



Bottlenecks to Indian Manufacturing Industry Case Analysis

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**CCS
Final
Submission**

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INTRODUCTION

1.1 RATIONALE FOR CHOICE OF INDUSTRY & COMPANY

In the manufacturing sector, the industry chosen for analysis is Automobiles. This sector contributes around 7 percent to the GDP of Indian economy and has been receiving greater impetus due to the Make in India program.

Through this project, we aim to analyze Tata Motors Ltd. in detail to understand the firm's operations and all possible interfaces with the external environment. Tata Motors is a homegrown firm with wide operation base in the country. TML is present across several segments such as Passenger Vehicles, Light/Medium/Heavy commercial vehicles. Though the operation for each segment varies widely, our aim is to work with a generic organizational and operational structure.

1.2 MAJOR BREAKTHROUGHS IN THE INDUSTRY

To understand when Indian Automobile Industry has taken off and at which period of time there were significant breakthrough, we looked at trend of total production of all types of vehicles in India from 1950 onwards.

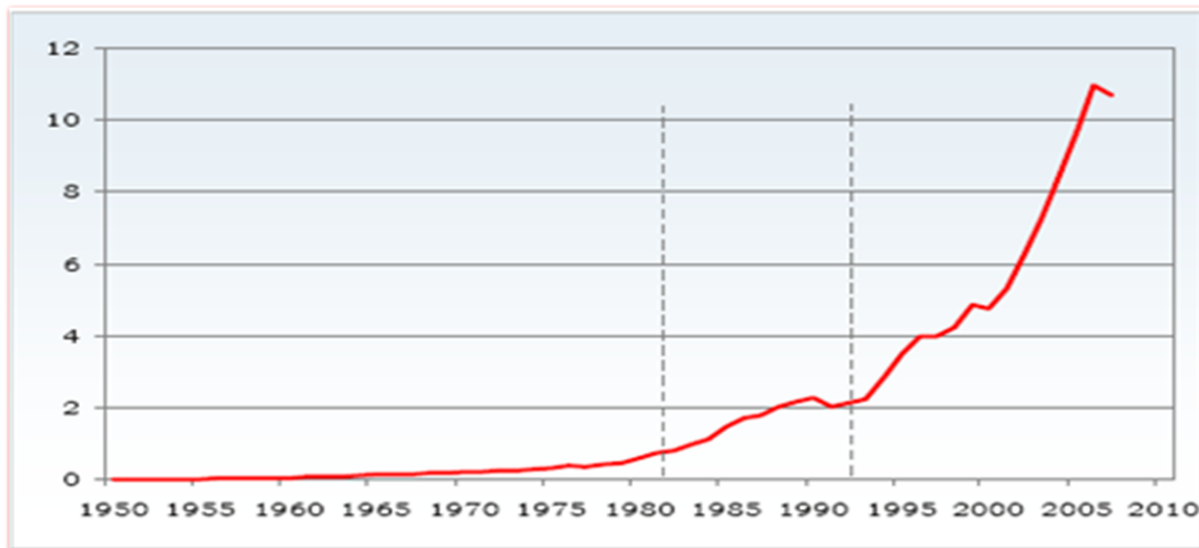


Fig: Total Production of all Vehicles in India in million units during fiscal years 1950-2007¹

The production figures indicate that the industry and impact of various policies can be analyzed in terms of three periods namely pre 1980s, 1980s – 1991 and post 1991.

¹ <http://www.theautomotiveindia.com/forums/nostalgic-era/1295-indian-auto-industry-history-timeline.html>

1.2.1 Pre 1980s:

This period can be subdivided into pre 1955 and 1955-1980s. Activities pre 1955 majorly revolved around import of components and assembly and the post-independence period emphasized on self-reliance through indigenization of manufacturing industry.

One major breakthrough in value chain of automobile industry is setup of Dunlop pneumatic tyres office in 1897. 1912 saw the commencement of TVS operations and in 1920s General Motors India Ltd and Ford Motors Co commenced assembly of automobiles. Hindustan Motors Ltd, Premier Automobiles Ltd, Mahindra & Mahindra started manufacturing in 1942, 1944 and 1945 respectively.

1.2.1.1 *Negative Impact of Policies Post-Independence:*

The GOI had appointed the Tariff Commission in 1952 and in accordance with its recommendation, terminated the activities of CKD (completely knocked down) unit assemblers who did not have any manufacturing program in 1953. An import substitution program was launched in 1953 which restricted the import of fully built-up cars. Also, there were multiple restrictions on entry, import of components and machinery, capacity expansion and foreign collaboration, following which, General Motors and Ford had backed out of India in 1954.²

1.2.2 1980s – 1991:

In 1966, GOI appointed the Mudaliar committee to frame guidelines for foreign collaborations and technology import post the heightened criticism on heavy reliance of automobile industry on foreign technology. The GOI took a strict view on acquisition of technology through foreign investment and collaborations. To foster self-reliance and indigenization, GOI imposed strict control on imports which had resulted in increased failure of components. In 1969, the car manufacturers took the issue of controls on capacity and distribution and price controls to Supreme Court owing to which Car Price Commission was setup which had finally led to **abolishment of Price Controls in 1985.**³

Auto component was protected by GOI with high import tariffs and was encouraged towards supply of components to domestic manufacturers. The Phased Manufacturing Program introduced in 1980s has resulted in auto-component industry's modernization of technology.

A significant breakthrough in this industry took place in 1980s with the first lease of liberalization policies which has resulted in the industry which we see today. This period witnessed the **birth of Maruti Udyog** and Indo-Japanese two-wheeler partnerships. In 1983, the GOI formed a joint venture with Japan's Suzuki and thus Maruti Udyog Ltd came up with a GOI owning 74percent stake in the company. This was a milestone in India's automobile industry and a move away from restrictions and policies on foreign investment and collaborations and has brought in technological advancements and manufacturing practices to the Indian Industry.

A major breakthrough is announcement of **broad banding policy** in 1985 which facilitated broader classification of industrial licensing to broad groups of automotive products such as two and four wheeled vehicles, commercial vehicles etc.

² <http://www.theautomotiveindia.com/forums/nostalgic-era/1295-indian-auto-industry-history-timeline.html>

³ http://www.anjeel.com/auto/indian_automotive_history.html

Other important policy changes included relaxation in MRTP and FERA, de-licensing of some ancillary products, modifications in licensing policy, concessions to private sector (both Indian and Foreign) and foreign collaboration policy etc. which resulted in higher growth and better performance of the industry than in the earlier decades.⁴ To promote the auto industry, foster indigenous research and development and showcase absorption of new technologies by automotive industry, GOI organized Delhi Auto Expo for the first time in 1986. All these policy changes have resulted in sales crossing the mark of 100,000 units for the first time in 1985, from a mere 46,633 vehicles sold in 1980, and touched 200,000 in 1989.⁵

1.2.3 Post 1991:

The **adoption of LPG** (Liberalization, Privatization and Globalization) has been the most radical policy change so far in Indian Manufacturing history which ended the License Raj era. In 1991, plethora of policies was announced such as **New Industrial Policy**, Mass Emission Norms for Petrol Vehicles (in 1992 for Diesel Vehicles), foreign investment, exchange rate, fiscal policy etc. **Industry was de-licensed in 1993** and National Highway Policy was announced in 1997 which had a positive impact on the Automobile Industry and in the time period of 1995-2000, industry had witnessed entry of multiple international players.

Several landmark policy changes were introduced from 2000 onwards like **Quantitative Restriction and 100percent FDI through automotive route**.

