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CHAPTER II

ORIGIN AND GROWTH OF AUTOMOBILE INDUSTRY

2.1 INTRODUCTION

The automobile history of the world dates back to the late eighteenth century. Nicolas Joseph Cugnot, a French engineer, is credited with inventing the first self-propelled automobile. This vehicle was used by the French Army.\textsuperscript{36} He is said to have built the first true automobile in 1769.

Cugnot's automobile was never commercially sold. In the beginning automobile industry was dominated by steam-powered vehicles. They were expensive and difficult to maintain. The commercial history of automobiles started with the invention by the German inventor, Karl Benz.

Karl Benz constructed his first gasoline powered vehicle in 1885 at Mannheim, Germany. The Commercial production of Benz cars started in 1888. Panhard et Levassor of France was the first company to exclusively build and sell motor cars from 1889.\textsuperscript{37}

\textsuperscript{36} http://www.surfindia.com/automobile/industry-growth.html

\textsuperscript{37} ibid
The early 1900s saw many automobile manufacturing companies coming into existence in a number of European countries and the United States. The first mass produced automobile in the United States was the curved-dash Oldsmobile. The economics of the US car market was disrupted by the arrival of Henry Ford and his Model T car. A million units were sold by 1920 with in a space of 10 years.

Mercedes introduced the world’s first diesel car in 1936. Mass production of cars led to cheaper vehicles. This made cars more affordable to the common American and European citizen. The British automobile manufacturing history was revolutionized by assembly line production methods employed by two separate car makers - William Morris and Herbert Austin. Austin Seven was the world's first compact car. The Morris manufactured vehicles had the engine mounted on front.

The 1960s saw rapid developments in the automobile manufacturing technology. A milestone in the history of automobiles was achieved by the invention of efficient fuel injection processes, independent suspensions and turbochargers. Computer Aided Design (CAD) was introduced for designing vehicles from the 1980s. Ford Taurus was the first vehicle to be built using CAD.
The **History** of motorcars has surely been a well-traversed track. The automobile, as it progressed, was a product of many hands, of revolutionary concepts, and of simple, almost unnoticed upgrading. In the end, the one who received the most for these challenges and changes was the motorist whose interest, money, and enthusiasm have forced the auto manufacturers to upgrade, perfect, and add to previous achievements in order to stay in the competition.\(^4^1\)

In 1980, Japan became the top automobile-producing country in the world.

Some landmarks pertaining to the invention of automobile cars are as follows:

<table>
<thead>
<tr>
<th><strong>MODEL OF VEHICLE</strong></th>
<th><strong>YEAR OF INVENTION</strong></th>
<th><strong>COUNTRY</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>BENZ VEHICLE</td>
<td>1886</td>
<td>GERMANY</td>
</tr>
<tr>
<td>PANHARD ET LEVASSOR</td>
<td>1891</td>
<td>FRANCE</td>
</tr>
<tr>
<td>BAKER ELECTRIC CAR</td>
<td>1899</td>
<td>USA</td>
</tr>
<tr>
<td>MERCEDES</td>
<td>1901</td>
<td>FRANCE</td>
</tr>
<tr>
<td>T-MODEL– HENDRY FORD</td>
<td>1907</td>
<td>EUROPE</td>
</tr>
<tr>
<td>VOLKSWAGEN</td>
<td>1936</td>
<td>GERMANY</td>
</tr>
</tbody>
</table>

Source ([http://www.surfindia.com/automobile/industry-growth.html](http://www.surfindia.com/automobile/industry-growth.html))

**2.2 EVOLUTION OF AUTOMOBILE INDUSTRY IN INDIA**

The first car ran on India's roads in 1897. Until the 1930s, cars were imported directly, but in very small numbers. An embryonic automotive industry emerged in India in the 1940s. **Mahindra** and **Mahindra** was established by two brothers as a trading company in 1945,\(^4^1\) *ibid*
and began assembly of Jeep CJ-3A utility vehicles. The company soon branched out into the manufacture of light commercial vehicles (LCVs) and agricultural tractors.  

