development

Source: Based on data from The Global Competitiveness Report 2011-2012

For all these reasons, the world's major automakers are expanding or establishing operations in México. For example, Ford recently announced that it will invest 1.3 billion USD in Hermosillo, Sonora. Meanwhile, Nissan's investment in the country will be in the order of two billion USD. Likewise, Honda will allocate 800 million USD to México to open a new plant, while Mazda announced an investment of 500 million USD.

A story of singular importance is the announcement by Audi AG, a Volkswagen group company, that it will invest approximately two billion USD in its first SUV plant in Puebla, México as part of its strategy to compete against rivals BMW and Mercedes Benz. The expected arrival of Audi to Puebla, México will increase the competitiveness of the company and, to a large extent, bring it closer to its goal of selling two million cars by 2020.

These investments confirm the evolution and relevance of the Mexican automotive industry. Worldwide companies of the sector recognize that México offers excellent infrastructure, competitive costs, world-class manufacturing and a long tradition and experience within the sector.

Figures 8-11 show relevant traded cluster information developed jointly with the Institute for Strategy and Competitiveness at Harvard Business School

for the Sintonia Initiative mentioned in the preface, which support the importance of the automotive cluster in México.

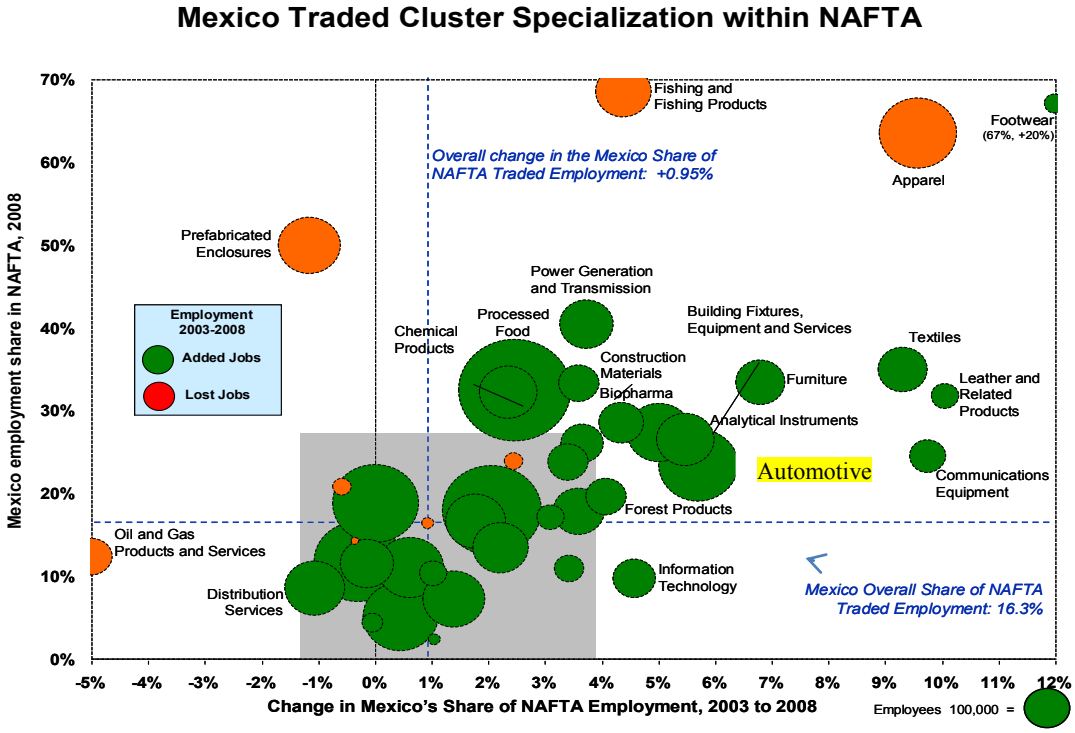
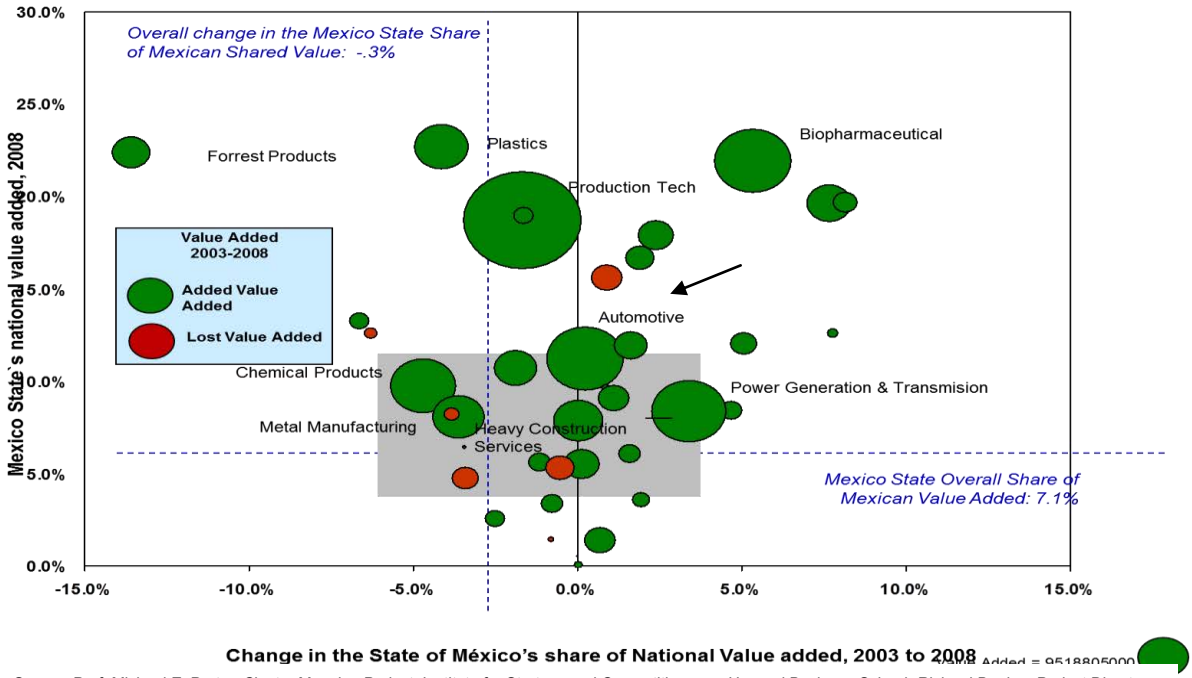


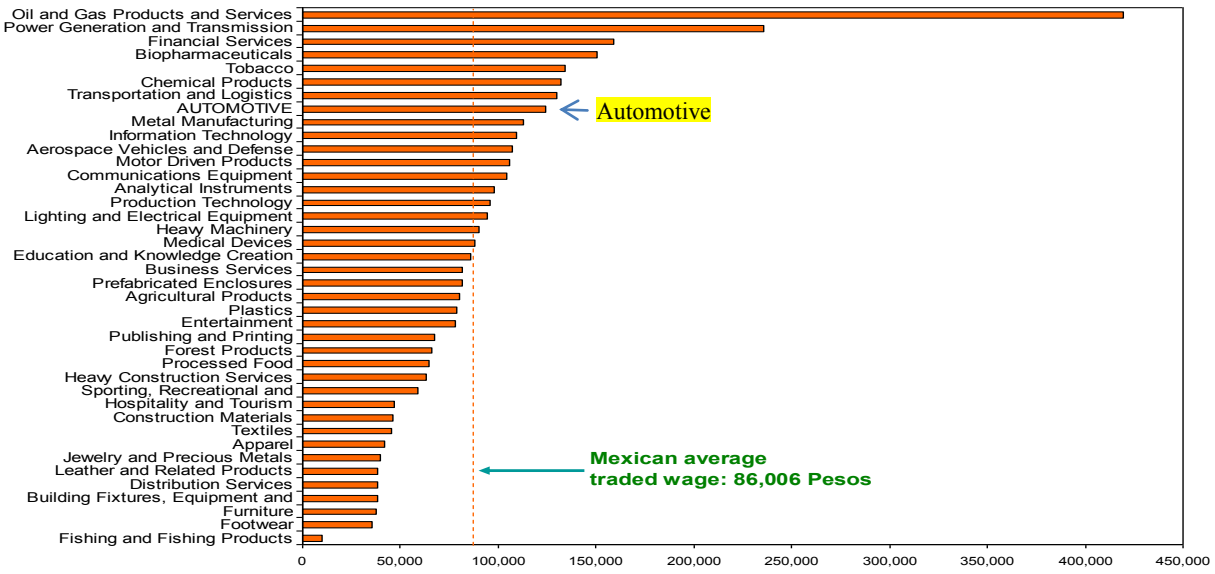
Figure 8. México Traded Cluster Specialization within NAFTA (North America Free Trade Agreement)

Figure 9. Traded Cluster Composition of the Mexico State Economy



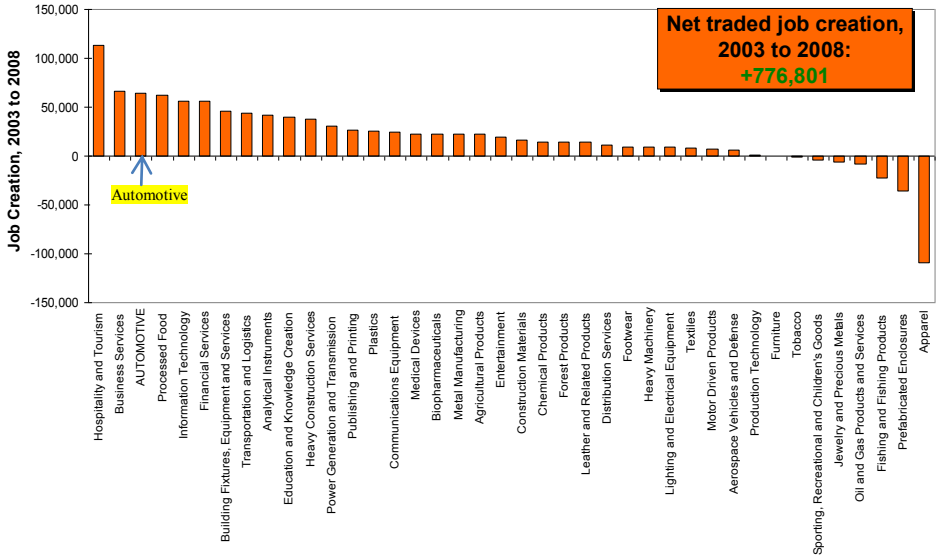
Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño, (UPAEP University)

Figure 10. Mexico Wages in Traded Clusters (2008)



Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño, (UPAEP University)

Figure 11. Mexico Job Creation in Traded Clusters (2003 to 2008)



Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño (UPAEP University)

3.3 Comparison of México and other Countries

According to a 2011 KPMG report, compared to the US and nine other countries, México offers a 13% saving in parts manufacturing costs, 19.4% in plastic supplies and 19.5% in metal supplies used in this sector.

The World Economic Forum (WEF) released the Global Competitiveness Report 2010-2011, placing México at the site 66 of 139 countries, six spots behind its latest report, behind Chile (30) , Puerto Rico (41), Panama (53), Costa Rica (56), Brazil (58) and Uruguay (64), and placed ahead of countries like Colombia (68), Peru (73), Argentina (87) , Ecuador (105), Bolivia (108), Nicaragua (112), Paraguay (120) and Venezuela (122). An extract of some representative countries is presented in Figure 12.

The report indicates that in México the rigidity in domestic markets is a structural obstacle to growth prospects in the long term, despite the condition that keeps on trade liberalization and the measures the federal government has taken in economic policy to improve the business climate and achieving greater economic efficiency.

As for legislation, México, occupied in 2006 a 46.4% position in the ranking, while in 2011, after climbing 8 sites, is located 40.8% of the ranking, a slight improvement but also a reflection of legislative stalemate, which prevents you from improving. Suffice it to note the rise of Brazil in the period, thanks to important changes in its laws. In terms of measuring the rule of law, which means the growing concerns of insecurity; México dropped 9 places compared to 2009 reaching 134 at the site referred to the high rate of violence recorded in 2010.

Finally, it is important to note that in terms of global competitiveness, the World Economic Forum created a list of criteria to be analyzed and measured to determine the global competitiveness index in each country.

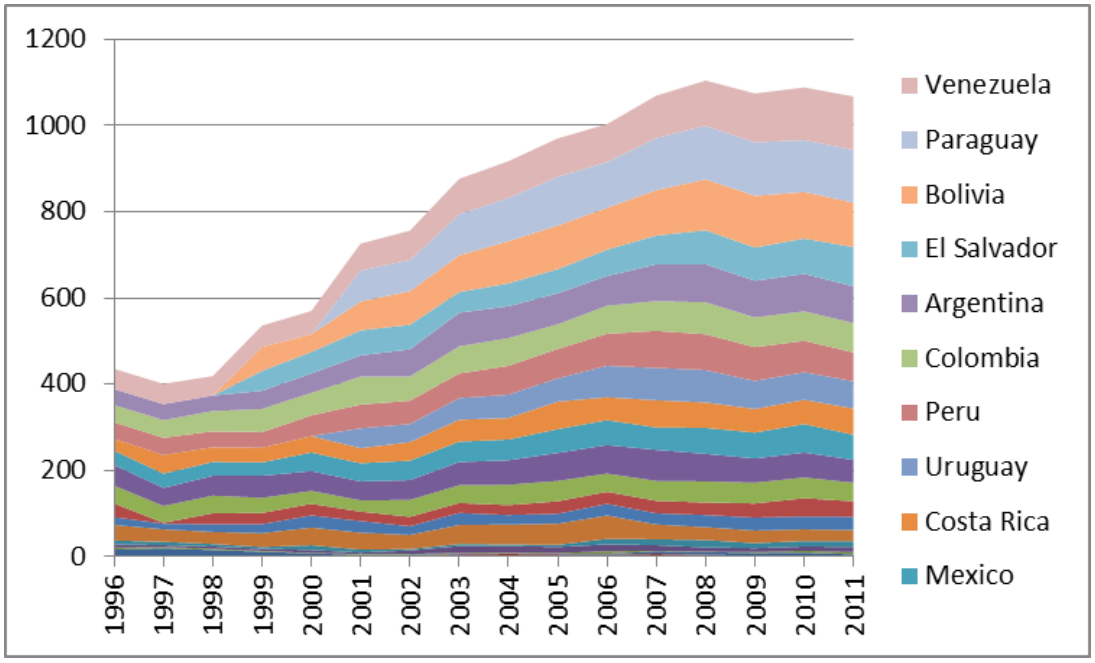


Figure 12 .Global Competitiveness Index for Growth 1996 – 2011

Source: Based on data from World Economic Forum in Davos, Switzerland, Annual results, sample in selected countries 2011-2012

3.4 SWOT Analysis of México

Several factors account for the success of the automotive industry in México, such as a privileged location, access to markets through a network of Free Trade Agreements (FTAs) and the experience of both entrepreneurs and workforce. Figure 13 presents the main aspects of the SWOT analysis.

México's geographical location allows it to be a genuine platform for exporting, mainly for American markets. We are exporting to more than 100 countries and have managed to diversify our exports. Before, we exported 80% of our production to the US and now, it is between 60% and 63%. Latin America has become our most dynamic region for exports. Recently México has established full openness with Colombia, Uruguay and Chile. The Mercosur trade area has allowed exporting to Argentina and Brazil. México's network of FTAs also allows it to reach the European Union and Japan; this network is a pillar for México to attract other investments.

The experience México has in the automotive industry is composed in part by the following factors: world-class labor, with expertise in activities such as metalworking and casting, which allows the country to climb the value chain and attract 'more projects with added value; the network of suppliers within the country that has made México the major automotive supplier to the US. Also, the proven productivity in manufacturing vehicles and auto parts, has allowed México to become one of the leaders in productivity.

Figure 13. SWOT Analysis of México

3.4.1 Strengths

México has a skilled labor force in terms of automotive topics, it is quite useful for automakers their suppliers. The skills are available due to the high quantity of final assembly and auto parts factories all over the Mexican republic which have developed this expertise in the labor force.

The ability to turn company assets into funds is something México is capable of through its capital availability, which can call the attention of corporations looking for international opportunities willing to find non-traditional markets. As a job creator enhancer and an economic stimulator, México has a free trade agreement with most of the main markets, allowing the country to import and export at lower rates. Consequently, the growth of the market is strong, which attracts and retains customers.

Countries that maintain relatively stable macroeconomic variables such as inflation, unemployment, interest rates, exchange rates, etc., tend to display higher long-term growth rates, being this the case of México's macroeconomic environment. There is also a regulatory framework in the Mexican country which helps the flow of Foreign Direct Investment, an essential factor of development.

One of the country's unique strengths is its privileged geographical situation which has been well taken into advantage together with the free trade agreements with the neighbor countries. As for the domestic market, its purchasing power has grown gradually, letting the productivity to increase its levels. Another growth which is strong is the labor force in terms of the demographic bonus. The relative stability of the FDI and the strong growth in domestic savings has led to a steady capital growth. The main strengths are derived from the market and are offset by structural weaknesses in the chain and the strategy of member companies (lack of local raw materials and household management approach and short term). México has a strong legal framework that not only provides certainty for investment but also facilitates manufacturing and trade. The country has promotion programs for this purpose in different sectors which, in the case of the automotive industry, allow the import of supplies with preferential tariffs.