Later, GOI through the Development Council on Automobile and Allied Industries had setup a task force to chalk out a 10-year mission plan. The objective of this is high rate of growth of industry, retain the attractiveness of Indian market and enhance the competitiveness of Indian companies, facilitate growth by removing the impediments and making necessary infrastructure available. The Automotive Plan 2006-16 aims at doubling the contribution of automotive sector in GDP.⁶ GOI's Automotive Mission Plan 2016-26 aims to achieve annual production target of INR 16,16,000 cr and contribute 12percent to GDP.⁷

4 http://shodhganga.inflibnet.ac.in/bitstream/10603/3722/13/13_chapterpercent204.pdf

5 <http://www.autocarpro.in/features/rise-automobile-free-india-9078#sthash.i0lg0ATU.dpuf>

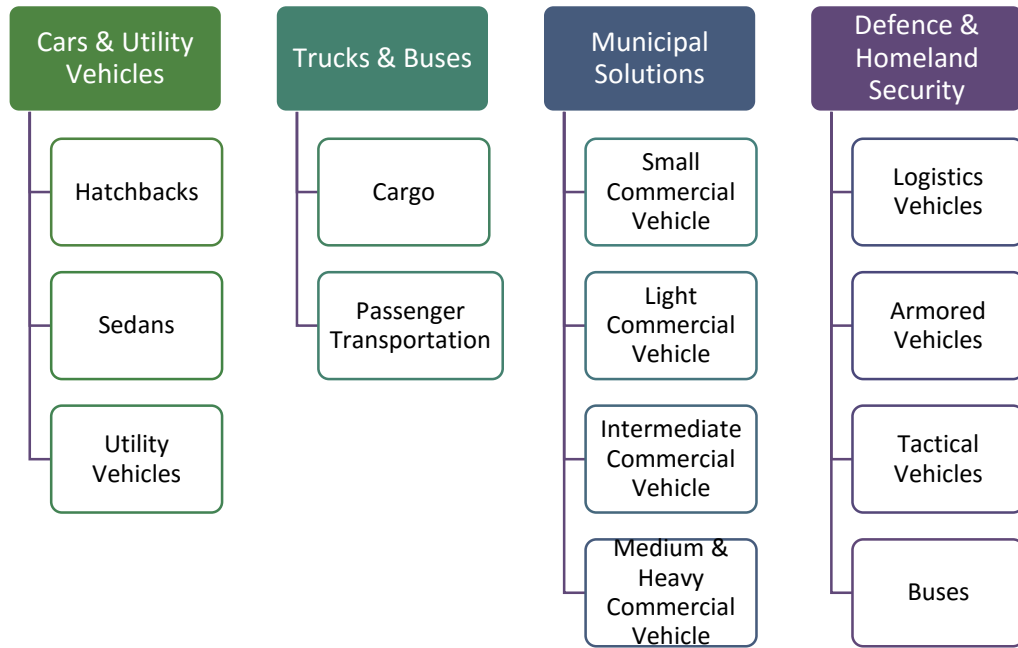
6 <http://www.siamindia.com/uploads/filemanager/20AMP-2006-16.pdf>

7 <http://www.siamindia.com/uploads/filemanager/47AUTOMOTIVEMISSIONPLAN.pdf>

COMPANY OVERVIEW

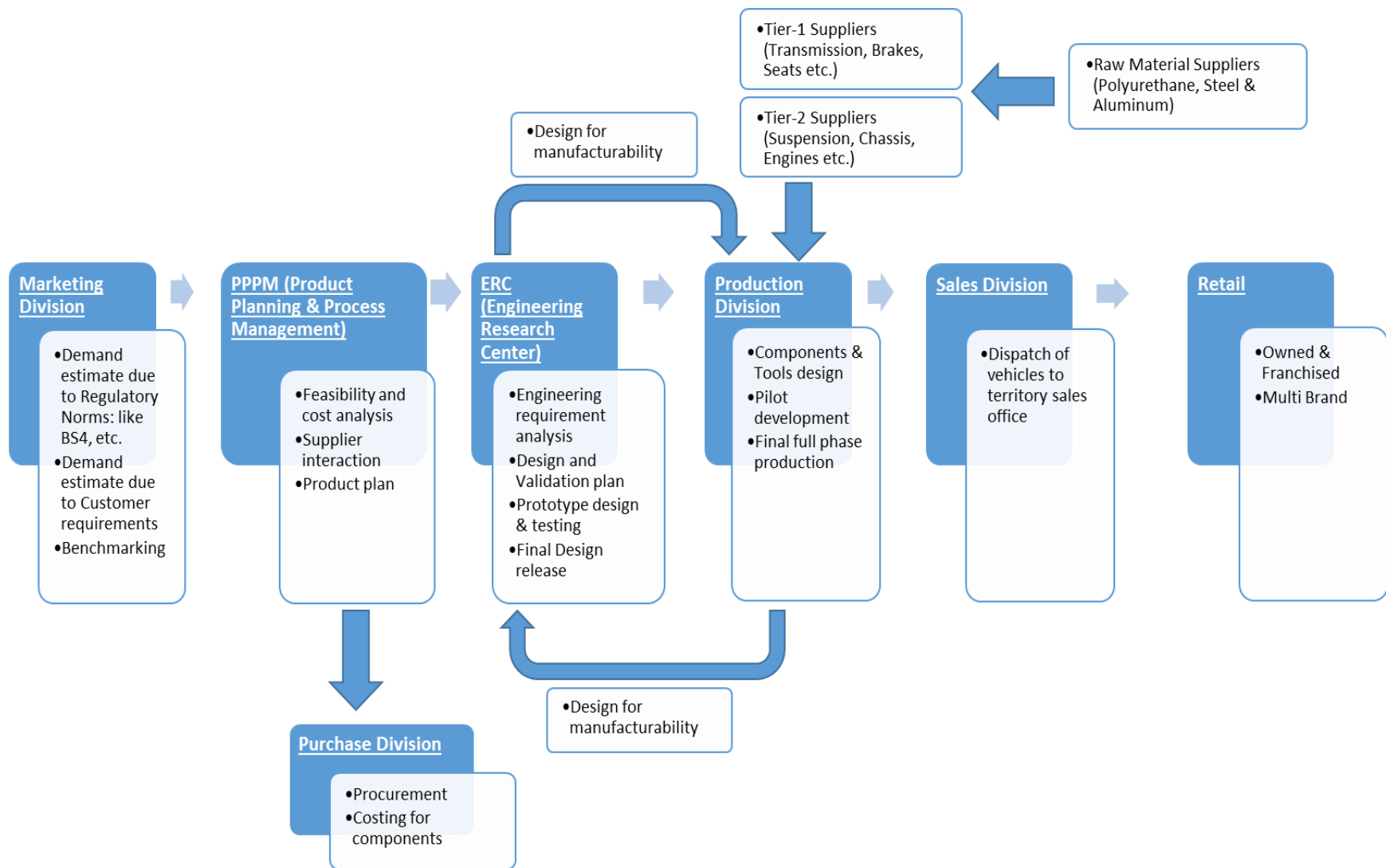
2.1 PRODUCT PORTFOLIO

The product portfolio of Tata Motors Ltd can be categorized into Passenger Vehicles and Commercial Vehicles. One other type of categorization is presented below:



2.2 VALUE CHAIN

Value Chain Analysis of a typical automobile industry is done in order to study the impact of various macro-economic variables and policies at each stage which is presented below:



The components mentioned under Tier-1 & 2 suppliers are indicative and can be interchanged.

