CHAPTER TWO

THE AUTOMOBILE INDUSTRY

2.1 Genesis of the Indian Automobile Industry

2.2 Industry Structure

2.3 Growth of the Industry

2.4 Market Characteristics

2.5 The State of Competition

2.6 Resource Usage

2.7 Modernisation and Upgradation of Technology

2.8 Present Scenario and Future Prospects
2.1 GENESIS OF THE INDIAN AUTOMOBILE INDUSTRY

The dawn of automobile history dates back to 1770 when a French man, Nicholas Cugnot, built what is generally agreed to have been the first road vehicle propelled by its own power. The development of the present day automobile dates from about 1880 when German and French efforts to develop internal combustion engine began to bear fruit. By 1886, Gottlieb Daimler, a German engineer, patented an internal combustion engine, and in 1887 another German engineer, Carl Benz, built a tricycle propelled by an internal combustion engine.

An important landmark in the history of the industry was the formation of a firm Rene Panhard & Emile Lavassor in Paris which developed a car after acquiring patents and rights of Daimler in 1894. Thereafter the automobile industry began to flourish in all big towns of the world. However, it took five decades for an indigenous automobile company to be established in India. In the early 1940s, international automobile giants -- Ford and General Motors -- had their assembly plants in Bombay. Both the companies made enormous profits through imports, assembly, and sale. Both also opposed the moves of Indian entrepreneurs to indigenously manufacture cars.
It was Hindustan Motors Ltd (HML) which first set up a car manufacturing plant in 1942 at Uttarpara, on the outskirts of Calcuta. Later, Premier Automobiles Ltd (PAL) established its plant in a suburb of Bombay. In the initial years, the two Indian companies did only assembly work but could not make any headway because of the stiff competition from foreign models that were easily available.

In 1953, the Tariff Commission recommended that only those firms with proper phased manufacturing programme (PMP) would be allowed to operate and that others, which merely imported vehicles in completely knocked down (CKD) conditions and assembled them in India, must fold up. As a result, both the American companies wound up their business as they did not think the country had a proper industrial base and refused to go into indigenous production in India. The reservation of the domestic market for units with genuine programme of manufacture heralded the emergence of an indigenous automobile industry.

TELCO (The Tata Engineering & Locomotive Co. Ltd) entered into collaboration with Daimler Benz of Germany and started production in 1954. Bajaj Auto Ltd (BAL) started the manufacture of scooters and three-wheelers in collaboration with Piaggio of Italy in 1960. Earlier, the company acted as traders, importing CKD kits of scooters and three-wheelers. Incorporated as a public limited company in 1948 in collaboration with Standard Motor Co. (UK), the Standard
Motor Products of India Ltd (SMPIL) rolled out its first indigenously manufactured cars in 1955. It was the smallest among the three car manufacturers in the country. The Automobile Products of India Ltd (API) started production of scooters in 1954. Incidentally, API was the first company to manufacture three-wheelers in India indigenously. Earlier, Mahindra & Mahindra (M&M) was set up in 1945 to import steel jeeps. And Ashok Motors (now Ashok Leyland) was set up to assemble Austin cars in 1948. In 1950, the company acquired the sole rights to distribute and assemble Leyland commercial vehicles of UK, and in 1953 opted for starting indigenous automobile manufacture in collaboration with Leyland.

2.1.1 Present Status

The automobile industry in India is more than forty years old now. From a production of merely 4,122 vehicles in 1950, the automobile industry produced 2,273,709 vehicles in 1990-91, and is expected to reach 55,00,000 mark in the year 2000. Exhibit 2.1 shows the growth of automobile industry in India.

Since the year 1950, India’s share in world automobile output has increased from 0.1 per cent to 0.4 per cent. The industry recorded a growth of 318.5 percent during the period 1980-90 compared to 174.8 per cent during 1970-80. The total sales of 16 major companies amounted to Rs 7108.5
as on March 31, 1990 compared to 5739.1 crore in the preceding year\textsuperscript{20} -- thus recording a growth of 22.2 per cent.

