

Demand Report:
Mexico's Manufacturing Sectors

prepared for

VEDP

**International
Trade**

ExportVirginia.org

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Objectives and rationale

Identify sources of demand for products and services from Virginia exporters in Mexico

- **Manufacturing** in Mexico is a well-established and dynamic industry
- Creates a large share of the country's B2B sales activity

- 1) What are **key demand stimuli** among Mexican manufacturers?
- 2) What **Virginia products and services** are they most relevant for?
- 3) **How** can Virginia exporters meet these demand areas?

Why manufacturing?

Continued growth, investment, innovation

- Sector created 200,000 jobs in 2018 in Mexico
- 18% of Mexico's GDP
- 98 R&D centers nationally; 34 industry clusters implementing Industry 4.0 and IoT technologies
- 52% of companies in production sectors have accelerated their adoption of robotics and automation
- 59% of manufacturing companies in Mexico have a digital strategy
- Prior to pandemic, 5-12% real sector growth YoY
- **In 2020, the global supply chain shift is largely viewed as an opportunity to shore strategic Asian and European operations in Mexico**

Accessible to Virginia exporters

- International standards, well-regulated, process-oriented
- High technological sophistication
- Diverse demand areas
 - Direct input: components, materials destined to be part of output product
 - Indirect supply: plant infrastructure, services to support and improve internal processes as well as external sales and supply processes
- Diverse, accessible geographical areas
 - Mexico Valley Metropolitan Area; Monterrey-Salttillo-Torreon; Puebla; Guanajuato; border states

Manufacturing activities

Top Co's by 2019 Revenue	MN USD	Sector	Revenue vs 2018
GM	\$22,010	Auto	15 %
Fiat Chrysler	\$18,989	Auto	4 %
Bimbo	\$15,172	Food	8 %
Volkswagen	\$11,096	Auto	1 %
Nissan	\$10,326	Auto	3 %
Coca-Cola FEMSA	\$9,597	Beverage	-1 %
Honda	\$9,117	Auto	-8.8 %
Ford	\$8,714	Auto	-3 %
Arca Continental	\$8,366	Beverage	14 %
Orbia (Mexichem)	\$7,289	Chemical	26 %

- Automotive / Vehicles / Parts
- Electronics / Appliances / Electrical
- Chemical / Petrochemical
- Energy
- Food / Beverage / Brewing
- Metals / Mining
- Aerospace an important growth sector
~315 OEMs, Tier 1s, Tier 2s

Mexico's top 10 manufacturers, ranked left, were all **within the overall top 30 companies** in Mexico by revenue.

