Being prepared for the next Mexican automotive boom

Perspectives for OEMs and suppliers

Chicago, IL, USA and São Paulo, Brazil
April 2016
Overview

A. Automotive vehicle production in Mexico is growing by 9% annually and develops into premium vehicles production

B. Growth of automotive parts production lags behind vehicle production – Gap closed through imports of parts

C. Automotive industry is not prepared for the changes – Especially, high-tech manufacturing capabilities are missing

D. OEMs need to react and develop their suppliers to secure seamless supply in the future

E. Suppliers' landscape shows growth opportunities – Invest in product offerings gaps at the right location in Mexico

F. References, further readings and your contacts at Roland Berger
A. Automotive vehicle production in Mexico is growing by 9% annually and develops into premium vehicles production
Mexican automotive industry is growing and changing – Entry of premium products results in new requirements for the value chain

Overview on Mexican light vehicle production

Looking at the past

- **8.4%**
  - Past production annual growth
  - Over the last 5 years, Mexico's light vehicle production has been on a remarkable growth track driven by exports to USA – CAGR since 2010 was 8.4%

Looking into the future

- **9%**
  - Future production annual growth
  - Growth will continue with expected 41% more capacity by 2020 to supply existing and new export markets – Above average increase of exports to markets outside NAFTA

- **4 to 10%**
  - Growth of premium segment from 2015 to 2020
  - Entry of new brands like Audi, BMW and Infiniti is shifting product mix from 4% to 10% share of premium vehicles

- **>$17 bn**
  - OEM investments
  - New OEMs from developed countries are beginning to enter Mexico – Together with incumbent OEMs, more than USD 17 bn investments are expected

Source: Roland Berger
In the last five years Mexico's vehicle production has been on a remarkable growth track driven by exports to USA.

Light vehicle production in Mexico and sales destination [m units]

Looking at the past

Drivers

Maturity of past exporting destinations
Main exports destinations are mature markets reaching saturation level

Conquest of new markets
Mexico has been expanding its export markets with rapid increase to new markets

Shift to Asia
In the 2010-15 term, Mexico's LV exports to Asia grew ~250% whereas exports to Latin America grew by ~20%
2015 vehicle production mix was characterized by non-premium mass-market products which are comparably low in complexity.

Light vehicle production by brand and segment in 2015 ['000 units]

Looking at the past

Source: IHS; Roland Berger; Logos: Company websites

> Premium models currently present are only Cadillac SRX and Lincoln, with 122,000 units production which will run out in 2015 and 2019
Looking at the present

Mexico combines favorable trade agreements and regulations with adequate infrastructure and a cost competitive labor force

Mexico location advantages compared to global automotive hot spots

<table>
<thead>
<tr>
<th>Theme</th>
<th>Mexico</th>
<th>Emerging market examples</th>
<th>Developed market examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure and logistics conditions</td>
<td>Established automotive industrial parks</td>
<td>Brazil</td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>Proximity to USA and South America</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wide rail and highway accessibility along with over 150 international harbors (on both Atlantic and Pacific) and airports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business climate</td>
<td>Stable currency exchange rate through the last decade and inflation under control</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reliable credit rating grades from global rating agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory environment</td>
<td>Investment protection laws</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advantageous regulatory conditions for trading</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Over 10 free trade agreements covering more than 45 countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost-competitive workforce</td>
<td>Cost competitive workforce at all levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower wages if compared to other LatAm economies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

High | Low

Source: ProMexico; Secretaría de Economía; WEF; Co-production; Roland Berger
Looking at the present

Mexico's government continuously lowered the boundaries to export – Today, 11 free trade agreements cover over 45 countries

Major free trade agreements between Mexico and other countries

Mexico has the largest number of free trade agreements in the world: 11 active FTAs covering 46 countries

- Mexico also holds complementary agreements (economic complementary agreements) with most countries in Latin America such as Brazil and Argentina
- Mexico complements external relations by fostering collaboration with investment protection agreements with non FTA countries like China, Bahrein, Kuwait, Korea, India an Singapore

Source: ProMexico; Secretaría de Economía; Roland Berger
Of the three major automotive clusters in Mexico, Bajio is the largest and fastest growing.

