

RENAULT MEXICO case study

F Gauthier

Question at the end of the main text

Mr. LECLERE-BESSONET, Director of the Management of North American Territories of the state-run corporation Renault, stated at the beginning of 2002:

"After committing ourselves to Renault's development in the United States, and now that our collaboration with AMC has reached its peak, we need to consolidate our position on the North American continent by applying our policy of industrial development prepared over the last five years to Mexico."

Renault In the United States

Renault, the leading French manufacturer with 35% market share internally and 13% market share in Europe, projecting global sales of 2.2 million vehicles in the coming years, has decided, under the direction of its two successive presidents, B. VERNIER-PALLIEZ and B. HANON, to attempt a new conquest of the North-American market (6 million vehicles a year), avoiding the errors committed at the time of the terrible experience of La Dauphine in the 1960s. Since then, the market has become more demanding, requiring sophisticated engine components: the catalytic converter, the automatic transmission, anti-pollution devices pushing manufacturers to increase the size of the cylinders to a minimum of 1,500 cubic centimeters.

Thus, the state-run corporation acquired a 46% share of America's fourth largest automotive manufacturer, AMC, in 1999.

Its goal is to capture 3 to 4% of the U.S. market, with the aid of three product lines:

- Renault products imported from France (approximately 36,000 vehicles in 2002)
- AMC products derived from Renault (180,000 vehicles with the brand name Alliance in 2000) manufactured in Kenosha (AMC)
- Jeep products, a subsidiary of AMC, located in Toledo

Adaptation of French Models

If the production of Jeep's factory is that of a purely American product, production at the Kenosha plant is an adaptation of the French model to American regulations. For the first time, the Megane found itself renamed "Alliance" and soon the Clio will become the "Encore," the two products having been strongly Americanized (anti-shock, anti-pollution, safety standards). To succeed at capturing the American market, Renault needed a "European" automobile manufactured by Americans.

This adaptation of the French model to American standards has introduced the problem of supplying the factory with parts.

Technical Composition of a Motor Vehicle

A vehicle can be considered to be formed of four ensembles offering a more or less large degree of homogeneity:

- the motor-propulsion group (engine & transmission)
- the chassis and mechanical elements
- the body
- the equipment

The distribution of value of the final vehicle's different groups of parts, excluding labor, is generally as shown in Table 1. Labor costs for the final assembly represent 8% of the total value of the vehicle.

Outfits of a very heterogeneous quality are generally outsourced. The chassis and the body already represent more specific ensembles, and Renault has the means and the equipment to produce them in large quantity in France. The production of these agents, strengthened by the capabilities of the AMC plant, can be relatively flexible at the heart of the workshops to supply all of Renault's automotive factories, both in France and abroad.

The motor-propulsion group, by far the most specific, requires for its assembly specialized production units. The most important of these is Cl  on in France, the only

Table 1
Distribution of Worth

Chassis Mechanicals	Body	Equipment	Motor- and Propulsion Group
34%	20%	28%	18%

assembly plant to manufacture the "C" engine (1,400 cubic cm cast iron) from its conception more than 15 years ago to a current rate of 3,700 engines per day, as well as the new 1,700/2,000 cubic cm cast iron, the "F" engine, for which global demand is estimated at 3,200 motors per day beginning in 1988. These two motors are manufactured in proportions such that today the Cl  on plant can export 6% of "F" motors to Renault's foreign subsidiaries. The "C" motor equips the Megane, Scenic, and the "F" the Clio. But the modular design of many of the vehicles allow the adaptation of the "C" or the "F" engine to any model in the series. The maximum production capacity of the "F" engine for Cl  on is 2,200 engines per day.

Supply of the Mexican Factory in Sahagun

The Mexican factory in Sahagun is supplied following the CKD model (Completely Knock Down). The process applied to the Megane Scenic assembled in Sahagun is as follows: The CKD of Renault's Grand-Couronne factory in France (Seine Maritime) consolidates and stocks all the parts necessary for the assembly of the models manufactured in factories abroad. Thus, for a given model, here the Scenic, the Grand-Couronne plant gathers the parts by lots of 50 or 100. The lots are then packed. The technique requires the utilization of packaging specific to each lot and they are placed in a wood crate. This type of packaging represents in materials and labor costs, approximately 16% of the cost of the parts that it contains. Shipments are made in lots of 40 to 80 crates and made almost exclusively by boat. Transport costs represent 10% of the cost of the parts. The assembly plant therefore receives only assembly kits by 50 or 100 of which it must guarantee the administration which represents. 2% of the costs of the parts. The principal problems are therefore concentrated in the Grand-Couronne plant, which in effect only receives vehicle orders from the foreign assembly plants. Its operating costs, somewhat variable, are 8.5% of the cost of the forwarded parts. Financial and commercial controls are organized at the state-run corporation's head office: its cost is .04% (parts cost) to which .6% data processing expenses must be added.