There is also the Eighth Rule, a mechanism that allows the import of materials, supplies, parts and components through the zero duty tariffs and the Manufacturing, "Maquiladora" (Assembly) and Export Services program (IMMEX), simplifying procedures and requirements to the assembly regime for companies that already have a structured trading plan, and Import Tax Refund to Exporters.

3.4.2 Weaknesses

México has an uncompetitive cost structure, which is a result of higher capital costs. However, it could be corrected by channeling capital to industry in more favorable terms. There is insufficient capacity of raw materials which requires the country to import the rest needed. There is a lack of competitive rates and a lack of a policy to promote domestic production of capital goods. The Mexican industries are not quite used to invest in technology infrastructure; as a consequence, there is obsolescence of machinery and equipment. The rate of response to market needs and customer needs is slow in México, in a

competitive situation, a fast response to the needs of the market is essential. Unfortunately the segments of the market do not form a cluster.

There is an established relationship but the development has to go further. A weak point of the federal government is the absence of incentives to boost the domestic market. There is also a lack of structural reforms which could trigger the country's competitiveness. Health systems have not developed entirely and need to improve their quality. Together with the quality of the educational systems, this is something that needs full attention of the government and the educational institutions. The weaknesses outweigh the strengths and are intensified by the lack of competitive conditions in factors external to the industry but widespread impact

3.4.3 Opportunities

There is a strong opportunity for México to incorporate high technology in the solution process as they could also take a more active role in the national development, but the establishment of numerous engineering and design centers, and automotive clusters in different parts of the country is increasing.
Examples of these strong points include General Motors' Regional Engineering Center and Nissan's Technology Development Center, based in Estado de México; Chrysler's Automotive Engineering Research, Development and Testing Center in México City; and Delphi's Technical Center in Chihuahua.

High elasticity of demand of in the population is another option for the country and the industries inside growth. Although that México has already taken advantage of exports with free trade agreements, it could also increase the exports of finished products.

The proximity to the large U.S market is a high opportunity to increase productivity and attract FDI, because of the manufacturing and logistics costs, which is another opportunity for the country's growth. Additionally, the use of export niches in line with the scale of Mexican producers.The main opportunities are in exploiting potential markets that until now have been supplied at the margin but are international in nature; keep exporting to countries with free trade agreements.

3.4.4 Threats

México's mayor problems are corruption and organized crime, being the corruption the main inhibitor of the economic development and the organized crime impeding the fair economic flow inside the country. Asian products from countries such as China are high competitors in terms of products with subsidies. There is a lack of an economic policy that encourages the growth of the country. The main threats are related to unfair competition internally and externally and the competition that seeks to place their surplus production in the Mexican market. The supply of Asian countries, especially China, is the most commonly perceived threat.

3.5. México's Diamond Analysis

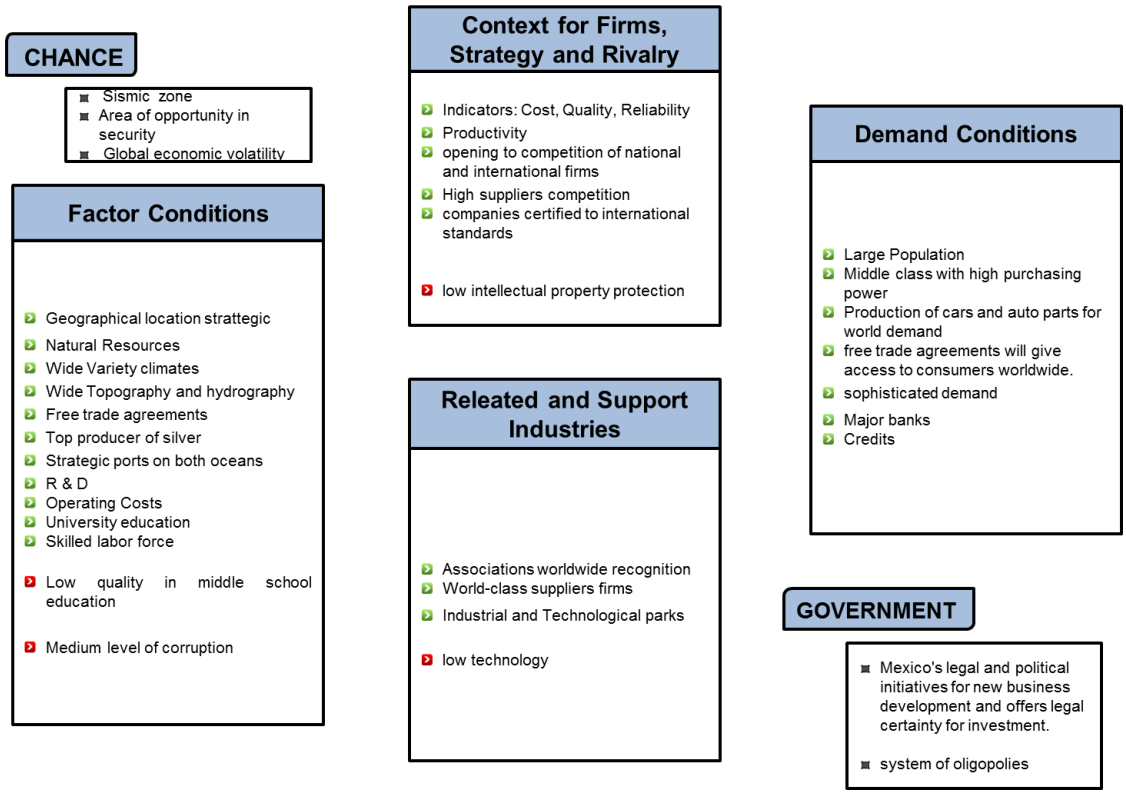


Figure 14. México's Diamond Analysis

3.5.1 Factor Conditions

Strategic geographical location. México is geographically located in the center of the automotive world and is the point where the two most important manufacturing corridors in North America. The geographical location is strategic for the industry as it not only borders on the world's largest market, United States, but also sandwiched between two oceans that allows you to get auto parts from Asia and export cars to Europe. It is also a strategic point to serve the Latin American markets. Moreover, the human factor, in terms of cost and training, has been central to the success of this industry.

Natural resources. México is considered among the five most bio diverse countries in the world for its large number of species of flora and fauna.

Free trade agreements. México has 12 agreements trade with 44 countries, which represent 15 percent of the world population .Currently, OEMs are leveraging the network of trade agreements signed by México with other countries and with this market access that these threats give producers in México has been an important incentive for firms to carmakers have decided to settle in México, projects for which other competing countries. Undoubtedly with the signing of NAFTA, the automotive sector has been one of the most active, the value of the automotive production rose 75.5% in real terms between 1995 and 2000. NAFTA has fostered the import of auto parts, which is why the industry had better terminal. In México exists an attractive interest rates and a stable exchange rate, we can use the capital in a rational and have competitive prices for parts and raw materials.

Operating costs. On the issue of cost competitiveness The study "Competitive Alternatives KPMG's Guide to International Business Location 2008 Edition "by KPMG in coordination with Mercer, Colliers International, Economic Research Institute and Decisions, places México as the country No. 1 for the manufacture of auto parts. About the México competitiveness and According to the study "Off Shoring - Onshore: Exploring México's Manufacturing Advantages, "the consultant McKinsey, the productivity gap between EU and México, in terms of cars assembled per hour, has been reduced from 15 percent in 2005 to 8 percent in 2007 and according to the Harbour Report 2008 the Mexican plants won averaging - 3 hours, while in U.S. improved only - 0.1 hours.

Universities' education. In México there are universities with programs that specifically target the production, automotive design and innovation. In México are major investments related to research, innovation and development, including:

- Regional Center for Engineering General Motors (Toluca, México)
- Center for Engineering and Design Automotive Chrysler (México City)
- Delphi Technical Center (Ciudad Juarez, Chihuahua)

There are also institutions of scientific and academic sectors, including:

- Development Center of the Automotive Industry in México
- Instituto Tecnológico y de Estudios Superiores de Monterrey (Monterrey Campus)
- United States-México Foundation for Science
- UPAEP, CESAT (Center of Specialized High Technology Services)

Skilled labor force. The economic importance of this sector and the high dependence on technology source countries have encouraged the development of skilled labor that goes for all of direct operators of the production lines. México has enough people experienced in planning, quality, production and design, many of them trained abroad for the same car companies. México graduates over 90,000 students per year in engineering and technology. There are more than 900 graduate programs related to engineering and technology in Mexican universities. The vast majority of engineers and technicians in México speak English as a second language.

3.5.2 Context for Firms, Strategy and Rivalry

Opening to competition of national and international firms The automotive industry in México is a historic moment in which he combined the need for U.S. companies to increase their competitiveness and supply in our country to have the experience of auto plants and auto parts and a highly productive workforce competitive cost and quality. Eight of the ten leading car assemblers in the world have assembly plants in México. There are over a thousand auto parts companies established in the country, most of them of foreign origin.

High supplier's competition. The domestic auto industry is comprised of industry and the auto terminal. The terminal industry is made up of 14 companies established in México that manufacture or carry out final assembly of motor vehicles. Five of these companies are 100% foreign capital: Chrysler, Ford, General Motors, Nissan and Volkswagen account for 92% of vehicle manufacturing. In 1997 the production of this industry was 14 000 million and accounted for 7% of the manufacturing GDP. It employed 60 000 people,

representing 4% of total employment in manufacturing. The auto parts industry consists of little more than 500 companies in 1997, providing employment to 175 100 workers, 8% of the manufacturing employment.

3.5.3 Demand Conditions

Large population. México has a population of 107 million. Within 30 years, the country's economically active population will be 69 million people; they will be in a position to buy a car.

Credits. In 2000 only 30% of new cars sold on credit, today, 60% of these cars are sold through financing. This means that any family with a monthly income from 4 minimum wages was in a position to access a new vehicle.

Sophisticated demand. The automotive market in México has not only grown in quantity, but in quality and variety. The range of models available to Mexican consumers has doubled going from 213 models in 2000, over 300 models and we sold approximately 1 million 100 thousand units.

Consumers worldwide. Automotive companies in the country have a double advantage for access to markets:

- Internal Market. - can sell units manufactured in the country or elsewhere of its plants in the world.
- Foreign Market. - The country's geographical location, Free Trade Agreements and infrastructure place it as a center of assembly and production of this industry suitable for the export of auto parts and finished vehicles.

3.5.4 Related and Support Industries

México has different agencies that support the different sectors, like Chambers, associations, universities, technical schools, research centers, specialized committees.

3.5.5 Government

Government and industry are working together to create working synergies and strengthen partnerships to enable the national automotive sector, continue positioning itself as a leading manufacturer. Currently in México, the participation of development banks in the automotive industry has been an essential element in attracting different brands producing cars.

As the above example we can mention the agreement that was signed in 2008 between the National Foreign Trade Bank (BANCOMEXT) and National Financial (NAFINSA) to structure a financing together for up to 400 million dollars, resources that would be designed to manufacture a new model compact car at the Chrysler plant in Toluca in that year. Furthermore, México's legal and political system for new business development offers legal certainty for investment.

3.5.6 Chance

Global economic volatility. México today is a country with high economic dependence on its USA neighbor. For México the exchange of remittances from

this country is the second foreign exchange earner after oil, therefore the economic crisis in the U.S. caused adverse effects in our country.

The crisis in 2008 initiated by the U.S. mortgage crisis had a domino effect in México as in many stock exchanges around the world. In México, the weakness in the financial system government and reliance on it in oil prices have led to various crises, forcing to an increase in various taxes such as Value Added Tax, Income Tax, as well as creating other new taxes on automotive-related industries.

Seismic zone. México is located in one of the most seismically active regions in the world and we have history of earthquakes with magnitude greater in 1985 of 8.1 degrees on the Richter scale. However, since 1985 México has contingency seismic plans and a highly educated population and culture that know how to act on these contingency cases.

4. Competitiveness of the Automotive Cluster in the State of Puebla

4.1 Puebla's context

The Mexican states that contribute the most to the automotive industry are those on the northern border, with a total production of 47%, a situation that is stimulated by their proximity to the US market. In terms of vehicle production, there is a cluster in the center of the country that holds 43% of the total, while the northern cluster contributes 57% of the total production.

Puebla is an important state in terms of population, industrialization, trade, culture and tourism factors, to name a few. The state has 5.7 million inhabitants, of those, 3 million are women, 72% of the state population reside in urban areas whereas the rest in rural zones. The level of industrialization of the state has created a well-established labor market by which the level of unemployment as of 2011 is of only 5.11%. Economic output then, in terms of state GDP in constant prices is 299,100 million pesos (23,007 million USD). The contribution to the national GDP gives the state a 7th place.

Puebla's strategic location as a middle point between the national major ports, like Veracruz on the gulf of México or Acapulco in the pacific coast, and intertwined through major toll roads makes the state an important point of entry to the south of the country and makes it possible to access the northern region through newly created toll roads surrounding México city with no further need to cross it.

The level of trade reflects a positive trade balance with $610.7 million dollars as of 2011. In that same year foreign direct investment accounted for $54.43 million USD National investment for the same year arose to $1,685 million pesos ($129.6 million USD). The positive impact of that same year is noted in the number of workers registered for social security, which increased to 470,000, a 6% increase compared to the previous year.

Puebla´s inflation rate is no higher than the national one and both fiscal and monetary policy of the Federal Government and the Central Bank of México have created macroeconomic stability panorama.

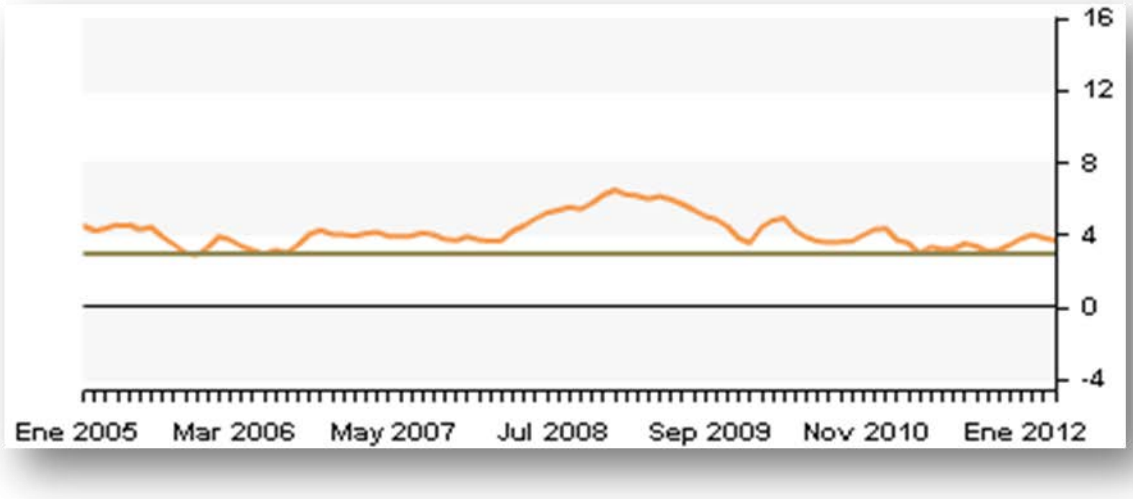
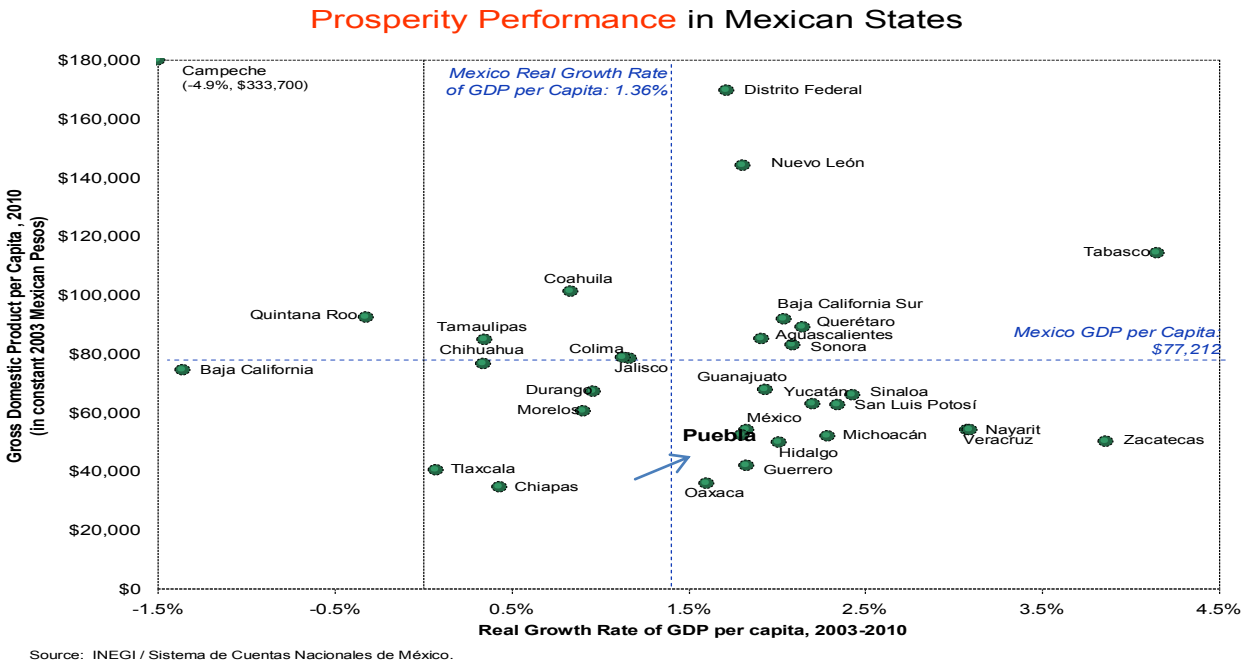


Figure 15. Mexican Inflation 2005 - 2012

Source: Based on data from National Institute of Statistics and Geography (INEGI)



Source: INEGI / Sistema de Cuentas Nacionales de México.