Mexico's major automotive clusters

Vehicle production capacity [000 units] and example OEMs

Source: IHS projection; Logos: Company websites
Looking into the future

Future production expects 9% CAGR until 2020 – Demand driver is exports to outside NAFTA

Future destinations of Mexican light vehicles production [m units]

<table>
<thead>
<tr>
<th>Year</th>
<th>Mexico</th>
<th>Rest of NAFTA</th>
<th>Rest of world</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016f</td>
<td>3.4</td>
<td>0.6</td>
<td>0.5</td>
</tr>
<tr>
<td>2017f</td>
<td>4.1</td>
<td>2.3</td>
<td>0.6</td>
</tr>
<tr>
<td>2018f</td>
<td>4.5</td>
<td>51%</td>
<td>19%</td>
</tr>
<tr>
<td>2019f</td>
<td>4.6</td>
<td>2.4</td>
<td>14%</td>
</tr>
<tr>
<td>2020f</td>
<td>4.8</td>
<td>2.3</td>
<td>0.7</td>
</tr>
</tbody>
</table>

CAGR 9%

Source: IHS; AMIA; Roland Berger

1) Estimate based on Roland Berger analysis
Entry of new brands like Audi, BMW and Infiniti will shift share of premium vehicles from 4\% to 10\%.

Change in production mix of light vehicles from 2015 to 2020 [m units]

- Incumbent OEM programs: Total 0.15
  - Premium: 3.4 (4\%)
  - Non Premium: 3.3 (96\%)
  - EOP until 2020: 1.0
  - SOP of successors until 2020: 0.8
  - Growth of existing programs: 0.1

- New entering programs: Total 1.2
  - Premium: 4.8
    - Non premium: 4.3 (90\%)
    - Premium: 0.5 (10\%)
  - EOP until 2020: 0.8
  - Growth of existing programs: 0.5
  - End of 2015: 0.15

Source: IHS; Roland Berger
Out of the 1.2 m additional new entering programs until 2020, 39% are expected to be premium segment.

Production of new entering programs by brand and segment in 2020 ['000 units]

<table>
<thead>
<tr>
<th>Segment</th>
<th>Premium</th>
<th>Non premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact Sedan</td>
<td>~170</td>
<td></td>
</tr>
<tr>
<td>GLB</td>
<td>~150</td>
<td></td>
</tr>
<tr>
<td>Q6</td>
<td>~80</td>
<td></td>
</tr>
<tr>
<td>Q5</td>
<td>~60</td>
<td></td>
</tr>
<tr>
<td>Q40</td>
<td>~10</td>
<td>~200</td>
</tr>
<tr>
<td>3-Series</td>
<td>100%</td>
<td>~170</td>
</tr>
<tr>
<td>C-CUV</td>
<td></td>
<td>~170</td>
</tr>
<tr>
<td>Forte</td>
<td></td>
<td>~90</td>
</tr>
<tr>
<td>Corolla</td>
<td></td>
<td>~70</td>
</tr>
<tr>
<td>Tiguan</td>
<td></td>
<td>~70</td>
</tr>
<tr>
<td>Accent</td>
<td></td>
<td>~10</td>
</tr>
<tr>
<td>B-SUV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alaskan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

> Premium brands (ex. Audi) are building plants in Mexico to export mainly to the United States, Europe and South America.

> Audi, Mercedes, BMW and Infiniti relocate their production from developed countries to Mexico.

Source: IHS; Roland Berger; Logos: Company websites
The product mix change happens due to new entrants – Established foreign OEMs invest at least USD 6 bn

New entrants main announced investments in the 2016-2020 term (selection)

<table>
<thead>
<tr>
<th>Brand</th>
<th>Location (city or state)</th>
<th>SOP</th>
<th>Production model</th>
<th>Added capacity ['000 units]</th>
<th>Investments [bn USD]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Acura</td>
<td>Celaya</td>
<td>2017</td>
<td>Expansion of Honda’s plant</td>
<td>40</td>
<td>N/A</td>
</tr>
<tr>
<td>2 Audi</td>
<td>Puebla</td>
<td>2016</td>
<td>Export vehicles in a new plant</td>
<td>150</td>
<td>2.3</td>
</tr>
<tr>
<td>3 Hyundai</td>
<td>Hidalgo or San Luis Potosi</td>
<td>2019</td>
<td>New plant under negotiation</td>
<td>100</td>
<td>1.5</td>
</tr>
<tr>
<td>4 Hyundai</td>
<td>Nuevo León</td>
<td>2017</td>
<td>Probably expansion of Kia’s plant</td>
<td>80</td>
<td>N/A</td>
</tr>
<tr>
<td>5 Jeep</td>
<td>Toluca</td>
<td>2016</td>
<td>Probably expansion of FCA’s plant</td>
<td>200</td>
<td>N/A</td>
</tr>
<tr>
<td>6 Kia</td>
<td>Nuevo León</td>
<td>2016</td>
<td>New plant with whole new supply park</td>
<td>300</td>
<td>1.0</td>
</tr>
<tr>
<td>7 Nissan</td>
<td>Aguascalientes</td>
<td>2017</td>
<td>JV MBB/Nissan – Expansion of Nissan’s plant</td>
<td>300</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Total: 1,170 >6.0

