CHAPTER 3

ANALYSIS OF INDIAN AUTO COMPONENT INDUSTRY

One of the objectives of this study is to understand the growth of Indian auto component industry with specific reference to Tamilnadu and analyse key performance indicators. A detailed analysis of the Indian auto component industry is explained in this chapter, based on analysis of secondary data obtained from published journals and reports. This chapter starts with the growth of the global auto industry and understands the derived demand for the component industry; both at the global level and also at the Indian level. The auto component industry scenario in Tamilnadu is also discussed. The performance measures of the Indian auto component industry, such as the production capacity, exports, range of components manufactured are analysed. A detailed Strengths - Weaknesses - Opportunities - Threat (SWOT) analysis and a five-force analysis of the Indian auto component industry are performed in order to identify evolve strategies for better competitiveness.

3.1 INTRODUCTION

The auto industry is often thought of as the most global of all industries and has universally emerged as an important driver in the economy. Post liberalization, with the advent of the Multinational Corporations (MNCs) into the Indian market, top brands from across the globe entered the Indian automotive industry. As a result of derived demand, there was ample scope and opportunity for the component industry to perform. The aim of review of
this secondary data was to trace the path of this evolution that the Indian auto component industry underwent, assess its current status and analyse its future potential.

3.2 BOOM OF THE AUTOMOTIVE INDUSTRY

The automotive industry boom started towards the middle of last decade, with global vehicle production rising by nearly 7 million units between 1990 and 1997, much of this growth having been concentrated in the developing countries. The size of the global auto component industry is close to $1trillion and is expected to touch $2.3 trillion in 2010. The global motor vehicle production and growth rate in leading countries for passenger cars and heavy trucks is shown in Table 3.1. It can be observed that the growth rate in India for both the passenger car segment and the heavy truck segment is above 25%.

Table 3.1 Global Motor Vehicle Production 2004: (millions of units)

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of Vehicles</th>
<th>Passenger Cars</th>
<th>Heavy Truck</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Production (in units)</td>
<td>Growth rate (%)</td>
</tr>
<tr>
<td>USA</td>
<td></td>
<td>4,229,625</td>
<td>-6</td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td>1,756,166</td>
<td>17</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>8,720,385</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>5,192,101</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td></td>
<td>1,178,354</td>
<td>30</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td>2,316,262</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: www.csmauto.com
The Indian domestic automobile market has been growing at 14.2 percent cumulative average growth rate (CAGR) over the past 4 years (2000-01 to 2004-05), while the auto components market has been growing at 19.2 per cent CAGR (2000-01 to 2003-04) (ACMA annual report 2005).

<table>
<thead>
<tr>
<th>Countries</th>
<th>Passenger Vehicles (in 1000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>500</td>
</tr>
<tr>
<td>USA</td>
<td>480</td>
</tr>
<tr>
<td>UK</td>
<td>480</td>
</tr>
<tr>
<td>Japan</td>
<td>440</td>
</tr>
<tr>
<td>S. Korea</td>
<td>186</td>
</tr>
<tr>
<td>Singapore</td>
<td>122</td>
</tr>
<tr>
<td>Thailand</td>
<td>27</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>13</td>
</tr>
<tr>
<td>China</td>
<td>10</td>
</tr>
<tr>
<td>India</td>
<td>7</td>
</tr>
</tbody>
</table>

Source: www.acma.com

**Figure 3.1 Per Capita Passenger Car Penetration per 1000**

Fuelled by rising incomes and relaxed trade policies, most Asian countries have seen rapid progress in the past few years and the trend is expected to continue. Asia would become a major source of growth in the global demand for automobiles by the end of 2010 (KPMG’s Global Auto executive Survey 2006). While the Gross Domestic product (GDP) growth in Asian economies maintaining a Cumulative Average Growth Rate (CAGR) of over five percent, China, South Korea and India are expected to see a growth
of around 10% by 2010. The passenger car sale is expected to grow by 13.5% in India.

There is a high degree of correlation between the automotive vehicle and the automotive component industry sales. This steady growth in the auto industry has triggered off a demand for auto components. On the other hand, in the Triad regions (the United States of America and Canada, i.e North America, Japan and Western Europe), the vehicle industry is mature and has been plagued by overcapacity, cost pressures and low profitability (Figure 3.1). These facts have been highlighted in the United Nations Industrial Development Organisation (UNIDO) report 2003 by John Humphrey. North America’s production and capacity has remained flat since 2003. Automakers had to content with twin pressures: to innovate and, at the same time, to reduce costs.

The Indian passenger car market is far from being saturated – leaving ample room for volume growth. This added to the demand for auto components in the already booming Asian Economies. This combination of factors pushed companies to source more components from places where costs are lower. As a result, outsourcing in the auto sector grew from $65 billion in 2002 to $175 billion by 2005 (KPMG report 2005).

3.3 TRACING THE GROWTH OF THE INDIAN AUTO INDUSTRY

The auto component industry in India has seen high growth in recent years. Post Liberalization, Indian economy grew at an average rate of 6 to 7% from the conservative growth rate of 3½% and is expected to touch 10% by 2007. India has the potential to become one of the top five automotive economies by 2025 (ACMA 2005).
The Indian auto component industry which was 3.1 bn $ in 1997, with a CAGR of 9% for (1997-2000), grew to more than 10bn$ in 2005, with a CAGR of 20%. With a projected CAGR of 17% for (2005-2014), the Indian auto component industry is predicted to reach 40bn$ by 2014 (ACMA).

There are three major reasons behind the recent robust growth of auto component industry in India.

- First, the domestic automobile industry (two-wheelers, commercial vehicles and passenger cars) has registered positive growth, with passenger vehicle production rising from a CAGR of 9% in (1995-2000) to 14% in (2000-2005) (Nasscom - Mckinsey Report 2005). High demand for automobiles has subsequently fuelled the demand for auto component from automakers.