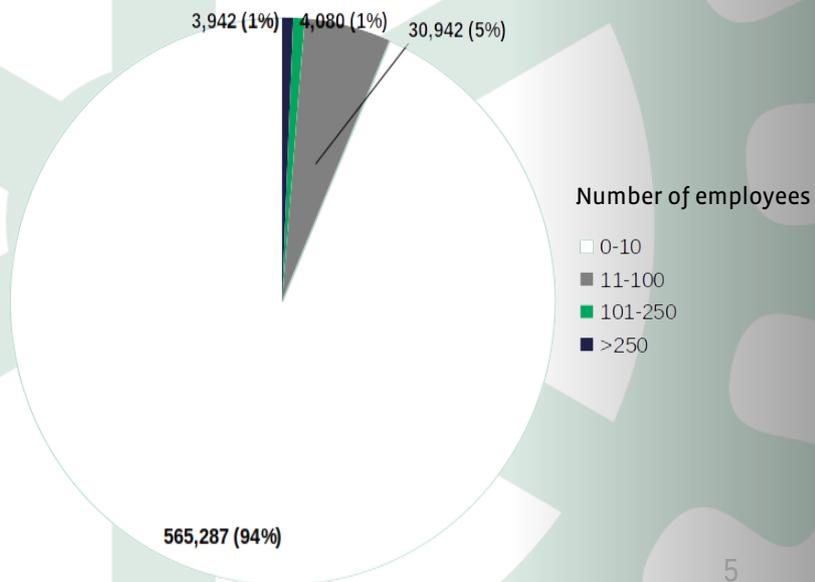
Orders of magnitude

OPEX on supplies	BN USD	CAPEX on infrastructure	MN USD
Total input spend	320	Total CAPEX	9,023
Raw materials domestic	157	Machinery & Production Equipment	6,282
Raw materials imported	87	Computers & Information Assets	194
Packaging & Containers	12	Other	323
Shipping	7		
Repair, Maintenance, Parts, Accessories	6		
Outsourced Manufacturing	2		
Royalties	2		

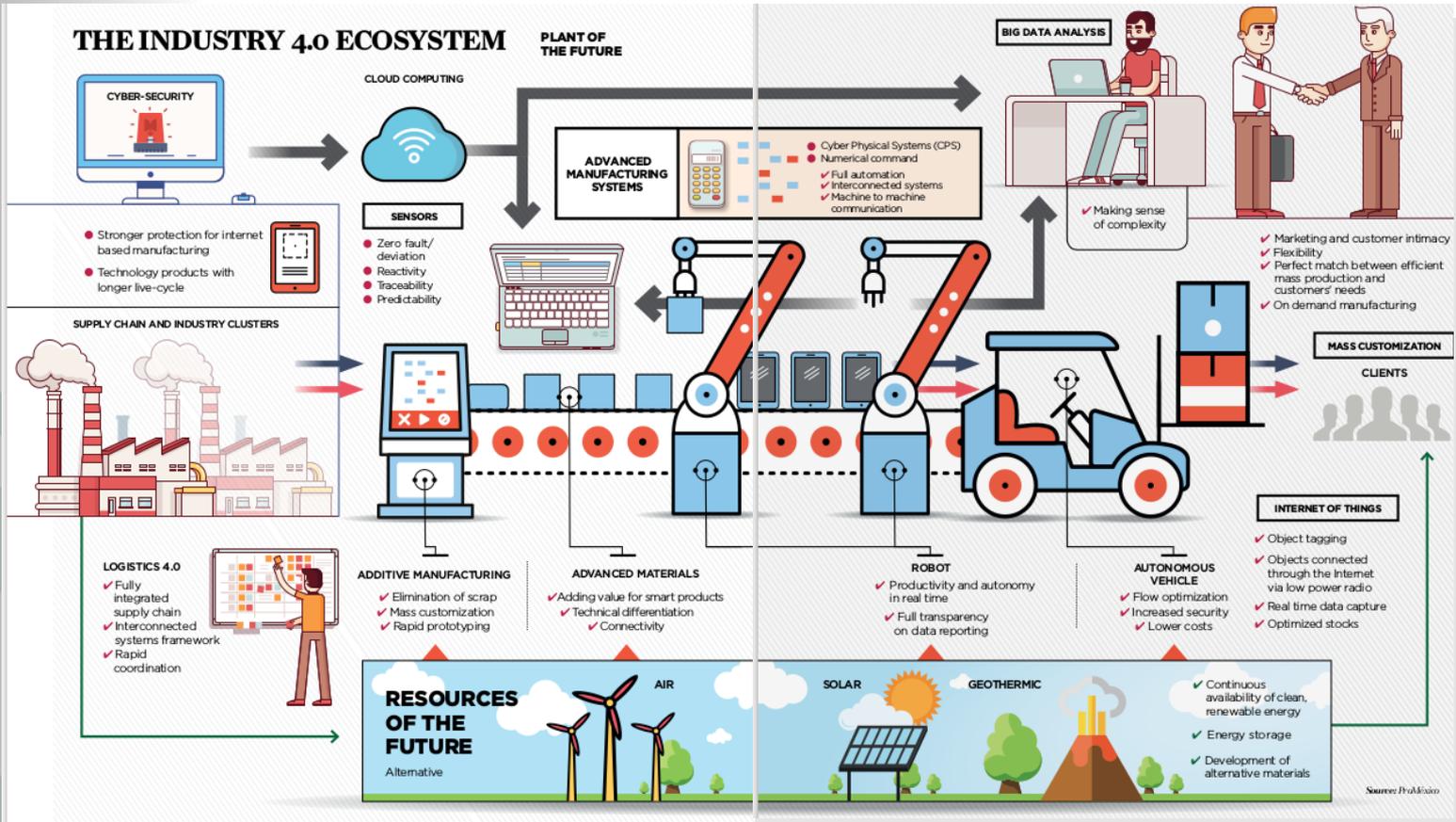
INEGI data (BIE + DENUE)