Source: Companies websites; Press announcements; IHS; Roland Berger; Logos: Company websites
OEMs already present in Mexico are planning to invest at least USD 11.1 bn in large production sites during 2016-2020

Existing OEMs main announced investments in the 2016-2020 term (selection)

<table>
<thead>
<tr>
<th>Brand</th>
<th>Location (city or state)</th>
<th>Type of investment</th>
<th>SOP</th>
<th>Added capacity ['000 units]</th>
<th>Investments [bn USD]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aguascalientes</td>
<td>New</td>
<td>2017</td>
<td>230</td>
<td>1.4</td>
</tr>
<tr>
<td>2</td>
<td>Salamanca</td>
<td>Expansion</td>
<td>2016</td>
<td>~90</td>
<td>N/A</td>
</tr>
<tr>
<td>3</td>
<td>Guanajuato</td>
<td>New</td>
<td>2019</td>
<td>200</td>
<td>1.0</td>
</tr>
<tr>
<td>4</td>
<td>San Luis Potosi, Mexico City</td>
<td>New/ expansion</td>
<td>2018</td>
<td>500</td>
<td>5.0</td>
</tr>
<tr>
<td>5</td>
<td>Coahuila</td>
<td>N/A</td>
<td>Announced</td>
<td>N/A</td>
<td>1.2</td>
</tr>
<tr>
<td>6</td>
<td>Guanajuato</td>
<td>N/A</td>
<td>Announced</td>
<td>N/A</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Total: >520 >11.1

Source: Companies websites; Press announcements; IHS; Roland Berger; Logos: Company websites
B. Growth of automotive parts production lags behind vehicle production – Gap closed through imports of parts
Mexican auto suppliers are strong in some aspects but not ready for growing demand or changing product mix

Overview on Mexican automotive parts industry

Looking at the past

- **>80%** Foreign companies
- **~65%** Dependency on imports
- **$46 bn** Technology gap

Mexico has a very well established Tier 1 supplier base, out of which more than 80% are large global companies.

Suppliers lack technological know-how and certain product offerings like body, powertrain and chassis rely heavily on imports of auto parts to meet the gap in supply – With current devaluation of the Mexican peso imports paid in dollars are getting more expensive.

Product and process supply base offerings vary regionally, with high concentration of suppliers in the north and lack of critical products in some regions – Production process gaps account to USD 46 bn

Looking into the future

<table>
<thead>
<tr>
<th>OEM</th>
<th>Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>9%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Production is expected to grow at different rates for vehicles and auto parts (9% vs 1% CAGR 2016-2020), creating a growing demand-supply gap which offers a domestic auto-parts investment opportunity of USD 25 bn in 2020

Source: Roland Berger
The Mexican auto parts industry is well established, but falls behind on the Tier 2/3 level

Strengths and weaknesses of Mexican auto parts industry

Strengths

> Experienced and cost-competitive labor force in auto parts industry at all levels: operators, managers and directors
> Established Tier 1 park, connected to foreign capital with flexible production systems and client oriented (> 80% of the companies are from abroad)
> Favorable regulatory environment – Tax incentives for manufacturing for exports

Weaknesses

> High competition for workers at technical and operator levels
> Low application of international quality standards due to obsolete technology and low innovation and technological development at Tier 2/3 level
> Reduced number of solid production chains with well integrated clusters – Absence of proper Tier 2 supply base drives up imports by Tier 1 companies

Source: Roland Berger
Significant gaps exist in product offerings especially in body, powertrain and chassis which are being met by imports.

