

## **Chapter 4 Empirical analysis about Automotive Supplier parks in Mexico**

After talking about supplier parks on a general approach in the second chapter, the present chapter is dedicated to the description and evaluation of the supplier park landscape in Mexico, based on secondary data and informal questions asked to the suppliers.

The chapter is structured as follows: The first part is going to be about the general supplier park landscape and the history of the supplier park development in Mexico. Thereafter, two specific supplier parks are going to be described, with particular emphasis of their functioning and the OEM-supplier-relationship. Concerning the last issue mentioned I am going to illustrate an example of relationships between suppliers and the OEM.

The last part is dedicated to the evaluation of the supplier park and to elaborate if the advantages, disadvantages and dilemmas investigated in the general approach can be found in the Mexican environment as well.

### **4.1. Automotive Supplier park landscape in Mexico**

Supplier parks in Mexico appeared in the mid 1990's by the time when the Mexican automotive industry was in the process of great transformation due to a huge debt crisis in Mexico in the 1980's and the signing of NAFTA at the beginning of the 1990's.

By the time the NAFTA was signed, Volkswagen, as one of the first car manufacturer, saw the opportunity of taking advantage of the free-trade-agreement and initiated the plan to invite suppliers to Mexico for close collaboration. In 1992, they started building the *Parque FINSA*, the first Mexican supplier park, next to their plant.

As a consequence of Volkswagen's approach, many big car manufacturing companies attracted suppliers close to their plants in Mexico. However, these industrial complexes cannot be considered supplier parks as the suppliers build up their plants without planning it in conjunction with the car manufacturers.

In the actual decade, many OEMs decided to strengthen their relationships with their suppliers and decided to construct supplier parks. One example is Ford,

who built a new park in Hermosillo, Sonora (2003-2005). In December of 2007, Chrysler initiated its new supplier park in Toluca, composed by 8 Tier1-suppliers.

General Motors recently started building a he supplier park recently in San Luis Potosi.

Mexico is particularly attractive for the car manufacturers due to long tradition and experience in the automotive sector. Besides, Mexico still offers some really important advantages compared to low-cost counties, for example relatively good infrastructure (compared to China or India).

## **4.2 Cases: Mexican Automotive Supplier Parks**

### *4.2.1 Parque Industrial FINSA Puebla*

The beginning of the automotive industry in Puebla goes back until the decade of the 1960's, when Volkswagen de Mexico, in the following VWM, constructed a plant in the north of the city dedicated to the fabrication of the Volkswagen Sedan for the domestic market. Until the beginning of the 1990's, VWM produced almost two thirds of production for the domestic markets (old beetle)<sup>1</sup>. It lasted until 1992, when, as a result of severe labour conflicts, VWM started modifying its mode of production and working system. Stricter quality management, reduce in hierarchy and a productive payment system, were now initiated in order to become more competitive and to assure the future of the factory. At the same time, VWM started to restructure its supplier network. This contained two basic elements: First, the invitation and pressure of many German suppliers to come over to the Puebla region, and second, the construction of an industry park located directly beside the Volkswagen plant, primarily for the construction of the New Beetle.

The construction of *Parque FINSA* started in 1992 and finished in 1996. In the course of the *Parque FINSA*, many new industrial parks were either built, or invaded by automotive suppliers which seek the vicinity of Volkswagen. The Puebla region counts about 70 to 80 top suppliers<sup>2</sup>. They are located in various industrial parks in the greater Puebla region such as: *Chachapa, Parque Industrial*

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<sup>1</sup> Pries (1999), p. 86

<sup>2</sup> Pries (1999), p. 87

5 de mayo or Puebla 2000. However, in the following the exclusive focus will be turned to the *Parque Industrial FINSA*.

### *Parque Industrial FINSA Puebla*

The park has a total surface of 300 hectares (constructed surface: 478,799 sq. meters) and is located on one adjacent site of the park (see figures 14 and 15). In total, FINSA extended the park three times since the beginning of its operations. VWM employs 13,800 people in its plant<sup>3</sup>. The total number of employees of the supplier firms is at approximately 8,000 people.