- Of Mexico's 600k + manufacturing plants, 94% employ under 10 people.
- About 8,000 plants employ 100 or more.

Manufacturing plants by size ↓



Source: *Negocios* magazine, Mexican Secretariat of the Economy, Sep-Oct 2017



A Mexican vision of Manufacturing.

Key manufacturing stakeholders in Mexico are pinning the sector's future on Industry 4.0.

As the evolution promises to stimulate higher-value jobs, it enjoys the political support to sustain government cooperation on educational programs and maintaining a favorable investment climate.

Case study: Bosch Mexico

- German company in Mexico since 1955
- 16,000 employees at 12 locations
- New smart factory will manufacture **Electronic Control Units** in 21,000-square-meter facility
- Since 2014 center for software development and engineering services in Guadalajara

“By mid-2019, manufacturing at nearly all Bosch plants in Mexico equipped with our intelligent control system.”

- René Schlegel, President, Bosch Group Mexico

New ECU factory, on track to be finished 2020 in Celaya, Guanajuato, features Manufacturing Execution System for intelligent production lines

- Automatically collects data, shares production information in real time
- Facilitates preventive maintenance of machinery and higher product quality
- Digitally connects the plant to the Bosch Group’s global manufacturing network
- Adjacent logistics center

Image: Bosch



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Mexico is certifiably global...

Tratado de Libre Comercio de América del Norte = NAFTA. Now known as TMEC, USMCA. North America is where it started, but it didn't stop there.



Mexico Trade Agreement Timeline

...Thanks to international trade decisions that made manufacturing a cornerstone of economic development.

- Free trade with 46 countries
- 45 countries look to Mexico as a potential platform to sell into the US
- 46 countries look to Mexico as a platform to sell to the rest of the world

Global supply chain integration enhances stability and diversifies technological transfer.

The North American Economic Region

- Mexico, the US and Canada have **reaffirmed trilateral commitment to economic cooperation**
 - For over 25 years the 3 countries have supported a legal framework that encourages supply chain linkage throughout the region
 - Having particularly benefitted manufacturing, the agreement has drawn global investment in production to Mexico
- **USMCA** (called “TMEC” in Mexico) entered effect July 1, 2020 to update NAFTA. New factors important for Mexico manufacturing:
 - Worker participation in unions has to be genuine (efforts to block coerced member approval votes to “rubber stamp” what management wants)
 - Automobiles have to include 75% North American content
 - Of North American automotive content, 40% has to be produced by workers making over 16 USD per hour
 - Above factors to reinforce higher salaries and plant automation in Mexico
- The **Covid pandemic + US-China trade battles**
 - Both factors seen as driving reconfiguration of global supply chain footprint that could favor North America-bound investment, and particularly Mexico
 - Mexican and US foreign relations leaders working to ensure supply chains in North America remain synchronized (reopenings, health + safety measures, etc)
 - Aim for state + local governments in Mexico and US to work more closely together on investment and trade leadership

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Image: July 9, 2020 by [The Guardian](#)

Key demand stimuli for MX manufacturing

- **Realignment of global supply chains** following US-China head-butting
- Interest in more value chain “latency” and geographically **better connected regional + back-up partners**
- Continually **increasing output** to meet global demand
- **International and domestic investment continues**: more manufacturing, more diverse outputs
- Pressure to **add better value to supply chain**
 - Pressure from within Mexico as well as external
- **Opportunity for labor productivity improvement**
 - 1/5 of Mexico’s educated work force is trained in STEM: underutilized and underpaid
- Supply chain leaders who integrate and incentivize