Local production vs. imports of parts by system in 2013\(^1\) [USD bn]

<table>
<thead>
<tr>
<th>Total demand</th>
<th>Body</th>
<th>Powertrain</th>
<th>Chassis</th>
<th>Interior</th>
<th>Electrical</th>
</tr>
</thead>
<tbody>
<tr>
<td>~30%</td>
<td>~35%</td>
<td>~40%</td>
<td>~65%</td>
<td>~35%</td>
<td>~80%</td>
</tr>
<tr>
<td>~70%</td>
<td>~65%</td>
<td>~60%</td>
<td>~35%</td>
<td>~20%</td>
<td>~80%</td>
</tr>
</tbody>
</table>

\(1\) Local market demand: Estimated share and market value [USD bn]

Source: AMIA, ProMexico; Roland Berger
Product gaps result from unexplored technology base and leave opportunities for investment in advanced production processes.

Top 5 auto parts production processes in 2013 [USD bn]

<table>
<thead>
<tr>
<th>Process</th>
<th>Domestic production</th>
<th>Import/ market opportunity</th>
<th>Total demand</th>
<th>Total of top 5 investment opportunities</th>
<th>USD 46 bn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stamping</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Foundry</td>
<td>3</td>
<td>13</td>
<td>13</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Forging</td>
<td>2</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Machining</td>
<td>4</td>
<td>13</td>
<td>12</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Injection molding</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Local Mexican suppliers lack expertise, many of them do not have ISO certification.

Besides the top 5 production processes mentioned on the left, there is shortage on following technologies:
- Aluminum die casting
- Hot forming
- Laser cutting
- Fasteners
- High gloss painted parts
- Etc.

Source: AMIA, ProMexico; Roland Berger
Looking at the past

Regional coverage of supply base varies across 3 clusters – Bajio and Central being under-represented vs. North

Regional variations of supply base in 2013 (examples)

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of suppliers</th>
<th>Production value [USD bn]</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>1,084</td>
<td>37</td>
</tr>
<tr>
<td>Bajio</td>
<td>648</td>
<td>21</td>
</tr>
<tr>
<td>Central</td>
<td>653</td>
<td>17</td>
</tr>
</tbody>
</table>

- **North**
  > Lacks concentration of seating, transmission and suspension
  > Has full portfolio of processes due to Tier 1 penetration

- **Bajio**
  > Supply base lacks welding, die casting and assembly concentration
  > Product offerings fall short in HVAC, interiors and accessories

- **Central**
  > Supply base has wide process portfolio excluding CNC machining
  > Product offerings fall short in electrical components, plastics and transmission

Source: INEGI; Roland Berger
Vehicle production growth with 9% CAGR but auto parts 1% only – Domestic auto-parts production opportunity of USD 20-25 bn

Indexed growth of light vehicles vs. auto-parts production [2016 = 100]

- Vehicle production set to increase to ~4.8 million units by 2020 due to investments
- Auto parts industry is still recovering from 2008-2009 downfall and growth is much slower
- The mismatch in growth creates a significant demand gap
- Increase in imports is currently imminent to cover for this gap in the supply chain – Expensive due to devaluation of Mexican peso
- There is a significant opportunity for domestic auto-parts production up for grabs

Note: Compared growths are vehicle units [#] vs. auto parts production value [USD]
Source: IHS, INA, Roland Berger
C. Automotive industry is not prepared for the changes – Especially, high-tech manufacturing capabilities are missing
The changing product mix and exports environment questions OEMs and suppliers ability to adapt to the new automotive Mexico

Qualitative analysis of Mexico's readiness for automotive challenges

<table>
<thead>
<tr>
<th>Assembly capabilities</th>
<th>Current development level(^1)</th>
<th>Fit for production mix</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Non premium</td>
</tr>
<tr>
<td></td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Advanced manufacturing processes</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supplier base</th>
<th></th>
<th></th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td>Non premium</td>
</tr>
<tr>
<td>Tier 1 presence</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Tier 1 product coverage</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tier 2/3 presence</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Manufacturing technology</td>
<td>☐ ☐ ☐ ☐ ☐</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

1) Comparable level to production in developed country

✓ Fulfilled to a good extent

✗ Not fully fulfilled

Source: Roland Berger
The automotive supply chain faces specific issues as a whole to adapt to the changes