The annual production capacity is of 347,000 vehicles. At the moment VWM produces the *Jetta*, the *New Beetle*, the *Bora/Jetta* and most recently the *Bora/Jetta station wagon*<sup>4</sup>.



Fig. 14

Source: <http://www.fumec.org.mx/espanol/recursos/6-VWM.pdf>



Fig. 15

Source: FINSA webpage

### *Administration*

The administration of the facilities in the park is conducted by FINSA<sup>5</sup>. In Puebla, the company rented 30 ha of the industrial area for 20 years. Volkswagen meanwhile, sold the complete area to FINSA. In opposite to other industrial parks run by the company, FINSA Puebla is exclusively dedicated to the just-in-time supply for the Volkswagen plant suppliers<sup>6</sup>. In order to enter the park, suppliers

<sup>3</sup> Volkswagen de México (2007), p. 1

<sup>4</sup> Volkswagen de Mexico (2007), p.1

<sup>5</sup> FINSA is one of Mexico's leading companies in real estate and runs about ten industrial parks throughout Mexico

<sup>6</sup> FINSA webpage <http://www.finsa.net/propiedadesDisp.htm>

first have to contact FINSA for available space in the park. The minimum length of the rent is of 5 years.<sup>7</sup>

Furthermore, FINSA, in conjunction with Volkswagen, takes care of the water supply, the maintenance of the buildings, the pathways and the telecommunication. The *Comision Federal de Electricidad* (CFE), the state-run electricity company in Mexico, built up a new power station in the park interior in conjunction with VWM and FINSA.

The Logistics activities in the park are offered by SEGLO, a subsidiary of the German company *Schnellecke*. SEGLO takes care of the part deliveries and the preparation for the car exportations<sup>8</sup>.

### *Supplier landscape*

When Volkswagen initiated the plan to built an automotive supplier park in Puebla, they invited (and somehow pressured) their German-based suppliers to come over to Mexico. Today, one can still find the majority of the suppliers being German-based. The trend towards global suppliers can be found in Puebla as well, with the presence of some of the biggest automotive suppliers worldwide (Lear, Delphi, and Johnson Controls etc.). All actual suppliers are listed in Appendix 2. Mexican suppliers are, except for two companies, practically excluded from *Parque FINSA*.

### *Employment*

There is no uniform employment system in the supplier park, i.e. each company runs its own human resources department and is responsible for its own personnel selection process. However, the HR-departments have to select the employees by taking into consideration the demanding working condition of VWM.

The salaries are, accordant to the suppliers, performance-based, i.e. the companies measure productivity, daily production quotes, attitude towards the job, among other criteria. Usually the qualifications are published under a point

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<sup>7</sup> Steiert (2001), p. 15

<sup>8</sup> Steiert (2001), p. 17

system. This system is established openly so everyone knows what to expect and what to do to heighten their salaries.<sup>9</sup>

#### *Relationship OEM-supplier*

Concerning the relationship between the OEM and the suppliers, there is a clear dominance of VWM. The suppliers have to align their production and their work shifts based on the requirements of VWM. They are extremely dependent on the orders of Volkswagen.

In order to become a member of VWM's supplier network, the companies have to comply with the international quality standards ISO 9000-9004, QS 2000 and actually VDA 6.1.<sup>10</sup>

The communication between VWM and its suppliers is primarily carried out by face-to-face contact (formal or informal meetings) and an Electronic-Data-Interchange-System (EDI). Volkswagen adopted a uniform EDI-system in the park binding for all companies settled there, which at the same time means that the suppliers do not have the freedom of choosing the soft- and hardware packages they desire.

On behalf of the software, VWM expects to achieve the following aims:

- Time reduction and optimizing information flow among the companies
- Improvement in the distribution and transport of car parts
- Reduction of inventory levels
- Improvement in planning and effective response
- Assuring the data flow<sup>11</sup>

#### *Case Johnson Controls*

Johnson Controls (JC) is an example of how deeply Volkswagen integrates the suppliers in their operations and how meticulous the collaboration is planned. Before Volkswagen built the park, they got in contact with the Johnson Controls headquarters in the USA to mark the construct of a possible involvement of

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<sup>9</sup> Nuñez (1999), p. 16

<sup>10</sup> Pries (1999), p. 89

<sup>11</sup> Marquez (2005), p. 48

Johnson at the FINSA Park. Once they made an agreement concerning the collaboration in Mexico they started to plan in detail the principles of their work and the collaboration concerning Research & Development.