- Second, the replacement market is growing rapidly as more and more new vehicles hit the road. Moreover, the product life cycle of automobiles are becoming shorter. As more new models hit the road the demand for auto component keep rising. The increasing number of vehicles means an expanding market for replacement components. For example, the sale of foreign brand cars grew from almost nothing before the entry of Hyundai in 1997 to 15% of the car market in the year 1998-99 to more than 25% of the car market in 2004-05. Consumers reacted favourably to the expanded set of offerings and consequently the demand for cars in India surged.

- Third, the global automobile industry is going through its worst phase ever. To cut production cost, the world's leading automobile companies are sourcing cheaper auto components
from countries like India and China. The government policies also enabled faster growth.

The production of both two wheelers and four wheels has been steadily growing, with the last year statistics as shown in Table 3.2.

**Table 3.2 Indian two wheeler and four wheeler Production**

**(millions of units)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4 / 6 Wheeler</td>
<td>Production</td>
<td>1.21</td>
<td>1.31</td>
</tr>
<tr>
<td></td>
<td>Sales (Domestic + Exports)</td>
<td>1.23</td>
<td>1.32</td>
</tr>
<tr>
<td>2/3 Wheeler</td>
<td>Production</td>
<td>5.19</td>
<td>6.20</td>
</tr>
<tr>
<td></td>
<td>Sales (Domestic + Exports)</td>
<td>5.24</td>
<td>6.20</td>
</tr>
</tbody>
</table>

Source: www.acmainfo.com

The Indian auto component industry responded to these challenges by adding capacity and modernizing existing plants. Using a combination of global expansion, domestic consolidation and quality management, the auto market has grown phenomenally. From being a supplier of components, Indian auto industry is maturing to become a sourcing base for international auto majors for exporting Completely Built Units (CBUs). Hyundai, Ford and Scorpio have made India a manufacturing hub for particular models of cars. Other MNCs such as Toyota, GM, and Daimler Chrysler source their components from here. Global tier-one suppliers like Delphi and Visteon have set up component manufacturing units in India.
Some of the policy initiatives include:

- Automatic approval for foreign equity investment up to 100 per cent of manufacture of automobiles and component is permitted.

- Customs duty on inputs and raw materials has been reduced from 20 per cent to 15 per cent. The peak rate of customs duty on parts and components of battery-operated vehicles have been reduced from 20 per cent to 10 per cent. These new regulations would strengthen India’s commitment to globalisation. Apart from this, custom duty has been reduced from 105 per cent to 100 per cent on second hand cars and motorcycles.

- National Automotive Fuel Policy has been announced, which envisages a phased programme for introducing Euro emission and fuel regulations by 2010.

- Tractors of engine capacity more than 1800 cc for semi-trailers will now attract excise duty at the rate of 16 per cent.

- Excise duty is being reduced on tyres, tubes and flaps from 24 per cent to 16 per cent. Customs duty on lead is 5 per cent.

- A package of fiscal incentives including benefits of double taxation treaty is now available.

### 3.3.1 Exports of Indian Auto Components

Indian auto component exports have grown multi-fold from 1997 to date and is the growth trend is projected to continue for the coming years as shown in Figure 3.2.
There is a significant growth in exports to multinational companies ($1.8 billion in 2004-05, as against $0.30 billion in 1996-97). With a CAGR of 25% in (2000-2005), the projected CAGR is 34% for (2005-2014), with exports touching 25bn$ in 2014.

Although exports are still very small compared to annual global auto component sales, which are in excess of $730 billion, they are a significant share of the sales (approximately 10-12%) of Indian auto components firms. Ten years ago, the after-market accounted for around 80 per cent of India’s auto component exports. Today, on a much larger export base, the after-market share has shrunk to 25 per cent with 75 per cent of India’s exports going directly to OEMs and Tier-1 suppliers. This means suppliers make better margins and it also enables them to forge long-term relationships and get repeat orders on a regular basis. Today, the more
developed markets of USA and Europe are accounting for a majority of exports. Table 3.3 is an indicative list of components sourced to Global OEMs and Tier-1 suppliers.

Table 3.3 Components sourced from India to Global OEMs & Tier 1 Companies

<table>
<thead>
<tr>
<th>OEMs / Tier I Suppliers</th>
<th>Sourcing Plans</th>
<th>PowerTrain</th>
<th>Chassis</th>
<th>Exterior</th>
<th>Electrical</th>
<th>Interior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford</td>
<td>Current: $160M, Planned: $400-$700M (2009)</td>
<td>Steering columns, alloy wheels, crankshafts, exhaust parts, complete engines for Ikon, radiators</td>
<td>Springs casings, forgings, leaf springs</td>
<td>Body panel (Ikon), -Horns, dashboard assembly, starters and alternators</td>
<td>Door trims</td>
<td></td>
</tr>
<tr>
<td>Toyota</td>
<td>Invested $197M in a plant to supply transmission system to global operations</td>
<td>Transmission system, gear boxes, axles, propeller shafts</td>
<td>Aluminum pressure die casting products</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delphi</td>
<td>Current: N/A, Planned: 250 (2007)</td>
<td>Piston rods, steering systems, driveshafts, catalytic converter, stampings</td>
<td>Sheet metal, soting stampings</td>
<td>Wiring harnesses, armature motors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visteon</td>
<td>2002: ~$55M, Planned: N/A</td>
<td>Instrument cluster assembly, bumpers, AC system, starters, motors, alternators</td>
<td></td>
<td>Panel instrument assembly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: www.acma.com

Of the total auto-component exports, America and Europe together accounts for 62%, Asia accounts for 16%, Africa accounts for 10% and middle east & others countries for the rest 12% of the export earnings.

3.3.2 The TQM Journey

Post liberalization, the Confederation of Indian Industries was the pioneer in driving the Quality movement. Along with the liberalization, came the global auto majors and the clarion call to improve quality. The entry of the foreign auto companies during the early 90’s changed quality standards and impacted the complexity of the parts required by OEMs. Faced with marginalized business and poor growth prospects, a number of Indian
component vendors started investing in quality. They embraced Japanese quality concepts such as Six Sigma, TQM, Total Productive Maintenance (TPM) and Toyota Production System in their operations. Thus the local component-manufacturing units have become part of the global sourcing systems of some of the international automotive companies. What started off as an ISO 9000 wave during the 90s, transformed the mindsets of the automotive companies. Indian companies have embraced the TQM concepts at various levels and in the form of various quality accreditations such as ISO 9000, QS 9000, TS 16949, ISO 14001, and the coveted Deming prize. Table 3.4 is a indicative list of number of Indian companies with quality certifications.