Concrete implications

- Honeywell, Bosch, Siemens, the automotive and aerospace OEMs, among others, work to **cultivate and improve local partners**
 - **Just-in-time, ISO** and other **standards enforcement for quality control and data management**
- Backed by collaboration with Industrial clusters, education, government
 - **R&D, training, process control, leadership, innovation culture**
 - **Incentives for building smart infrastructure**
 - **US and Mexican Governments increasingly highlight bilateral state and local leadership in both countries for coordinating regional North American supply chain partnerships**

Opportunities for Virginia Exporters



Direct
Join
Mexico's
manufacturing
supply chain



Indirect
Help Mexico's
manufacturing
supply chain *enhance*
the value it adds

Some relevant Virginia export areas

Products or services in:

Physical Security	Information Technology	Training Tools & Services	Aerospace Manufacturing
Human Resources Tools	Data Management	Quality Control & Testing	Automotive Manufacturing
Information Security	Financial Tools & Services	Risk Management Tools	Business Process Management
Alloys	Composites	Automation Support	Industrial Process Management
Logistics Optimization	Inventory & Packaging	R&D / Innovation Support	M2M / IoT Hardware & Software
Tooling & Die Maintenance	Energy Design & Control	Telecommunications	Infrastructure Development

The missing link? Be part of the supply chain

Some well-known needs in specific industries

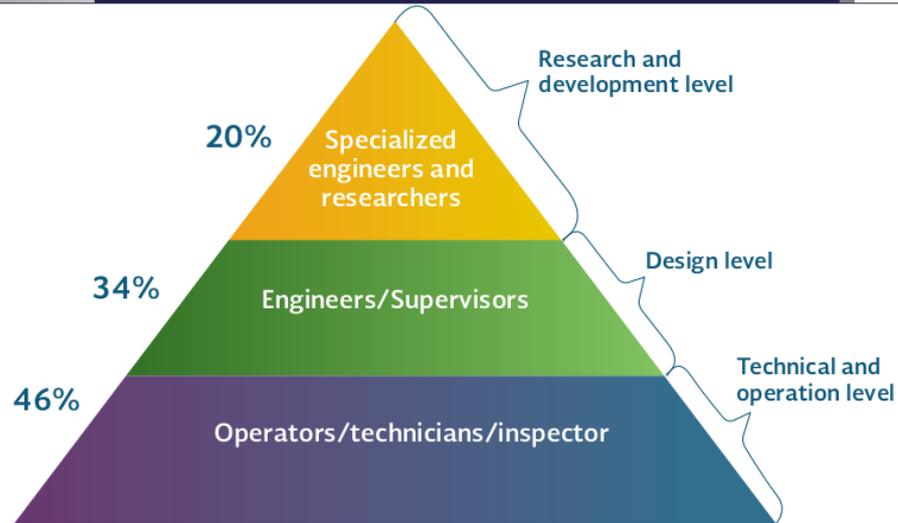
- **Automotive:** components for chassis, body, powertrain in particular demand, Tier 1 for new luxury vehicle production
- **Auto Tier 2 / 3** base lacking compared to Tier 1: stamping, machining, injection molding, aluminum die casting, hot forming, laser cutting, fasteners, high gloss painted parts all in demand
- **Aerospace:** sheet metal, machining, special processes, material distribution, raw metallic materials, electrical, composites
- **Medical devices / biotech:** quality control, testing, and related secondary services
- **Appliances:** embedded software, fiber glass, dielectric materials, metal extrusions, screens, ceramic/porcelain

Industry-agnostic needs

- Molds, tooling, and tooling design, maintenance and repair
- Specialty materials: reagents, chemicals, composites, alloys
- Specialized surface treatments, heat treatments, specialized machining
- Capital equipment and production infrastructure updates
- Plant infrastructure maintenance / consumables
- Logistics; insufficient rail and highway with significant challenges, inbound and outbound shippers need support optimizing

Help wanted: fortify existing suppliers

Mexico graduates **115,000 engineers a year**, yet all sectors identify personnel shortages. Graphic: ProMexico, "Human capital needs in Aerospace Manufacturing."