Figure 16. Prosperity Performance in Mexican States

Source: Based on data from National Institute of Statistics and Geography (INEGI)

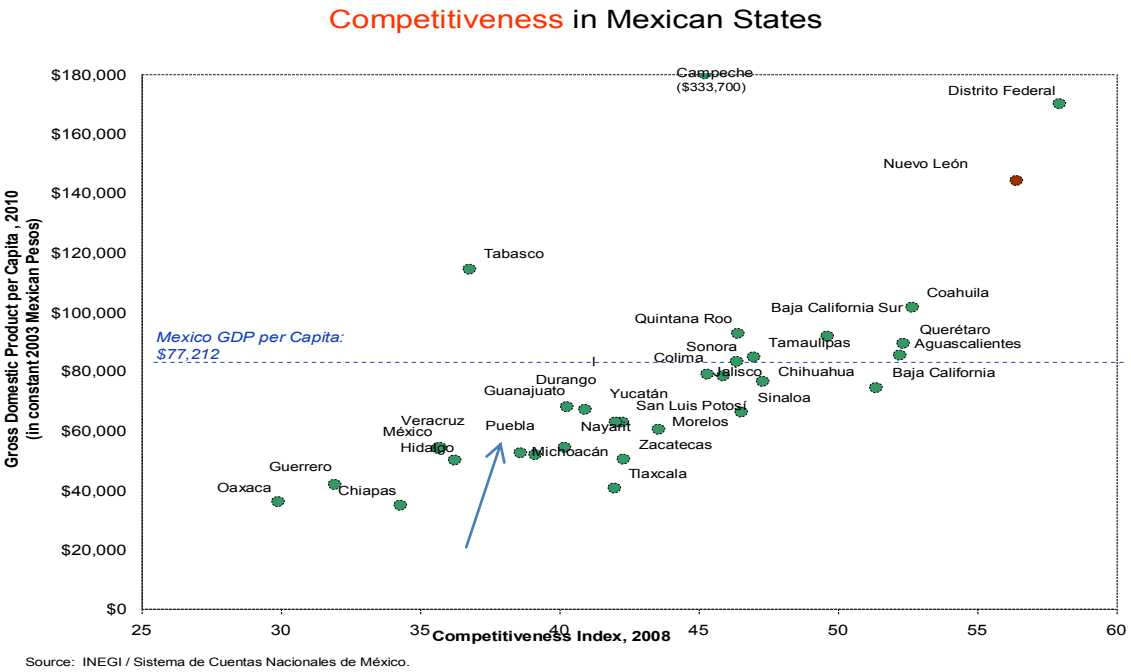


Figure 17. Competitiveness in Mexican States

The following figures (Figures 18-21) show relevant traded cluster information developed jointly with the Institute for Strategy and Competitiveness at Harvard Business School for the SINTONIA Initiative mentioned in the preface, which support the importance of the automotive cluster in Puebla, México (Please see file attached "context for the automotive cluster").

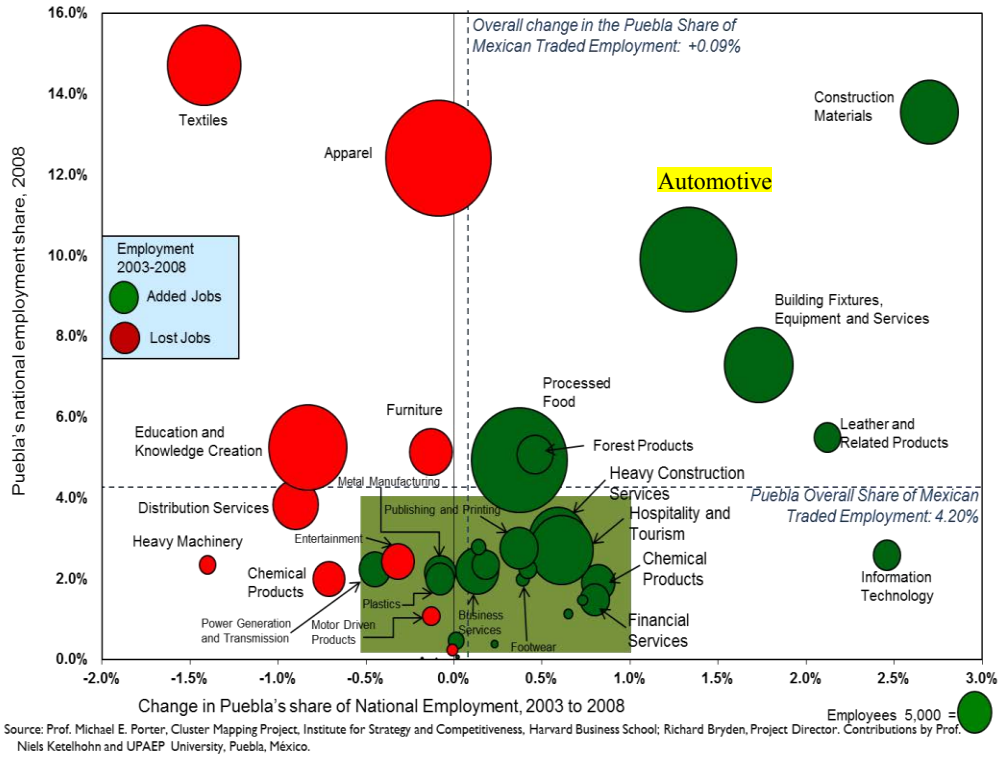
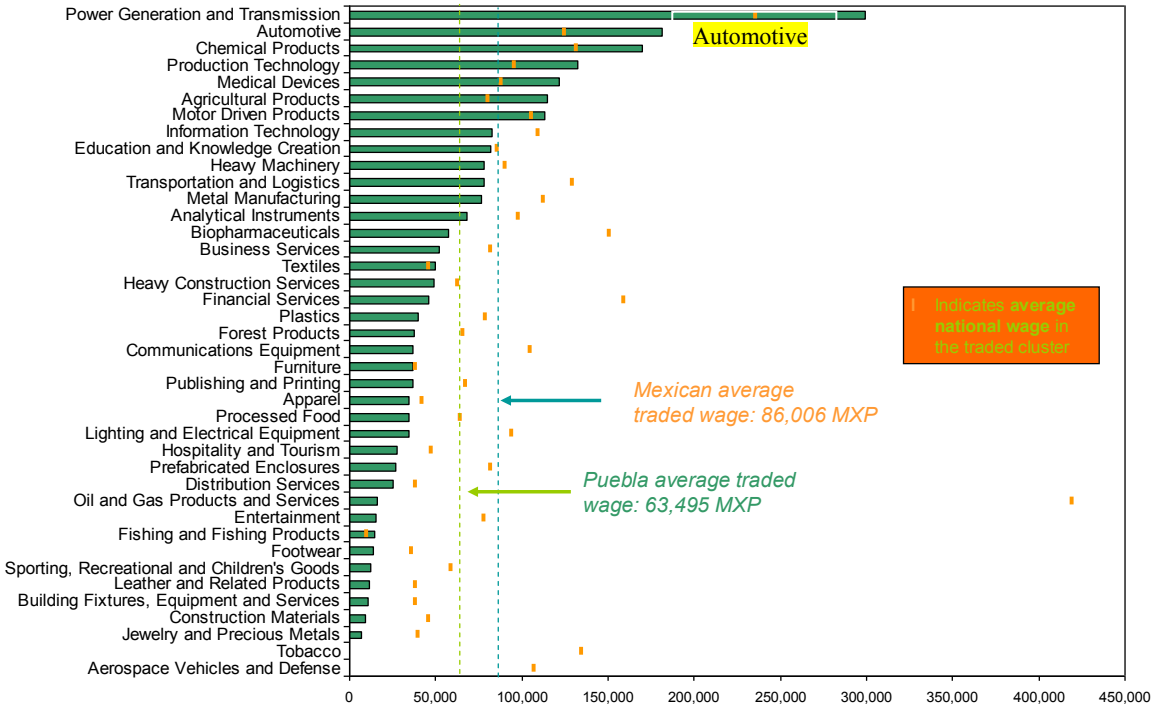


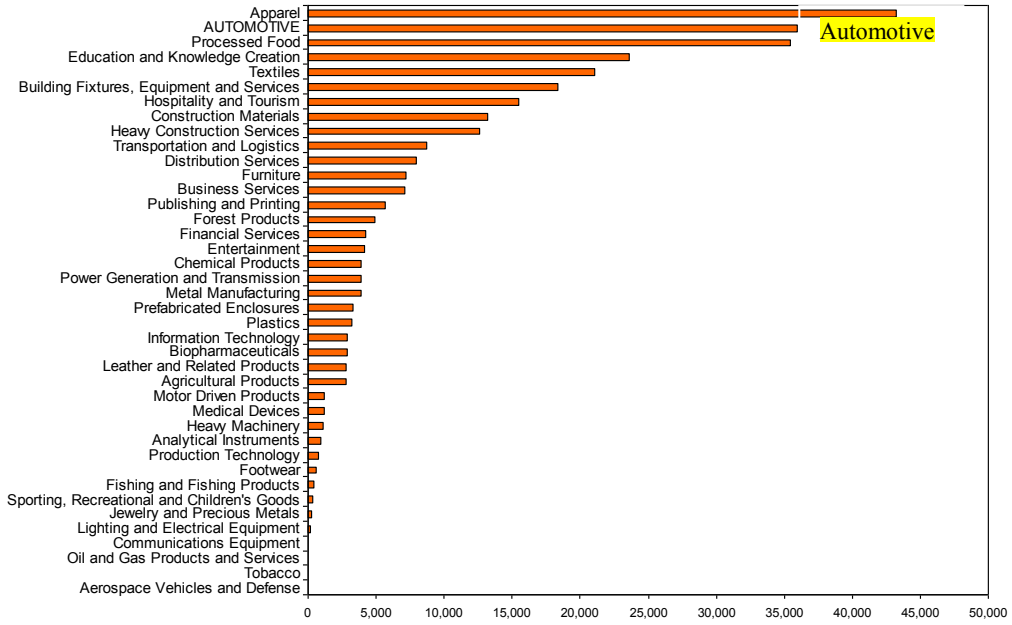
Figure 18. Traded Cluster Composition of the Puebla Economy inTerms of Employment

Figure 19. Puebla Wages in Traded Clusters vs. National Benchmarks (2008)



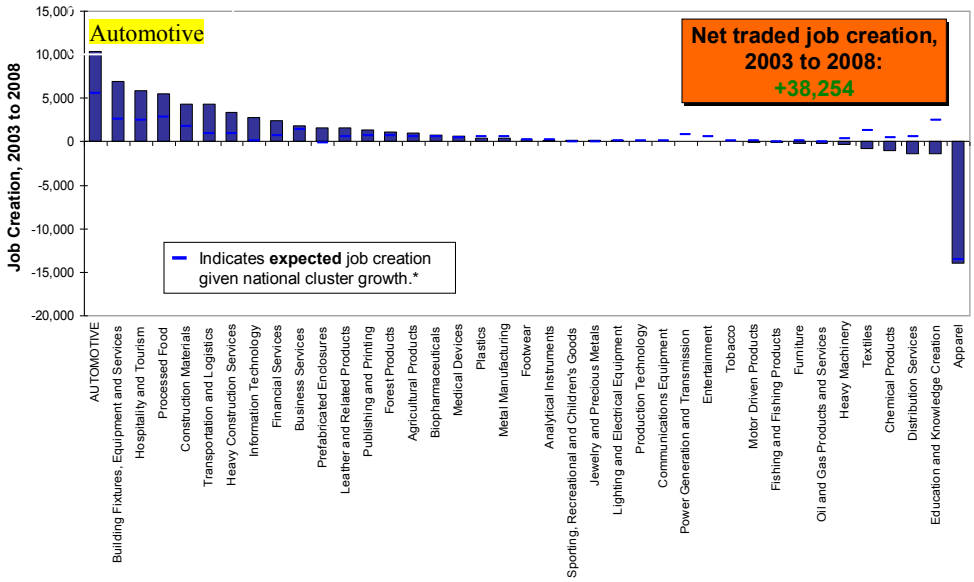
Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño (UPAEP University)

Figure 20. Puebla Employment in Traded Clusters (2008)



Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño (UPAEP University)

Figure 21. Puebla Job Creation in Traded Clusters 2003 to 2008



Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño (UPAEP University)

4.1.1 Location and Transportation Services

Puebla (Figure 22) is located in the central-eastern México. Bordered on the east by the state of Veracruz, on the west by the states of Hidalgo, México, Tlaxcala and Morelos and south by the states of Oaxaca and Guerrero. Puebla has no outlet to the sea, and has extremely rugged relief. Its area is 34,251 km², with more than five million people, the fifth most populous in the country.

Figure 22. México and Puebla

Puebla is conveniently located only two hours' drive northeast from the nation's capital, three hours to the port of Veracruz (Southeast) and 4.5 hrs. West to the port of Acapulco. It is well connected through a network of toll roads and federal roads. Railway service is constricted only for cargo freight, served by Ferromex and The Kansas City Railway Company, both with lines that connect to the port of Veracruz and to the neighbor states of Tlaxcala and Oaxaca. Efficient public transportation is available both inner state and outer state by prestigious coach service providers with several levels of service.

Air transportation is available through it is international flights connecting to other important cities like Guadalajara or Monterrey and with connecting hubs in Texas, USA and from there, to the rest of the world. Air freight and cargo facilities are available on site with customs and migration services.

The cargo facilities offer handling, warehousing and 3PL services for value added services and the local customs facilities allow for handling and manufacturing on site for export related services with no customs or tax implications. "Strategic Trade Zone", is a federal tax on import permit granted to the site in that regard.

4.1.2 Infrastructure

Puebla's infrastructure is now in constant development. New toll roads have been constructed to more efficiently connect both the northern and the southern neighbor states. New projects are currently being developed in the health sector, as well as in security related infrastructure with international assistance given by the U.S. government. Communication services are available in the entire state.

There are several industrial parks available with the necessary services to host different types and sizes of enterprises wishing to be established in the state. Natural resources for production are guaranteed. Water, from the surfaces, electricity, gas, gasoline and any other form of energy is guaranteed in the state.

4.1.3 Political System and Government

Puebla is ruled by a State Congress with a State Governor who is under democracy elected only once for a 6-year period. Each municipality has a local Major with periods of 3 years; the local Major cannot be reelected in consecutive periods.

The judiciary power is appointed by the governor. All three powers (legislative, executive and judicial) are of recent access to power and for the first time, in more than 70 years, there has been a change in the ruling party, mostly decided by the deception on the fall of the state's competitiveness in 2010 as shown as follows, due to several factors.

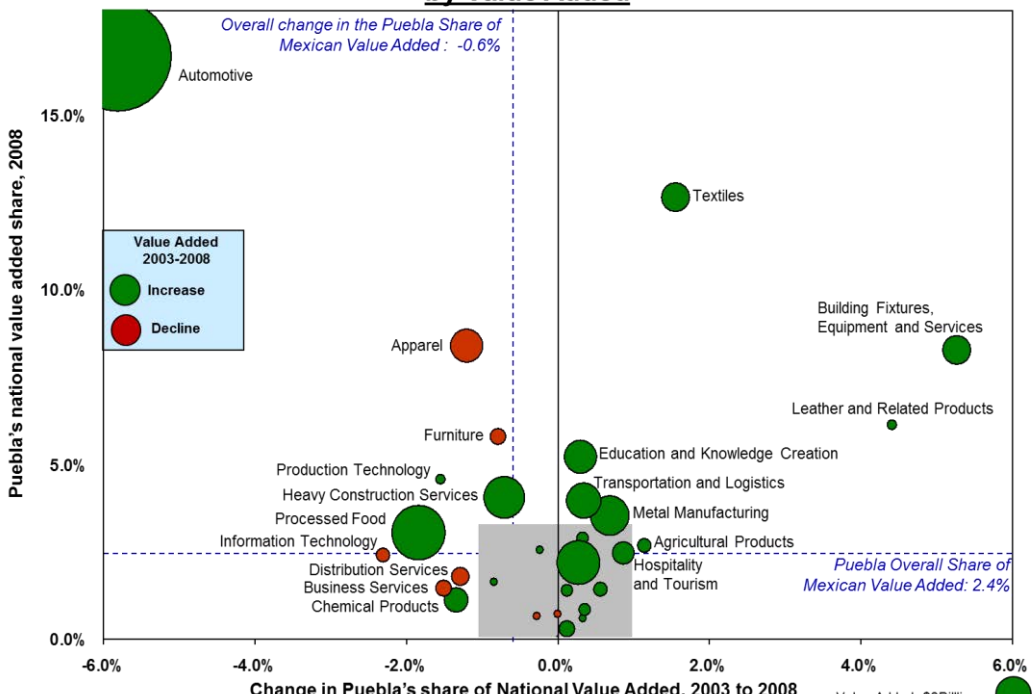
Puebla is a State on a positive growth path in 2010. The current unemployment rate is 5.11%. The local GDP (PPP adjusted) accounts for $299,100 million pesos with a quarterly economic activity indicator which has had a 7.4 % annual variation. Strong export sector with a positive trade balance of $610.78 million us dls in 2011. In the same year, $54.43 million dls were received as FDI. The state has a 6% annual growth in job creation.