Table 3.4  Indian Auto Manufacturing Units with Quality Certifications (2005)

<table>
<thead>
<tr>
<th>Quality Certification</th>
<th>Number of companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9000</td>
<td>456</td>
</tr>
<tr>
<td>TS 16949</td>
<td>248</td>
</tr>
<tr>
<td>QS 9000</td>
<td>136</td>
</tr>
<tr>
<td>ISO 14001</td>
<td>129</td>
</tr>
<tr>
<td>OHSAS 18001</td>
<td>32</td>
</tr>
<tr>
<td>Deming Prize Winners</td>
<td>13</td>
</tr>
<tr>
<td>JIPM Award</td>
<td>4</td>
</tr>
<tr>
<td>Japan Quality Medal Winner</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: www.acmainfo.com

Deming award is the most coveted award for TQM given by Union of Japanese Scientists and Engineers. The Deming application Prize, given to
companies, has exerted an immeasurable influence directly or indirectly on the development of quality control/management.

During the period 1998-2004, thirteen Indian companies have received the Deming award (Table 3.5), the largest number of firms, from any country outside Japan, that have won this award. Auto component suppliers have won ten of these awards and eight of these winners are Chennai based.

**Table 3.5 List of Indian Deming Award winners (1998-2005)**

<table>
<thead>
<tr>
<th>Company</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sundaram-Clayton Limited, Brakes Division, Chennai</td>
<td>1998</td>
</tr>
<tr>
<td>Sundaram Brake Linings Ltd, Chennai</td>
<td>2001</td>
</tr>
<tr>
<td>TVS Motor Company Ltd, Chennai</td>
<td>2002</td>
</tr>
<tr>
<td>Brakes India Ltd., Foundry Division, Chennai</td>
<td>2003</td>
</tr>
<tr>
<td>Mahindra and Mahindra Ltd., Farm Equipment Sector</td>
<td>2003</td>
</tr>
<tr>
<td>Rane Brake Linings Ltd, Chennai</td>
<td>2003</td>
</tr>
<tr>
<td>Sona Koyo Steering Systems Ltd</td>
<td>2003</td>
</tr>
<tr>
<td>SRF Limited, Industrial Synthetics Business*</td>
<td>2004</td>
</tr>
<tr>
<td>Lucas-TVS Limited, Chennai</td>
<td>2004</td>
</tr>
<tr>
<td>Indo Gulf Fertilisers Limited*</td>
<td>2004</td>
</tr>
<tr>
<td>Krishna Maruti Limited, Seat Division</td>
<td>2005</td>
</tr>
<tr>
<td>Rane Engine Valves Limited, Chennai</td>
<td>2005</td>
</tr>
<tr>
<td>Rane TRW Steering Systems Limited, Steering Gear Division, Chennai</td>
<td>2005</td>
</tr>
</tbody>
</table>

Source: JUSE website: www.juse.or.jp

* Non auto industry
Post TQM initiatives, the quality performance of Indian auto component manufacturers has significantly improved (Table 3.6). According to conventional understanding, this change in TQM has resulted due to better bottom line performance. For example, Hendricks and Singhal (1997 and 2001) document the performance of firms with effective TQM programs. They follow an event study approach to indicate that an effective implementation of TQM principles and philosophies leads to significant wealth creation.

Table 3.6 Comparison of Quality Performance of Indian auto component industry

<table>
<thead>
<tr>
<th>Quality performance in 2001</th>
<th>Quality performance in 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Conformance through Quality Certifications</td>
<td>Process Improvements through Quality Initiatives like TQM, TPM and six sigma</td>
</tr>
<tr>
<td>Customer Line Rejections 1000 plus PPM</td>
<td>Customer Line Rejections 100 to 300 PPM</td>
</tr>
<tr>
<td>Rework 3-5 %</td>
<td>Rework &lt;1%</td>
</tr>
<tr>
<td>First pass Yield &lt; 80 %</td>
<td>First pass yield 95 to 97 %</td>
</tr>
<tr>
<td>OEE 70 to 80%</td>
<td>OEE 90 to 95 %</td>
</tr>
<tr>
<td>Warranty &gt; 95 %</td>
<td>Warranty 500 – 2000 PPM</td>
</tr>
</tbody>
</table>

OEE – Operational Equipment Effectiveness measured by the actual production divided by the ideal production.

The improvement in quality performance shown in table 3.6 is based on a customer satisfaction survey conducted for 2002 and 2005. These surveys were conducted as part of an engagement on behalf of two foreign OEMs whose plants are located in India. The surveyed firms may be considered representatives of suppliers to large OEMs. These surveys show
clear trends of improvement on a variety of metrics that are important to customers.

3.4 TAMILNADU AUTO INDUSTRY

In Indian automotive circles, Tamilnadu has often been referred to as the “Detroit of India.” The region’s long tradition of engineering-based manufacturing included a strong reputation as one of India’s key auto-component hubs and a vibrant supplier base.

3.4.1 Tamilnadu as an auto component hub

The T.V.Sundaram group, Rane Group, The Amalgamations group, India Pistons, Ashok Leyland were leading the Tamilnadu automotive industry. This supplier network was deepened by the rise of a prestigious tier of frontline component and heavy vehicle producers that dominated the region till the arrival of Ford, Hyundai and Mitsubishi (via a licensing agreement with Hindustan Motors). The arrival of key global players in the auto assembly and supply sector has had a strong impact on the structure of production in Tamilnadu’s regional economy. From being a domestically oriented auto-components hub servicing multiutility and other non-passenger car vehicles (trucks, buses, tractors, Jeeps) till the early 1990s, Tamilnadu now finds itself a player in the export strategy of its new global assemblers.