Following the independence, in 1947, the Government of India and the private sector launched efforts to create an automotive component manufacturing industry to supply to the automobile industry. The growth rate was relatively slow in the 1950s and 1960s due to nationalisation and the license raj, which hampered the Indian private sector. After 1970, the automotive industry started to grow, but the growth was mainly driven by tractors, commercial vehicles and scooters. Cars were still a major luxury. Japanese manufacturers entered the Indian market ultimately leading to the establishment of the Maruti Udyog. A number of foreign firms initiated joint ventures with Indian companies.  

Following the economic liberalization in India in 1991, the Indian automotive industry has demonstrated sustained growth as a result of increased competitiveness and relaxed restrictions. Several Indian automobile manufacturers such as Tata Motors, Maruti Suzuki and Mahindra and Mahindra, expanded their domestic and international operations. India's robust economic growth led to the further expansion of


its domestic automobile market which has attracted significant India-
specific investment by multinational automobile manufacturers. In
February 2009, monthly sales of passenger cars in India exceeded
1,00,000 units and has since grown rapidly to a record monthly high of
1,82,992 units in October 2009.\textsuperscript{44}

In recent years, the automobile industry in India has grown
by leaps and bounds. This phenomenal growth rate is owing to two
factors mainly: a better standard of living of the Indian middle class and a
consequent rise in their disposable income. The rise in disposable income
increases the purchasing power adding to the growth of the automobile
industry as a whole and the automobile companies in particular.
Apparently, there are 1 million passenger cars already on the Indian
roads and the figure only promises to increase as the days go by. Due to
the availability of potential market and target customers, global giants
from the USA and Japan are entering the Indian automobile sector and
working in collaboration with the Indian automobile majors\textsuperscript{45}.

\textbf{Supply Chain of Automobile Industry}

The supply chain of the automotive industry in India is very
similar to the supply chain of the automotive industry in Europe and

\textsuperscript{44} AFP (08.12.2010). "India car sales jump 21 percent in November". http://www.google.com/hostednews/afp/article. Retrieved 01.01.2011

\textsuperscript{45} http://www.surfindia.com/automobile/industry-growth.html
America. The orders flow from the bottom of the supply chain i.e., from the consumers and goes through the automakers and climbs up until the third tier suppliers. The channeled products in every traditional automotive industry flow from the top of the supply chain to reach the consumers.

The contributors to the supply chain are classified as Tier-I, Tier-II & Tier-III

**Tier-I Suppliers:**

These companies provide major systems directly to assemblers. These companies have global coverage, in order to follow their customers to various locations around the world. They design and innovate in order to provide “black-box” solutions for the requirements of their customers. Black-box solutions are solutions created by suppliers using their own technology to meet the performance and interface requirements set by assemblers.

First tier suppliers are responsible not only for the assembly of parts into complete units like dashboard, brakes-axel-suspension, seats, or cockpit but also for the management of second-tier suppliers.

**Tier-II Suppliers:**

These companies design vehicle systems or bodies for the First Tier Suppliers and OEMs. They work on designs provided by the tier-I suppliers or OEMs. They also provide engineering resources for
detailed designs. Some of their services may include welding, fabrication, shearing, bending, etc.\textsuperscript{46}

**Tier-III Suppliers:**

These companies provide basic products like rubber, glass, steel, plastic and aluminum to the Tier-II suppliers.\textsuperscript{47}

**Automakers/Vehicle Manufacturers/Original Equipment Manufacturers (OEMs):**

Automakers in India are the key to the supply chain and are responsible for the products and innovations in the industry. Examples of these companies are the Tata Motors, the Ashok Leyland Ltd, the Maruti Suzuki, the Toyota, the Bajaj and the Honda. The main focus of these Companies is on Innovation, design capability and branding. After researching consumers’ wants and needs, automakers begin designing models which are tailored to consumers’ demands. The design process normally takes five years. These companies have manufacturing units where the engines are manufactured and the parts supplied by Tier-I Suppliers and Tier-II suppliers are assembled.\textsuperscript{48}

**Dealers as Sellers:**

Once the vehicles are ready, they are shipped to the regional branch and from there, to the authorized dealers of the companies. The dealers then sell the vehicles to the end customers. The authorised

\textsuperscript{46} [http://en.wikipedia.org/wiki/Automotive_industry_in](http://en.wikipedia.org/wiki/Automotive_industry_in)

\textsuperscript{47} ibid

\textsuperscript{48} ibid
dealers also sell automobile parts and accessories, oil and grease, tyres and tubes produced by the automakers and petroleum companies.