The value chain shown above can be broadly split into the demand and the supply side:

- Supply Side
 - Marketing division deals with customer facing roles and is responsible for data collection about latest trends and requirements
 - The data collected is then transferred to the PPPM division where preliminary cost analysis is performed by interaction with suppliers and the feasibility of the design is checked
 - The PPPM division is also responsible for interaction with the purchase division to transfer details about procurement requirements
 - Based on the technical details obtained from PPPM, costing is performed by the purchase division and tenders are floated to invite suppliers for procurement
 - After the feasibility study, the details are passed on to the ERC division where further analysis is performed to arrive at the final design which is technically sound. Prototype testing is also performed and the final, validated design is released for production
 - The production division interacts with tier-1 and tier-2 suppliers for component design. Pilot and full scale volume production are undertaken in the plant by constant interaction with suppliers
- Demand Side
 - The final automobile that is commercially ready and acceptable is ready for launch and the sales division takes it on from here
 - Based on the territorial distribution system, dispatch of vehicles happens and are further transported to regional franchises
 - Retail outlets can either be a multi-brand store or owned franchises

The demand-side of the value chain which is depicted as “Retail” above consists of several services required by the customer pre-sale and post-sale of the vehicle. The following table depicts the same:

Financial Services	Vehicle Services	Mobility Services	Driving Services
<ul style="list-style-type: none">• Insurance• Financing• Re-selling• Leasing	<ul style="list-style-type: none">• Repair• Maintain (Servicing)• Enhance (Fitments)	<ul style="list-style-type: none">• Re-fuelling• Charging	<ul style="list-style-type: none">• Infotainment• Productivity - Navigation, Concierge

VALUE CHAIN ANALYSIS

3.1 VARIABLES AFFECTING EACH ELEMENT OF VALUE CHAIN

After having analyzed the Value Chain, the following stages have been chosen to study the impact of economic variables and policies.

Suppliers			
<p>Demand & Supply</p> <p>Growth rate of Automobile Industry</p> <p>Global Economic scenario</p>	<p>General Price Level</p> <p>Costs of raw materials</p> <p>Cost of production</p> <p>Cost of transportation - Impact of Fuel prices</p> <p>Inflation</p>	<p>Economic Indicators</p> <p>Inflation & Interest rates</p> <p>Exchange rate fluctuations</p>	<p>Government Policies</p> <p>Taxation polices , GST</p> <p>Ease of doing business</p> <p>India's Trade pacts & agreements with other countries</p>

Automobile Manufacturer			
<p>Demand & Supply</p> <p>Growth rate of Automobile Industry</p> <p>Global Economic scenario (Demand & Recession)</p>	<p>General Price Level</p> <p>Costs of raw materials, Components, Sub-assembled parts</p> <p>Cost of production</p> <p>Cost of transportation - Impact of Fuel prices</p>	<p>Economic Indicators</p> <p>Inflation & Interest rates</p> <p>Exchange rate fluctuations</p> <p>Others</p> <p>Availability of Finance</p> <p>Technology</p> <p>Competition & Global OEM's entry into India</p> <p>Trade Cycles</p> <p>Volatility in Fuel Prices</p>	<p>Government Policies</p> <p>Taxation polices , GST</p> <p>Environmental Regulations & Safety standards</p> <p>Ease of doing business</p> <p>Government Incentives</p> <p>India's Trade pacts & agreements with other countries</p> <p>Impact of foreign countries policies</p> <p>Disposable Income - Impact of Pay Commission</p>

Distributors & Dealers

<p style="text-align: center;">Demand & Supply</p> <p>Growth rate of Automobile Industry Economic outlook of India</p>	<p style="text-align: center;">General Price Level</p> <p>Cost of transportation - Impact of Petrol, Diesel, CNG prices</p>	<p style="text-align: center;">Economic Indicators</p> <p>Inflation & Interest rates Exchange rate fluctuations</p> <p style="text-align: center;">Others</p> <p>Availability of Finance Availability of Insurance Competition from Global players Trade Cycles Volatility in Fuel Prices Auto components /enhancement industry impact</p>	<p style="text-align: center;">Government Policies</p> <p>Taxation polices , GST Ease of doing business</p>
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Customer

<p style="text-align: center;">Economic Indicators</p> <p>Inflation & Interest rates Exchange rate fluctuations</p>	<p style="text-align: center;">Finance related</p> <p>Availability of Credit/ Banking / Loan Availability of Insurance</p>	<p style="text-align: center;">Government Policies</p> <p>Taxation polices , GST Government Incentives Disposable Income - Impact of Pay Commission Road Infrastructure Impact of public transportation</p>	<p style="text-align: center;">Others</p> <p>Volatility in Fuel Prices Technology Availability of Productivity features / Autocomps / Infotainment Repair & Maintenance market Fuelling & Charging Availability Road Infrastructure & Parking Impact of Hailcabs, taxi services</p>
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3.2 INTERACTION WITH EACH ELEMENT

3.2.1 Study and impact analysis of Indian Macroeconomic policies on Suppliers which in turn has impact on Automobile Manufacturers

a. Procurement

The firm has an extensive supply chain for procurement of several components and also outsources many manufacturing and processes to suppliers. Tata Auto Comp (TACO) is a major supplier of components to both Tata Motors and other automobile companies and encourages JVs with international component manufacturers such as

- Tata Johnson Controls Limited for seats
- Knorr Bremse CV Systems for commercial vehicle air brakes
- Tata Yazaki Autocomp Limited for wiring harnesses
- JBM Sangwoo Limited for pressed components
- Tata Toyo Radiators Limited for radiator assemblies

TML has a stake of around 26percent in TACO. TML also imports components when they are unavailable in India or quality standards are not met or they are available at a cheaper cost in foreign countries such as special steel, power steering assemblies and wheel rims. Every year, around 8-10percent of raw materials and components are imported from other countries.⁸

b. Contractual Relationship

The supplier-OEM relationship is tightly bound by the contractual terms agreed upon which emphasize on quality requirements, adherence to standards, protection of IP rights and mutual benefit clauses. Violation of any of the above shall be dealt with in accordance to the Indian law.

One clause of the contract clearly mentions that the supplier is expected to offset yearly inflationary prices with simultaneous improvement in production. TML shall be a partner in achieving reduced production costs but the exact nature of contribution is undefined. The supplier is expected to implement value engineering principles, Six Sigma and Kaizen practices and other ways of achieving economies of scale to offset the increase in production costs due to inflation.⁹ This particular clause puts immense pressure on the suppliers as they need to anticipate inflationary rise every year and accordingly plan their cost reduction projects.

c. Close Monitoring

Several vendor management programs have been implemented that include vendor base rationalization, vendor quality improvement and vendor satisfaction surveys.¹⁰ Working towards the aim of quality improvement and cost and time reduction in procurement, the Management Information Systems (MIS) of TML has been integrated with the suppliers.