Nowadays, Johnson, who has 20 different locations in the whole country, has a specific area of development where they can, according to the goals of Volkswagen, plan and elaborate constant improvements in their production.

As one employee mentioned during one interview, JC and VWM established a really fertile relationships, based on a lot of informal face-to-face contact.

On the other hand, JC Puebla is extremely dependent on VWM as it is the only client they supply from their plant in Puebla.

Furthermore, the whole technology JC uses in Puebla is exclusively designed for the assembly of the Volkswagen vehicles and it is not possible to use it for other type of cars.

#### *Supplier park type*

The FINSA supplier park can not be attributed exactly to a supplier park type described in the previous chapter. It is a hybrid version, as it has elements from both a modular consortium and an industrial condominium.

On the one hand, the park is administrated by a single company, which shows a tendency towards a modular consortium. On the other hand, the suppliers are managing their own personnel and not requested to procure a uniform software system, which shows a tendency towards an industrial condominium.

#### *4.2.2 Ford Futura Hermosillo*

Ford began its operation in Hermosillo, Sonora in 1986 with the construction of the Ford CT-18 Tracer and an annual production capacity of 130 thousands vehicles.

In 2003 Ford decided to build three new models (Ford Fusion, Mercury Milan and Lincoln Zephyr) in Hermosillo and therefore decided to construct a new supplier park in the immediate proximity of the plant<sup>12</sup>.

The supplier park is called *Parque Futura*, due to the former name of the Ford *Fusion*, *Ford Futura*. Ford invested a total amount of 1,2 billion dollars in the park.<sup>13</sup>

The annual car production is of 800 thousands vehicles, among these 300 thousands units of the Ford Fusion. 95 % of the *Fusion* is destined for exportation, in particular to the United States and Canada.



Fig. 16

Source: <http://www.autocosmos.com.mx/contenidos/galeria.asp?id=568>

### *Administration*

At *Ford Futura* Hermosillo, the car manufacturer is, together with Dynatec, in charge of renting the facilities to the Tier-1 suppliers. Analogue to Puebla, the logistic activities are carried out by SEGLO, who takes care of the JIT-delivery of the parts and modules from the suppliers to Ford's final assembly<sup>14</sup>.

In terms of electricity, the CFE constructed a new power station close to the plant in order to provide Ford and its suppliers with sufficient energy.

### *Supplier landscape*

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<sup>12</sup> Contreras (2005), p. 2

<sup>13</sup> Contreras (2005), p. 6

<sup>14</sup> SonoraES, Revista mensual de información y promoción; Num. 18, Sep. 2005

The supplier park consists of 20 Tier-1 and Tier-2 suppliers. As in Puebla, the supplier park is dominated by large global acting suppliers (Magna, Hella, Delphi or Lear).

Mexican suppliers are practically excluded from the park. Although Ford is willing to include more Mexican Tier 1 and Tier 2 suppliers in their network it fails due to the technological incapacity to cope with Ford's standards and an inexistence of a industrial culture towards innovation, among others.<sup>15</sup>

Nonetheless, in their whole supplier network, which also includes Tier 3 – and Tier 4- suppliers, Ford is trying to integrate local suppliers related to the automotive industry. In general terms, Ford has created a very complex and detailed system of system integration, both of multinational and domestic-based companies.

One example can be seen in figure 13, explaining the integration of three small Mexican technological companies (AIISA, IRMI and CINEMATICA) in the whole supply chain process of Ford.