With the recent signing of a memorandum of understanding (MOU), Renault, Mahindra and Nissan are investing Rs 4,000 crore in Tamilnadu. This has made Tamilnadu as the location of what will be potentially one of the largest automotive production sites in India, with an installed capacity of 400,000 units per year (www.automotive world.com)
The auto component sector is growing at 10% and is contributing to 35% of the Nation’s production. Presently Tamilnadu has 107 key players, with an investment of Rs.36000 million ($ 800 million). (Tamilnadu Industrial Development Corporation – TIDCO report 2006). The output is US $ 1.2 billion, with exports of US $ 140 million, directly employing about 45,000 persons. It has a share of 35% installed capacity in components manufacturing in India.

3.4.2 Factors contributing to success of Tamilnadu

Tamilnadu has a highly-skilled and educated workforce and primarily English-speaking Managers, Quality conscious manufacturers, Low-cost manufacturing base and partnering linkages with global supply chain. The auto component industry’s performance in Tamil Nadu can be attributed to four factors:

- Role of the government of India in managing and sequencing the process of deregulation. The Indian reforms were much slower and more strategic than the quick dismantling of tariffs seen in many other countries.
- Government’s past policies, and the particular capabilities they helped nurture, are now proving invaluable for firms as they seek new, cost-effective niches, including in the area of Information Technology (IT)-embedded component production. In the early 1990s, the government made several changes to its auto sector policy. The customs tariff on auto components was reduced drastically over a period of five years. The tariff which was 35% in 2001 became 12.5% in 2006. Even as it lowered barriers on the import of
components, the government retained, and in some cases stiffened restrictions on the import of fully assembled cars. It abolished the old licensing policy and permitted Foreign Direct Investment in the auto sector with 100% equity. Tamilnadu has the third largest FDI in India with a FDI of Rs. 22,582.64 crores.

- Industry’s better performance relates to the different way in which medium sized follow sources of the large assemblers (and the assemblers themselves) are becoming inserted in the Indian economy given the regulatory field (of graded protections) created by the government as it deregulated.

- The novel work of two vibrant associations in the auto industry ACMA (the Automotive Component Manufacturers Association of India) and SIAM (the Society of Indian Automobile Manufacturers) in helping to upgrade and restructure local supply capabilities by diffusing widely among local firms lessons about good business practices—with rest to quality, consistency, timely delivery and documentation—learned from exposure to the new global producers operating in the region.

### 3.4.2.1 Reasons for Growth of Chennai as an Auto Component Cluster

Among the auto component clusters in the India, Chennai is a favourite destination for the auto industry. Chennai is among the sought after place for the automotive industry due to the following reasons (Charles Chow Hoi Hee 2003).
• **Excellent Infrastructure**

It has a RORO (Roll on & Roll off) port and an international IT-gateway in Chennai. Together with Coimbatore, it has been voted in 2001 as the top five cities in South India with regard to professional education, road transport, private finance, tourism, communication and economic growth.

• **Advantage of Ceiling and Regulation act**

Though many Indian states implemented the 1976 Urban Land Ceiling and Regulation Act (ULCRA), that prevents single ownership of vacant land in excess of stipulated limits, Tamilnadu did not. Although repealed in 1999, while other states are still resolving its effects, Tamilnadu is not affected by inflexible zoning and rent controls as the result of ULCRA.

• **Lowest Operating Cost**

Out of the 28 states and 7 union territories, Tamilnadu has emerged to have the lowest operating costs and the highest qualitative support (infrastructure and other value added features within the operating environment) according to a Standard Chartered Bank survey in July 2003.

• **Deming Award winning companies**

Among the 13 Indian Deming award winning companies, eight companies are based in Chennai (Table 3.4). This enables spreading on the TQM culture in the Tamilnadu automotive industry.
Concentrated Auto Industrial Belt

The auto industrial belt in India (especially in the South India) is more concentrated in and around Chennai. Most of the international major auto players like Ford and Hyundai have their base at Chennai and thus catalyzed its growth as an auto hub in that region. Tier 1, tier II and tier III suppliers exist in this region.

3.4.3 Range of Auto Components manufactured in Tamilnadu

The Tamilnadu automotive component industry manufactures a wide range of parts including castings, forgings, finished, semi-finished components, assemblies, and subassemblies for all types of vehicles produced in India. Given below in Table 3.7 is its component wise production capacity share in India’s production. Visteon – the largest component manufacturer of India is located in Chennai and are exporting components made in India to their various other plants around the world.

The three global auto-firms (Hyundai, Ford and Mitsubishi-Hindustan Motors) have adapted themselves in the Tamilnadu local environment very well. It is interesting to note that they have a number of similarities. All three are located in industrial estates around Chennai. The locational distance from the city, from the airport, and from the ports is roughly the same for all three. They all are in the same state, and hence face the same policy environment, the same local government and the same industrial culture. They tap into the same workforce, and potentially can share the same local supplier pool. They all confront the same physical and institutional infrastructure, and since all have arrived during the same five year window in the mid-1990s, they face quite similar external costs as well as opportunities.
### Table 3.7 Tamilnadu Production Capacity – component wise

<table>
<thead>
<tr>
<th>Type of Component</th>
<th>Share Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet and exhaust valves, valve guides, valve tappets, Fuel pumps (petrol), oil pump assembly, thermostat, Timing chair, water pump assembly, starter Motors, Alternators, camshafts, oil seals, Brake linings, wiper motors, Air brake assembly, Engines</td>
<td>Above 50% share (19 items)</td>
</tr>
<tr>
<td>Fuel pump Nozzle holders, voltage regulations, Flywheel Magnetos, Steering gears (mechanical &amp; power), wheel Rims, Electric horns, Dashboard instruments</td>
<td>30% - 50% (10 items)</td>
</tr>
<tr>
<td>Fuel pump Nozzle &amp; elements, delivery valves, crankshafts, bi-metal bearings, Fuel inj. Pumps, Radiators, Clutch plates, clutch assembly, shock absorbers, Automotive tyres, automotive seats.</td>
<td>10% - 30% (17 items)</td>
</tr>
<tr>
<td>Rear combination lamps, automotive dashboard instruments</td>
<td>Less than 10%</td>
</tr>
</tbody>
</table>