⁸ [http://www.wikinvest.com/stock/Tata_Motors_\(TTM\)/Suppliers](http://www.wikinvest.com/stock/Tata_Motors_(TTM)/Suppliers)

⁹ http://suppliers.tatamotors.com/Project_Docs/rfq_terms_conditions.pdf

¹⁰ [http://www.wikinvest.com/stock/Tata_Motors_\(TTM\)/Suppliers](http://www.wikinvest.com/stock/Tata_Motors_(TTM)/Suppliers)

This has facilitated real time information exchange and processing to manage the entire supply chain more effectively. Closely working with suppliers to ensure optimal inventory had paid off during the financial crisis due to a huge demand slump.

d. Taxation

All the components supplied by different suppliers are subject to duties imposed by the state or central government such as excise/VAT/sales tax/turnover tax etc. and TML is entitled to claim any exemption accrued under taxation laws in place during the period of operation. In case the supplier is located in another country, all taxes applicable in the supplier's country is included in the development cost agreed upon in the contract.¹¹ With the introduction of GST, these taxes shall be subsumed within a single tax.

e. Recent Dynamics

OEMs are forcing suppliers to co-locate their engineering facilities and manufacturing plants close to the assembling plant so as to reduce costs. When this happens, suppliers can source inputs locally and this leads to proliferation of other Tier 2 suppliers as well. This system of localization of OEMs shall greatly proliferate the auto components industry. This network creates an ecosystem locally which will deliver huge economies of scope as well in times of expansion. Except in the case of proprietary technology, the supply locations are being used for supplying to other OEMs as well.¹²

India is a country where a lot of emphasis is being given to homegrown companies and technology which has led to drastic growth of companies like Tata Motors. The downside is that adoption of technology and best practices has been at a much slower pace.

f. Government Regulations¹³

- From a safety perspective, usage of ABS has been made mandatory in 125cc+ two wheelers and crash test has been made mandatory for passenger vehicles. Current penetration of ABS in India in the PV segment is only 30percent which is expected to grow rapidly due to the above mentioned regulations. This is likely to turn into a INR 6500 crore opportunity for the suppliers by FY19
- Ongoing ban on high-end diesel vehicles in the NCR and the newly imposed 1.4percent infrastructure tax on PV will negatively affect the demand in the PV segment which accounts for the bulk of domestic demand for auto components by an OEM

3.2.2 Study and impact analysis of Indian Macroeconomic policies on OEM

The Automotive Mission Plan 2006-16 was aimed at alleviating some of the inherent structural failures such as unavailability of trained manpower, crunch of funds for R&D, infrastructural development etc. to boost the entire automobile industry in India including exports.

¹¹ http://suppliers.tatamotors.com/Project_Docs/rfq_terms_conditions.pdf

¹² http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1619694

¹³ https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=937768&TB_iframe=true&height=505&width=500

a. Market Conditions

Since automobile industry predominantly functions through a pull strategy where the demand impacts the production, the impact of different economic indicators with respect to market conditions shall be analyzed on the demand side of the value chain in the following sections.

b. Technology

The Automotive Component Manufacturers Association of India (ACMA) initiated by the government performs the functions of an apex body in the country. The institution does a lot of domestic and foreign research and through this undertakes activities such as technological upgradation, disseminating information regarding latest trends and industrial events to all relevant auto stakeholders. Compliance with emission norms and latest technological developments in the field such as electric vehicles etc. has a huge implication on the technological advancement of the firm which can become a bottleneck if not addressed at the right time.

c. Exports

Currently, Latin America is the top importer of Indian Automobiles (25percent) surpassing Africa which had been the leader till last year (30percent last year). The reason for this has been stated as the falling commodity and crude prices in Africa which has made it difficult for them to purchase cars in dollars. In order to counter this downtrend, the Society of Indian Automobile Manufacturers (SIAM) has decided to approach the Ministry of Commerce requesting for a change in trading currency from dollars to rupees for all African nations (predominantly Algeria, Nigeria and Morocco).¹⁴ Another proposal is also to establish Free Trade Agreements (FTA) with Latin American countries to boost exports. Currently, these countries have ties with various competitors like Japan, South Korea and the USA which is hitting the Indian Automobile industry.¹⁵ The FTA with the EU that was proposed in 2015 is set to be a counterforce to the Make In India program since the benefitting party from this agreement will be the EU alone and not India. EU will find in more gap to enter India through their exports which will harm the domestic automobile industry.¹⁶

d. Co-development

The recent upcoming trend in the relationship between OEMs and suppliers is that of co-development. Several steps of the manufacturing processes are being outsourced to a number of suppliers. Design support is provided by TML and continuous monitoring is done to ensure that design developments are not shared by the supplier with any other competing OEM. Exclusivity clauses are common when working on designs developed by TML.

It is also possible that when the process/product is highly proprietary, the OEM might consider buying stakes in the suppliers to ensure no loss of IP or related rights.

14 https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=971250&TB_iframe=true&height=500&width=500

15 https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=971119&TB_iframe=true&height=500&width=500

16 <http://www.livemint.com/Industry/NRKSzIPydUnmeZAmhn7dAN/Auto-sector-inclusion-in-IndiaEU-FTA-against-Make-in-India.html>

e. Concurrent Engineering

Since many phases of produce development overlap and can be simultaneously undertaken, Concurrent engineering is on the rise where TML aims to reduce its product development cycle time by early involvement of vendors in prototyping and produce design development. This has led to an increase on the dependency of TML on its suppliers for technology and manufacturing capabilities.

f. Impact of GST on Sourcing and OEM

Currently, components supplied by various suppliers are taxed at the state and central level due to Sales tax and Central Excise tax (if there is interstate transportation) respectively. SIAM conducted a study on the impact of embedded tax on the cost of manufacturing vehicles and found out that there is an increase of about 12percent on the cost of vehicles which can be done away with due to introduction of GST.¹⁷ The cascading of taxes creates a huge burden on the OEMs which can be done away with the introduction of a single GST throughout the country. GST removes the concept of origin tax and the only taxation shall be at the selling location which will be fully creditable by the dealer during the sale. The impact of GST shall be felt by the OEM on both the supply side with respect to several input components and on the demand side with respect to sales across states.

There exist certain downsides of GST too. Many companies receive state incentives in states like Tamil Nadu, Maharashtra based on current VAT and CST which they pay. Manufacturers will have to do away with these incentives under the new GST regimes. All these factors will have to be taken care while formulating and negotiating the contract henceforth.

Some other expectations of automobile manufacturers from the GST bill are:¹⁸

- Used vehicle trade to be brought under the GST purview to make it a more organized sector
- Uniform tax rate for the Complete Built Up (CBU) unit and input components since less than 10 percent of the input materials are procured from within the same state
- The tax base should be the “Cost-to-Business” for levying the GST
- Diesel and other fuels should be brought under GST so that the OEMs can avail tax credit on the input tax
- There should be no distinction between input and capital goods to allow for a uniformity in taxation on transfer of stock and purchase of input

Balancing out the savings and the losses, automobiles are expected to have a reduced tax burden under the new GST policy.¹⁹

¹⁷ <http://www.siamindia.com/economic-affairs.aspx?mpgid=16&pgid=26&pgidtrail=29>

¹⁸ <http://www.siamindia.com/economic-affairs.aspx?mpgid=16&pgid=18&pgidtrail=21>

¹⁹ <http://www.ey.com/IN/en/Newsroom/News-releases/ey-gst-impact-on-the-auto-industry>

g. Factors affecting Supply Chain Management²⁰

Demand Side	Supply Side
Uneven Growth	Differentiated outsourcing
Fragmentation	Low cost country sourcing
Accelerated volatility	Risk management
Importance of after-market	Transparency/Accountability

h. Challenges in Indian Automotive Supply Chain²¹

Some of the major challenges are as follows:

- Quality challenges due to resource shortcoming
- Large number of fragmented suppliers leading to ineffective collaboration, complex tariffs and duties
- Lack of infrastructure
- Multi-level distribution system which impacts the price of products
- Frequent changes in cost of raw material commodities
- Continuous change in consumer requirement