Exhibit 2.1: Automobile Production in India (1950-92)

<table>
<thead>
<tr>
<th>Year (Jan-Dec)</th>
<th>Comm. Vehicles</th>
<th>Cars</th>
<th>Jeeps</th>
<th>Two-Wheelers</th>
<th>Three-Wheelers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>1891</td>
<td>2221</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4112</td>
</tr>
<tr>
<td>1960</td>
<td>27518</td>
<td>19097</td>
<td>5501</td>
<td>16878</td>
<td>496</td>
<td>68490</td>
</tr>
<tr>
<td>1970</td>
<td>40972</td>
<td>35305</td>
<td>9334</td>
<td>113171</td>
<td>4229</td>
<td>203011</td>
</tr>
<tr>
<td>1980</td>
<td>68311</td>
<td>30538</td>
<td>15068</td>
<td>417602</td>
<td>26519</td>
<td>558038</td>
</tr>
<tr>
<td>1990</td>
<td>145628</td>
<td>176821</td>
<td>41944</td>
<td>1875522</td>
<td>95528</td>
<td>2335443</td>
</tr>
<tr>
<td>1991</td>
<td>146152</td>
<td>176995</td>
<td>30417</td>
<td>1801108</td>
<td>79429</td>
<td>2034101</td>
</tr>
<tr>
<td>1992</td>
<td>128095</td>
<td>153357</td>
<td>38202</td>
<td>1475379</td>
<td>65340</td>
<td>1860373</td>
</tr>
</tbody>
</table>


As of present, the industry produces a whole range of vehicles -- buses, trucks, commercial vehicles, cars, jeeps, scooters, motorcycles, mopeds and three-wheeled vehicles. Although the industry is primarily a capital-intensive industry, raw materials constitute more than 60 per cent of the total manufactured price\textsuperscript{21}. As most of the raw materials are imported, the automobile industry is sensitive with regard to levying of excise duty on import of raw materials, and fluctuations in the value of international currencies.
and prices. Moreover, the incidence of excise duty on end products within the industry has been considerably high depending upon the imported and indigenous content of components.

Although fuel availability and its price is a major determinant of demand for certain category of vehicles, others like income levels, tax laws relating to depreciation etc., also play a significant role in influencing demand for vehicles. In 1991, the adverse combination of the factors viz., shortage and spurt in prices of petroleum products, inflationary pressures, changes in depreciation rules, etc., greatly affected the production and sales of automobiles.

After experiencing technological obsolescence for more than four decades, the automobile industry seems to be witnessing modernisation and upgradation of technology. Since the easing of procedural impediments, there has been a spate of foreign collaborations within the industry.

2.2 **INDUSTRY STRUCTURE**

The Indian automobile industry, including the component sector, is fairly large though not big enough by international standards. India is the thirteenth biggest manufacturer of commercial vehicles with about 0.8 per cent of the world commercial vehicles of 12 million, and is
ranked seventeenth among car manufacturers with a worldwide output of nearly 34 million vehicles\textsuperscript{23} in 1991. It ranks second in the world in terms of number of two-wheelers produced\textsuperscript{24}. At present, India is the world's largest producer of three-wheelers. Thus, it seems that India is going to emerge as the largest market in the world for two and three-wheelers.

2.2.1 Size of Industry

The total licensed/registered capacity in automobile industry during 1991-92 stood at 55,43,000 numbers of all types of vehicles per annum while the installed capacity was the order of 36,80,500 numbers per annum\textsuperscript{25}. Capacity utilisation in the industry is about 55 per cent with production being 2,021,573 vehicles during the year 1991-92. Earlier, in 1990-91, the industry utilised 61.7 per cent of its installed capacity with production being 2,273,709 vehicles. In all there are 42 units engaged in the production of different types of vehicles\textsuperscript{26}. Exhibit 2.2 shows the aggregate installed production capacity of automobile industry.

Out of the total installed production capacity of automobile products, two-wheelers segment alone account for 32,00,000 numbers per annum -- that is, 86.9 per cent of the installed capacity. The licensed capacity for two-wheelers in 50,00,000 numbers per annum. Exhibit 2.3 shows a broad
segment-wise break-up of licensed and installed capacity of automobile industry for the year 1991-92.

Exhibit 2.2: Installed Production Capacity of Automobile Industry (in numbers)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Units</th>
<th>Installed Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986-87</td>
<td>41</td>
<td>25,86,100</td>
</tr>
<tr>
<td>1987-88</td>
<td>41</td>
<td>27,35,100</td>
</tr>
<tr>
<td>1988-89</td>
<td>42</td>
<td>28,35,100</td>
</tr>
<tr>
<td>1989-90</td>
<td>42</td>
<td>36,80,500</td>
</tr>
<tr>
<td>1990-91</td>
<td>42</td>
<td>36,80,500</td>
</tr>
<tr>
<td>1991-92</td>
<td>42</td>
<td>36,80,500</td>
</tr>
</tbody>
</table>