**Source**: TIDCO (Tamilnadu Industrial Development Corporation)

### 3.5 STRUCTURE OF INDIAN AUTO COMPONENT INDUSTRY

Most of the auto component manufacturers are distributed in the north, south, and, western parts of India around major Automotive Vehicle Manufacturers (AVMs). The AVMs contribute largely towards the development of component suppliers through technical and or financial collaborations. These are however, concentrated in some pockets such as Chennai and Bangalore in the south, Pune in the west, the National Capital Region (NCR, which includes New Delhi and its suburban districts) in the north, Jamshedpur and Kolkata in the east and Pithampur in the central region. Following global trends, the Indian automotive sector also has most auto suppliers located close to the manufacturing locations of OEMs, forming
regional automotive clusters. Broadly, the three main clusters are centred around Chennai, Pune and the NCR.

The Indian automotive component industry is highly fragmented. There are nearly 6,400 players in the sector, of which only about 6 per cent are organised and the remaining 94 per cent are small-scale, unorganized players. In terms of value added, however, the organised players account for nearly 77 percent of the output in the sector. The auto ancillary industry caters to three broad categories of the market:

1) Original equipment manufacturers (OEM) or vehicle manufacturers, that comprises of 25% total demand
2) Replacement market, that comprises 65% of the total demand
3) Export Market, that comprises primarily of international Tier I suppliers and constitutes 10% of total demand.

The organized sector has about 425 firms who serve more than 20 big vehicle manufacturers. There are nearly 50 leading companies who account for a major share of the output. These companies have access to technology due to their tie-ups with some of the foreign collaborators. At present, there are nearly 450 foreign collaborations in the Indian auto component industry, out of which 60% are technical collaborations (www.acma.com). Whereas, the unorganized sector which predominantly caters to the aftermarket, operates independently on a small scale with little investment. Their primary focus is high volume and low technology components and they supply to the Tier I, Tier II suppliers and the replacement market. Within the unorganised segment, apart from supplying in the aftermarket, a number of players are also involved in job work and contract manufacturing.
3.5.1 Tierisation in Indian Auto Component Industry

The process of shifting part of the assembly i.e., sourcing assemblies or systems instead of individual components, down the supply chain is called tierisation. Typically, the supplier who is closest in supply chain to vehicle manufacturer undertakes the responsibility to integrate and supply complete systems and is recognized as tier-I supplier. This is followed by the second rung and third rung firms, which comprises of component manufacturers who supply to the first and second tiers respectively.

The Indian auto component manufacturers serve major OEMs as Tier II or Tier III suppliers. Tier I manufacturers have enormous advantage over Tier II or Tier III suppliers. The major advantage is that Tier I suppliers are the first to get orders for components from vehicle makers. Getting early orders help the Tier I supplier to recover the investments very quickly.

The tier 1 suppliers in India are the global component solution providers like TVS-Sundaram Group of Companies, Rane, Shriram group, Bharat Forge and Bharat Gears. The other Indian component manufactures consolidate and become tier 2 or tier 3 suppliers to the tier 1 companies. The increasing trend is to source many integrated assemblies rather than components. This puts the large and competent component suppliers next to the assemblers while the technologically weaker firms are relegated to lower rungs of the value chain.

3.6 PRODUCTION RANGE OF AUTO COMPONENTS IN INDIA

The Indian auto component industry has the resources to manufacture the entire range of auto products (nearly 20,000 components)
required for vehicle manufacturing. The range of products manufactured (Figure 3.3), with each broad product segment having a different market structure and technology, has negated any possible concentration of the market in a few hands.

![Figure 3.3 Production range of auto components in India](source: www.acma.com)

However, there are a select few large companies that have integrated their operations across the value chain. The key to competing in this industry is through specialization by product-type, and integrating operations across the related area of specialisation.

### 3.7 PORTER’S FIVE FORCES ANALYSIS OF INDIAN AUTO COMPONENT INDUSTRY

Globalization had indeed left its impact on the automobile industry. Now foreign auto dealers were facing lesser restrictions to operate in overseas markets. Michael E. Porter (1990) in his book “Techniques for analyzing industries and competitors” dealt with five competitive forces that shaped all
industries. This helped to analyze the intensity of competition, which had an impact on the profitability of an industry.

The Porter five forces analysis is a framework for business management used to derive five forces that determine the attractiveness of a market. They consist of those forces close to a company that affect its ability to serve its customers and make a profit. A change in any of the forces normally requires a company to re-assess the marketplace.

The relationship among Porter’s five forces in the Indian auto component industry, detailed below clearly proves its competitive nature.

3.7.1 Threat of New Entrants

The existing loyalty to major brands, incentives for using a particular buyer, higher fixed costs, scarcity of resources, high costs of switching companies, and government regulations constituted the barriers to entry which in turn reduced the competition in an industry.

There is a sizeable replacement market for parts and components, but manufacturers who sell unbranded products at very low prices heavily dominate this market. The component manufacturers therefore have to rely on assemblers in the domestic market.

Tooling costs for suppliers remain the same for 10,000 units or for 100,000 units. Till assemblers achieve volumes, it is not profitable for suppliers to accept orders. Assemblers are thus forced to import components. This pushes up costs and currently prices as well, which in turn affects sales and growth. Maruti developed a quality vendor base over 10 years. However, new entrants can expect to develop a supplier base faster.
The supplier industry has had some success in developing parts and components including collapsible steering columns, brake linings, power steering, catalytic converters and central locking systems. Current technology upgradation is in plastics, trims, electronics, anti locking braking systems and environment and safety related items and materials. International supplier firms are looking for Indian partners in a variety of areas. Thirteen new joint ventures in 1995, and many more technical collaborations were finalized.

3.7.2 Bargaining Power of Suppliers

The presence of very few suppliers of a particular product, and the absence of any substitutes for the product supplied reflected the pressure exerted by the supplier. Sometimes the product was extremely important to the auto-maker and the alternatives proved to be very costly. In such cases the suppliers were in a better position to dictate terms. A lot of suppliers depended on automakers to buy their products. But if the automaker decided to change suppliers it would badly affect the supplier’s role in auto manufacturing.