The Renaults Megane and Clio are going to represent in the only production of the Mexican factory in Sahagun. The manufacture of other models there will be stopped from now until

2002. The projects of the plan to fabricate Meganés and Clios allow one to estimate the cost of the parts assembled in Sahagun as a function of their origin:

Origin Kenosha (sheet iron and various equipment): 5,500 €

Origin France (mechanicals and various equipment): 3,250 €

The average cost of an equipped engine destination Sahagun: 2,500 €

The largest portion of shipments is made by the maritime route with a gain of 4% in relation to traditional packaging. But here the system requires a more significant recourse by plane against emergency repairs to avoid the shutdown of the assembly lines in the case of a break in supply. Approximately 3% of the total weight of the parts are transported by plane and 20% of these shipments are treated as urgent. An additional warehouse should have been conceived in Sahagun. Operating costs and the annual costs associated with it represent 800,000 € per year. The Mexican factory should have equally admitted to a more significant management of its production (cost: 1 % of the cost of the imported parts) and implemented more sophisticated data processing (1 % of the cost of the imported parts + 400,000 €/year).

Administrative expenses at the firm's headquarters represent .2% of the cost of the parts to which it must add 1.2% for data processing fees.

Supply of the North American Factories

When a North American buyer places an order for a particular vehicle, that vehicle is generally not already built, rather, the client waits no more than 15 days from the date of the order to receive it. Otherwise the client will, in the best of cases, change dealers, or will even change brands altogether.

Vehicle production has therefore developed out of this assumption: deliver client orders from week A to the manufacturer, buy the parts, produce the vehicles, and deliver them to the client in week A + 2....

In order to meet the parts supply demands of the American Motors factories, and to adapt to the standards applied to the suppliers of large American manufacturers, standards defined by AIAG (the American equivalent to the union of automotive workers in France), Renault has had to adapt to a very different system to which European automotive manufacturers are not accustomed. In 2002 Renault became, in effect, a simple supplier of AMC. The American affiliate thus passes on to its headquarters weekly orders for parts like any other of its local suppliers. This system has allowed Grand-Couronne's suppliers to receive contained and reusable containers for which the price is generally included in the purchase price of the part. The factory's activities are all the more simplified (cost: 4.5% value of parts in variable cost). These containers have the advantage of being directly usable on the assembly line. The only supplementary costs are inherent in the packaging of specific returnable containers, when necessary, and then in their placement in the maritime container.

The investment in reusable containers represents approximately 10% of the cost of the shipped parts, amortized over 5 years.

Renault in Mexico

Since 1960, Renault has positioned itself in Mexico essentially under the name of Renault of Mexico (RdM). It was controlled 40% by the French state-run corporation and 60% by the Mexican government up until 1998.

Afterwards, the Mexican government abandoned the automotive industry to private groups and Renault was from that point forward 100% owner of its Mexican subsidiaries. In its Sahagun factory (Hidalgo province RdM produces Clios, and Scenics, delivered in CKD).

This production is destined exclusively for the local market of which RdM claims approximately 12%.

But the Mexican market, after having been possessed one of the strongest growth rates worldwide, is in a full recession. After having recorded 571,000 vehicles in 1998 the market attained a painful 250,000 in 2000 and remain at this level for several years.

Nevertheless, Mexico remains a promising market for automotive manufacturers since a population of 80 million (of which 42% are less than 15 years of age) experiences a accelerated growth rate (2.6% per year).

The country possesses much potential wealth, which is only beginning to be exploited. A lax administration today slows development, leaving the country facing serious financial difficulties. Thus, finance charges in Mexico are 36% per year, whereas in France and in the United States rates are at 10%. With a 38% market share, Volkswagen is the leader in Mexico, followed by Datsun, Chrysler and Ford, each with a 10% market share. During this time, the dollar is at 1.00 €.