A survey was conducted by KPMG revealed that the main strategies to overcome the above mentioned bottlenecks in the supply chain of Indian automotive industry are:

- Increasing investment in IT and process improvement technologies
- Vendor consolidation
- Improving internal infrastructure

In order to further improve the efficiency of OEMs, the government of India should invest in and encourage R&D capabilities in India with regard to hybrid cars, fuel cell development and development of supporting infrastructure.

i. Government Regulations²²

- Removal of minimum capital investment required by new investors
- Reduction in excise duty for small automobiles and low emission and multi utility cars
- 100percent FDI provision
- Complete delicensing thereby encouraging investors
- Relaxation in import tariffs for components and export profits
- De-reservation of vehicle component market²³

²⁰ <http://airccse.org/journal/mvsc/papers/5214ijmvs06.pdf>

²¹ <http://airccse.org/journal/mvsc/papers/5214ijmvs06.pdf>

²² <http://www.economywatch.com/indian-automobile-industry/government-policies.html>

²³ Frost and Sullivan report on "The Indian Automotive Industry"

- The New Scrapping policy to be introduced by the government shall aim at incentivizing customers for surrendering old polluting vehicles in the form of 50percent rebate in excise duty imposed on new vehicles. This will boost automobile demand in the country and is expected to increase the industry turnover by 4 times.²⁴
- The Supreme Court's order regarding conversion of petrol/diesel taxis to CNG fueled vehicles makes regulatory and economic sense to customers because the running cost per km for CNG is much lesser than that for petrol/diesel vehicles. Impetus from the Delhi government in terms of strengthening public transport and reduction in prices of CNG further aid in a solid boost to demand of commercial vehicles in the country. Tata Motors has a strong presence in the CV segment and this caveat in the rules presents a massive opportunity that can be leveraged²⁵
- The government also announced a policy to manufacture flexi-fuel vehicles where the vehicles can run entirely on Ethanol but also have the option of using Petrol. This technology is already being practiced in the USA and Brazil. The only constraint shall be on the supply side where a major boost in the production of Ethanol is needed. Sugar mills have been advised to take into account this factor while planning their production capacities. Auto companies will not have any other major issues as long as supply, demand and infrastructure are in place²⁶

j. Emission Standards

The impact of automobiles on the environment and the emissions contributed by vehicles are affected by the following factors:

- Vehicular Technology
- Fuel Quality
- Inspection and Maintenance of in-use vehicles
- Quality and maintenance of roads

The government has decided to switch directly to BS-VI (Bharat Stage-6) emission standards without adopting the intermediate BS-V standards. This will require fuel supply adhering to the standards and automobiles designed accordingly. Adoption of this standard will increase prices of vehicles by INR 1 lakh for diesel cars and INR 20,000 for petrol cars as estimated by Maruti Suzuki. In addition to financial constraints, the industry experts believe that this policy shift will cause technical and operational difficulties as well.²⁷

k. Exchange Rate Fluctuations

TML's balance sheet is subject to risk of exchange rate fluctuation with respect to the countries in which they operate, import of raw-material, equipment and sale in international market, and the non-rupee denominated debts on the balance sheet.

²⁴ https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=959949&TB_iframe=true&height=500&width=500

²⁵ https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=952187&TB_iframe=true&height=505&width=500

²⁶ https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=925937&TB_iframe=true&height=505&width=500

²⁷ https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=925940&TB_iframe=true&height=505&width=500

It is mainly dependent on fluctuations of Indian Rupee against US dollar, GBP and Euro and fluctuations of GBP to US Dollar, Euro and Japanese Yen. As data in the recent past is not available, we present an excerpt from TTM 20-F filed Sep 28, 2005. As of March 31, 2005, approximately 83.8percent of our borrowings were denominated in dollars and other non-rupee currencies. Further, in fiscal 2004 and 2005, 4.6percent and 5.7percent, respectively, of our total raw material costs were incurred in dollars and other non-rupee currencies, and in fiscal 2004 and 2005, 7.9 percent and 13.9percent, respectively, of our total revenues were derived from international markets.²⁸

I. Imports

The customs duty imposed on imports depend on whether the import is a Completely Built Up (CBU) unit or a Completely Knocked Down (CKD) unit. The tax structure is as shown:²⁹

Criteria / Applicability	Import Duty in %
Used car import	125
Cars CBUs whose CIF value is more than \$ 40,000 or Petrol Engine > 3000 CC or Diesel engine > 2500 CC	100
Cars CBUs whose CIF value is less than \$ 40,000 and Petrol Engine < 3000 CC and Diesel engine < 2500 CC	60
Two-wheeler CBUs with engine capacity <800 cc	60
Two-wheeler CBUs with engine capacity >=800 cc	75
Commercial Vehicle CBUs (Trucks & Buses)	20
CKD containing engine or gearbox or transmission mechanism in pre-assembled form but not mounted on a chassis or a body assembly	30
CKD containing engine, gearbox and transmission mechanism not in a pre-assembled condition	10

The range of customs varies from 10percent on the basic components till 125percent on the final product. Indian automobile industry thus follows a policy of vendor localization to the extent possible. TML for example, has almost 95-100percent of the components being sourced domestically whereas smaller companies like Volvo which do not have a significant market share import a higher percentage. This tax structure seems to have a positive influence on the Make In India program since it encourages domestic development and manufacturing but the success shall only be achieved when inherent structural inefficiencies such as poor infrastructure, unavailability of skilled labor, sufficient R&D spend etc. are corrected.

²⁸ [http://www.wikinvest.com/stock/Tata_Motors_\(TTM\)/Fluctuations_Exchange_Rates_Result_Foreign_Losses](http://www.wikinvest.com/stock/Tata_Motors_(TTM)/Fluctuations_Exchange_Rates_Result_Foreign_Losses)

²⁹ <http://www.siamindia.com/economic-affairs.aspx?mpgid=16&pgid1=18&pgidtrail=20>

3.2.3 Study and impact analysis of Indian Macroeconomic policies on Customers which in turn has impact on Automobile Manufacturers

a. Interest rate

It is one of the key macro-economic factors driving the vehicle sales and a reduction in it has a positive impact on the demand. But, a point to be noted is that, not just decrease in interest rate, but the 'confidence channel' plays role in demand as observed by industry players. A move by RBI in keeping interest rate unchanged will bring certainty in the economy and this will help in decision-making of buyers who have been delaying purchase for uncertainty to clear and interest rates to come down.

b. Availability of Credit/ Banking / Loan

Automobile sales are heavily dependent on the availability of retail finance. Higher interest rate and stringent lending norms can adversely affect the demand. On the other hand, lower interest rates stimulate demand as it results in lower cost of acquisition.³⁰

c. Exchange Rate

India heavily imports high quality steel and coking coal and thus fluctuation in exchange rates impacts auto-component industry which further has a bearing on price of automobiles. An analysis by Mint underscored that the operating profit margins of a sample 45 auto component manufacturers has declined from 28.3percent in FY12 to 15.7percent in FY13.³¹ An increase in the prices of raw material will squeeze the margins of the auto component industry before being passed on to the buyers. As the prices of auto components increase, the prices of automobiles increase. This has a negative impact on the demand of automobiles. An excerpt from a study is presented below to understand the impact of depreciation on the balance sheet of auto-component manufacturer: Scenario 1 considers Exchange Rate as INR 54/1 USD and Scenario 4 as INR 67.0/1 USD and in both cases principal debt obligation is taken as 100USD. In this case, we note that the burden on the borrower and the foreign exchange reserves of India increased by 24.1percent as the rupee depreciates from INR 54/1 USD in Scenario 1 to INR 67.0/1 USD in Scenario 4.³²

d. Taxation policies

Reduction in excise duties can act as catalyst for higher demand of automobiles as it reduces prices, which, if passed on, enhances the affordability for buyers.³³ Other taxation policies such as levy of cess has a negative impact on demand as observed by SIAM - In March, the Society of Indian Automobile Manufacturers (SIAM) had lowered its growth forecast for 2016-17 to 11 per cent from the earlier 12 per cent, after the imposition of infra cess ranging between 1-4 per cent in the Budget.³⁴