Issues affecting the Mexican automotive industry in the wake of change

<table>
<thead>
<tr>
<th><strong>OEMs</strong></th>
<th><strong>Tier 1</strong></th>
<th><strong>Tier 2 and 3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in local sourcing of parts that matches requirements</td>
<td>Gaps in product offering and process</td>
<td>Gaps in product offering and process</td>
</tr>
<tr>
<td>Production/supply demand competition from new entrants</td>
<td>Sub-optimal footprint, white spots in certain regions</td>
<td>Sub-optimal footprint, white spots in certain regions</td>
</tr>
<tr>
<td>Supply base not to grow at same pace as vehicle production</td>
<td>Lack of technological capability and rising quality standards</td>
<td>Lack of technological capability and rising quality standards</td>
</tr>
<tr>
<td>SOP/launch management on suppliers' side</td>
<td>SOP/launch management</td>
<td>SOP/launch management</td>
</tr>
<tr>
<td>Labor cost increase in the long term</td>
<td>Insufficient Tier 2/3 base</td>
<td>Hard access to capital</td>
</tr>
<tr>
<td>Shortage of logistics capacity</td>
<td>Labor cost increase in the long term</td>
<td>Reduced options to deal with risk</td>
</tr>
<tr>
<td>Labor cost increase in the long term</td>
<td>Shortage of logistics capacity</td>
<td>Labor cost increase in the long term</td>
</tr>
<tr>
<td>Shortage of logistics capacity</td>
<td></td>
<td>Shortage of logistics capacity</td>
</tr>
</tbody>
</table>

Go to chapters D and E to read how to deal with these issues

Source: Roland Berger
D. OEMs need to react and develop their suppliers to secure seamless supply in the future
OEMs need to focus on developing an integrated and localized supply base to reduce imports and avoid potential supply gap

OEM perspective: Securing seamless supply in the future

**Issues**

<table>
<thead>
<tr>
<th>Issue</th>
<th>OEMs agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in local sourcing of parts that matches requirements</td>
<td>Develop localized supply base and strategic partners for critical parts</td>
</tr>
<tr>
<td>Production/supply demand competition from new entrants</td>
<td>Support suppliers with building up launch expertise</td>
</tr>
<tr>
<td>Supply base not to grow at same pace as vehicle production</td>
<td>Accommodate future costs in decisions</td>
</tr>
<tr>
<td>SOP/launch management on suppliers' side</td>
<td></td>
</tr>
<tr>
<td>Labor cost increase in the long term</td>
<td></td>
</tr>
<tr>
<td>Shortage of logistics capacity</td>
<td></td>
</tr>
</tbody>
</table>

Raising production becomes non competitive with dependence on imports under free trade agreements compliance for local content share in exports

Increase in number of OEMs will increase demand for Tier 1 and Tier 2/3 supply and drive up costs

Production of vehicles is expected to grow at 9% CAGR and auto parts at 1%, creating a supply gap

Due to lack in in experience with local teams launch management often fails

Densification of OEMs and suppliers causes labor costs to increase due to further increasing competition for talent

Inbound and outbound logistics capacity is too limited to meet automotive sector growing demand

Source: Roland Berger

Details on next slides
Building an integrated supply chain requires partnering with the right suppliers and providing subsequent alignment support.

Methodology for identifying and establishing supply partners:

I. Identification of OEM's goals and value proposition to new partners

II. Selection of high priority parts and services

III. Preselection based on OEM prerequisites

IV. Selection of enablers to execute the selection program

V. Selection and subsequent assistance for alignment

Support activities:

- Technical workshops to facilitate integration and technology transfer
- Visits to OEM and suppliers for synergizing functioning and communication
- Workshops to integrate quality culture and value system between partners
- Assistance programs for financing, quality certification and logistics for new partners

Source: Roland Berger
The definition of cornerstones is based on the cross evaluation of the OEM goals and value proposition to potential new suppliers.