"Automotive" Manufacturers in Mexico

To reach the goals set by the automobile law and the various relative ordinances, manufacturers must estimating firm by firm, their productions and their sales so as the balance their annual foreign currency budgets. The requirement for local integration is calculated using the price of the equivalent model in the country of origin (article 5 c the automotive law, see appendix 1).

One must not spend, in foreign currency, at one time more than 50% of:

Dealer price x 0.85 of the French factory sale price of the equivalent vehicle (the remaining 15% represents the manufacturer's markup);

For example, for a Megane or a Clio with a dealer price of 22650 €, the cost of the parts imported from France cannot exceed:

$$0.85 \times 22,650 \text{ €} \times 0.5 = 9,625 \text{ €}$$

Faced with this obligation, every automotive manufacture maintains a markup on the purchase of local parts in relation to the French price when the rate of integration is greater than 35%.

Faced with the obligation of national integration, the markups that it can generate and the advantage of foreign currencies, a large portion of automotive manufacturers have invested in Mexico:

1. To be able to manufacture local components without significant markup, which is what would have been the case with the local manufacturers.
2. To export products which bring in enough of the foreign currency necessary for the purchase of parts from their origin (at least 50% of the value calculated according to the previous formula).

Regarding the choice of an automotive manufacturer to manufacture locally, Renault must determine the dimensions of the future plant, taking into account, for example, the global demand for engines or body parts, but also these requirements in a foreign currency. These requirements should meet importation at the completion of collections CKD necessary to Renault's Mexican market.

In the case of a local production of engines, the former would be 75% integrated locally and its average sale price at Kenosha is estimated at 2250 € in 2002 (a portion of small equipment would be installed in the United States) from which point the factory would have completed its "rise in industrial rate."

The Choice of the Localization of the Factory in Mexico

To determine its geographical implementation in Mexico, Renault must take several factors into account (refer to appendix 2 for a geographical location of cities).

1. The majority of its production will be in Kenosha, Wisconsin, United States, with the surplus destined for Renault's Mexican plant located 90 km from Mexico City, in Sahagun.
2. It is not possible, taking into account Mexican laws, to install oneself less than 100 km from either the North American border or the Atlantic coast: seven sites are selected (reduced finally to four sites).
3. Mexico's immediate surroundings have a traditionally strong union presence, which has often inconvenienced the Renault administration (the *escalafon* principle: promotion by seniority by all usual channels is confused).
4. Certain Mexican provinces are ready to favor Renault with certain "incentives" (land gifts, exemption from local taxes, etc.).

Modes of Transport

A. Delays

Forwarding to and from the destination (be it Vera Cruz or Tampico in Mexico, be it Houston or Charleston in the United States) can be carried out either by truck (approximately 2 days) or by train, for which the average delay is 25 days.

The liaison Mexico-Kenosha AMC can be envisioned in three forms, as shown in Table 2.

Table 2

Mexico-Kenosha link

	<i>Truck Only</i>	<i>Rail Only</i>	<i>Piggy Back'</i>
Factory => border	1.5 to 2.5 days	5 to 25 days	2 to 3 days
Customs	0,5 days	2 days	2days
Customs Kenosha	4 days	8 days	6 days
Total	6 to 7 days	15 to 35 days	10 to 11 days

¹Piggy Back: trucks and trailers for the Mexican portion of the trip, the trailers are forwarded on special wagons American portion of the trip.

B. Costs and Distances

The table of distances between the principal reserved places is given in appendix 3, the two border crossing points between Mexico and the United States are Laredo and Eagle Pass.

Ground Transport: Mexico and the USA

It is possible to utilize two drivers in the same truck to reduce the delays by 2. The cost for an additional driver is \$400 per day. A driver covers approximately 500 km per day. Table 3 summarizes the ground transport by truck and train.

Maritime and Aerial Transport

Maritime transport is feasible either in its traditional form or by container. The latter is of two types, the 20' and the 40'. The first can be filled to 18 tons and the second to 24 tons. But volume restrictions are such that the containers are filled to 75% to 80% of their capacity by weight by assembled modules, and to 95% by elementary components. American legislation

dictates that only one 20' be loaded on each truck, whereas truckers do not hesitate to put two on in Mexico.

The characteristics of maritime transport are presented in appendix 4. The average cost of a kilo of mechanical automotive parts was estimated in 1992 at 22.50€ per kilo, body parts at 7.5 €/Kg and equipment at 22.50 €/Kg.