Local suppliers have little bargaining power vis-à-vis the major auto firms, because India lacks a network of suppliers capable of bargaining with long established and technically savvy OEMs. In fact, the relative absence of local suppliers provided a barrier to entry into these markets. Because local content requirements were mandated throughout Asia, firms wishing to locate production facilities in the region had to provide years of technical training, certification processes and technology transfer. Nonetheless the relative absence of local suppliers provided a long-term bargaining advantage for western firms. As individual firms provided firm-specific training, certification, and technology to local suppliers, their dependence on those firms was assured.
3.7.3 Power of Buyers

Small number of buyers, purchases of large volumes, prevalence of alternative options, and price sensitive customers were some of the factors that determined the extent of influence of the buyers in any industry. Indian consumers were driven towards foreign cars mainly because most of the auto-makers sourced their key auto-parts from different suppliers. But this raised doubts on the reliability of the vehicle itself.

High demand gave local buyers in Asian markets little say over the level of product differentiation required, therefore OEMs were in a good position to slow product cycles and reduce manufacturing costs.

Market drivers

The demand for automotive components is derived from the sales of automotive vehicles. Moreover, the changing perspective of global OE and Tier 1 component manufacturers are also expected to drive the auto components market. They observe India as a low cost-manufacturing destination to produce and sell.

The total components market is the sum of OE consumption market and aftermarket sales. The drivers for these two markets are relatively distinct.

OE market drivers

This market is highly dependent on the demand for automotive vehicles. Factors that drive the vehicle market also have an influence on the component market. A growth in the economic activity, increase in the
personal disposable income, growth in rural economy, multiple finance options, decline in tax rates are the factors which drive the growth of the Indian automotive market.

Aftermarket Drivers

The following factors govern the aftermarket for automotive components in India:

- The old vehicle population (growth rate linked to vehicle sales)
- The life span of components (frequency of component replacement)
- The average value of parts replaced.(generally high for genuine branded parts)
- Share of genuine-branded components in the total aftermarket

Considering the above factors, the growth in old vehicle population and an increase in the customer awareness level in using branded-genuine parts are the main drivers of this market.

Market Restraints

The government restrictions aimed at limiting consumption and protecting the domestic industry have stifled the demand for vehicles. Total annual revenues from all component production are approximately $2.6bn, representing just 1 percent of the world components market. Such a small industry base does not offer adequate volume to achieve economies of scale.
• Technologically superior product, improved life of components curtail the replacement demand for components

• Stringent emission norms are likely to force the old vehicles off the roads at the earliest. This may reduce the effective life span of vehicles on the roads and thereby reduce the replacement parts consumption per vehicle

• The high price differential between non-genuine and branded genuine parts is likely to entice vehicle owners to purchase non-genuine parts

3.7.4 Availability of Substitutes

If substitutes were available offering similar services, the likelihood of buyers switching over to another competitor depended mainly on the cost. The cost of the automobiles along with their operating costs was driving customers to look for alternative transportation options. The rising gasoline fuel was bound to influence the buyers.

As in other parts of Asia, auto manufacturers in India do not face a “threat of substitutes.” Public transportation is underdeveloped, even in the cities.

Four factors are responsible for reducing the threat of public transport as a substitute for automobiles:

• First, public transport is not efficient in serving areas with low population or employment densities. Low usage means infrequent service, and infrequent service, in turn, deters users. The kind of demographic fragmentation that
characterizes most of India is an almost insurmountable challenge for public-transport systems.

- Second, the rapid growth of Indian economy has changed travel patterns as new growth areas have sprung up. Fixed transport systems, such as rail lines, quickly become obsolete under conditions of rapid growth. The sunk costs that characterize mass transit systems are simply too high in areas where the shift from rural to urban demographics is rapid, and also too high when growth in developing economies is low.

- Third, many types of public transport have high opportunity costs. Flashy rail systems can consume resources that could serve far more people if devoted to improving bus travel. And finally, the preference for public transit decreases as income level rises; at the same time, consumers increasingly prefer autos over motorbikes.

### 3.7.5 Competitive Rivalry

The presence of many players of about the same size, little differentiation between competitors, and a very mature industry with very little growth are the features of a highly competitive industry. Higher the competition in the industry lower would be the profit margin. To remain ahead in competition, automakers were tempted to offer value added services to the customers incurring more costs. Easy finance options and long term warranties were offered to lure the customers. But these measures cut into the profit margins.

The level of actual demand in India should not be overstated. Most automakers that enter the Indian market can count on a low volume of sales at
the outset, with the expectation that demand will eventually increase. They therefore must be willing to produce a number of product types to find a wider initial market.

Thus the Indian automobile industry in the face of global competition from foreign firms was offering better deals to cater to diverse needs of customers.

Trans-national mergers and acquisitions have complicated the issue of competition in Porter’s model. In the 1980s and 1990s, the auto industry was slow to respond to pressures for mergers despite excess capacity. Consolidation, automakers felt, would undermine brand recognition and loyalty, considered in the industry to be a key weapon in the fight for market share. In the Indian market, Suzuki, through its joint venture with the state-owned Maruti holding company, had been able to increase its market share from 33% in 1987 to over 43% by 1996. Driven both by continued overcapacity in the 1990s and by intense competition in the Indian market, cross-national consolidation began to eclipse cross-national competition.

Indeed, the problem of overcapacity had grown worse: in 1999, the average worldwide plant utilization was only 69%, compared with 80% in 1990. By the end of the decade, most national firms were pushed by lower profit margins to merge. An example to illustrate the changed structure of the industry at the turn of the century was Daimler Chrysler’s purchase of a one-third interest in Mitsubishi Motors, which merged German, American, and Japanese firms into the third largest auto company in the world. Now, the competition is not between national firms but between consolidated firms, often acquired for their competitiveness in specific market niches. Even more radical strategies have been envisioned. The large manufacturers have begun
to sub-contract the design and production of entire sub-assemblies, such as brakes, steering, and suspension.