**Dealers as Service Providers:**

Many dealers provide services to the customers in the nature of servicing of vehicles, repairing parts, arrangement of finance for purchase of vehicles, etc. Customers can choose independent service providers for getting the services mentioned.

**Diagram 2.1**

**SUPPLY CHAIN MANAGEMENT OF AUTOMOBILE INDUSTRY**

The production of automobiles has greatly increased in the last decade. It has crossed twenty lakh units of production.\(^{49}\) Table 2.2 shows the production statistics.

### Table 2.2

**PRODUCTION STATISTICS OF AUTOMOBILES IN INDIA**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Year</th>
<th>Cars in Units</th>
<th>Commercial Vehicles in Units</th>
<th>Total Production in Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2002-03</td>
<td>7,03,948</td>
<td>1,90,848</td>
<td>8,94,796</td>
</tr>
<tr>
<td>2</td>
<td>2003-04</td>
<td>9,07,968</td>
<td>2,53,555</td>
<td>11,61,523</td>
</tr>
<tr>
<td>3</td>
<td>2004-05</td>
<td>11,78,354</td>
<td>3,32,803</td>
<td>15,11,157</td>
</tr>
<tr>
<td>4</td>
<td>2005-06</td>
<td>12,64,000</td>
<td>3,62,755</td>
<td>16,28,755</td>
</tr>
<tr>
<td>5</td>
<td>2006-07</td>
<td>14,73,000</td>
<td>5,46,808</td>
<td>20,19,808</td>
</tr>
<tr>
<td>6</td>
<td>2007-08</td>
<td>17,13,479</td>
<td>5,40,250</td>
<td>22,53,999</td>
</tr>
<tr>
<td>7</td>
<td>2008-09</td>
<td>18,46,051</td>
<td>4,86,277</td>
<td>23,32,328</td>
</tr>
<tr>
<td>8</td>
<td>2009-10</td>
<td>21,66,238</td>
<td>4,66,456</td>
<td>26,32,694</td>
</tr>
</tbody>
</table>

**Analysis and Interpretation**

Karl Pearson's Co-efficient of Correlation technique has been applied to the above data for finding out the relationship in the production of cars and commercial vehicles; The obtained r value is 0.836, which indicates the existence of a perfect correlation between the production of cars and commercial vehicles. Due to economic downturn, the production of commercial vehicles has come down in 2008-09.

**Emission norms**

The Central Government unveiled the standards in the year 2000, titled “India 2000” in tune with international standards, in order to
reduce vehicular pollution. The upgraded guidelines of the standards are known as “Bharat Stage”. These standards have been implemented in the 13 Cities Viz., Delhi, Mumbai, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmedabad, Pune, Surat, Kanpur, Bhopal, Lucknow and Agra. The rest of the cities in the nation are still under the Bharat Stage III to be implemented.\(^{50}\)

\[\text{2.3 AUTOMOBILE EXPORTS}\]

India's automobile exports have grown consistently and reached $4.5 billion in 2009, with the United Kingdom being India’s largest export market followed by Italy, Germany, the Netherlands and South Africa. India's automobile exports are expected to cross $12 billion by 2014.\(^{51}\)

According to the New York Times, India's strong engineering base and expertise in the manufacturing of low-cost, fuel-efficient cars has resulted in the expansion of the manufacturing facilities of several automobile companies like the Hyundai Motors, the Nissan, the Toyota, the Volkswagen and the Suzuki.\(^{52}\)

\(^{50}\) http://en.wikipedia.org/wiki/Automotive_industry_in


In 2008, the Hyundai Motors alone exported 2,400,000 cars made in India. The Nissan Motors planed to export 2,500,000 vehicles manufactured in its Indian plant by 2011. Similarly, General Motors announced its plans to export about 50,000 cars manufactured in India by 2011.53