**OEMs goals**

- Establishing end-to-end supply base in Mexico
- Creation of a dynamic just-in-time/lean value chain to mitigate logistic risks
- Ensure sustainable supply of auto parts
- Leveraging penetration in the supply-base for creation of sustainable financial results

**Value proposition to potential new suppliers**

- Opportunity for market entry and expansion in Mexico
- Support for further internationalization and export opportunities
- Increased sales revenues and export channels
- Long-term perspective of growing Mexican production demand
- Preferential partnership for new developments in Mexico and abroad

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**Source:** Roland Berger
Localized supply base and strategic partners

The selection of high priority parts and services aims to identify critical suppliers, products and processes in the supply chain

II Scope selection: Key product, process and supplier requirements

Situation in Mexico:

> Technical proficiency to handle new product mix for premium OEMs
> Logistics and quality control autonomy
> Adaptive to emerging market conditions

> Over 70% of process needs are imported
> USD 31 bn opportunity exists in stamping, foundry and forging alone
> Other opportunities include surface finishing and mechanical assembly
> Body, powertrain and chassis parts need localization in production
> Steels, fiber glass, tubing and ceramics show investment opportunity

Results

> Identification of critical suppliers, products and process along the supply chain
> Selected products and processes discussed with relevant stakeholders (purchasing, quality, logistics, finance, engineering, R & D,…)
> Necessary documentation for the selection of high priority products and processes made available
The selection of suppliers and partners considers the suitability of each according to OEM pre-determined requirements.

**III Supplier preselection**
- Definition of long list of possible suppliers
- Cross check with current supply base
- Suppliers with potential to become trusted suppliers

**IV Enablers selection**
- **Incumbent projects**
  - Global sourcing
  - Technical workshops
  - Extension of contracts of carry-over parts
  - Etc.
- **New projects**
  - RFQ
  - Development contracts
  - Sourcing of tooling
  - Etc.
- **Future developments**
  - Joint development of new concepts
  - Preferential supplier
  - Etc.

**V New partner selection**
- Selection criteria and localization support to suppliers
  - Market analysis
  - Finance and tax
  - Site selection
  - Evaluation of entry options
  - Legal
  - Development program
  - Quality
  - Tier 2/3 network

Source: Roland Berger
E. Suppliers' landscape shows growth opportunities – Invest in product offerings gaps at the right location in Mexico
## Major challenges faced by suppliers come from gap in products offering and sub-optimal production footprint

### Supplier perspective: Growth opportunities and implementation issues

<table>
<thead>
<tr>
<th>Issues</th>
<th>Suppliers agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaps in product offering and process</td>
<td>Explore new product offerings</td>
</tr>
<tr>
<td>Sub-optimal footprint, white spots in certain regions</td>
<td>Invest in optimal footprint &amp; the right locations in Mexico</td>
</tr>
<tr>
<td>Lack of techn. capability and rising quality standards</td>
<td>Partner and obtain technology/ Import know how</td>
</tr>
<tr>
<td>Labor cost increase in the long term</td>
<td>Accommodate future costs in decisions</td>
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<tr>
<td>Shortage of logistics capacity</td>
<td>Develop dedicated launch expertise</td>
</tr>
<tr>
<td>SOP/launch management</td>
<td>Invest and support Tier 2/3 build up</td>
</tr>
<tr>
<td>Insufficient Tier 2/3 base</td>
<td>Aggregate with local suppliers</td>
</tr>
<tr>
<td>Hard access to capital</td>
<td>Diversify product portfolio</td>
</tr>
<tr>
<td>Reduced options to deal with risk</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Roland Berger

*Details on next slides*
Roland Berger has a proven approach for footprint optimization – From the definition of strategy to supply chain adaptation

Roland Berger manufacturing footprint optimization and site selection approach

**Supply Strategy**

Decide on principles to guide steps A and B, for example:

- Centralization/large site vs. decentralized approach
- Make vs. buy strategy
- Determine technology preferences
- Agree on level of automation
- Focus of plants: Technology centers vs. product focus
- Etc.

**Site selection**

**Qualitative assessment**

- Internal (company's goals and requirements, risks and opportunities)
- External (customers, supply base, tax benefits etc.)

**Quantitative assessments**

- Region-specific factors (operational costs)
- Company-specific factors (investments and revenues)

**SWOT analysis**

**Sensitivity analysis**

**Transition roadmap**

**Supply chain adaptation**

End-to-end supply chain optimization

- **Plan** (process optimization; product lifecycle planning; phase in/out management)
- **Source** (lead time reduction; TCO-based supplier selection; supplier mgmt; supplier risk management)
- **Make** (manufacturing footprint optimization; modularization/platform concept; material cost reduction)
- **Deliver/return** (warehouse; footprint optimization; transportation concept; inventory reduction)

Invest in optimal footprint and the right locations in Mexico
In order to find an optimal location a four step approach can be applied