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<sup>15</sup> Contreras (2005), p. 3

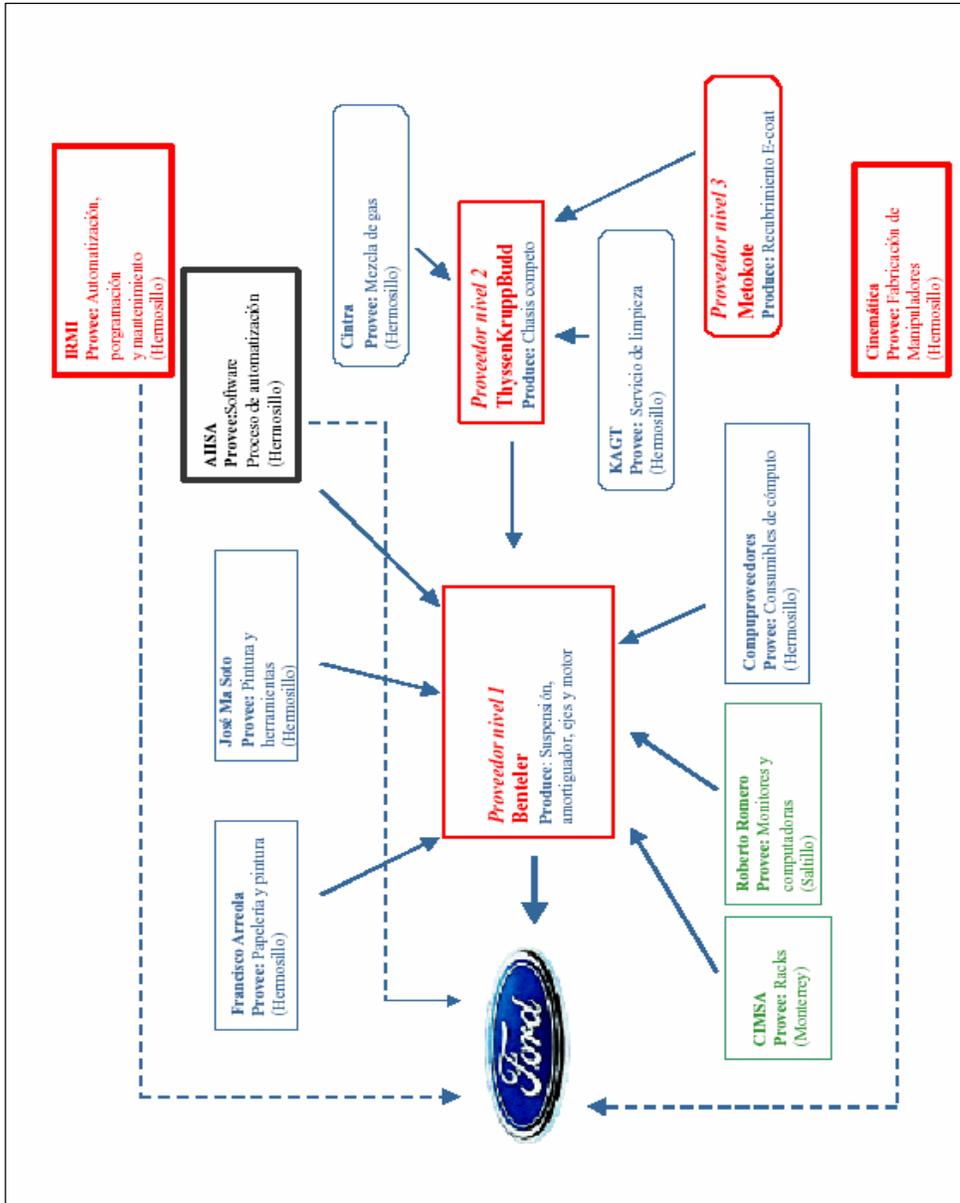


Fig. 17  
 Source: Contreras (2005), p. 25

*Employment*

The employment is handled similarly to Puebla. The suppliers select their own employees always taking into consideration the requirements and the working conditions set up by Ford.

In quantitative terms, Ford itself employs around 3800 people. Besides, the Futura Park generates 4675 employees among the Tier 1- and Tier2 suppliers.

### *Relationship OEM-suppliers*

Analogue to the FINSA Park, the car manufacturer sets up the working condition. This requires the coordination between the suppliers' production process and the final assembly line of Ford. It also implies a quality and control mechanism according to Ford's exigencies in order to be able to delivery of frequent small order quantities without many defects<sup>16</sup>.

To assure those quality standards, Ford gets involved in the production process and offers corporation and after-sales-help to its partners.