The newly elected officials have established new criteria on the integration of the state's bureaucracy, setting new standards and rules for their employees. Educated officials is the common rule, with specific know how in their areas is now compulsory. A new State development Plan has been presented and all ministries have goals and clear objectives. Leadership starts by the governor Rafael Moreno Valle Rosas, a well-educated and proactive person with openness for new projects.

4.1.4. The Current State of the Automotive Cluster in Puebla

The automotive cluster in Puebla is the largest value added contributor to the GDP in Puebla and it adds over 18 % to the national valued added automotive share, Figure 23... Of the 14 entities that contribute most to the automotive industry, Puebla leading contribution to GDP in vehicles with a share of 29.4 percent, with Volkswagen's third strongest brand in the domestic market, adding a thousand 950 million investment dollars in the last three years.

Figure 23. Traded Cluster Composition of the Puebla Economy by Value Added



Source: Prof. Michael E. Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Contributions by Niels Ketelhohn, Alfonso Mendoza, Martha Cabanas, and Pablo Nuño (UPAEP University)

The country's central region comprising the states of Puebla, México and Morelos, make the largest contribution to GDP automotive vehicle segment with a 43.5 percent, however, as to the parts, is the north by Coahuila, Chihuahua, Nuevo Leon, Sonora, Tamaulipas and Baja California states showing greater participation with 57.6 percent.

In parts, Puebla provides 5.4 percent, ranking in the 14th position. By region, the southeastern Puebla, which integrates a total of 101 plants with greater representation in the commissary car parts; mainly with air conditioning systems and heating, hydraulic jacks, components inside seats, engine parts in the power system and suspension parts? Puebla is in first place with the largest contribution to the production of light vehicles followed by Aguascalientes, Coahuila and Sonora, which has representation of Nissan and General Motors.

For its level of production and exports, Volkswagen located in Puebla has established itself as the third best positioned automotive brand in México, and that during the period 2008-2011 earmarked an investment of 950 million thousand dollars in the country, ranking below General Motors 2,000,200 million dollars, and Nissan with 2,000,928 million dollars. The strength of the automotive industry in Puebla has meant that its contribution to GDP of the state (Figure 24) is considerable, with 25.6 percent and contribute to employment generation of 4.5 percent, while wages have increased by 20.8 percent.

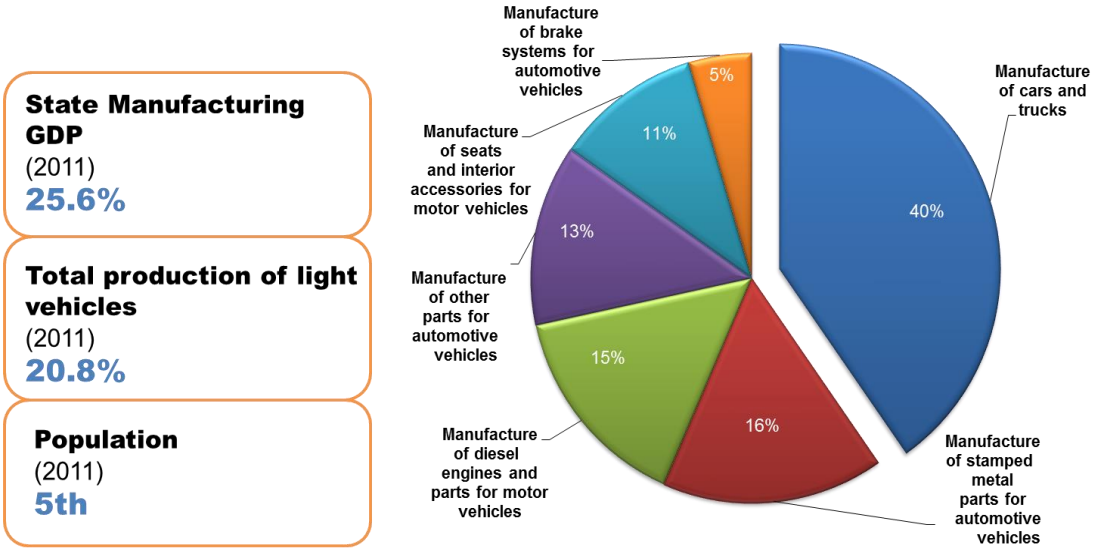


Figure 24. Composition of Automotive Manufacturing in Puebla ´s GDP

The entities that contribute the most to the automotive industry are the northern border states with 47 percent in vehicle production, which highlights the cluster center with 43 percent of the total, while in parts, the cluster of the northern leads with 57 percent contribution. Below is a summary of the current situation of the automotive industry in Puebla:

4.2 Competitive Advantage of Puebla

The state of Puebla is among the three institutions with the largest increase in Social Competitiveness Index 2010 to 2011. After 4.3 percent Morelos, Puebla is the territory with 3.2 percent and then the State of México with 2.6 percent, according to the Social Competitiveness in México 2012 Report.

Under these considerations, the results of the Social Competitiveness Index suggest that the working conditions of the country's working population improved between 2005 and 2010, and that levels of social competitiveness could be having stagnation in the most recent period from 2010 to 2011.

4.2.1 Competitiveness in social institutions and metropolitan areas

Social Competitiveness Report 2012 in México is an indicator of well-being and renewed timely. Social Competitiveness Index (SCI), which is an appropriate indicator, since it approximates the development process from a fundamental perspective. This measure of social competitiveness is a statistical tool that can detect the impact of events on the welfare of people in the short term and can anticipate, accurately, the level of human development.

With the data obtained in the report, it is possible to establish social competitiveness ratings for both states and for metropolitan areas. To do this,

calculate the value of the ICS (Figure 25). From 2010 to 2011, 26 states showed increases in the value of Social Competitiveness Index. Morelos (4.3%), Puebla (3.2%) and State of México (2.6%) had the largest increases, while in Michoacán (1.3%), Durango (1.0%) and Campeche (0.6%) were detected most significant reductions.

As for metropolitan areas, among the cities most noted for their increased rate between 2005 and 2010 are Tuxtla Gutierrez (4.80%), Oaxaca (4.47%) and Campeche (4.07%). The cities that showed the most significant decreases were La Paz (0.57%), Monterrey (0.46%) and Puebla (0.30%).

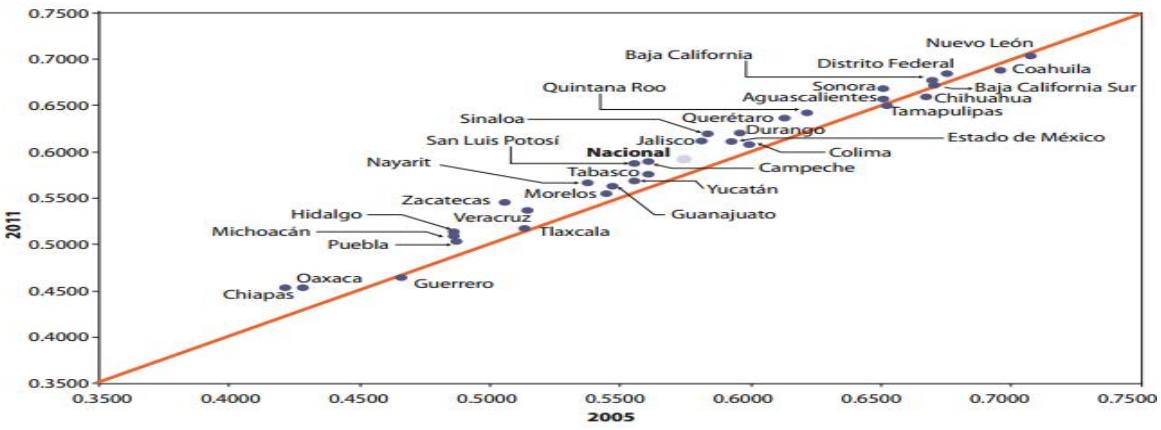


Figure 25. ICS by state 2005 vs 2011

4.3 Puebla's Automotive Cluster Diamond Analysis

The automotive cluster diamond analysis is presented in Figure 26. The determinants of the diamond are analyzed next.

4.3.1 Factor conditions

Strategic location: Proximity to the capital (DF), Gateway to southeastern México and Central and South America.

Infrastructure: Main roads: México-Veracruz, Puebla, Tlaxcala, Puebla, Querétaro, Puebla-Southeast. Railroad network, International airport, and Industrial Parks.

Higher Education: It is the fourth state in number of students (ANUIES 2007-08).

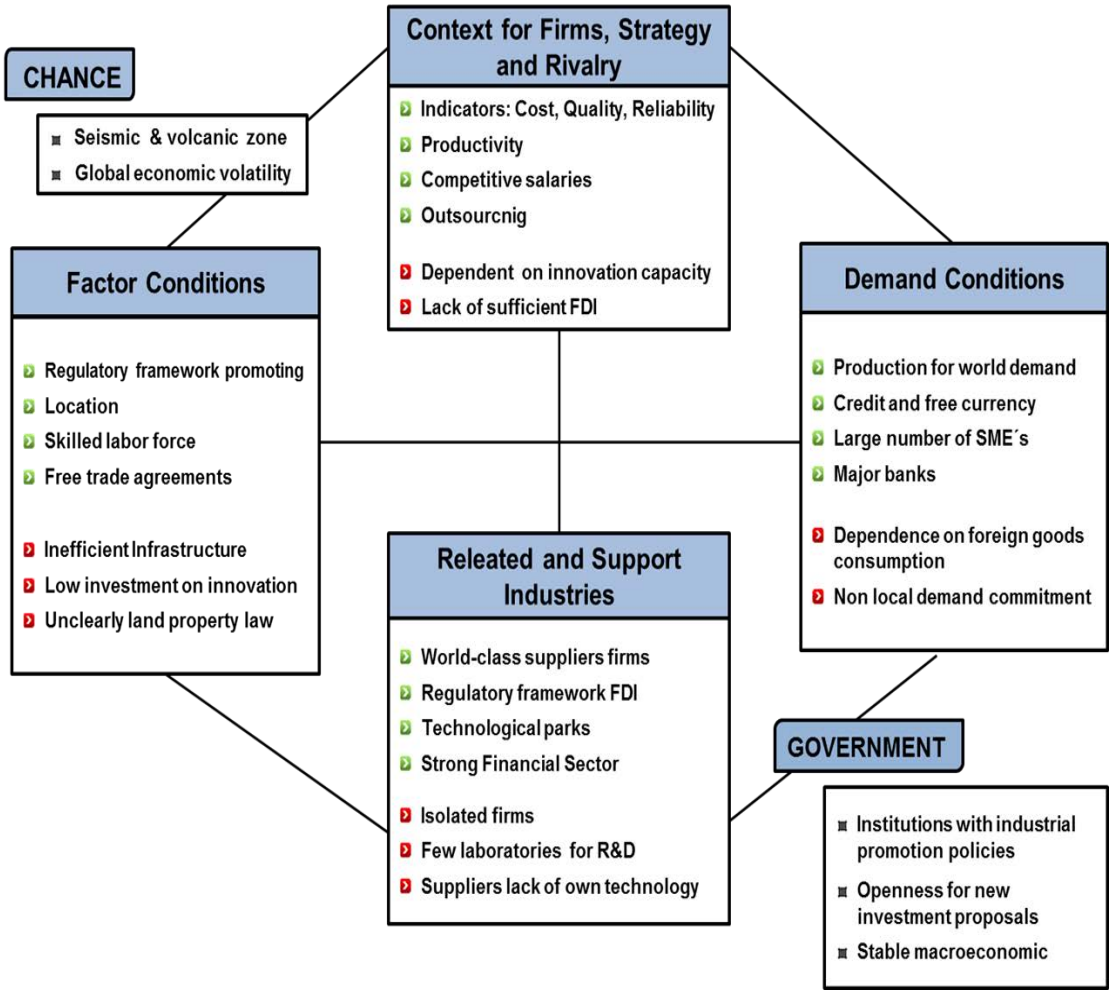


Figure 26. Puebla's Automotive Cluster Diamond Analysis

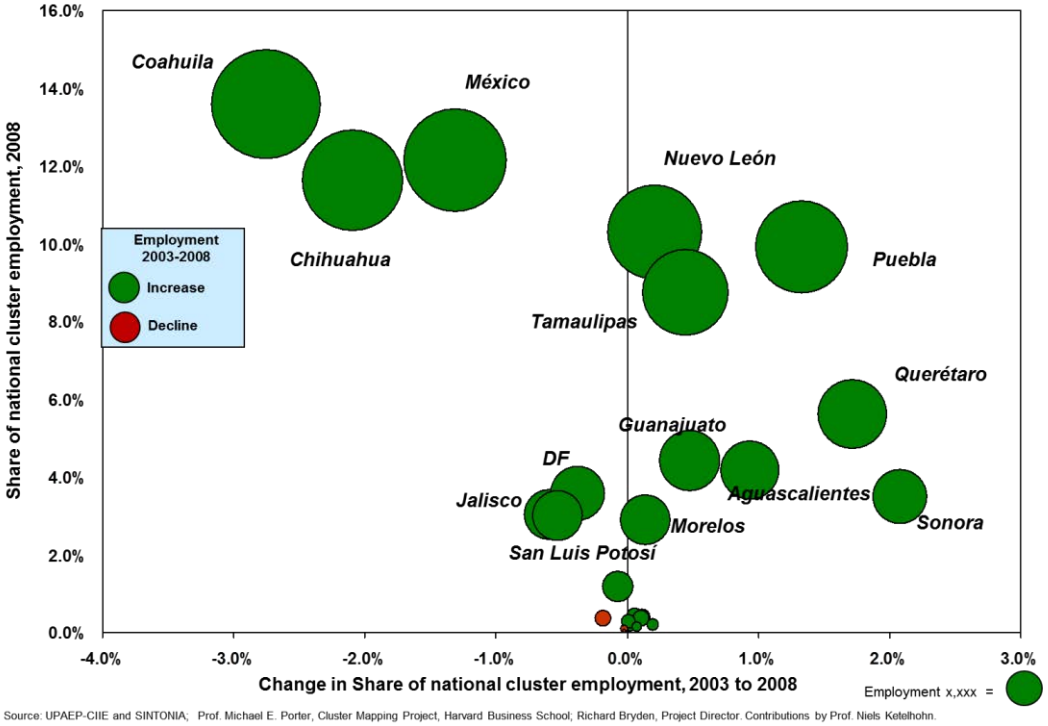
4.3.2 Context for Firms Strategy and Rivalry

There is a high rivalry given the concentration of business and service offering, The percentage of contribution to GDP is 3.4%. The Automotive cluster has the highest contribution to the state GDP in manufacturing (26.6%).

It is the largest cluster recipient of foreign investment (81.4%), whereas support services to businesses and waste management and remediation services contribute with 9.3%. Insurance and financial services 4.5% Wholesale trade 2.3% and Construction with 1.1%

Figure 27 shows the importance that Puebla has also in employment with respect to other Mexican states.

Figure 27. Automotive Cluster Performance in Mexican States by Employment



Source: UPAEP-CIIE and SINTONIA; Prof. Michael E. Porter, Cluster Mapping Project, Harvard Business School; Richard Bryden, Project Director. Contributions by Prof. Niels Ketelhohn.

4.3.3 Demand Conditions

There are 20,207 companies registered, according to the Mexican Business Information System. The gross domestic product per capita is 52,442.9 pesos. Local consumers exert high pressure due to the wide range of products that have at their disposal and the proximity to México City, Low level of intellectual property protection

4.3.4 Related and Support Industries

A detailed description of supporting industries is presented in the Value chain section (4.5) of this report given the importance for this cluster. With respect to related Industries, a complete section is presented in the cluster map of the Automotive Cluster (section 4.7).
Puebla counts with several research centers, technology parks, civil associations, schools of Engineers, Architects, Lawyers, Accountants, Laboratories, and a University Consortium.

4.4 Porter's Five Forces Analysis of the Manufacturing Auto Industry

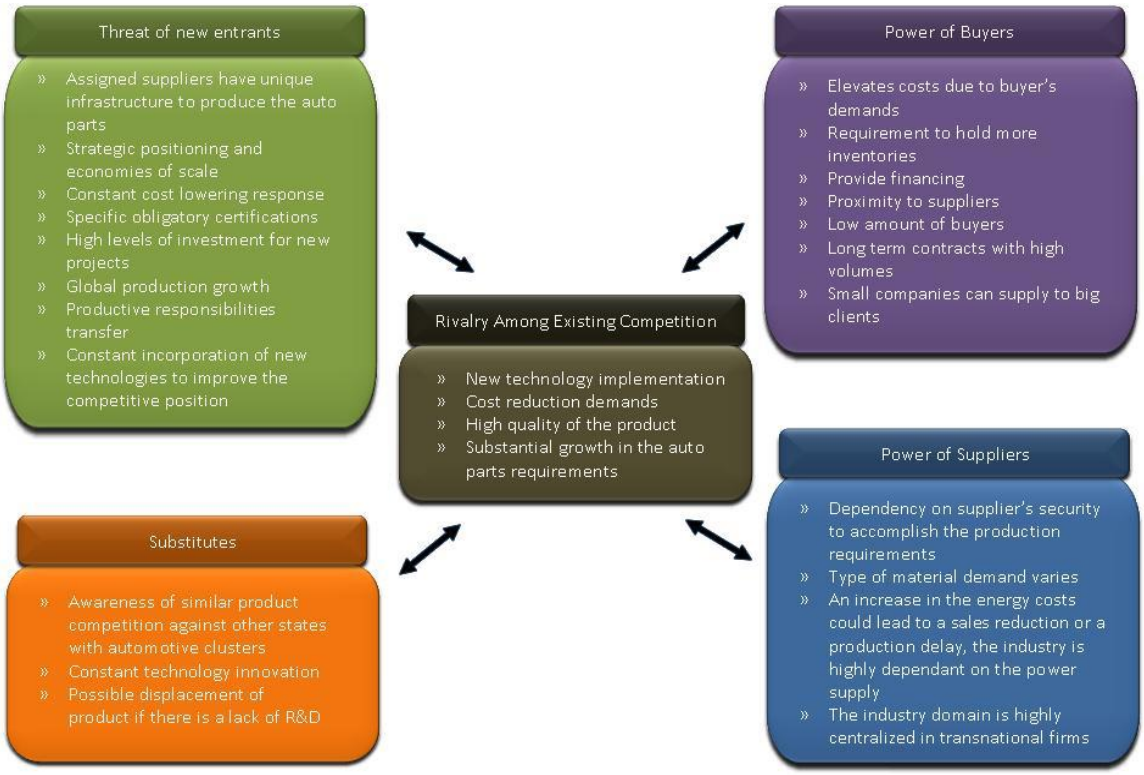


Figure 28. Five Forces Analysis of the Manufacturing Auto Industry

4.4.1 Threats of New Entrants

The threat of new entrants depends on how hard is it to enter the sales market; however, the automotive industry has also other factors which lower the threat of new competitors. The already assigned suppliers have a unique infrastructure in order to produce components for the automotive industry; this infrastructure sometimes is specialized and controlled by the client.