In September 2009, the Ford Motors announced its plans to setup a plant in India with an annual capacity of 2,500,000 cars for US$500 million. The cars will be manufactured both for the Indian market and for export. The company said that the plant was a part of its plan to make India, the hub of its global production business. The Fiat Motors also announced that it would source more than US$1 billion worth auto components from India.54

In July 2010, The Economic Times reported that the PSA Peugeot Citroen was planning to re-enter the Indian market and open a production plant in Andhra Pradesh with an annual capacity of 1,00,000 vehicles.55


India surpassed China as Asia's fourth largest exporter of cars after Japan, Korea and Thailand. India allows foreign carmakers, 100% ownership of factories in India, which China does not allow.

In recent years, India has emerged as a leading center for the manufacture of small cars. Hyundai, the biggest exporter from the country, now ships more than 2,50,000 cars annually from India. Apart from shipments to its parent Suzuki, Maruti Suzuki also manufactures small cars for Nissan, which sells them in Europe. Nissan will also export small cars from its new Indian assembly line. Tata Motors exports its passenger vehicles to Asian and African markets, and is in preparation to launch electric vehicles in Europe. The firm also launched an electric version of its low-cost car Nano in Europe, U.S & India. Mahindra & Mahindra is preparing to introduce its pickup trucks and small utility vehicle models in the U.S. market. Bajaj Auto is designing a low-cost car for the Renault Nissan Automotive India, which will market the product worldwide. Renault Nissan may also join domestic commercial vehicle manufacturer Ashok Leyland in another small car project. While the possibilities are impressive, there are challenges that could frustrate the future growth of the Indian automobile industry. Since the demand for automobiles in recent years is directly linked to the overall economic
expansion and the rising personal incomes, industrial growth will slow if the economy weakens\textsuperscript{56}.

The following are the few examples relating to the potential growth of the Automobile Sector in India:

M&M Ltd, Ahemedabad, launched the “GENIODC”, a double cabin commercial pickup vehicle. It offers dual benefits of being a cargo and a passenger \textsuperscript{57}

Ford India Ltd has launched “Ford Fiesta”, the first model of Ford’s new range, on 14.07.2011 at Mumbai.\textsuperscript{58}

According to the report of the Indian Foundation of Transport Research and Training (IFTRT), Truck sales have grown by 10.5%, the growth of light commercial vehicles is 25.8% and the multi axel vehicles is five percent.\textsuperscript{59}

Royal Enfield, the motor cycle division of Eicher Motors, is to invest Rs.350/- crore in a new manufacturing plant at Oragadam, the


\textsuperscript{57} Business Line 15.07.2011ibid

\textsuperscript{58} ibid

\textsuperscript{59} Business Line 12.07.2011
automobile cluster located 45km west off Chennai. This project is going to be completed by 2013. It will produce the entire product range of Royal Enfield motor cycles to meet the demands of the customers worldwide, by increasing the production capacity from 70,000 units to 1,50,000 yearly.\(^\text{60}\)

### 2.4 COMPANIES IN INDIAN AUTOMOBILE MARKET: EXAMPLES

The following are the examples of companies in the Indian Automobile Market.

#### A. Indian Automotive Companies

- **Chinkara Motors**: Beachster, Hammer, **Roadster 1.8S**, Rockster, **Jeepster**, Sailster.
  - **Hindustan Motors**: Ambassador
  - **ICML**: Rhino Rx
  - **Mahindra**: Major, Xylo, Scorpio, Bolero, Thar, Genio
  - **Premier Automobiles Limited**: Sigma, RiO
  - **San Motors**: Storm
  - **Tata Motors**: Nano, Indica, Indica Vista, Indigo, Indigo Manza, Indigo CS, Sumo, Venture, Safari, Xenon, Aria

\(^\text{60}\) ibid
B. Joint Venture automotive companies in India

Maruti Susuki

- 800, Alto, WagonR, Estilo, A-star, Ritz, Swift, Swift DZire, SX4, Omni, Versa, Eeco, Gypsy, Grand Vitara