Table 3

Ground Transport: Mexico and USA

Container 20' or 40'

Cases

Loading of truck or freight car (including administrative costs)

\$100 per container

\$7.5/ton

Truck mileage costs USA and Mexico

\$70/100km by flatbed able to hold 1-2 containers according to total weight

\$5/ton/100km

Rail mileage costs in Mexico Rail mileage costs in USA

\$20/km per container \$40/100km per container

\$1.5/Ton/100km \$3/ton/100km

Aerial transport is envisioned either by bulking or by parcel service. Information relative to these types of transport is outlined in appendix 5. The transfer of the bill of lading between France and Mexico requires 45 days delay.

Customs Restrictions

Customs regulations in Mexico require that every imported vehicle is subject to a 300% tax. Vehicles manufactured locally that do not satisfy minimum levels of national integration (see Article 5 in Appendix 1), are considered as imported vehicles.

Customs duties on imported parts have been fixed at approximately 12% of the part's value. Renault Corporation has experience with these customs restrictions with its American subsidiary. It decided to place its Kenosha factory in a "customs control operation." The cost of such an operation (customs procedures on the factory's premises) is about \$300,000. One must take into account "various administrative costs" at an annual sum of \$100,000.

Question

What is the best way to organize and manage the flow of information necessary to manufacturers, financiers, retailers, those in charge of transports, customs?

Your solutions will be considered as able to answer various problems listed as well as optimum solution.

Appendix 1

Excerpts from the Law Relating to the Rationalization of the Automotive Industry

The degrees of the vehicles' national integration will be evaluated by model, based on the cost-part formula. For those vehicles that will not abide by the minimal standards for integration, importation taxes equivalent to those of imported vehicles must be paid, except if the Secretary, under advice from the Commission, has allowed a temporary decrease in integration because businesses are being seriously hurt, but for reasons not directly attributable to it.

Article 11

Terminal manufacture companies are not allowed to manufacture components produced by the separate parts industry, with the exception of those parts that they already produce or that are authorized by the Secretary. If the company cannot meet with the law's requirements, the Secretary, under advice from the Commission, can authorize that the separate parts industries manufacture additional automotive components to those already produced, when it constitutes an additional benefit for the country's economy and for the development of national industry; the latter understanding to strive to meet international production standards, and designates the major portion of its production for exportation, and to respect any other conditions set by the Secretary.

Chapter III Budget of Foreign Currency

Article 14

Terminal manufacture companies must produce the net foreign currency revenues necessary to their importations and payments abroad. The foreign currency budget determined for each company by the Secretary, taking into account the Commission's recommendations, must be balanced a minimum of yearly for each model.

Article 15

To calculate the foreign currency produced, the Secretary will consider the sum total of net foreign currency revenues resulting from vehicle exportation, tools and automotive components, as well as the exterior capital designated to augment the social capital of the companies, and the external finances in foreign currency allocated for the acquisition of machines and production equipment.

Article 17

To calculate the outflow of foreign currencies, importation totals and exterior payments made by terminal manufacture companies will be taken into account, as well as increase of importations of separate parts industries necessary to the production of automotive components destined for vehicle assembly and for original equipment repairs.

Considering that for several years, the federal government has pursued a policy encouraging the development and integration of the automotive and separate parts industries, which allowed the structuring of a significant industrial framework constituting a first-rate source of employment.

That to consolidate the obtained results, as a function of current national and international estimates, and the new objectives of industrial policy and external commerce, set out in the National Plan for Development, it is necessary to rationalize the automotive industry such that it most effectively contributes to the national objectives and priorities.

That in order to do so, the automotive industry must no longer constitute a burden for the commercial balance of the country, and in the future must produce the foreign currencies necessary to its operations. .

That the vehicles and their components must be manufactured for a profit, with optimum quality and prices competitive with the global market so they may be accessible to the national consumer, and in particular, those high value-added vehicles, exported.

That to attain the objectives of a balance of payment and of competitiveness, it is necessary to affect those structural modifications within the industry which will rationalize the production of components, and produce, in a general fashion, the benefits offered by peak economies.

Article 5

Vehicles must display the following minimum levels
national integration:

Degree of Integration Model Year

<i>Vehicle</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007 Forward</i>
<i>Utility Vehicles</i>	50%	50%	55%	60%
<i>Light and Commercial</i>	65%	70%	70%	70%
<i>Mid-size and heavy-weight utility</i>	65%	70%	75%	80%
<i>Road Tractors</i>	70%	90%	90%	90%
<i>Full-size Buses</i>	70%	90%	90%	90%