There is also a strategic positioning of the companies depending on who are they supplying, sometimes they are even required to establish next to the client to optimize logistics costs and have just in time (JIT) deliveries. The economies of scale are also present reducing the unit cost as the size of the facility and the usage levels of their inputs increase.

Additionally, there is a constant cost lowering response which makes it difficult for investors to see a profitable opportunity in the sector. There are several required certifications for each supplier which are normally mandatory in order to enter the market; such certifications are demanded by the large manufacturer.

The global production growth allows several companies to supply globally, or import globally some of the products, making it other entrants to compete with them. On the other hand, there are other companies, which transfer their productive responsibilities locally, in order to save costs and

increase their presence. Related to the local factor, there is another issue which impedes the entrants to compete easily, it is the constant incorporation of new technologies to improve the competitive position.

4.4.2 Power of Buyers

The buyers have a strong power in the automotive industry of Puebla, as they are able to elevate costs due to their own demands. They have also the power of requiring to hold the inventories as much as they need, increasing the costs to the suppliers.

An opportunity of providing financial support is also available giving the buyer the power of deciding the financial terms. As there is a lack of large assembly manufacturers and large component manufacturers the remaining ones can control strongly the industry and the rules among it. The projects which lead the businesses with the suppliers are normally long-term, as well as the contracts with high volumes are. Then the supplier is forced to keep the demanded standards of quality and production until the end of the contract. If the companies are small, they can also supply the big clients if they have the technology, expertise and requirements that are needed.

4.4.3 Power of Suppliers

Even though the power of the buyers is high, the supplier's power is considered to be medium. There is a dependency on the supplier's security to accomplish the production requirements, if there is some kind of natural disaster the consequence to the customer is harmful to the profits. The type of material demand varies, so the specialization and diversity of materials play the important role in the competition. There are also other important factors which can affect the customer's profitability such as energy costs increases, for example, making the industry highly dependent on power supply.

The industry domain is highly centralized in several transnational firms; these firms have strong economic power and presence not only locally but internationally and could or could not have their core business with the buyer.

4.4.4 Threat of substitutes

Substitutes have a low threat; there is an awareness of similar product competition against other states with automotive clusters as well as constant technology innovation. The electric and hybrid vehicles are emerging and introducing heavily in the markets due to environmental protection and the industries with a lack of R&D could be very possible displaced.

4.5 Value Chain

The Puebla's automotive industry is a global industry with active participants from local and globally regions. Its inputs and components sourced from local suppliers to those who come mainly from China, Europe and the U.S. In reference the market, we can mention the particularity of the anchor company (VW) established in the region, whose models are produced in Puebla and sold

anywhere in the world. The quality, technical and environmental specifications are met to satisfy the laws of each market. Within the auto industry, some local suppliers produce and deliver to the anchor company of the region as well as other OEM or TIERs that are located in other regions of the central part in the Bajio and the North, so as some of the region North America. The supply chain (Figure 29) is essential in the operation manner in this industry, regardless of the distance is intended to reduce the inventory level within the channel always arranging the number and version of suitable products on the time in the assembly line, of course, always at the lowest possible cost.

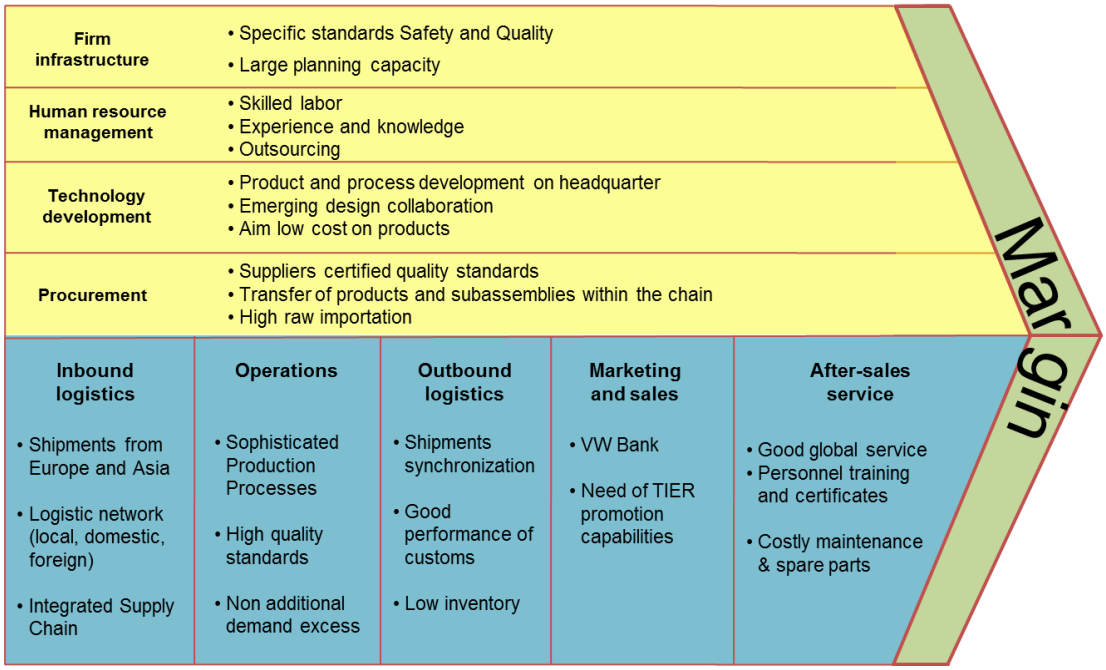


Figure 29. Anchor Automotive Company Value Chain

4.5.1 Primary Processes, Inbound Logistics

- It still relies heavily on imports of certain inputs, raw materials and components made from other parts of the world. Ii is increasing imports of parts and subassemblies to Chinese companies.
- It takes a lot of control in the shipments coordination and a developed network and logistics to meet the required deadlines.
- Reliable sources of supply and information are vital.
- There are local and international logistics companies involved in this sector. Foreign trade activities are basic. A lot of synergies in these activities are made in order to reduce logistics costs.
- Decreasing inventories within the chain is essential. Major controls are taken to bring this reliability.
- No wonder mention, deadlines, quantities and qualities that are required, the chain is highly integrated.

4.5.2 Operations

- The production processes are generally sophisticated. There is a high demand for components. Cost reduction is necessary.
- It seeks to minimize any kind of waste through lean manufacturing philosophies or quality assurance.
- The production processes must meet the highest standards to fulfill the most rigid quality and safety controls. In part, this is accomplished with different kind of audits, testing and laboratory controls.
- International standards of quality and safety are met to ensure proper functionality of the products.
- There should be a high reliability in the performance of all activities involved.

4.5.3 Outbound Logistics

- Export activity in the sector is very high, above 88% of the product is stocked anywhere in the world. To accomplish this, participants must meet all regulations of the host market.
- As in the inbound logistics it is vital to have a developed logistic network and reliable sources of information.
- Transportation companies are closely tied to OEM and TIERs which export to other regions. It is a constant the search for savings in transportation to be more competitive in pricing issues.
- Synergies are sought to find savings in logistics. Transportation of Milk Run types is very common in this region.

4.5.4 Marketing and Sales

- Marketing processes are different from retail. Usually the OEM is who advertise their final products and services.
- In the auto parts sector seeks to participate in specialized media.
- It requires a great abroad promotion concerning the auto parts industries capabilities from the region. The big Automotive Sector attraction from the Bajio region is generating diverting reception of foreign investment.

4.5.5 Post Sales Services

- This is usually done through the OEM channel, which counts a highly qualified staff, distributed worldwide through dealerships maintenance services.
- There is a high correspondence with assurance and reliability topics. Manufacturer communications must be made even if mere suspicion or anomalies possibility or defects in products could jeopardize the integrity of consumers.
- Liability in this sector is imperative.

4.5.6 Infrastructure

- Usually there are several types of financing, from the same parent company, through credit lines at national and international banks to other funding sources such as factoring chains.
- There are also within the same contracts, confidentiality obligations and provisions to ensure liability.
- Of course, each provider must meet international standards of quality and safety of both personnel and product.

4.5.7 Human Resource Management

- This type of industry requires highly qualified personnel in both technical and management issues. Even though we are in a region with high education provision and labor, new entrants must be trained within the industry. We can consider that at the end of their training are qualified as required by the local and international industry. With this we also mean that a better approach is needed between educational institutions and technical and industry in order to have qualified personnel who need less time to be able to fully incorporate this industry.
- It's a trend in this industry outsourcing personnel, especially the operation. Changes in legislation have been made to co-responsible companies in the areas of Social Security to protect workers.
- Important to mention also the work carried out by trade unions in enterprises in the region.

4.5.8 Technology Development

- Even when you have this type of investment, we must remember that still used a lot of manpower to carry out certain processes and activities.
- There is a strong tendency to locally improve the performance of production processes.
- OEM and Tier I made some significant investments in the development of technological and productive capacities during changes or inclusions of new models. The current trend is to try to achieve savings by reusing, sharing or flexible most productive existing infrastructure.
  Even when you have this type of investment, we must remember that still used a lot of manpower to carry out certain processes and activities.
- Also important are the investments during the design phase. Unfortunately, R & D in the region is still in its infancy. The parent companies are the ones who do most of the product development, although cooperation between the parent and local companies is increasing.
- It still depends a lot on foreign companies for development, creation and installation of productive capacities and infrastructure, including the tooling used.
- There is a strong tendency to improve locally the performance of production processes.

4.5.9 Procurement

- The procurement process is central for this industry. It must coordinate a variety of logistics activities and suppliers from diverse regions and countries. Correct timing is essential in this sector.
- Systems of local and international orders are coordinated and programmed linked to the needs of OEM and market. Excellent Foreign Trade activities are required to achieve the objectives of time and quantity.
- It requires a tight integration between all members of the chain. It is essential having products in time and quality according the requirements.
- It should be noted that there is still much dependence from abroad for certain raw materials and more sophisticated components.
- There are a high number of transfers of parts and semi-finished products in the different levels of providers.

4.7 Cluster Map

Puebla's emerging automotive cluster map can be appreciated in Figure 30. The cluster system is compound of upstream, mainstream and downstream players which are supported by some other related and supporting industries that play an influential role as well. Additionally, the role of universities, government institutions and some institutions for collaboration is also involved in the cluster map.

The cluster's productivity is increasing little by little as the car's demand is gaining terrain not only in the national market but internationally as well. It is important to mention that the car's production is not only sold locally but exported to different markets of the world.

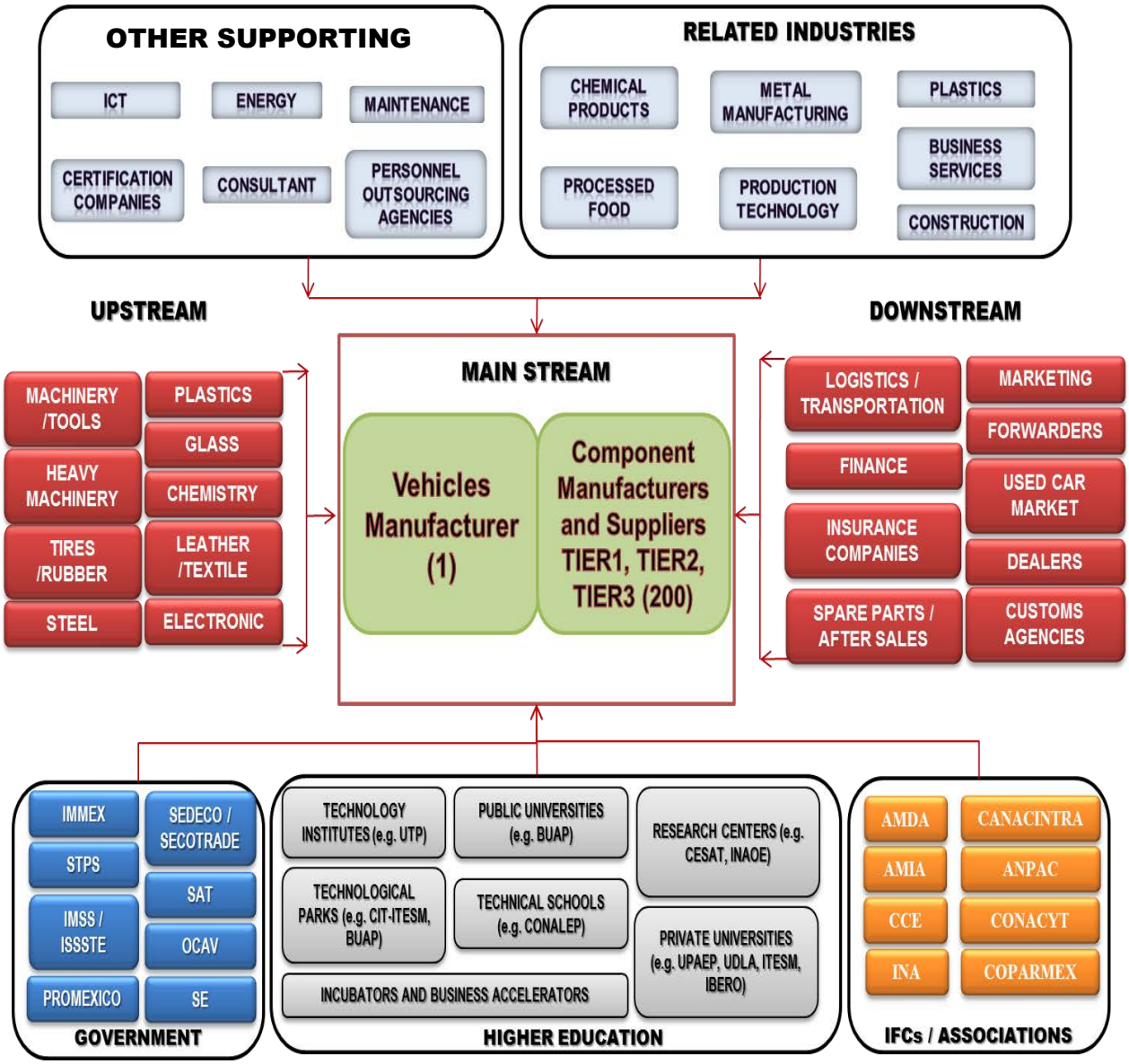


Figure 30. Automotive Cluster Map

4.7.1 Upstream Players

The upstream players are the ones who supply the raw material to the emerging automotive cluster, some of these upstream players have already their own cluster development, some other are not that mature but strong. Some of the players are machinery/tools, steel, plastics, glass, chemistry, leather/textile, electronic, tires/rubber and heavy machinery.

4.7.2 Mainstream Players

Manufacturer of passenger cars (OEM): Volkswagen de México is the subsidiary of Volkswagen established in 1964 on the outskirts of the Mexican city of Puebla, specifically in Cuautlancingo, where about 14.900 people work around. The first cars came in 1967 from its production lines. The Volkswagen plant in México is the largest company in Puebla. They are currently producing the Jetta Classic, Beetle, Jetta A6 and the Golf Variant. This plant is strategically important for the Volkswagen Group since it is the second largest outside Germany as well that 80% of vehicles produced are exported to over 120 countries.

Component manufacturers and suppliers (TIER1): Direct suppliers of the car manufacturers, among the main components which are developed we can find parts of the motor, steering and suspension systems, air-conditioning systems, and electronic components.

Component manufacturers and suppliers (TIER2): Supplier companies for the TIER1 companies, they develop equipment and products used in the more advanced and specialized components of the automotive industry, such as: forged parts, stamped, molded aluminum parts, cast parts, plastic parts, machined parts, etc.

Component manufacturers and suppliers (TIER3): Suppliers of inputs for the TIER2 that meet the necessary quality requirements demanded by the automotive industry.