C. Vehicles manufactured or assembled in India

- **BMW India**: 1 Series, 3 Series, 5 Series, X1.
- **Fiat India**: (in collaboration with Tata Motors): Grande Punto, Linea, Palio Stile.
- **Ford India**: Ford Figo, Ikon, Fiesta, Endeavour.
- **General Motors India**
- **Chevrolet (CSPIL)**: Spark, Beat, Aveo U-VA, Aveo, Optra, Cruze, Tavera.
- **Honda Siel**: Jazz, City, Civic, Accord.
- **Hyundai Motor India**: Santro, Accent, Verna Transform, Sonata Transform.
- **Mahindra Renault**: Logan
- **Mercedes-Benz India**: C-Class, E-Class.
- **Mitsubishi** (in collaboration with Hindustan Motors): Lancer, Lancer Cedia, Pajero
- **Nissan Motor India**: Micra.
- **Toyota Kirloskar**: Etios, Corolla, Innova, Camry.
- **Volkswagen India**: Polo, Vento, Jetta, Passat.
- **Audi India**: A4, A6.
- **Škoda Auto India**: Fabia, Octavia, Laura, Superb, Yeti.

D. Vehicles imported to India

- **Audi**: A8, S4, S6, S8, TT, R8, Q5, Q7.
- **Bentley**: Arnage, Azure, Brooklands, Continental GT, Continental Flying Spur, Mulsanne.
- **BMW**: 5 Series GT, 6 Series, 7 Series, X3, X5, X6, X6 M, M3, M5, M6 and Z4.
- **Bugatti**: Veyron
- **Chevrolet**: Captiva.
- **Fiat**: 500, Bravo.
- **General Motors**: Hummer H2, Hummer H3.
- **Honda**: Civic Hybrid, CR-V.
- **Hyundai**: Santa Fe.
- **Jaguar**: XF, XJ, XK.
- **Lamborghini**: Gallardo, Murciélago.
- **Land Rover**: Range Rover, Range Rover Sport, Discovery 4, Freelander 2.
- **Maybach**: 57 and 62.
- **Mercedes-Benz**: CL-Class, GL-Class, M-Class, R-Class, CLS-Class, S-Class, SL-Class, SLK-Class, Viano, G-Class, SLS.
- **Mitsubishi**: Montero, Outlander, Evo X.
- **Nissan**: Teana, X-Trail, 370Z, GT-R.
- **Porsche**: 911, Boxster, Panamera, Cayman, Cayenne, Carrera GT.
- **Rolls Royce**: Ghost, Phantom, Phantom Coupé, Phantom Drophead Coupé.
- **Škoda**: Yeti, Superb.
- **Suzuki**: Grand Vitara, Kizashi.
- **Toyota**: Land Cruiser, Land Cruiser Prado, Fortuner*, Prius.
- **Volkswagen**: Beetle, Tiguan, Touareg, Phaeton.
- **Volvo**: S60, S80, XC60, XC90.

**E. Commercial vehicle manufacturers in India**

**Indian brands**
- Force
- Hindustan Motors
- Premier
- **Tata**
- **AMW**
- **Eicher Motors**

**Joint Venture Brands**

- **Ashok Leyland** - originally a Joint Venture between Ashok Motors and Leyland Motors, now 51% owned by Hinduja Group
- **Mahindra Navistar** - A 51:49 Joint Venture between Mahindra Group and Navistar International
- **Swaraj Mazda** - originally a Joint Venture between Punjab Tractors and Mazda, now 53.5% owned by Sumitomo Group
- **Kamaz Vectra** - A Joint Venture between Russia's KaMAZ and the Vectra Group

**Foreign Brands**

- **Volvo**
- **Tatra**

### 2.5 STATUS OF TAMIL NADU IN AUTOMOBILES

Tamil Nadu today accounts for 35% of the auto components produced in the country. The State’s share could go up to 40%, when
Renault Nissan, Mahindra, Peugeot populate their vendor parks in Tamil Nadu.\textsuperscript{61}

The region that is home to automobile companies in Tamil Nadu is a corridor, shaped like a half “U” running between Thiruvallur (the north west of Chennai) and Maraimalai Nagar (the south of the City), a distance of about 80 kms.\textsuperscript{62}

The first product of the Joint Venture between Ashok Leyland and Nissan Motor Company of Japan, the Light Commercial Vehicle (LCV) named DOST was unveiled in Chennai on 29.03.2011. This joint venture would strive to deliver to its customers “Products of Japanese quality at Indian cost”.\textsuperscript{63}

2.6 FUTURE TRENDS:

The automotive sector, comprising of the automobile and auto component sub sectors, is one of the key segments of the economy having extensive forward and backward linkages with other key segments of the economy. It contributes about 4 per cent to India’s Gross Domestic Product (GDP) and 5 per cent to India’s industrial production.