30 [http://www.wikininvest.com/stock/Tata_Motors_\(TTM\)/Factors_Affecting_Vehicle_Demand](http://www.wikininvest.com/stock/Tata_Motors_(TTM)/Factors_Affecting_Vehicle_Demand)

31 http://www.onicra.com/images/pdf/Publications/Pulse_Impact_of_depreciating_rupee_on_auto_component_industry_2_.pdf

32 http://www.onicra.com/images/pdf/Publications/Pulse_Impact_of_depreciating_rupee_on_auto_component_industry_2_.pdf

33 [http://www.wikininvest.com/stock/Tata_Motors_\(TTM\)/Factors_Affecting_Vehicle_Demand](http://www.wikininvest.com/stock/Tata_Motors_(TTM)/Factors_Affecting_Vehicle_Demand).

34 https://insight.dionglobal.in/Budget/News_Details.aspx?NewsID=975213&TB_iframe=true&height=500&width=500

e. Impact of Pay Commission

Government employees contribute approximately 17percent to sales volume and salary hike announced in 7th pay commission may result in increase in sales volume. Maruti Suzuki, India's largest car maker expects a 25percent jump in sales to government employees.³⁵ The following figure shows the impact of implementation of 6th pay commission in 2008.

The sales of passenger cars and two-wheelers posted an increase of 25percent for two consecutive years, but this increase has to be viewed in conjugation with two other factors namely, reduction in excise duty to 4percent from 8percent and submission of the 6th pay commission report in 2008 while the pay scale was implemented from 1 January 2006, and hence the government paid the due amount of INR 18,000 crores in tranches in 2009 and 2010.



f. Impact of Monsoon

Irrigation in India is majorly monsoon rain dependent and any change in monsoon levels can have an impact on the income of rural households, which in-turn impact vehicle sales.

g. Volatility in Fuel Prices

The fuel prices or levies could adversely impact the demand of automotive vehicles in India, particularly passenger cars.³⁶

h. Technology

Customer preferences especially in many of the developed markets seem to be moving in favor of more fuel efficient vehicles.

³⁵ <http://economictimes.indiatimes.com/industry/auto/news/auto-industry-expects-relatively-muted-effect-from-the-7th-pay-commission/articleshow/52998798.cms>

³⁶ <http://www.tatamotors.com/investors/financials/68-ar-html/mda4.html>

In addition, the climate debate and promotion of new technologies are increasingly resulting in the automotive industry's customers no longer looking for products only on the basis of the current standard factors, such as price, design, performance, brand image or comfort/features, but also on the basis of the technology used in the vehicle or the manufacturer or provider of this technology. This could lead to shifts in demand and the value added parameters in the automotive industry.³⁷

i. Road Infrastructure

For the growth of automobile industry, it is imperative that road infrastructure develops. When international trends are taken into consideration, we observe that during 1997 - 2002, highway length in China increased by around 15,000 km and CV volumes nearly doubled from 1.2mn to 2.1mn and a similar trend can be expected in India.³⁸ With the Smart city initiative and the 2016-17 budget allocation of INR 97,000 crore on infrastructure for roads & highways³⁹, 10000 km of highway plan⁴⁰ the demand is expected to boost.

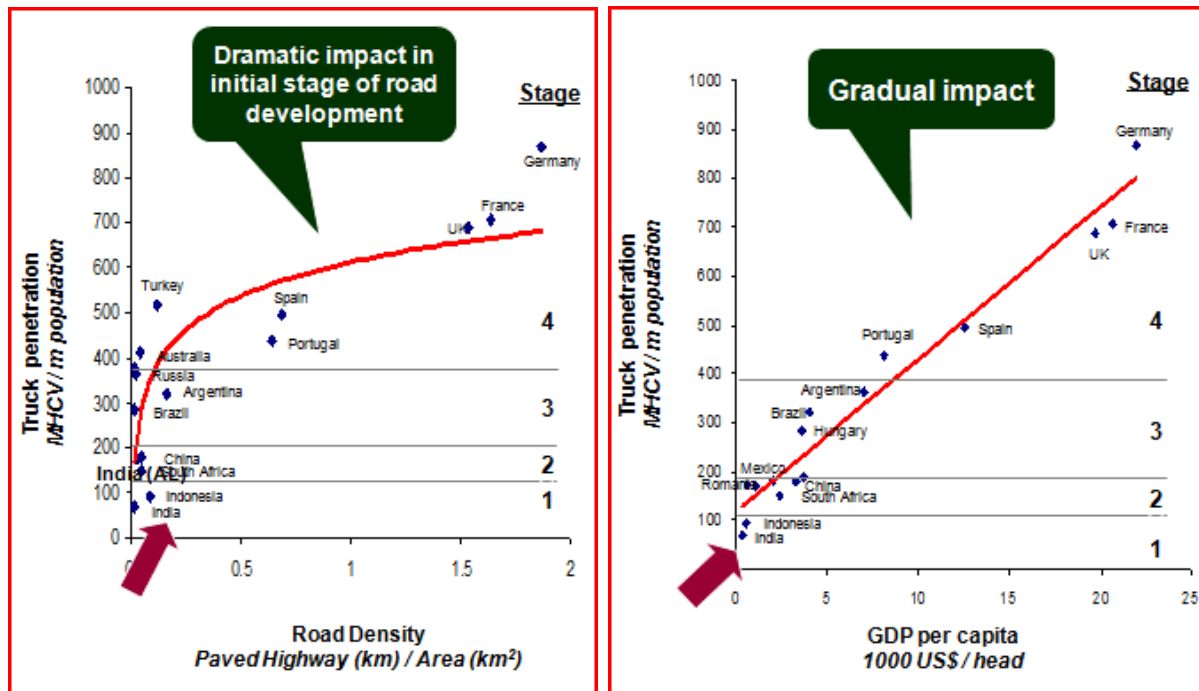


Fig: Impact of Road Development and GDP growth on Commercial Vehicle Industry⁴¹

37 <http://www.tatamotors.com/investors/financials/68-ar-html/mda4.html>

38 <http://www.autonews.com/assets/PPT/CA4229118.PPT>

39 www.rediff.com/business/report/budget-2016-sector-auto-higher-taxes-may-lead-to-substantial-drop-in-demand/20160229.htm

40 <https://autoportal.com/articles/indian-union-budget-2016-and-its-impact-on-automobile-industry-5506.html>

41 Source: VDA (German Automotive Association), Worldbank, DRI Automotive report

3.2.4 Study and impact analysis of Indian Macroeconomic policies on Distributors which in turn has impact on Automobile Manufacturers

The Apex body for the dealers and distributors in India is the Federation of Automobile Dealers Association (FADA). FADA is involved in sales, servicing of vehicles and post purchase sales of spare parts. They also have representatives from complementary industries such as tyre manufacturers etc. FADA also arranges financial services for customers and is sometimes involved in trade of used cars.