3.8 SWOT ANALYSIS OF INDIAN AUTO COMPONENT INDUSTRY

SWOT analysis is a strategic planning tool used to evaluate the strengths, weaknesses, opportunities, and threats involved in a project or in a business venture or in any other situation of an organization or individual requiring a decision in pursuit of an objective.

An analysis of the Indian auto component would serve as an example to diagnose the strengths, weaknesses, opportunities and threats existing for automakers. The SWOT analysis was performed based on secondary data sources such as industry reports and research papers in journals.

3.8.1 Strengths

The strengths of the Indian auto component industry which it leverages to its advantage are as listed below:

3.8.1.1 Research and Development (R&D) Capability

In recent years the world's leading automakers and Tier I suppliers have opened their R&D centres in different parts of the country. The cost of R&D in India is low compared to any developed country due to availability of skilled manpower and qualified engineers (Table 3.8).
Table 3.8  Availability of Global Labour Skill / Qualification

<table>
<thead>
<tr>
<th>Skill/Qualification</th>
<th>Country</th>
<th>Germany</th>
<th>India</th>
<th>USA</th>
<th>Brazil</th>
<th>Mexico</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of Skilled Labour</td>
<td>7.5</td>
<td>7.4</td>
<td>7.2</td>
<td>6.4</td>
<td>6.3</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Availability of Qualified Engineers</td>
<td>8.5</td>
<td>7.5</td>
<td>7.4</td>
<td>6.6</td>
<td>6.6</td>
<td>4.2</td>
<td></td>
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</tbody>
</table>

Source: www.acmainfo.com (Scale 1 = Low, 10 = High)

India's strength in software can be utilized in R&D in the auto component sector for reverse engineering, designing and testing auto parts. Sona Koya, an Indian auto component maker has set up an engineering designing solution centre in Gurgaon and world's leading OEMs outsource their engineering designs from Sona Koya. India has the huge potential to export embedded software for automobiles for the developed markets (ACMA). Embedded software handles many critical control functions such as braking systems, airbags etc. Embedded software is also used for safety, climate, control and so on.

3.8.1.2  Product Liability

The World's leading OEMs follow strict product liability rules while going for any contract with their suppliers. Under product liability rules any supplier could be penalized by its client if the product fails to meet the set quality standards and results in line stoppages, recalls and claims. In India the domestic insurance companies such as Tata-AIG (American International Group) started providing product liability insurance to the Indian auto component makers. This will give the Indian auto component manufacturers the confidence to do more business with foreign automakers.
With product liability insurance in place the acquisition and execution of export contracts will be easier for the Indian companies.

### 3.8.1.3 Labour Cost

The component industry in India has significant cost advantages primarily due to lower labour cost in India. This labour cost advantage translates to overall cost advantage of 20-30% over the counterparts from other developed countries despite lower labour productivity. Since Tier 1 suppliers control the global component industry the cost advantage should be leveraged into attracting these global players to set up manufacturing base in India.

The other strengths of the Indian auto Component Industry include, Wide Industry base (manufacturing 97% of component required), Growing entrepreneurship, growing domestic market, expanding global markets, trans-nationalisation of world economy, Investments by non-resident Indians and economic liberalization.

The auto Component industry in India has the potential of becoming the export driver of the auto industry. To achieve the Auto industry version of 10% share of industrial out put by 2010, the component industry will have to grow at close to 22% over next 12 yrs, with export contributing to 20% of the output.

### 3.8.2 Weaknesses

There are several challenges, which the industry has to overcome at industry level and organizational levels Vasant Khisty (2004). Few of these have been briefly described here with.
3.8.2.1 **Small in size**

The Indian auto component industry is wide with over 400 firms in the organized sector, but small in sales turnover. It is currently a Small and fragmented industry by global standards.

3.8.2.2 **Inferior Quality**

Quality upgradation is the most important challenge for Indian component suppliers. ACMA reports that over 456 of its members have already received ISO9000 certification and 248 have obtained TS 16949 and 136 have received QS9000 certification. But ACMA members constitute only 7% of the Indian auto component manufacturers, numbering 6,400. Out of the four Deming appreciation Prize winners for 2005, three were Indian Companies and all were from the auto sector. However statistics do not represent the overall quality problems, which plague the industry, driven by historically protected markets. Defect rates in India are in the range of 1000-2000 parts per million (PPM) against Japanese average of 100-200 PPM (www.kabulpress.org)

3.8.2.3 **Lower Labour Productivity**

The advantage of low cost labour is negated due to lower productivity level of Indian work force. Indian Labour productivity is lower relative to the rest of the world. The median level of labour productivity in Indian plants is about 1 unit per man-hour. This compares with a threshold figure of 6 units per man-hour for the plants with world – class performance. (Andersen 2000)
3.8.2.4 Inferior Technological capabilities

The sector has been dependent on the OEM segment for product design and did not develop the engineering capability on its own. Most of the technology improvements made by Indian manufacturers are through joint ventures or technological collaborations. If the Indian suppliers wish to upgrade technology they will have to increase the global Tier-1 players operating in India up from 4 to 15/20 and develop relations with large global tier-1 suppliers. Visteon and Delphi have a large number of joint ventures and technology collaborations leading to upgradation of technology. Over time there has to be a shift of design and development capability to Tier 11 and tier-111 suppliers. Indian suppliers in these categories must eventually raise their research and design expenditure from current level of 0.5% to global level of 5%.

3.8.2.5 Taxation Structure

The present structure of multiple and cascading taxation presents an obstacle for systems procurement and discourages the tiering of the supply chain. Consequently, Indian firms suffer from an inherent disadvantage compared to global competition that has additional income advantage of tiering. Over 20-30% of all parts were uneconomically sourced due to central sales tax distortions, which have no Modified Value Added Tax (MODVAT) relief Confederation of Indian Industry-A.T. Kearney MNC Survey (2005). Indeed the vat system as adopted by many European nations will open vast opportunities for competitive sourcing and tiering in component Industry.
3.8.2.6 Higher Cost of Finance In India

India has one of the highest interest rates for Capital and working capital. These can range from 12% to 18% and higher. Most of the Indian companies work for financial institution. Where as in countries like USA and Europe funds are available at 1/3rd the cost. This makes big difference on the health of the company. Though the financial institutions are flushed with funds, more funds are available for investment in Non-performing assets.