Main component manufacturers in Puebla: It is worth mentioning that the anchor company has over 700 suppliers from various parts of the world: Argentina, Austria, Belgium, Brazil, Canada, Czech Republic, England, France, Germany, Holland, Hong Kong, India, Ireland, Israel, Italy, Japan, South Korea, Spain, Poland, Portugal, Taiwan, Turkey and USA /See Figure 31)

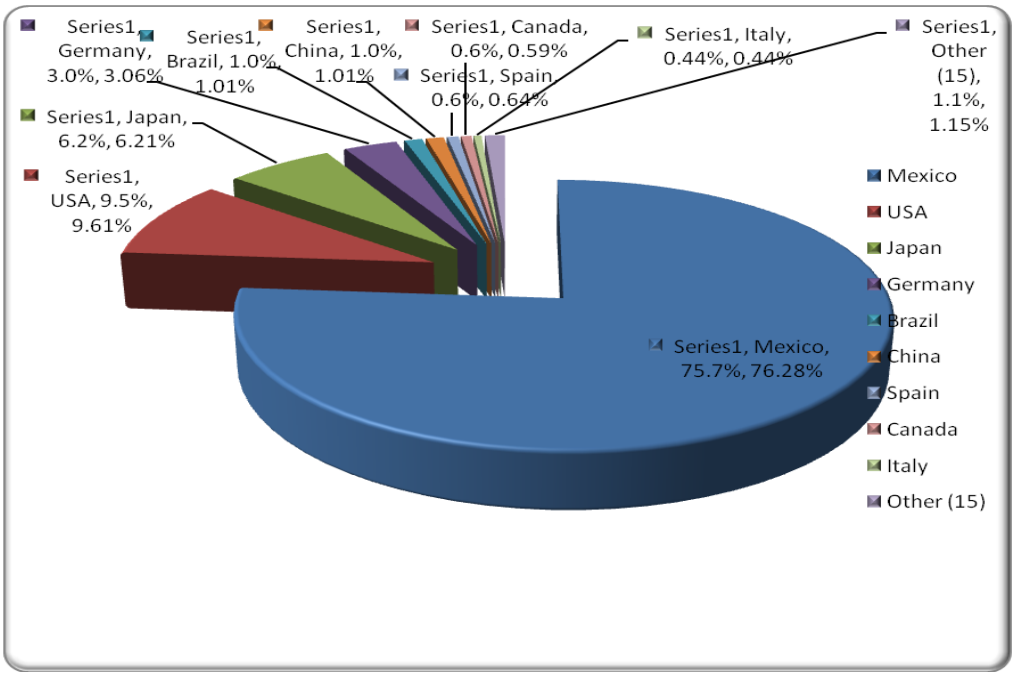


Figure 31. Anchor Company Purchasing By Country

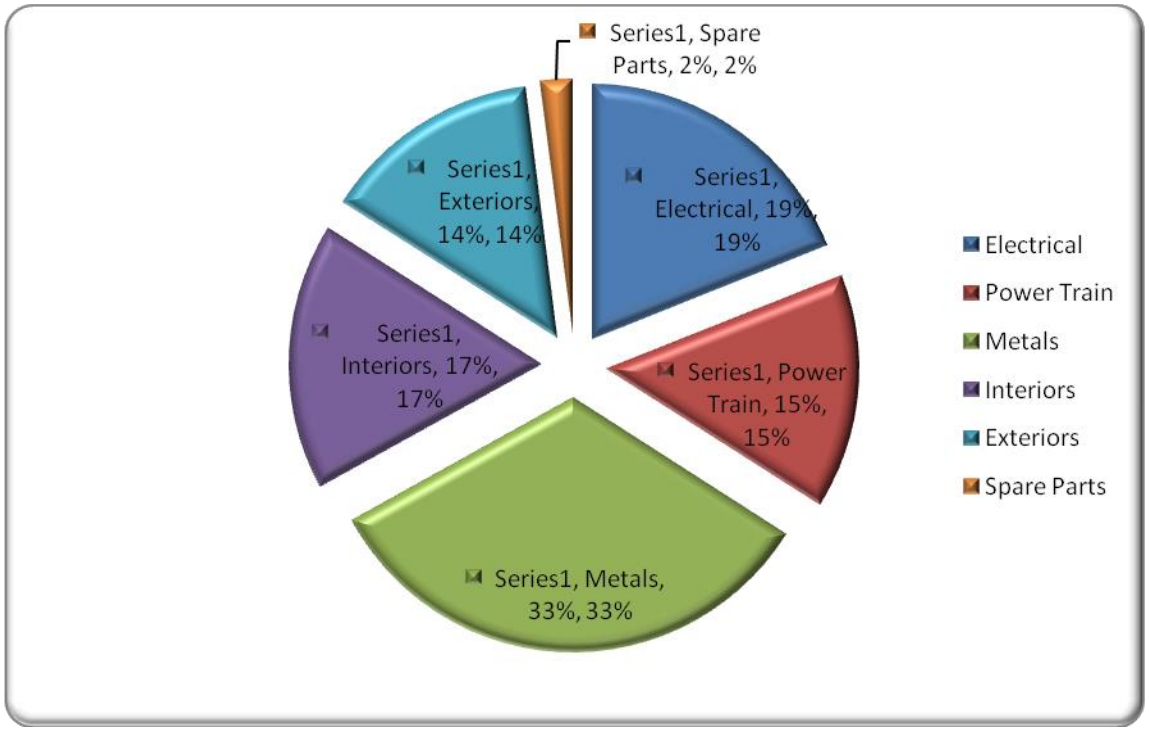


Figure 32. Anchor Company Purchasing By Commodity

Concerning the TIER I the anchor company have, only 25% are located in the region of Puebla, but in percentage, it changes according the purchasing share:

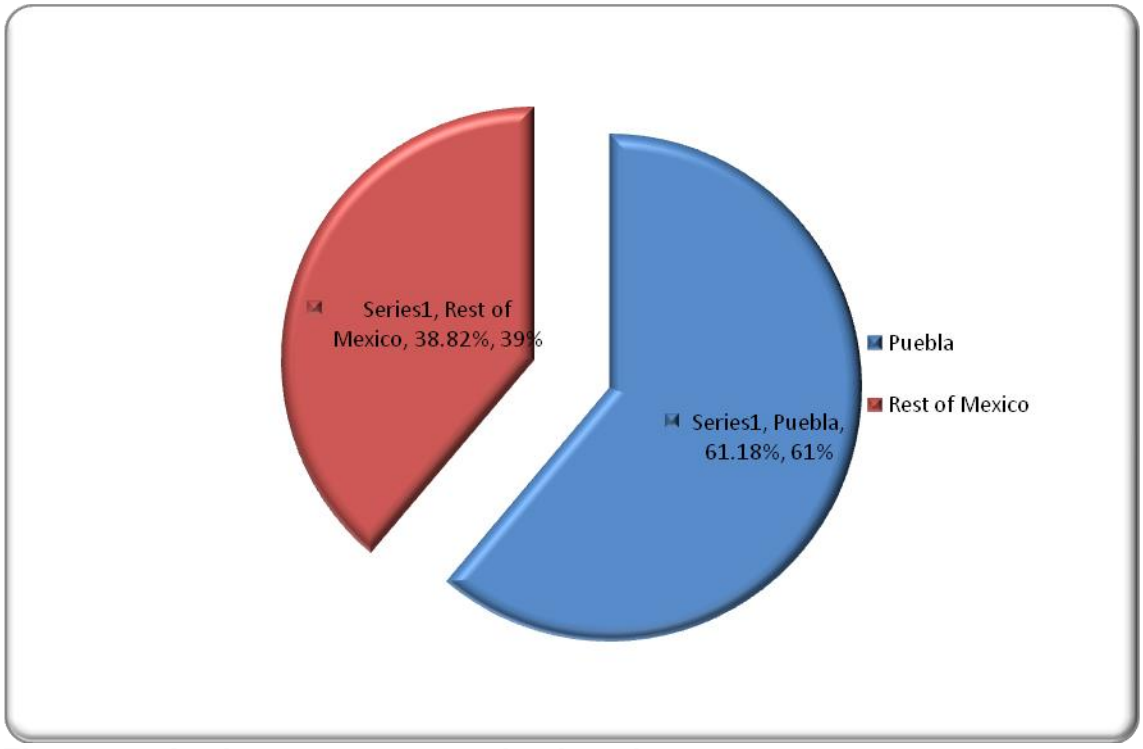


Figure 33. Anchor company purchasing share

Within the region, we find the following auto parts TIER I:

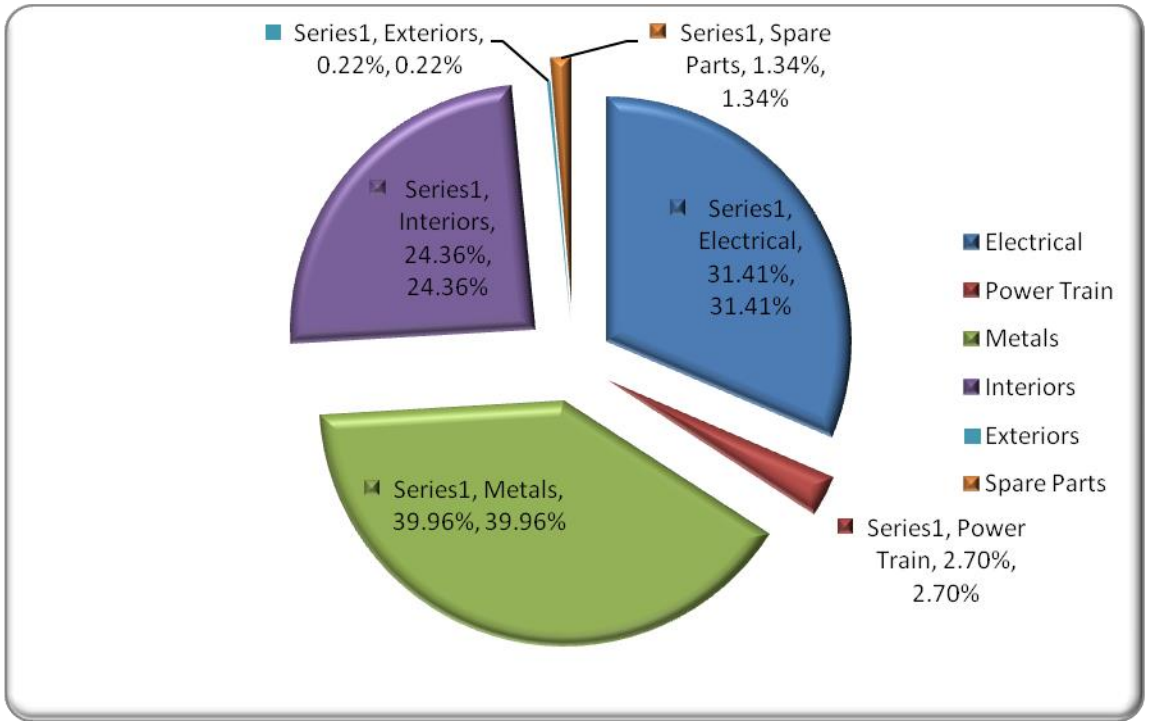


Figure 34. Local Auto Parts Share by Commodities

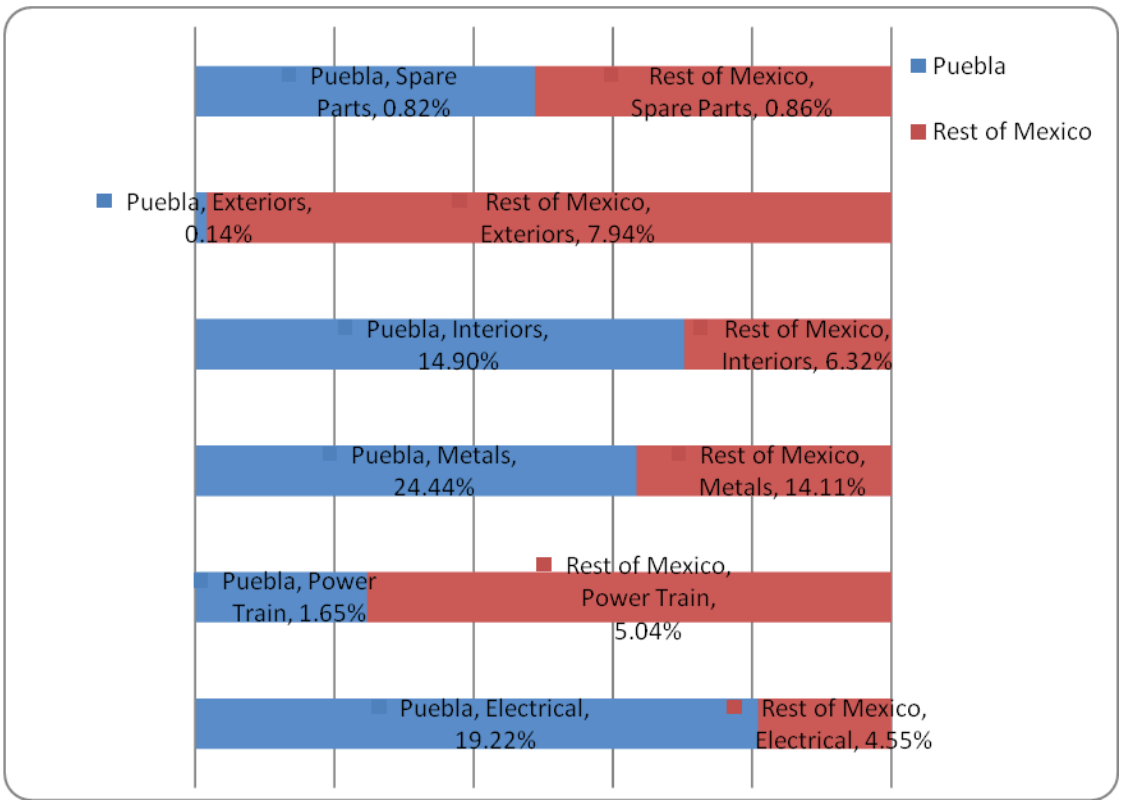


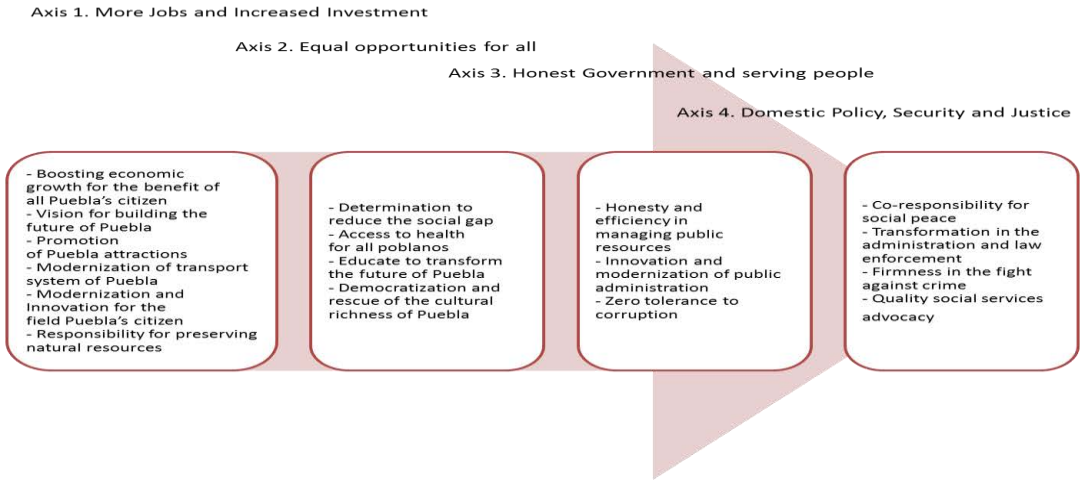
Figure 35. Anchor Company Local vs. Regional Share by Commodities

4.7.3 Downstream Players

In the automotive industry these days, many companies are looking at strategic advantages in logistics and transportation to reduce costs. Today a broad group of activities are available to automotive manufacturers that represent logistics services such as inbound material flow management, inventory control, kitting, container management, packaging, reverse logistics, cross-docking, just-in-time delivery, warehousing, and transportation. All of these activities can be performed in-house or outsourced to third-party logistics providers (3PLs).

4.8 Role of Government

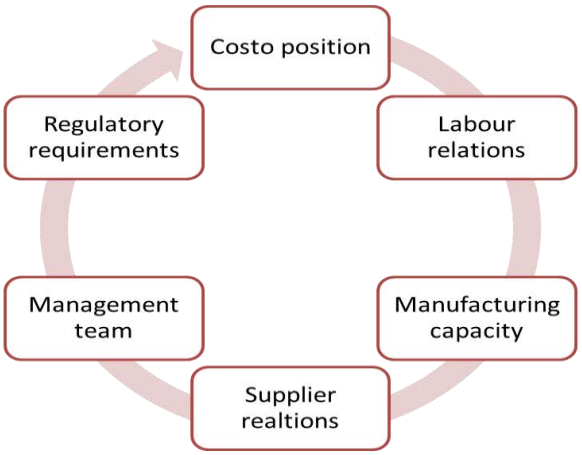
To make a coalition government supports this initiative, along with the different levels of government, it is suggested to carry it out with a shared purpose, generating unit.



In each of the axes, the Government is committed to seeking new opportunities to Puebla, one of which is the growth and development of the automotive cluster.

4.8.1 Automotive Key Success Factors: Puebla's Public Policy Alignment

For industry challenges and key factors for success, Puebla's government has defined a business oriented public to support automakers competitiveness. The key elements of car making related public policies in Puebla are presented in Figure 36.