FADA has a self-owned training academy wherein it provides professional training to automobile dealers by collaborating with several academic institutions as well. This initiative is crucial in alleviating the supply side bottleneck of untrained manpower in the distribution phase. FADA also collaborates with SIAM by adopting initiatives to address the requirement of skilled manpower and ensure a greener environment.

a. Customer Relationship

OEMs are constantly improving their technology to keep pace with changing customer expectations and demographics. The face of the OEMs is the dealers and this is one area where several bottlenecks exist in terms of efficient customer service. With the increasing penetration of internet, almost 75-80percent customers research online before buying a vehicle.⁴² Many potential buyers are using mobile apps to locate dealers close to them and are using the internet for several other purposes such as reviews of dealers, ratings for automobiles etc. Research has also demonstrated that having a sound digital presence can generate more leads at a lesser cost than compared to traditional advertising in newspapers etc.

This calls for massive digitization of the dealers so that they can be more accessible to customers and can provide value added features like online booking of test drive, 360^o view of the vehicles etc. OEMs should also collaborate with dealers on this front through a robust online inventory management system, feedback system etc.

OTHER GOVERNMENT POLICIES

4.1 THE NATIONAL MISSION FOR ELECTRIC MOBILITY 2020

The aim is to give a fillip to promote indigenous manufacturing capabilities of reliable, affordable and efficient xEVs (hybrid and electric vehicles) thereby achieving the target of 5 million electric and hybrid vehicles per year on the road by 2020 and total xEV sales of 6-7 Million units.⁴³

⁴² <http://www.fadaindia.org/auto-summit/auto-summit-2016-a-report.html>

⁴³ <http://www.makeinindia.com/sector/automobiles>

4.2 FAME (FASTER ADOPTION & MANUFACTURING OF HYBRID & ELECTRIC VEHICLES) 2015-2020

The aim of FAME is to provide demand incentives to the extent of Rs.795 cr⁴⁴ to electric and hybrid vehicles covering segments of two-, three- and four-wheelers (cars, LCVs, buses etc.)

4.3 R&D INCENTIVES

To boost R&D activities, a weighted tax deduction under section 35 (2AA) of the Income Tax Act, weighted deduction of 200percent to assess for any sums paid to a national laboratory, university or institute of technology, or specified persons with a specific direction, provided that the said sum is used for scientific research within a program approved by the prescribed authority etc. are granted.⁴⁵

For the benefit of the companies engaged in the manufacture of an in-house R&D center, a weighted tax deduction of 200percent under section 35 (2AB) of the Income Tax Act for both capital and revenue expenditure incurred on scientific research and development is granted.⁴⁶

Also, for supply to manufacturers of hybrid and electric vehicles, the lithium ion automotive batteries used are exempted from basic customs duty.⁴⁷

Apart from the above, various **State incentives** like relaxation in stamp duty exemption on sale or lease of land, investment subsidies/tax incentives, power tariff incentives, rebates in land cost etc., **Export incentives** under '**Merchandise Exports from India Scheme**' for auto components and automobiles sectors and **Area-based incentives** for units in SEZ/NIMZ as specified in respective Acts or the setting up of projects in special areas like the North-east, Jammu & Kashmir, Himachal Pradesh & Uttarakhand are offered. ⁴⁸

44 <http://pib.nic.in/newsite/PrintRelease.aspx?relid=118088>

45 <http://www.makeinindia.com/sector/automobiles>

46 <http://www.makeinindia.com/sector/automobiles>

47 <http://www.makeinindia.com/sector/automobiles>

48 <http://www.makeinindia.com/sector/automobiles>

PROPOSED GST ACT

Proposed GST	Impact on Automobile Industry
No tax on Interstate movement of goods (CST)	Can optimize logistics cost by re-designing supply chain
2percent Central Sales Tax would become a part of Integrated GST (IGST) which is creditable by the dealer on sale in other state and there might not be origin tax	No cascading effect of tax. CST on Interstate procurement of components is creditable by OEMs
Proposed tax rate of 18-20percent with excise duty, road and registration tax, sales tax, all subsumed into GST ⁴⁹	Expected decrease in vehicle prices thereby leading to increase in demand
Treatment of whole country as 'One Market' for indirect taxation purpose	Increase in operational efficiencies

5.1 CHALLENGES WITH PROPOSED GST

- The ambiguity of definition of car segments if differential tax rates are adopted is one of the major challenges.
- Yet another concern of industry is the validity of tax holidays and incentives given by state governments to OEMs as they are at present based on VAT (value added tax) and CST. **Tata Motors is at losing end as it has received tax incentive from Gujarat government.**
- There is a need to reconcile GST Act and Customs Act for ease of doing business as currently Customs duty is outside the ambit of GST.⁵⁰
- Increase in number of compliances is a concern.
- Stock transfers which do not come under ambit of current taxation practice would be a concern in GST regime
- To remove the possibility of denial of input tax credit and interest imposition on tax liability, OEMs have to undertake monthly reconciliation of purchases with sales of suppliers.

TATA MOTORS' ACTIONS TO RESOLVE BOTTLENECKS

- Owing to fluctuations in the exchange rate, TML has taken measures to insulate itself from international spillovers and trends by sourcing around 95percent of the input components domestically. TML's stake in Tata Auto Comp (TACO) has also helped achieve this.
- The contractual relation with the suppliers is tightly bound through integration of the MIS thus achieving a responsive supply chain model.

⁴⁹ <http://economictimes.indiatimes.com/industry/auto/news/industry/benefits-challenges-for-auto-sector-in-gst-bill/articleshow/53553514.cms>

⁵⁰ http://www.moneycontrol.com/news/tax/gst-percentE2percent80percent93road-ahead-forauto-industry_7220821.html?utm_source=ref_article

- TML adopted a set of initiatives in the year 2002 to reduce procurement cost because raw materials accounted for bulk of the expenses. Total savings of around INR 4000 crore was achieved. Some of the initiatives are:⁵¹
 - Value engineering: identifying alternative materials and technologies
 - Adopting single sourcing for parts for a particular model of vehicle. This hugely reduced vendor management costs (One part one vendor policy)
 - Indigenizing procurement wherever possible and reducing imports
 - Launching the concept of e-procurement and reverse-auction process, where vendors bid online to supply requirements
- TML follows co-development and concurrent engineering by constantly interacting with suppliers and ensuring knowledge transfer. This has led to reduced product development cycle time and bottlenecks like supplier bargaining power and lengthy time to market can be overcome.
- TML has its own internal finance arm, Tata Motors Finance Ltd., which provides financial help to customers for purchase of vehicles which solves the financing bottleneck.
- TML has partnered with Cummins for their engine technology is a huge advantage with regard to technological superiority.

KEY TAKEAWAYS

7.1 FROM THE PROJECT

- Dynamics of the automobile industry in India
- Major breakthroughs in the industry and how they shaped up the current scenario
- Methods of operations of a typical automobile company through the lens of Tata Motors
- Value Chain of operations of Tata Motors
- Constraints faced by each stage in the value chain with respect to internal coordination and external (technological and macroeconomic) implications
- Macroeconomic policies that help and restrain the operations of the automobile industry in general and Tata Motors in particular
- The importance and applicability of the recently proposed GST with respect to the functioning of a typical automobile company
- Few initiatives undertaken by the management of Tata Motors to overcome certain constraints

7.2 FROM THE ANALYSIS:

- a. Around 95-100 percent of the components are through supplier localization thereby leading to minimal impact of global economic fluctuations
- b. Companies import in case of availability of low cost materials, availability of special materials such as special steel, special engines etc.