Another very important in the OEM-Supplier relationship at Ford in Hermosillo is the reciprocal apprenticeship. Therefore, Ford wants to create an interactive information exchange tool between the partners with the following objectives:

- information exchange about the product quality and the technical abilities
- creating social relationships based on governing and confidence
- direct technical corporation with the suppliers<sup>17</sup>

The cooperation among Ford and its suppliers also contains questions in strategy development, with the purpose of tightening the relationship and gaining more commitment to the whole organization.

### *Supplier Park type*

*Ford Futura* Hermosillo is, based on the definition of the types of supplier parks, an industrial condominium. Determined factors for this categorization are:

- The suppliers managing their own facilities and their human resources system
- The supplier being in different facilities than FORD (not under one single roof).

Figure 18 illustrates the basic facts about both supplier parks analyzed

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<sup>16</sup> Sandoval & Wong-Gonzalez (2005), p. 20

<sup>17</sup> Sandoval & Wong-Gonzalez (2005), p. 24

	<b>Parque FINSA Puebla</b>	<b>Ford Futura Hermosillo</b>
<b>Supplier park type</b>	Hybrid	Industrial Condominium
<b>Basic facts</b>		
<b>Surface:</b>	300 hectares	442.5 hectares <sup>18</sup>
<b>Total number of employees:</b>	Approx. 21800	Approx. 8475
<b>Annual production capacity:</b>	347,000 Vehicles/Year	800,000 Vehicles/Year
<b>Total number of suppliers:</b>	29 (of which 2 rent their spots, but are not directly located inside)	20
<b>Administration</b>	<ul style="list-style-type: none"> <li>- FINSA rents the spots and is responsible for water supply, building maintenance and telecommunication</li> <li>- Minimal rent of 5 years</li> <li>- SEGLO provides all kind of logistics activities</li> </ul>	<ul style="list-style-type: none"> <li>- Ford, together with Dynatec, is responsible for the rent of the facilities</li> <li>- SEGLO provides all kind of logistics activities</li> </ul>
<b>Supplier park landscape</b>	- Dominated by big global-Acting suppliers	- Dominated by big global-acting suppliers
<b>Employment</b>	<ul style="list-style-type: none"> <li>- Each company runs its own HR-system</li> <li>- Suppliers' salaries performance-based</li> </ul>	- Each company runs its own HR-system
<b>Relation OEM-supplier</b>	<ul style="list-style-type: none"> <li>- Clear dominance of VWM</li> <li>- Supplier must meet highest quality standards</li> <li>- Uniform EDI-system obligatory for everyone</li> </ul>	<ul style="list-style-type: none"> <li>- Clear dominance of Ford</li> <li>- Information exchange tool for reciprocal apprenticeship</li> <li>- Ford offers after-sales-help to its partners</li> </ul>

Fig. 18

Source: Proper elaboration

### 4.3. Evaluation of Automotive Supplier Parks in Mexico

The objective of this part is, based on the findings in the previous part, to give an overview of the main benefits and limits the supplier parks in Mexico have and what can be done in order to eliminate the deficits.

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<sup>18</sup> [http://www.alianzaautomotriz.com/articulos.php?id\\_sec=16&id\\_art=532](http://www.alianzaautomotriz.com/articulos.php?id_sec=16&id_art=532)

#### *4.3.1 Benefits*

##### *Clear division of the tasks in the park*

In both supplier parks, the responsibility is shared between lots of companies. One company is in charge of renting the spots, the CFE takes responsibility of the electricity, and a logistic provider assumes the delivery of the car parts/modules, so every participant in the park has its area where specialized services can be offered. This helps to guarantee a frictionless development of the operation in the park.

##### *Good integration of (most) suppliers*

What especially VWM has achieved in most cases is to integrate their suppliers deeply into their operations by allowing them to participate in questions of R&D. This strengthens the relationship and collaboration between OEM and suppliers and helps to improve their performance.

##### *Improvement in quality*

VWM just allows suppliers that cope with international quality standards and cope with the company's requirements. The fact that VWM divides their suppliers into categories (A to C, with A being the supplier with the highest quality standards), stimulates the will of the suppliers to achieve the highest level and helps VWM to maintain their quality on a high level.