Cost position
- Government control inputs (water, land, others)
- Supply chain strengthening by focused financing schemes
- Tailor made off-site or in-site training

Labor union negotiations
- Labor union negotiations
- Recruiting and training
- Safety and security
- Social benefits

Manufacturing capacity
- Site selection
- Infrastructure development
- Reliable access to utilities
- Machinery and equipment import facilitation

Supplier relations
- Supply chain development support –TIER1 and TIER2 key suppliers attraction incentives
- Networking and information

Management team
- Talent attraction and retention
- Cost and quality of living
- Landing

Regulatory requirements
- Local and State tax breaks
- Permits and licenses
- Lobbying with federal, state and local authorities

Figure 36. Car Making Related Public Policies

5. Risks, Challenges and Conditions for Success

5.1. Risks

The global automotive model can have a paradigm shift, changes in markets for new technologies, are there a growing demand for rapid incorporation of new technologies (environmental protection, recycling, energy).

As both the automotive and auto parts will continue this trend with new models of cars arriving and those who take up arms in the country. Unprepared to these innovations, both processes generate as products become obsolete with subsequent loss of productivity and competitiveness.

The low investment in R & D encourages us to continue depending on foreign technology in pieces that could be built in Puebla since large assemblers and foreign companies control the components of higher added value and manage the technology, only produced a certain type of components is imported just over half (those with greater technological and capital requirements) this results in the occurrence of parts and services that have less value added. These conditions pose major development opportunities for the creation of technological research centers in the region which involves the integration of both the productive academic and government in order to strengthen innovation in the automotive and auto parts cluster.

It has human and technical resources that give life to the cluster but there is no efficient guidance and links to automotive issues, because there is no planning, comprehensive planning is proposed an educational model that includes part of the needs of the industry general (government, businesses, chambers, universities and innovation).

The current infrastructure can meet current needs, although weak, the automotive cluster, but also presents opportunity margins to develop systems that allow more efficient logistics take the lead in the operation and systematization of the new processes and demands of industry it makes the recommendation to modernize existing infrastructure and the development of new logistics parks suitable to recent technological needs.

5.2. Challenges

After the crisis that occurred in 2009, the Mexican automotive industry emerged stronger from the last economic crisis, which is reflected in their increased participation in national GDP and the manufacturing sector and the fact that just over fifth of exports are made by the industry. The automotive industry has become a major export platform, either because they have moved production processes of the U.S. companies or because the Japanese have considered investing again into strong, to provide supply options close to the United States.

Given the difficult situation facing Europe, which could be at best a decade of low growth, México could overtake Italy, France and the United Kingdom, with a growth rate close to 5% annually, which is complicated but not impossible. To get beat Brazil and reach the number seven as a global producer will require faster growth and / or that the current slowdown in annual growth rates of Brazil below 3% - from spreading.

México should be a natural beneficiary of the economic paradigm shift in China, inheriting important part of the manufacturing fortune there. Today, China as a producer of value-added at a lower cost has lagged behind. Wage increases in China have generated a greater tendency for additional costs in that country. The Chinese labor is becoming less competitive, transportation costs are increasingly prohibitive due to rising fuel prices, and intellectual property protection is becoming more strategic.

In this sense, México has the opportunity to become the manufacturing center for the U.S. market also provides a macroeconomic environment ideal for foreign direct investment, a privileged location and a large domestic market which is growing slowly in their purchasing power, but should grow faster. If México wants to become an economic power needs to improve productivity and the political class must understand that it is necessary to carry out reforms that will surely affect the interests of some powerful groups.

5.3 Conditions of Success

There are eight factors identified as critical for success:

1. Identifiable committed leadership in the government, beyond the keynote speech, aligning policies, actions and resources to the strategy. The different public administrations at different levels should be aligned.
2. A foundation of mutual trust, without disqualifying, building on the arguments and positions of others
3. An office support for ensuring the continuity of work and facilitate interaction and reference-internally and externally throughout the process
4. An external consultancy facilitation, strategic orientation, contrast expert reference and credibility, independence, media reports
5. The support of the local society, business, universities, government institutions and civil organizations, support which, in general, must be achieved throughout the process. It is not usually start
6. Provide government funding that can be mixed and diverse sources starting with the budget, a group of private funding to ensure continuity and other third-party funds may be government, foundations, institutions and international organizations and so on. (In practice, the ideal is a multi-year budgetary commitment to ensure the implementation of the entire project
7. A long-term horizon and greater government efforts to start, so it is advisable for the creation of a non-public-but-engaged by the Government to follow up. The presence of all the Universities in the project facilitates the generation of multiple ad hoc instruments.
8. Strategic Direction. While many short-term and immediate initiatives that a government has to undertake a strategic discourse has become the umbrella head of any initiative, bringing consistency to all government actions.

6. Recommendations Derived from the Analysis Performed, Strategic and Share Value Projects Proposals

6.1. Strategic Projects

México needs new strategies that have a value proposition that includes its competitive position, prominent clusters, and the country's role within their region. Are proposed and described below 3 strategic projects to detonate the automotive cluster:

6.1.1 Strategic Project 1

Audi's attraction to Puebla.

Implement a tailor made incentive and support package based on Audi's needs and requirements.

Potential Audi's installation process:

Tax breaks and exemptions

- Property Tax
- Local Taxes (Payroll Tax)
- Federal leverage, Federal Tax grade, Income Tax

Financing and subsidies

- Access to Federal financing and subsidy schemes
- Tailor-made state incentives
- Access and support for private sources

Modernize existing industrial parks:

- Privatization of industrial parks (e.g. Nuevo León), to improve industrial parks and world class turn in Puebla so we can attract more investment.
- Have industrial railroad spurs.
- Adequate the infrastructure of the industrial parks to the international standards.
- Improve the service in the existent Amozoc and Texmelucan toll booths (e.g. too much time lost when crossing).
- Improve highways infrastructure.

Industrial parks must have turnkey projects for companies willing to establish in Puebla:

- Sufficient industrial land ready (with all the services) for greenfield (e.g. Guanajuato, Queretaro and San Luis Potosi).

6.1.2 Strategic Project 2

Further develop current local suppliers
Shift foreign procurement to local producers in order to increase competitiveness.

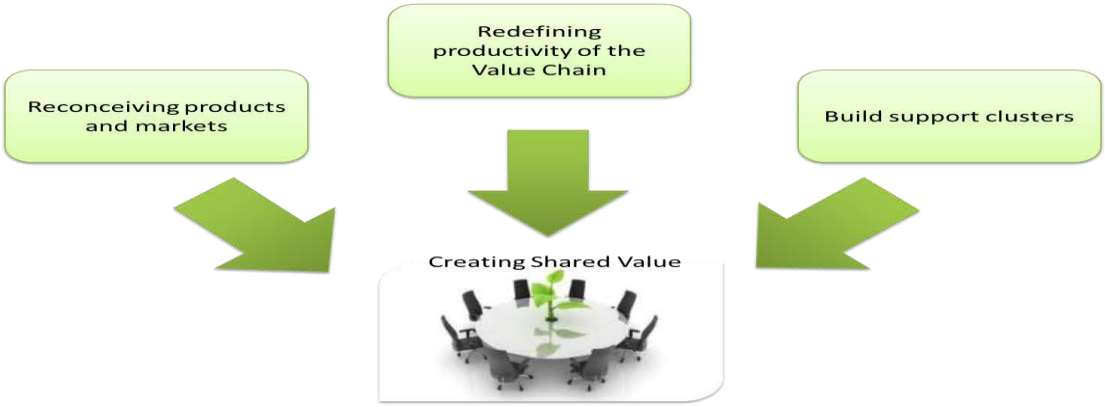
- Analyze the needs of TIERI, TIER2 and TIER3.
- Enhance the strengths, along the value chain, of suppliers and manufacturers of automotive industry and others related.
- Develop productivity and innovation projects to improve business competitiveness (e.g.http://clusterlean.mx/).
- Impacts along the supply chain for tier 1 and tier 2 suppliers: using scorecard or EPP (environment preferable purchasing) or EPD (environment product declaration). Measuring:
    - GHG or greenhouse gas (using protocols)
    - Energy use
    - Water use
    - Waste

6.2. Shared Value Projects

Innovation is a key factor for generating new technologies and intelligent solutions to address challenges such as protecting the environment. The training of human capital in this new scenario is essential to strengthen the sustainability and competitiveness of businesses, the creation of jobs and the improvement of people's income and quality of life.

We are considering to sustain high growth, there is not only continuing put money in the capital, we need to include technology and innovation. In the long run, economic growth is about innovation

In the automotive cluster, the main objective is expanding total pool of economic & social value, are proposing two lines of action to create shared value across the value chain of the automotive cluster.



Research and development projects generated through the Advanced Automotive Research Center, political will shared value: preconceiving products and markets, redefining productivity in the value chain and enabling local cluster development.

Advanced Automotive Research Center.

Increase the level of technological development throughout the whole vehicle, *by developing components friendly with the environment.*

6.2.1 Technological Development Approach

The approach aims to promote technological development and innovation in the automotive cluster in Puebla is the Integral Approach, is a collaboration of industry, academia and government to develop competitive advantages in selected technologies across all systems the vehicle, not only to develop competitive advantages in selected systems (Focus on select systems vehicle) nor technological development focused on non-priority or priority systems (phased approach).

- Approach has the greatest potential to increase the level of technological development in México.
- To position México as a country with development capabilities in all systems in the automobile.
- Best chance of capturing design work overseas.
- Countries with high levels of technological development (Canada, Australia, etc.) are focus on all vehicle systems.
- An integrated approach allows the development of all players in the industry without of the level of technological development of systems.
- México is among the first three suppliers to the U.S. in all automotive systems.

In this sense aims to create an Advanced Automotive Research Center with support from the Government and in collaboration with industry and academia to develop projects that focus on the vehicle fully (e.g. AUTO21 project in Canada or Auto CRC in Australia).

In order to promote technological innovations within the automotive industry, it is proposed to establish an award program for workers in every level of the organizations.

- Interview workers and publish their progress in the daily press and magazines.
- The best innovators awarded each year will be part of a Hall of Fame.
- Integrate a Technical Committee to certify the proposals of businesses and workers.

6.2.2 Open Innovation Automotive Cluster

The aim is to strengthen relationships and synergies between the various economic agents (companies, university associations, public institutions, investors, professionals, entrepreneurs, etc.), promoting and applying a model of participatory work and encouraging two methodologies: Open Innovation and User-Driven Innovation.

Figure 37 shows the structured process for transforming the management of innovation and investment, enabling measuring results, focused on finding solutions to customer needs. The five stages involved in identifying hidden opportunities that exist in existing or new markets, while from stage 6 to 8 uses the information collected to develop new products, improve processes and develop new concepts of products or services.

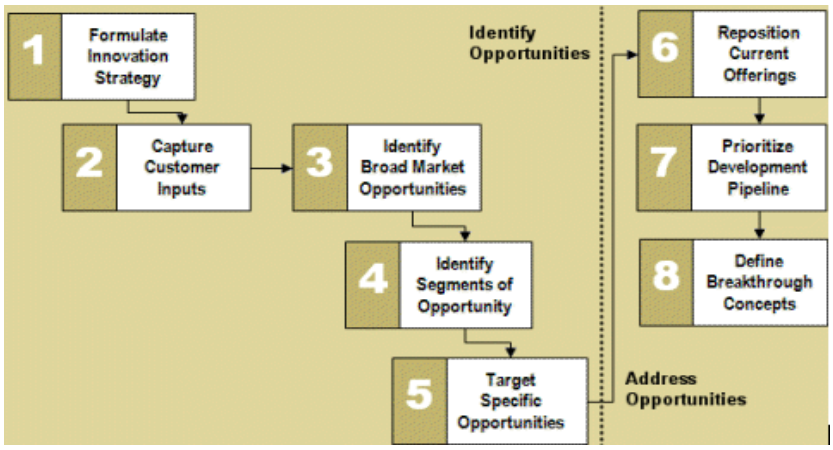


Figure 37. Structured Process for Transforming the Management of Innovation and Investment

Source: http://www.strategyn.co.uk/methodology/index.asp

The positive effects of collaboration make open innovation to be present in cluster policies to streamline and promote innovation as the basis to develop unique value propositions in the Automotive Cluster in the Puebla, México region.

Appendices

A. Top Global Automotive Production

Country	Cars	Commercial Cars	Total	% Change
China	14,485,326	3,933,550	18,418,876	0.80%
USA	2,966,133	5,687,427	8,653,560	11.50%
Japan	7,158,525	1,240,129	8,398,654	-12.80%
Germany	5,871,918	439,400	6,311,318	6.90%
South Korea	4,221,617	435,477	4,657,094	9.00%
India	3,053,871	882,577	3,936,448	10.70%
Brazil	2,534,534	871,616	3,406,150	0.70%
México	1,657,080	1,022,957	**2,680,037**	14.40%
Spain	1,819,453	534,229	2,353,682	-1.40%
France	1,931,030	363,859	2,294,889	2.90%
Canada	990,483	1,144,410	2,134,893	3.20%
Russia	1,738,163	249,873	1,988,036	41.70%
Iran	1,413,276	235,229	1,648,505	3.10%
Thailand	549,770	928,690	1,478,460	-10.10%
UK	1,343,810	120,189	1,463,999	5.10%
Czech Rep.	1,191,968	7,866	1,199,834	11.50%
Turkey	639,734	549,397	1,189,131	8.60%
Indonesia	561,863	276,085	837,948	19.30%
Poland	740,000	97,132	837,132	-3.70%
Argentina	577,233	251,538	828,771	15.70%
Italy	485,606	304,742	790,348	-5.70%

Fuente: OICA (2011)

B. The Global Competitiveness Index in detail

	INDICATOR	VALUE	RANK/142
	1st pillar: Institutions		
1.01	Property rights	4.0	80
1.02	Intellectual property protection	3.2	85
1.03	Diversion of public funds	2.8	94
1.04	Public trust of politicians	2.2	100
1.05	Irregular payments and bribes	3.6	91
1.06	Judicial independence	3.2	89
1.07	Favoritism in decisions of government officials	2.9	79
1.08	Wastefulness of government spending	3.0	75
1.09	Burden of government regulation	2.9	102
1.10	Efficiency of legal framework in settling disputes	3.1	101
1.11	Efficiency of legal framework in challenging regs.	3.3	80
1.12	Transparency of government policymaking	4.2	70
1.13	Business costs of terrorism	4.5	121
1.14	Business costs of crime and violence	2.7	134
1.15	Organized crime	2.7	139
1.16	Reliability of police services	2.6	133
1.17	Ethical behavior of firms	3.7	88
1.18	Strength of auditing and reporting standards	4.8	63
1.19	Efficacy of corporate boards	4.4	83
1.20	Protection of minority shareholders' interests	4.1	72
1.21	Strength of investor protection, 0–10 (best)*	6.0	**36**
	2nd pillar: Infrastructure		
2.01	Quality of overall infrastructure	4.2	73
2.02	Quality of roads	4.3	55
2.03	Quality of railroad infrastructure	2.6	68
2.04	Quality of port infrastructure	4.0	75
2.05	Quality of air transport infrastructure	4.8	65
2.06	Available airline seat kms/week, millions*	1,506.5	**22**
2.07	Quality of electricity supply	4.3	83
2.08	Fixed telephone lines/100 pop.*	17.5	72
2.09	Mobile telephone subscriptions/100 pop.*	80.6	96
	3rd pillar: Macroeconomic environment		
3.01	Government budget balance, % GDP*	-4.1	80
3.02	Gross national savings, % GDP*	25.1	**40**
3.03	Inflation, annual % change*	4.2	77
3.04	Interest rate spread, %*	4.1	**46**
3.05	General government debt, % GDP*	42.7	82
3.06	Country credit rating, 0–100 (best)*	67.6	**41**
	4th pillar: Health and primary education		
4.01	Business impact of malaria	6.3	75
4.02	Malaria cases/100,000 pop.*	9.0	80
4.03	Business impact of tuberculosis	5.9	**45**
4.04	Tuberculosis incidence/100,000 pop.*	17.0	**38**
4.05	Business impact of HIV/AIDS	5.2	71
4.06	HIV prevalence, % adult pop.*	0.3	69
4.07	Infant mortality, deaths/1,000 live births*	14.7	68
4.08	Life expectancy, years*	75.3	**50**
4.09	Quality of primary education	2.8	121
4.10	Primary education enrollment, net %*	98.1	**22**
	5th pillar: Higher education and training		
5.01	Secondary education enrollment, gross %*	89.9	64
5.02	Tertiary education enrollment, gross %*	27.2	79
5.03	Quality of the educational system	3.1	107
5.04	Quality of math and science education	2.8	126
5.05	Quality of management schools	4.5	**49**
5.06	Internet access in schools	3.8	82
5.07	Availability of research and training services	4.5	**41**
5.08	Extent of staff training	3.8	80