Manufacturers want to harness abundant local design and engineering capacity. Needs:

- Technical training and technological tools
- Certification support (international and internal standards)
- Talent management techniques and tools

Help local SMEs mature and modernize. Needs:

- Protocol and standards development
- Computer-aided process planning
- Common knowledge network platforms
- Manufacturing execution systems

Aerospace: a Mexico manufacturing darling

- Aerospace an opportunity to stand on the shoulders of Mexico's automotive achievements
 - Converting or expanding the work of automotive Tier 1 + Tier 2 companies into aerospace capabilities
 - Existing JIT, logistics corridors, + legal frameworks (including [Wassenaar Arrangement](#), [FAST/CTPAT](#))
 - Honeywell, Safran, Airbus, Beechcraft, Rolls Royce, GE among OEMs encouraging aerospace companies to cluster in Mexico
- [FEMIA](#), Mexico's Aerospace Industry Federation, is mostly about manufacturing
- [FAMEX 2021](#): coinciding with the VEDP trade mission to Mexico in Queretaro, this aerospace + defense trade show has a strong aerospace manufacturing element.
- Mexico's established aerospace clusters: Queretaro, Chihuahua, Baja California, Sonora. Yucatan a new player.
- Virginia companies who "link up" with Mexico's aerospace supply chain offer:
 - Specialized materials
 - Specialized machining + other precision processes
 - Coatings and treatments
 - Die and tooling supply/repair
 - Automation, integration, certification, specialty logistics control, other services to help improve local operations
- Virginia manufacturers who successfully sell into the aerospace supply chain may be asked by OEM customers to specify a timeline for establishing Mexico operations



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Demand: improved supply chain integration

Services and tools that **integrate suppliers into processes** of anchor manufacturers:

- Efficiency in production
- Intellectual property protection
- Common standards
- Knowledge sharing
- Logistics process standardization, certification, tools

Services and tools to help suppliers **keep up with advanced manufacturing demands**:

- Financial and risk management services in order to handle upgrades
- Organizational and process transformation services
 - As labor costs rise, manufacturers will seek to offset costs with technological efficiency

Opportunities to improve safety + security

- Alarming insecurity in freight transportation
 - Techniques and tools to prevent physical losses, protect personnel and mitigate related operational costs
 - Everything is a target, not just high-value goods
- Is prevention the only option?
 - Insurers often decline coverage or attach it to costly stipulations; 80% of ground freight currently travels uninsured
- Information security increasingly important
 - While costliest issues still related to physical theft, IoT introducing new vulnerabilities
 - Organized crime has proven hacking capabilities
- Improve communication between industry and law enforcement

Top Security Measures

Implemented by American Chamber of Congress Mexico Members, 2016

- Travel Safety Protocols (85%)
- Security Awareness Programs (79%)
- Risk Evaluation and Prevention Plans (70%)
- Secure Transport Services (68%)
- Crisis Management Planning (59%)
- Improved Hiring Processes (59%)
- Creating Facilities Security Procedures (56%)
- Emergency Phone Lines (52%)
- Information Compiling (44%)
- Drug Testing (39%)
- GPS Tracking of Assets (38%)
- Executive Protection (28%)

IT demand in manufacturing

- Networks for information processing: ERPs, APOs, CRMs
 - not in short supply domestically, but many smaller manufacturers have yet to adopt
- M2M / IoT
- Information security
- Training
- Capability Maturity Models
- Specialized information management systems:
 - Manufacturing Execution Systems (MES)
 - Laboratory Information Management (LIMS)
 - Personal Information Management (PIMS)
 - Warehouse Management Systems (WMS)
- Automation networks:
 - human-machine interfaces, SCADA, PLC, DCS, packaged systems, microelectromechanical systems, field programmable gate arrays, embedded systems
 - requirements management plans