⁵¹ <http://www.tata.com/article/inside/01TdQ4q04UA=/TLYvr3YPkMU=>

- c. In case the supplier is located in another country, all taxes applicable in the supplier's country are included in the development cost agreed upon in the contract
- d. Currently, Latin America is the top importer of Indian Automobiles (25percent) surpassing Africa which had been the leader till last year (30percent). The reason for this has been stated as the falling commodity & crude prices in Africa which has made it difficult for them to purchase cars in dollars
- e. In order to counter this downtrend, the Society of Indian Automobile Manufacturers (SIAM) has decided to approach the Ministry of Commerce requesting for a change in trading currency from dollars to rupees for all African nations (Algeria, Nigeria and Morocco)
- f. Another proposal is also to establish Free Trade Agreements (FTA) with Latin American countries to boost exports. Currently, these countries have ties with various competitors like Japan, South Korea and the USA which is hitting the Indian Automobile industry
- g. Supplier is expected to improve process efficiency to offset inflationary cost increases without cascading the inflationary costs to the OEM. TML shall act as a partner (exact nature of partnership not mentioned)
- h. Co-location of supplier facilities with the OEM facility to achieve better control and leads to proliferation of Tier-2 suppliers. Economies of scope also achieved
- i. Ongoing ban on high-end diesel vehicles in the NCR and the newly imposed 1.4percent infrastructure tax on PV will negatively affect the demand in the PV segment which accounts for the bulk of domestic demand for auto components by an OEM
- j. Usage of ABS has been made mandatory in 125cc+ two wheelers and crash test has been made mandatory for passenger vehicles. Current penetration of ABS in India in the PV segment is only 30percent which is expected to grow rapidly due to the above mentioned regulations. This is likely to turn into a INR 6500 crore opportunity for the suppliers by FY19
- k. TML adopted single sourcing for parts for a particular model of vehicle. This hugely reduced vendor management costs (One part one vendor policy)
- l. Automobile industry functions through a pull strategy principle, hence customer side factors impact the growth of the OEM
- m. Co-development between the OEM and supplier is the recent trend in this industry. Design support is provided by TML and continuous monitoring is done to ensure that design developments are not shared by the supplier with any other competing OEM
- n. Components supplied by various suppliers are taxed at the state and central level due to Sales tax and Central Excise tax (if there is interstate transportation) respectively. The cascading of taxes creates a huge burden on the OEMs which can be done away with the introduction of a single GST
- o. GST removes the concept of origin tax and the only taxation shall be at the selling location which will be fully creditable by the dealer during the sale. The impact of GST shall be felt by the OEM on both the supply side with respect to several input components and on the demand side
- p. There exist certain downsides of GST too. Many companies receive state incentives in states like Tamil Nadu, Maharashtra based on current VAT and CST which they pay. Manufacturers will have to do away with these incentives under the new GST regimes
- q. Balancing out the savings and the losses, automobiles are expected to have a reduced tax burden under the new GST policy

- r. Reduction in excise duty for small automobiles, low emission & multi utility cars set to boost demand
- s. 100percent FDI has been approved in this sector leading to easy adoption of advanced technologies
- t. Confidence Channel plays a key role in disseminating and achieving the monetary policy announcements
- u. The New Scrapping policy to be introduced by the government shall aim at incentivizing customers for surrendering old polluting vehicles in the form of 50percent rebate in excise duty imposed on new vehicles. This will boost automobile demand in the country by 4 times
- v. Impetus from the Delhi government in terms of strengthening public transport and reduction in prices of CNG due to supreme court order aids in a solid boost to demand of commercial vehicles in the country. Tata Motors has a strong presence in the CV segment and this caveat in the rules presents a massive opportunity that can be leveraged
- w. The government also announced a policy to manufacture flexi-fuel vehicles. The only constraint shall be on the supply side where a major boost in the production of Ethanol is needed. Sugar mills have been advised to take into account this factor while planning their production capacities
- x. Adoption of direct switch to BS-VI standard will require fuel supply adhering to the standards and automobiles designed accordingly. This will increase prices of vehicles by INR 1 lakh for diesel cars and INR 20,000 for petrol cars as estimated by Maruti Suzuki
- y. Fluctuation in exchange rates has a bearing on import costs
- z. Any policy announcements pertaining to disposable income such as Pay Commissions have a bearing on demand of vehicles
- aa. Volatility in fuel prices can alter the demand and change in prices of petrol, diesel, CNG etc reflects in consumer preference towards vehicles run on a specific fuel
- bb. Automobile Industry is at the receiving end of many other government policies and initiatives such as budget allocation for road development, Smart City & AMRUT Initiative in which the thrust is on mobility, National Mission for Electric Mobility and FAME.

RECOMMENDATIONS

- As the GST Bill is passed now, there won't be a tax on interstate movement of goods which can be leveraged by Tata Motors Ltd to its advantage by re-designing its value chain. This results in optimization of logistics costs.
- Production planning department needs to factor the expected increase in vehicle demand resulting from proposed decrease of tax rates.
- As mentioned in earlier part of the report, one of the concerns of industry in implementation of GST is the validity of tax holidays and incentives given by state governments to OEMs as they are at present based on VAT (value added tax) and CST. **Tata Motors is at losing end as it has received tax incentive from Gujarat government.** Hence TML has to take a proactive participation in discussions with central and state governments in clearing the air and plan its financials accordingly.

- As the treatment of differential rate structure of cars in GST is not yet clear, the same recommendation proposed above holds good (discussion in forums) and factor in the likely inflationary for mid/large car segment⁵² and plan for the production accordingly.
- GOI, in its policy announcements and initiatives is laying increased emphasis on hybrid and electric vehicles and even in International markets, the future is electric and environmental friendly vehicles. In this regard, TML has taken into account the requirement of electric and hybrid vehicles in upcoming 100 smart cities. (In just one smart city - Pune, there is a requirement of 100 electric buses).
- As there are multiple moot points regarding the efficacy of electric vehicles in sustainability and reduction of pollution, TML has to engage in R&D for electric, hybrid and alternate fuel vehicles and come up with a decisive stand on which suits the country better based on the type of power generated (hydel/nuclear/thermal)
- Substantial investments are to be made in technological breakthroughs in self-driving vehicles as they are expected to take over in a decade as drivers are becoming scarce and expensive by the years.
- TML also needs to stay abreast of the policy initiatives taken by GOI like the Smart city & AMRUT, in which the Mobility is thrust area, and government not just wants assembled vehicle, but is in a need of intelligent transportation, for which TML needs to invest in R&D and building in-house capabilities to meet back-end (ITS capabilities) and front-end requirements. For example, in a span of 18 months from now, Pune would be in a requirement of 2500 ITMS (Intelligent transport management systems) enabled buses.
- They should phase out older models of vehicles that are still under production like LPT, LPK and then promote the newer versions like NOVUS, PRIMA and SIGNA. This will help boost the topline by increasing the value of purchase. Also, the lifetime value of customers is higher if the newer versions of products are promoted
- Offering connected solutions and integrated service networks on app platforms using the telematics system and GPS is a great value addition to the transporters. Tata Motors must partner with Tata Docomo, another Tata group company to offer these services pan India to improve the service offering and usability.

⁵² http://www.moneycontrol.com/news/tax/gst-percentE2percent80percent93road-ahead-forauto-industry_7220821.html?utm_source=ref_article