The well-developed Indian automotive industry produces a wide variety of vehicles like passenger cars, light, medium and heavy

\textsuperscript{61} The Hindu, Business Line page dt.26.03.2011

\textsuperscript{62} Ibid

\textsuperscript{63} The Hindu, Business page dt.30.03.2011
commercial vehicles, multi-utility vehicles such as jeeps, scooters, motorcycles, mopeds, three wheelers, tractors, etc.

The Indian automobile industry today boasts of being the second largest two wheeler manufacturers in the world, the second largest tractor manufacturer in the world, the fifth largest commercial vehicle manufacturer in the world and the fourth largest Car market in Asia. The World’s largest Motorcycle manufacturer is in India.

India has the largest three wheeler market in the world, the second largest two wheeler market in the world, the fourth largest passenger vehicle market in Asia, the fourth largest tractor market in the world, the fifth largest commercial vehicle market in the world. 64

According to “The economic Times” (page-5) dt.07.05.2012, China was the largest car market in 2011 selling 14.5 million cars in 2011. India will be the 3rd largest market for passenger cars by 2020 with nine million cars.

To put the Indian Auto Industry in the global map, National Automotive Testing and R&D Infrastructure Project (NATRIP) at the total cost of Rs. 1718 crore has been initiated.

This project principally aims to:

64 Report on Growth of Indian Automotive Industry from website
1. To create critically needed automotive testing infrastructure in order to enable the Government to guide in global vehicular safety, emission and performance standards in India.

2. To promote value addition and facilitate the convergence of India’s strength in IT and electronics with automotive engineering.

3. To provide basic product testing, validation and infrastructure so that the Indian automotive sector would not face any export obstacles.

As per the Automotive Mission Plan 2006–2016, the Indian Government recognises its role as a catalyst and facilitator to encourage the companies to move to a higher level of competitive performance.

The automobile industry in India is now functioning in terms of the dynamics of an open market. Many joint venture projects have been set up in India in collaboration with leading global manufacturers. The collaboration takes place in the areas of both technical and financial perspectives. This trend is expected to pick up even further. The Government of India is keen to provide an appropriate economic and business environment conducive to the success of the established and prospective foreign partnership ventures. This indicates that the future prospect of the Indian automotive sector looks bright.

2.7 SUMMARY

The automobile industry dates back to the eighteenth century. In the early 1900s, in European countries and the US, many automobile companies came into existence. The world’s first diesel car was
introduced by Mercedes in 1936. Rapid developments took place in automobile manufacturing technology in 1960. In 1980, Japan became the top automobile producing country in the world. The first car ran on India’s roads in 1897. Following the economic liberalization in 1991, the Indian Automobile Industry has achieved fantastic growth. The robust economic growth of India attracts multinational automobile players to invest in the Indian Market. The supply chain management of the automobile industry in India is constituted by Tier-I, Tier-II, Tier-III, Automakers and Original equipment manufacturers. In recent years, India has emerged as a leading center for the manufacture of small cars. The automotive sector contributes about 4 per cent to India's Gross Domestic Product (GDP) and 5 per cent to India's industrial production. National Automotive Testing and R&D Infrastructure Project (NATRIP) at the total cost of Rs. 1718 crore has been initiated in order to put Indian auto industry at the global map. This project aims at creating value addition and facilitates convergence of India’s strength in IT and electronics with automotive industry. This project provides for basic infrastructure facilities which include basic testing, validation and emission norms. As per Automotive Mission Plan 2006–2016, the Indian Government supports companies to move to a higher level of competitive performance. The contribution of Tamil Nadu to the Indian Automobile sector is significant.
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