Source: Mexican Secretariat of the Economy

IT demand in manufacturing

Common software in demand, paired with need for services to facilitate integration and exploitation:

- Transvalor, Scientific Forming Technologies, Simufact Engineering, Siemens NX and Unigraphics, Prolex Electronics, SAP Manufacturing Execution, Dassault Systemes, Exact, Caseware, Autodesk, Vitri, Clarity, Advantech, Mitutoyu
- Custom software for aerospace and electronics-electrical manufacturing

Recommended sales approach for IT:
Partnership with a Mexican IT company.

You provide complementary services, guidance, software licenses; Mexican partner offers business development, implementation, localization and post-sales support.

Offer to hire Mexican partners for support on US projects.

While the Mexican IT market is highly competitive, this dynamic creates a motivating win-win situation.



Market entry models: faster



- **Direct Investment**

- Greenfield and hire locally, or
- Buy an existing company and adapt it to provide your product or service
- Good for when logistics, production, or delivery / service costs are reduced if done locally

- **Joint Venture**

- Create a company with a Mexican player already in the market
- Share responsibilities according to capabilities



These 2 options cost the most up front but represent the lowest risk. Overtly encouraged by OEM manufacturing customers.

- **Licensing Agreement**

- A Mexican company replicates and sells your product or service for a percentage / annual fee
- Need to ensure controls in place for accurate monetization

- **Distribution / Channel Partner Agreement**

- A Mexican company incorporates your services or products into the portfolio they offer in Mexico
- Varying degree of local responsibility for delivery / implementation



Mid-range options. If handled well with your Mexican partner, these 2 can be fast and less expensive.

Market entry models: lower upfront cost

Agents or Representatives

- A local team or individual promotes your product or service, provides customer service and develops sales
- You assume responsibility with them for ensuring product or service is properly received by customer
- Important to see your representatives periodically in person, show them you are invested in their service

Manufacturing customers will tolerate these models more for high-volume commodities or very specialized services. Otherwise, only while they have no better option. May ask you to commit to finding local support.

What % of your costs needs to be in dollars, vs pesos?

Sell from Virginia

- Promote locally
 - Advertising and trade shows, networking
- Spanish-speaking staff in US, travel frequently to market, telephone customers often
 - From a sales development standpoint it should feel to customers as if you were based in Mexico
- Ship product to client directly. Deliver service remotely or via trips to Mexico

More lightweight to implement, these options represent higher costs and risk in the long term, with slower results that are less guaranteed. Evaluate whether you should sell at a higher price point than in the US.

Routes to Mexico's manufacturing market

- Manufacturing clusters
 - Active supplier development
 - Key interest is reducing supply chain risk and improving local capability
- R&D and technical training centers
 - Often closely linked to cluster organizations
- Mexico locations of current customers (e.g. Rolls Royce) and other “anchor” manufacturers
- Manufacturer supplier days
- Industry trade shows
 - Reach SMEs (Tier 2s) interested in capabilities improvement
 - Reach OEMs, Tier 1s and Tier 2s with in-demand components, processes
 - Reach industry partners interested in Industry 4.0 and process management
 - Great for exhibiting secondary services to meet the needs of the industry
 - Great for meeting partners and reps

Past Important trade shows (check with us for 2021 updates)

Smart Industry Summit 4.0

Leon, Guanajuato, September 5-6, 2018

Industry 4.0 event bringing together multiple sectors in the Bajío region

Food Technology Summit

Mexico City, September 26-27, 2018

Food processing and ingredients

Foro de Proveeduría Automotriz

Leon, Guanajuato, October 17-18, 2018

Automotive manufacturing suppliers expo in one of the main auto regions

Expo Plásticos

Guadalajara, November 7-9, 2018

Machinery, technology, raw material and plastic solutions for all industries

Expo Manufactura

Monterrey, Feb 5-7, 2019

Country's biggest advanced manufacturing trade show with pavilions on automation and robotics, plastics, additive manufacturing, machining solutions

Automotive Meetings Queretaro

Queretaro, February 19-21, 2019

Automotive B2B meetings

Engine Forum & Aerostructures Meetings Sonora

Hermosillo, Sonora, February 27-28, 2019

Aerospace conference and exhibition focused on metal specialties

Logistics Summit & Expo

Mexico City, March 13-14, 2019

What the name says!