Ford has always maintained high quality standards in their ancient plant which they transferred into the new *Futura Supplier Park*.

#### *4.3.2 Limits and gaps*

##### *Limited accessibility for Mexican companies*

A big problem that still persists in both supplier parks is the little accessibility for Mexican suppliers to enter the park. This is mainly due to the high quality standards both Ford and VWM require. A lot of Mexican suppliers

cannot cope with those standards. Besides, the car manufacturer trust in their suppliers they have been working with for a very long time so it will remain an exclusive circle for some elected suppliers.

*(Too) strong dependence from the OEM*

A common issue in Supplier Parks is the strong dependence of the supplier from the OEM. The Mexican supplier parks do not make any exception. Suppliers locate in the parks have almost no freedom of taking their decision concerning the production.

*Trade unions*

The problem between car manufacturers and the trade unions is a problem which has been persisting for a long time and has a deep impact on the production.

#### **4.4 Concluding remarks and recommendations to eliminate the deficits**

Recapitulating the analysis of the Mexican supplier parks, one can notice that the advantages of suppliers parks elaborated in the previous chapter mostly apply to the supplier parks in Mexico as well. Both *Parque FINSA* and *Ford Futura Hermosillo* have benefit from the geographical proximity in order to improve their interactions and communication. Furthermore, the case of *Johnson Controls* in Puebla shows that geographical proximity between the assemblies helps to create a common language and promotes the use of tacit knowledge.

The advantage of establishing an information network has also been accomplished in both of the parks.

Concerning the disadvantages of supplier parks, unfortunately most of them also apply to Mexican supplier parks. On the one hand there is also a strong interdependency between the OEM and the suppliers. The great predominance of the OEM and the requirements they put on the suppliers can somehow turn into serious problems.

Talking about the dilemmas of Sako, one can say that to certain extent the trade-off between commitment and flexibility also exists in Mexico as the

suppliers act upon the requirements and orders of the car manufacturers. Nonetheless, as most of the suppliers are also located in different places of the country, the issue of flexibility in this case is not so serious (i.e. they do not have to struggle whether to keep certain independence from the OEM or not).

The employment dilemma is truly applicable in Mexican supplier parks, as there have been a lot of problems with trade unions, particularly in Puebla, which complicates not only the daily work, but also the relationships between the OEM and their suppliers.

The modularity dilemma cannot be considered a bigger problem in Mexican supplier parks. On the one hand modularity in Mexican supplier parks has become custom as they are predominated by powerful suppliers which produce the modules in almost every ASP in Mexico. Furthermore, the suppliers' motive to enter a supplier park is not really to create a buffer for their production (as Sako assumes), but to be closer to the OEM in order to tighten the OEM-supplier relationship and to facilitate the communication, so the dilemma is not really applicable for Mexico.

Governance ambiguity can be seen in Mexican ASPs, especially at *Parque FINSA Puebla*, where FINSA and VWM form a very powerful alliance and the suppliers have to act and work to rule, but still allow the suppliers to participate in informal committees.

#### *Recommendations to decrease the deficits*

Concerning the trade union, it is very hard to come to a consensus as different suppliers belong to different trade unions so it gets complicated to avoid any type of conflicts. Furthermore, the trade unions are often accused of defending their own interests rather than the interests of their members, which makes it even harder to get to an agreement between the parties.

In terms of the limited accessibility for Mexican companies, the only thing they could do is to acquire a certain form of competitiveness and the will and sacrifice to go a step further in their development, because it is not impossible to cope with the requirements of the car manufacturers.

The dependence of the OEM will remain no matter what the suppliers do, when they decide to enter such a park, they have to be aware that the only one commanding is the car manufacturer and the suppliers have to accept their conditions because they are always replaceable.

After analyzing the situation of the suppliers in the Mexican supplier parks, I want to turn the focus again on the alternative concepts elaborated in Chapter 2 and the applicability of them in the Mexican environment. Therefore, the forthcoming chapter will consist of an empirical analysis of the supplier located further away from the OEM, their ways of assuring JIT-delivery. Afterwards I am going to derive the applicability of the 5 alternative concepts to ASPs in Mexico.