	INDICATOR	VALUE	RANK/142
	6th pillar: Goods market efficiency		
6.01	Intensity of local competition	4.6	84
6.02	Extent of market dominance	3.0	124
6.03	Effectiveness of anti-monopoly policy	3.2	120
6.04	Extent and effect of taxation	3.3	83
6.05	Total tax rate, % profits*	50.5	110
6.06	No. procedures to start a business*	6	**34**
6.07	No. days to start a business*	9	**35**
6.08	Agricultural policy costs	3.4	113
6.09	Prevalence of trade barriers	4.6	57
6.10	Trade tariffs, % duty*	8.1	91
6.11	Prevalence of foreign ownership	5.5	**23**
6.12	Business impact of rules on FDI	4.9	52
6.13	Burden of customs procedures	4.1	74
6.14	Imports as a percentage of GDP*	32.1	106
6.15	Degree of customer orientation	4.8	55
6.16	Buyer sophistication	3.4	73
	7th pillar: Labor market efficiency		
7.01	Cooperation in labor-employer relations	4.3	63
7.02	Flexibility of wage determination	4.8	89
7.03	Rigidity of employment index, 0–100 (worst)*	41.0	108
7.04	Hiring and firing practices	3.1	123
7.05	Redundancy costs, weeks of salary*	47	85
7.06	Pay and productivity	3.7	84
7.07	Reliance on professional management	4.1	75
7.08	Brain drain	3.4	61
7.09	Women in labor force, ratio to men*	0.55	120
	8th pillar: Financial market development		
8.01	Availability of financial services	4.6	69
8.02	Affordability of financial services	3.9	85
8.03	Financing through local equity market	3.5	74
8.04	Ease of access to loans	2.4	92
8.05	Venture capital availability	2.5	78
8.06	Soundness of banks	5.6	**40**
8.07	Regulation of securities exchanges	3.8	99
8.08	Legal rights index, 0–10 (best)*	5.0	76
	9th pillar: Technological readiness		
9.01	Availability of latest technologies	5.2	61
9.02	Firm-level technology absorption	4.6	81
9.03	FDI and technology transfer	5.2	**24**
9.04	Internet users/100 pop.*	31.0	79
9.05	Broadband Internet subscriptions/100 pop.*	10.0	52
9.06	Internet bandwidth, kb/s/capita*	2.3	84
	10th pillar: Market size		
10.01	Domestic market size index, 1–7 (best)*	5.4	**11**
10.02	Foreign market size index, 1–7 (best)*	5.9	**14**
	11th pillar: Business sophistication		
11.01	Local supplier quantity	4.8	63
11.02	Local supplier quality	4.8	53
11.03	State of cluster development	4.0	**41**
11.04	Nature of competitive advantage	3.3	72
11.05	Value chain breadth	4.0	**40**
11.06	Control of international distribution	4.0	70
11.07	Production process sophistication	4.1	**46**
11.08	Extent of marketing	4.2	59
11.09	Willingness to delegate authority	3.6	69
	12th pillar: Innovation		
12.01	Capacity for innovation	3.0	76
12.02	Quality of scientific research institutions	4.0	54
12.03	Company spending on R&D	3.0	79
12.04	University-industry collaboration in R&D	4.0	**45**
12.05	Gov't procurement of advanced tech products	3.5	75
12.06	Availability of scientists and engineers	3.9	86
12.07	Utility patents granted/million pop.*	0.9	58

Source: World Economic Forum, Executive Opinion Survey

C. México Top Trade Agreements

1. North American Free Trade Agreement
2. México-Chile Free Trade Agreement
3. México-Costa Rica Free Trade Agreement
4. México-Peru Free Trade Agreement
5. México-Israel Free Trade Agreement
6. México-Nicaragua Free Trade Agreement
7. México- European Economic Union Free Trade Agreement
8. México-Northern Triangle Free Trade Agreement (Guatemala, Honduras, El Salvador)
9. México- States of the European Free Trade Association (Iceland, Liechtenstein, Norway and Swiss)
10. Economic Complementation Agreement with Uruguay
11. México-Japan Agreement for the Strengthening of the Economic Partnership
12. ACE 55: Economic Complementation Agreement with Mercosur (Argentina, Brazil, Uruguay and Paraguay).

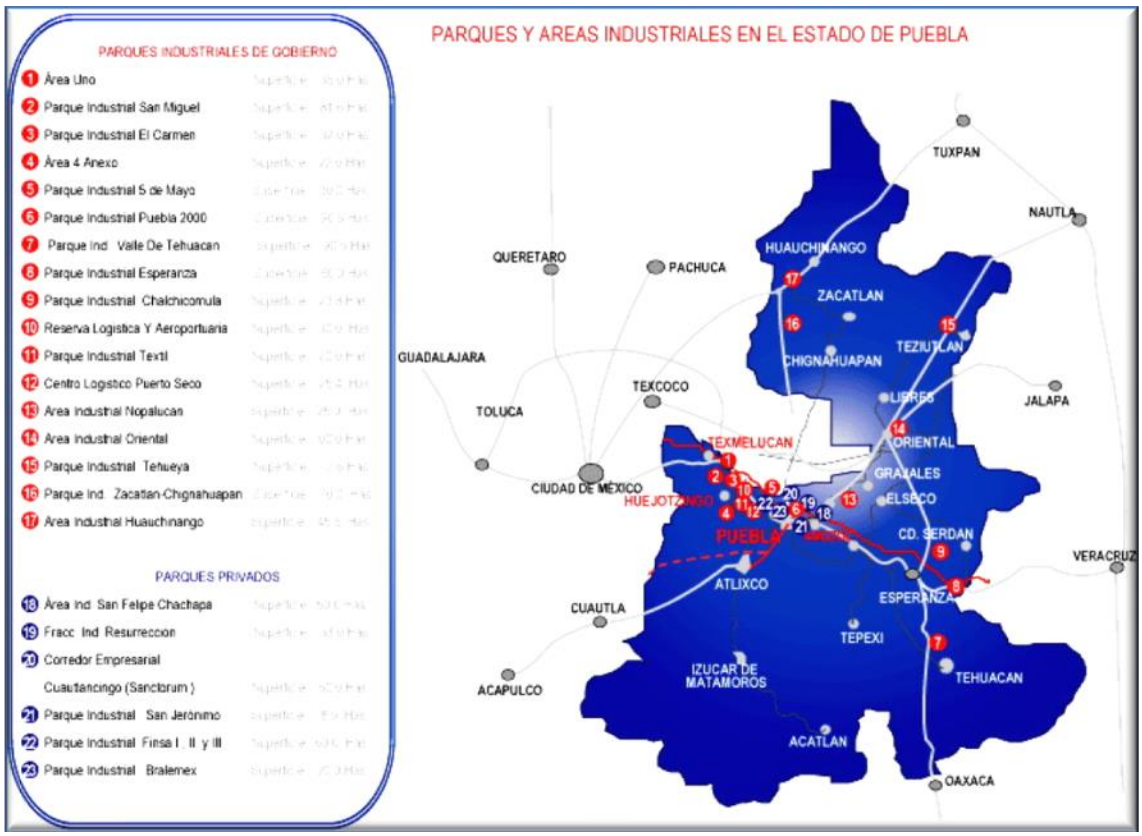
D. Location of automotive plants in México

Source: Secretaria de Economía

Company	State	City	Start year	Product
Chrysler	Coahuila	Saltillo	1981	Ram Trucks
	Coahuila	Saltillo	1981	Motors
	Mexico	Toluca	1968	Journey, PT Cruiser out of production in 2010
Ford Motor	Mexico	Cuautitlan	1932	In 2007 closed for renovations
			2010	Reopen with New Fiesta
	Sonora	Hermosillo	1986	Fusion, Milan and MKZ. For Exportation Fusion Hybrid. Milan
	Chihuahua	Chihuahua	1983	Motors
General Motors	Coahuila	Ramos Arizpe	1979	SRX, Captiva, Chevy, HHR, Monza, Vue
	Guanajuato	Silao	1992	Escalade EXT,GMC Sierra, Avalanche, Pick up Silverado. For exportation Silverado Hybrid, Sierra Hybrid
	Mexico	Toluca	1935	Motors
	San Luis Potosí	San Luis Potosí	2007	Aveo
Honda	Jalisco	El Salto	1995	Accord 4-door out of production in 2007
			2007	CR- V
Nissan	Aguascalientes	Aguascalientes	1982	Sentra, Tiida HB and March 4-cylinder engines
	Aguascalientes	Aguascalientes		
	Morelos	Cuautla	1966	Pick up Trucks, Frontier L4, Tsuru and Tiida Sedan.
Toyota	Baja California Norte	Tecate	2004	Tacoma
Volkswagen	Puebla	Puebla	1954	Beetle, Jetta / Clasico, Jetta TDI / Clasico TDI, Nuevo Jetta, Sportwagen and Heavy Trucks
	Guanajuato	Silao	2013	High technology engines

Source: Secretaria de Economía

E. Parks and industrial areas in the State of Puebla



F. Auto parts companies of Puebla

1. Special Car México SA de CV Puebla Manufacture and repair automotive accessories
2. Autotek Industrial de México SA de CV Puebla manufactures automotive parts
3. Benteler de México SA de CV Manufacture of auto parts Puebla
4. Duroplast Inc. de CV Cuautlancingo Manufacture of electrical parts for the automotive industry
5. S. Findlay Industries in México of R.L. C.V. Cuautlancingo Manufacture of automotive interiors
6. S. Industrial Ibayro of R.L. of M.I. Puebla mechanical machinery manufacturing
7. Lunkomex Inc. de CV Puebla Manufacture of other parts and car accessories
8. Johnson Controls Automotive México SA de CV Cuautlancingo Manufacture of seats and automotive parts
9. Luk Puebla SA de CV Manufacture of automotive parts Puebla
10. Spin Casting and Metal Inc. de CV Puebla auto parts manufacturing and processing of metals
11. Brakes Rassini SA de CV San Martin Texmelucan Manufacture of auto parts
12. Volkswagen de México SA de CV Cuautlancingo vehicle assembly and auto parts
13. Jorge Galindo Muñoz Feliciano Puebla Manufacture of parts and metal parts (lathe tall.)
14. Peralta Pérez Puebla Bibiano Repair Service for cars and trucks
15. Aksys de México SA de CV Amozoc plastic injection auto parts
16. FTE Mexicana SA de CV Production of automotive parts Amozoc
17. Alcoa Fujikura de México SA de RL de CV Manufacture of automotive parts Cuautlancingo
18. Federal Mogul Inc. de CV Puebla Manufacture of auto parts (bearings)
19. Norm SA de CV Manufacture of auto parts Cuautlancingo
20. Kayser of México Inc. de CV Cuautlancingo Manufacture and assembly of auto parts
21. FFT México SA de CV Puebla Manufacture and assembly of automobiles
22. Linde Pullman de Puebla SA de CV Coronango Manufacture of auto parts and rolled blanks
23. México ThyssenKrupp Metallurgical Inc. de CV San Miguel Xoxtla Assembly auto parts / auto parts manufacturing
24. Neyr of México Inc. de CV Cuautlancingo injection plastic and metal parts
25. Kunststoff Techniek Trier of México Inc. de CV Manufacture of auto parts Amozoc
26. Ideal Automotive Puebla SA de CV Cuautlancingo Manufacture of parts for the automotive industry
27. Karmann Ghia de México S. of R.L. de CV Fabric awnings Cuautlancingo car

28. Refa Mexicana SA de CV Manufacture of auto parts Cuautlancingo
29. Font End Hella Inc. de CV Manufacture of automotive parts Cuautlancingo
30. Ideal Fibres & Fabrics Inc. Wielsbeke de CV Manufacture of automotive spare parts Cuautlancingo
31. Gestamp Puebla SA de CV Automotive stamping Cuautlancingo canvas.
32. México Duroplast Faurecia SA de CV Manufacture of auto parts Cuautlancingo
33. Trhemsa Inc. de CV Amozoc Manufacture of dies, molds and mechanical models
34. Saval SA of México de CV Puebla seats Manufacture of auto coverage
35. Sanchez Josefina Araujo Ma.de Puebla Angels Purchase / sale of auto parts and lubricants
36. Roli Maintenance Inc. de CV Manufacturing Puebla assembly, machine repair w / industries
37. Kirchoff Mexicana SA de CV Purchase Cuautlancingo automotive parts manufacturing
38. Continental Automotive Guadalajara México, SA de CV Electro Cuautlancingo automotive fans
39. Unicar Mexicana SA de CV Manufacture of auto parts Puebla
40. Automotive Parts Draexlmaier México s. of R.L. Ltd. Manufacture of automotive parts Huejotzingo
41. Continental Automotive Guadalajara México, SA de CV Puebla equipment for the automotive industry
42. Speaker Production Mexicana SA de CV Manufacture of auto parts Puebla
43. Garlo Inc. de CV Manufacture of automotive wiring Puebla
44. Kratzer Automation Inc. de CV Cuautlancingo Manufacture of parts and accessories for cars
45. ThyssenKrupp Automotive Systems de México SA de CV San Miguel Xoxtla assembly and auto parts manufacturing
46. Lends México Thyssenkrupp Inc. de CV San Miguel Xoxtla auto parts manufacturing and assembly
47. Walker Autoparts Inc. de CV Manufacturing auto parts Amozoc
48. Holding Skf Mexicana SA de CV Puebla Manufacture of bearings and bearing.
49. Gabin Home Center Inc. de CV Puebla Manufacture of blinds and curtain rods
50. Seal de México SA Brummer de CV Manufacture of industrial spare parts Puebla
51. Lacna México II s. of R.L. de CV San Miguel Auto Parts Automotive Xoxtla
52. Cummins of East S.A. de C.V. Puebla Manufacture and sale of automotive parts
53. Meritor Mexicana SA de CV Manufacture of auto parts Cuautlancingo

54. Sas Automotive Systems Inc. de CV Manufacture of auto parts Cuautlancingo
55. Automotive Veritas SA of México de CV Cuautlancingo manufacturing and automotive accessories
56. Mahle Filter Systems México SA de CV Manufacture of auto parts Cuautlancingo
57. Peguform México SA de CV Cuautlancingo Factory Car Parts & Accessories
58. Federal Mogul Inc. de CV Puebla Manufacture of auto parts (pistons)
59. Birkart Globistics México SA de CV Manufacture of auto parts Cuautlancingo
60. Johnson Controls Automotive México S.de RL de CV Puebla Manufacturing and sales of auto parts
61. Metals de México SA Multiserv de CV San Miguel Xoxtla Autoparts
62. Kingtec of México Inc. de CV Autoparts Cuautlancingo
63. 63) Concorde Group Inc. de CV Cuautlancingo Manufacturing and assembly of auto parts
64. 64) Reynard México SA de CV San Martin Texmelucan Automobile Factory and Armadora
65. 65) Silao SA Grupo Antolin de CV Autoparts Cuautlancingo
66. 66) Injection with Technology Inc. de CV Puebla Autoparts
67. Pullman de Puebla SA de CV Autoparts Coronango
68. Eisentech México SA de CV Automotive Parts Factory Puebla

Source: Sistema Empresarial Mexicano (SIEM)

G. Shared Value Efforts

There have been some efforts to create shared value, especially in Technology Development, among companies, universities and society, as shown below:

University Consortium

Creation of inter-regional center to strengthen automotive cluster, a project coordinated by the Instituto Tecnologico y de Estudios Superiores de Monterrey (ITESM) Campus Puebla and between the participating institutions include the Autonomous University of Puebla (BUAP), the National Institute of Optics and Electronics (INAOE), the Universidad Iberoamericana Puebla, the Popular Autonomous University of Puebla (UPAEP), the Technological University of Puebla (UTP), Tecnológico de Monterrey Campus Hidalgo, as well as science and technology advice for the states of Hidalgo , Puebla and Tlaxcala.

The draft will invest 27 million pesos in order to impact on improving enterprise competitiveness by enhancing their production, generating products with latest technology and highly skilled jobs.

In January 2012 the application was accepted through the Regional Development Fund Institutional Development Science, Technology and Innovation (FORDECyT).

It is estimated that the economic impact of this center will be 61.6 million pesos annually. Companies will have operational savings equivalent to 40 million pesos and will increase the disposable income of the workforce of the entities involved, corresponding to 21.6 million.

Objectives of the center

In addition to implement mechanisms to promote and strengthen certification processes in the companies in the region, the Center for Automotive Industry Development in México seek to develop a training program of specialized human resources that are required by the automotive sector and to integrate the capabilities institutions of the region into four levels: technical, senior technician, and graduate to service areas and Stamping Metalworking, Plastics & Molds, and Electronics..

Also run advanced manufacturing processes and product design companies representative of the region to convert their production processes and improve their competitiveness and will address the design and implementation of a supplier development suited to the characteristics of the region.

UDLAP

Volkswagen México and the UDLAP University have signed, since March 2011, an agreement of project collaboration. It is an academic type agreement to share investigation topics, scholarships, creation of laboratories, as well as creation of subjects related to the automotive industry.

A center of electric-electronic competences was created, where VW has donated specialized equipment in order to develop automotive competences in the future engineers.

This project is aimed to develop the academic expertise of students towards a better specialized labor availability. Integrating shared value to the industry by giving additional help to the universities.

UPAEP

The link made by the UPAEP to society and business, in this case, VW de México, has been blasting of large projects such as:

- Creation of Automotive Design Engineering, which together with the degree of Industrial Engineering, Manufacturing Engineering and Mechatronic Engineering Auto Parts, form a good educational provision for the automotive and auto parts cluster.

- Volkswagen México and the UDLAP University have signed, since March 2011, an Collaboration agreement between VW de México and UPAEP in 2009, which offers scholarships to students of Engineering Excellence in Automotive Design

- Donation of VW México to the new laboratories of Automotive Design Engineering: New car Jetta 2011 and a coordinate measuring machine capable of measuring any type of geometry, from a very small piece to a complete body.

- Collaborative projects with German universities.

ITESM-Puebla

Currently, the Tecnológico de Monterrey has strong relationships with the automotive industry through programs of scientific and technological development through its Centre for Automotive Mechatronics Research (CIMA) and the Centre for Development of the Automotive Industry of México (CeDIAM). Furthermore, it has the Chair in Automotive Engineering pertaining to CIMA and whose research interests are the same as the areas of graduate concentration.