UTECH Las Americas

Mexico City, April 10-12, 2019

Polymers and chemicals trade show

PlastImagen

Mexico City, April 2-5, 2019

Plastics and plastic processes trade show

FABTech Mexico

Monterrey, May 7-9, 2019

Metalworking trade show

ExpoEléctrica

Mexico City, June 4-6, 2019

Electrical components expo; 2018 edition included automation pavilion

ExpoPack

Guadalajara, June 11-13, 2019

Large packaging and packaging processes show

ExpoCarga & Cargo Week Americas

Mexico City, June 18-20, 2019

Freight and logistics conference and exhibition

Industry associations

AMDM – Mexican Association of Machinery Distributors

AMIA – Mexican Automotive Industry Association

AMMMT – Mexican Mold and Die Manufacturing Association

AMS – Mexican Association of Surface Finishing Industrials

ANFAD – National Association of Appliance Manufacturers

ANIEI – National Association of Educational Institutions in Information Technology

APIMEX – Association of Industrial Suppliers in Mexico

ATMS – Association for Technology, Manufacturing and Solutions

CANACINTRA – National Chamber of Processing Industries

CANAME – National Chamber of Electrical Manufacturers

CANIETI – National Chamber of Electronics, Telecommunications, and IT

CIATEC – Center for Applied Innovation in Competitive Technologies

EMA – Mexican Accreditation Entity

FEMIA – Mexican Aerospace Industry Federation

FUMEC – US-Mexico Foundation for Science

Tip: to find out who the biggest players in your target industry are, check for sponsors or board members in the associations, clusters and trade shows.

Teaming up to compete: clusters

Many of Mexico's industrial clusters have created formal organizations to assess needs and facilitate competitiveness, typically steered by large investors, local government, and local educational institutions with strong support from industrial park developers.

- Chihuahua Advanced Manufacturing Cluster
- Aerospace Cluster Chihuahua
- Chihuahua Mining Cluster
- ClauGTO Guanajuato Auto Cluster
- Aerocluster Queretaro
- Mexico State Automotive Cluster
- Sintonia Puebla Industrial Cluster
- 2 IT clusters in the industrial hub of Monterrey: CSoftMTY, Monterrey IT Cluster
- Baja California Aerospace Cluster
- Baja's Medical Device Cluster
- Sonora Mining Cluster
- CLELAC – Electrical Appliances Cluster

Parting observation

In an internationalized economy like Mexico, it makes sense that you will find among your competitors French, German, British, Spanish, Japanese, Korean, Chinese, Brazilian, Israeli, Italian and Canadian companies.

What doesn't make sense is when those companies outperform US suppliers in Mexico, given the advantages in cost and quality Americans often offer, not to mention cultural affinities. Why does this happen?

Because the competing foreign companies are physically in the market.

Proximity can lull US companies into thinking they can properly compete in Mexico from home. Proximity is a real advantage-- think time zones, and not having to move product across oceans-- but it doesn't mean it's okay to skip the step of really engaging with customers in Mexico, in person.

International and Mexican competitors are in Mexico, on the ground, which more often than not is the deciding factor in a sale. Mexico is not an easy market compared to the US, nor is it inexpensive, so Mexican customers need to see you really understand and are invested in their needs. Plan to get to know them well.

One of the best ways to do business in Mexico is literally to make friends with Mexicans.

Gracias, y estamos a sus órdenes.

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