A Site selection (top-down approach)

**District prioritization**
- Pre-filtering of regions along select parameters:
  - Demographics
  - Business index
  - Industry mix
  - Competitors

**Site visits**
- Short listed sites visited
- Favorite locations selected for profiling

**Detailed site profiling**
- Detailed evaluation of top priority sites, metrics such as:
  - Location (e.g. proximity to services, landmarks)
  - Detailed infrastructure
  - Site configurations
  - Site cost

**Management decision**
- The positive and negative attributes of finalist sites are weighed through discussion with senior management
- Final decision and rationale documented

Source: Roland Berger
The site selection process uses distinct evaluation criteria

Invest in optimal footprint and the right locations in Mexico

Site selection and evaluation criteria (illustrative)

- **PEOPLE AND EDUCATION**
  - > Personal costs in the area
  - > Labor force availability
  - > Technical availability
  - > Education

- **INFRASTRUCTURE**
  - > Connectivity to road and rail
  - > Distance to airports and ports
  - > Access to utilities

- **LOGISTICS**
  - > Internal logistic costs

- **GOVERNMENTAL ISSUES**
  - > Tax incentives
  - > Landing
  - > Political influence on unions
  - > Future expansion plans

- **CUSTOMERS**
  - > Footprint
  - > Proximity
  - > Business strategy (future business plan)

- **SUPPLIERS**
  - > Footprint of key suppliers (steel, stamping, technical assistance...)

- **UNION RELATION**
  - > Union type
  - > Presence and strength
  - > Philosophy and approach

Option A: North
Option B: Central
Option C: Bajío

Scoring weights:
- Municipality 1: 20%
- Municipality 2: 10%
- Risk zone: 15%
- Scoring weights: 20%

Source: Roland Berger
Invest in optimal footprint and the right locations in Mexico

The footprint strategy shall also integrate a supply chain configuration to map end-to-end optimization opportunities.

Supply chain adaptation: Roland Berger framework

- RB conducts end-to-end supply chain optimization incorporating changes through footprint optimization.
- Most strategic supply chain decisions include usage of tools to aid planning of:
  - Make vs. buy
  - Insourcing vs. outsourcing
  - Dependence map of strategic points
  - Just in time supply chain requirements
  - ..Etc.

Source: Roland Berger
F. References, further readings and your contacts at Roland Berger
We have sound project experience in Mexico, South America and globally for both automotive OEMs and suppliers

Our project experience in Mexico and South America (selection)

**OEMs**

- Audi
- BMW
- CHANGAN
- PSA Peugeot Citroën
- FIAT
- GM
- Mercedes-Benz
- Chrysler
- Nissan
- Toyota
- Volkswagen
- Mitsubishi
- Renault
- AGCO
- CAT
- FAW
- IVECO
- John Deere
- Scania
- MAN
- DAIMLER

**Suppliers**

- Metalsa
- BorgWarner
- Continental
- BASF
- Magna
- Bosch
- Denso
- Continental
- Delphi
- Kromberg & Schubert
- Carraro
- Baterías Mora
- Tupy
- Magneti Marelli
- Brose
- Mahle
- Faurecia
- Scania
- ThysenKrupp Automotive
- Visteon
- FTE
- Tiral
- Sisamex
- Eagle Ottawa
- Tatal
- OSI Hagendorff
- Intergrail
- GST

**Content of selected projects**

- **Mexico market assessment and growth strategy** for a global truck & bus manufacturer
- **Definition of growth strategy Mexico** for an European mass market OEM based on the Brazilian product portfolio
- **Vender due diligence** for an exclusive distributor/dealer for Mexico to be bought by the OEM
- Development of a **growth strategy for an automotive** supplier in LatAm with focus in Mexico
- **Perform detailed competitive positioning analysis** and recommend specific negotiating positions for a Mexican automotive supplier
- **Market study** on latest developments in Intelligent Transportation Systems (ITS) in Mexico

Source: Roland Berger; Logos: Company websites
We are thought leaders globally and with profound market know-how, documented in high-quality publications

Thought leadership – Automotive (selection)
Our expertise and thought leadership are showcased through frequent publications on hot topics in operations.

Thought leadership – Operations strategy (selection)

THINK: act content

THINK: act management book

COO insights

Procurement studies

Manufacturing studies

SCM studies

R&D studies

Working capital studies

Source: Roland Berger
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