3.8.2.7 High Cost of logistics

The Cost to transport parts within the country is high due to high cost of fuel, and poor turn around of vehicles. The cost to export can be around 5 to 25% depending on the commodity. Ports in India are inefficient and the ship-turnaround time is higher than international standards. A finished product takes additional week to leave the Indian shores due to various documentation and other port formalities. A container load may cost 3000 US $ to USA. It is inefficient for individual suppliers to export small container loads. The uncertainties in Logistics prevent Indian companies to supply just in time.

3.8.2.8 High Cost and poor Quality of Raw materials

Raw material like steel, polymers, castings etc are at times 20% to 50% more expensive than other countries and the quality of these raw materials also are not comparable to international standards. Steel is the major raw material used for automotive applications and the same is increasing every quarter.
3.8.2.9 Lacking economies of scale

Despite being around 60 years old, the domestic auto industry is even behind countries like South Korea, Brazil and Mexico in terms of production and sales, thus depriving it the benefit of economies of scale. It is difficult for companies to invest extensively in research and development, a key competitive tool in the global market.

3.8.3 Opportunities

3.8.3.1 Huge Growth potential

Global auto components market is worth over US$ 1 trillion and, considering India's market size, which is just 0.8% of the total market size, there exists tremendous growth opportunity for the domestic auto players to exploit. Players with technical competence and necessary scale of production will benefit from the global outsourcing opportunities. To give an example, around 70% of the total exports in 2006 were OEMs or Tier-1 players as compared to around 35% in early 1990s (ACMA)

3.8.3.2 Outsourcing owing to cost arbitrage

Due to cost related pressures on global auto players and Tier-1 suppliers, a lot of them have started outsourcing components from low cost countries like India, China and some of the Latin American and ASEAN countries. However, the technical capabilities of the Indian players have given them the edge in high precision and critical activities. The industry, which exported components worth over US$ 1.4 bn in FY05, is also benefiting from strong domestic sales.
3.8.3.3 Learning from the multinational corporations

The entry of global players such as Ford, General Motors, Toyota and Honda into the Indian market has allowed the Indian manufacturers to work with these players on global production, quality and delivery systems. It has also helped the global players to see for themselves the evolution of many auto components manufacturers and they are therefore now entrusting them (Indian companies) with more work.

3.8.3.4 Information Technology (IT) advantage

Thanks to the country's IT advantage, the industry is capable of becoming a full-fledged service provider (research, design, development, testing) to global OEMs and thus score over other low cost countries like China. This, combined with low cost quality manpower strengthens our stand in the global arena.

3.8.4 Threats

3.8.4.1 Competitive threats

Though the Indian players have demonstrated their technical competencies, countries like China can spring in surprises in the long run considering the fact that with global auto players increasing their presence in China, the next logical step would be to rise up the value chain (high end auto ancillaries).

3.8.4.2 Increasing FTA

The growing number of (Free Trade Agreements) FTAs that are being signed by India with ASEAN countries is likely to hurt the domestic
players as they pay a relatively higher excise duty of around 25% as compared to 1%-10% being paid by their ASEAN counterparts.

**Table 3.9 Summary of SWOT Analysis**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Low cost of R &amp; D</td>
<td>• Industry Size is Small</td>
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<tr>
<td>• Product Liability Insurance</td>
<td>• Inferior Quality Products</td>
</tr>
<tr>
<td>• Low Labour Cost</td>
<td>• Low Labour Productivity</td>
</tr>
<tr>
<td></td>
<td>• Poor Technological Capability</td>
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<tr>
<td></td>
<td>• High Cost of Finance</td>
</tr>
<tr>
<td></td>
<td>• No economies of Scale</td>
</tr>
<tr>
<td></td>
<td>• High cost of Logistics</td>
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<table>
<thead>
<tr>
<th>Threats</th>
<th>Opportunities</th>
</tr>
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<tbody>
<tr>
<td>• Competitive threats from China</td>
<td>• Huge Growth Potential</td>
</tr>
<tr>
<td>• Increasing FTA</td>
<td>• Large Outsourcing Opportunities</td>
</tr>
<tr>
<td></td>
<td>• Learning from MNCs</td>
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**CONCLUSION**

Thus from the five force and the SWOT analysis (Table 3.9), it is clear that though the auto industry has huge growth prospects, the individual component manufacturers have to gear up and evolve strategies to compete globally. There are three areas in which locally-owned firms might prosper within the global auto components industry. They are:

(a) as second-tier component manufacturers operating within value chains supplying assemblers in the domestic market;
(b) allied with trans-national companies and supplying specialized products for global markets;

(c) as suppliers to both domestic and international after markets. The ability of locally-owned firms to compete in each of these markets can be influenced by support provided by local and national institutions.

The focus areas in which the auto industry needs to concentrate in order to become globally competitive are:

- **Quality certifications**: Entry into the auto industry supply chain increasingly depends upon certification. For second-tier component manufacturers, ISO9000 certification and, increasingly, QS9000 certification are essential. It is to be expected that greater emphasis will be placed in future on environmental standards, such as ISO14000. While markets in both the certification process itself and the preparation of firms for certification will tend to emerge, governments can play an important role in developing and ordering these markets.

- **Skilled labour**: Firms at all points in the chain need skilled labour able to enhance process-engineering capabilities. The education and training systems need to supply this labour. In some sectors, specialist skills in the area of materials will also be required.

- **Testing and measurement facilities**: For small firms, in particular, the cost of testing and measurement facilities can be high. Local and national governments can supply specialist
laboratory services and create a sound national framework for metrology.

- **Market intelligence**: Market intelligence services and support for participation in trade fairs can help domestic firms to open up new markets. This is particularly important for firms catering for the aftermarket, although it may also open up new markets for second-tier manufacturers.