It is evinced from the exhibit that commercial vehicles segment has installed only 84.5 per cent of the licensed capacity while the two-wheelers segment has installed merely 64 per cent of its licensed capacity. The car manufacturers have installed 93.9 per cent of the licensed capacity. Thus, from being a chronic excess demand industry, the Indian automobile industry is now showing distinct signs of excess capacity.
Exhibit 2.3: Break-up of Licensed and Installed Capacity of Automobile Industry (in numbers)

<table>
<thead>
<tr>
<th>Segment</th>
<th>Number of Units</th>
<th>Licensed Capacity</th>
<th>Installed Capacity</th>
<th>% Share in Total Ins. Cap.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comm. Vehicles</td>
<td>13</td>
<td>3,13,000</td>
<td>2,64,500</td>
<td>7.2</td>
</tr>
<tr>
<td>Cars</td>
<td>5</td>
<td>2,30,000</td>
<td>2,16,000</td>
<td>5.9</td>
</tr>
<tr>
<td>Two-Wheelers</td>
<td>24</td>
<td>50,00,000</td>
<td>32,00,000</td>
<td>86.9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>42</strong></td>
<td><strong>55,43,000</strong></td>
<td><strong>36,80,500</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>


2.2.2 Sectoral Structure

In the 1950s, there were just eight companies in the automobile industry -- all of them in the private sector. The industry, comprising of 42 manufacturers at present, is still dominated by the private sector. However, the presence of Maruti Udyog Ltd (MUL) -- the only public sector car and jeep manufacturing unit -- is more pronounced. Ever since it commenced production in 1983 with 175 cars, MUL has been steadily increasing its market share in the passenger car category. Exhibit 2.4 shows the sectoral structure of the industry.

Out of the 42 companies producing different types of vehicles, 38 belong to the private sector. Besides MUL, Gujarat Narmada Auto Ltd (GNAL) -- a manufacturer of
scooters -- is also in the public sector. Another public sector undertaking, Scooters India Ltd (SIL), had accumulated huge losses and is now a sick company. Unlike the early 1950s, there are no multinational companies. However, among the 42 automobile manufacturers, twenty-eight have foreign collaborations -- technical or financial, or both.

Exhibit 2.4 : Sectoral Structure of Automobile Industry

<table>
<thead>
<tr>
<th>Category</th>
<th>Private Sector Units</th>
<th>Public Sector Units</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(A) Commercial Vehicles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and Medium Commercial Vehicles</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Light Commercial Vehicles</td>
<td>10</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td><strong>(B) Light Motor Vehicles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Cars</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Jeeps</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>(C) Three-wheelers</strong></td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>(D) Two-wheelers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scooters</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>6</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Mopeds</td>
<td>7</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>38</td>
<td>4</td>
<td>42</td>
</tr>
</tbody>
</table>

Source: Adapted from Automotive Industry of India, Facts & Figures, 1991-92, Automotive Component Manufacturers Association of India, New Delhi, 1993, pp.3-4
2.3 GROWTH OF THE INDUSTRY

The automobile industry had grown in a sheltered environment since independence. Ever since the policy of liberalisation was adopted by the Government at the commencement of the Seventh Five Year Plan (1985-89), the industry has shown signs of accelerated growth. Manufacturing of all types of vehicles more than quadrupled between 1980 and 1990. From a mere production of 69,490 vehicles in 1980, automobile production increased to 5,58,038 vehicles in 1980, and to 14,05,433 vehicles in 1985. Exhibit 2.5 shows the growth of automobile production since 1980.

As is evinced from the exhibit, the automobile production increased from 1472081 vehicles in 1985-86 to 2273709 in 1990-91. Further, the Automobile Production Index (A.P.I.) has constantly been increasing with the base year being 1980-81. However, due to recessionary conditions, automobile production decreased in 1991-92.

2.3.1 Phases of Growth

The growth of automobile industry can be distinctly classified into two phases -- Pre-liberalisation Period (1951-1984) and Post-liberalisation Period (1985-onwards).
Exhibit 2.5: Growth of Automobile Production (in numbers)

<table>
<thead>
<tr>
<th>Year</th>
<th>Two-Wheelers</th>
<th>Three-Wheelers</th>
<th>Four-Wheelers</th>
<th>Total Vehicles</th>
<th>% Change over Pr.Year</th>
<th>Automobile Prod.Index (API)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-81</td>
<td>440310</td>
<td>28930</td>
<td>121116</td>
<td>588356</td>
<td>33.23</td>
<td>100</td>
</tr>
<tr>
<td>1981-82</td>
<td>546076</td>
<td>25801</td>
<td>153707</td>
<td>725584</td>
<td>23.32</td>
<td>123</td>
</tr>
<tr>
<td>1982-83</td>
<td>832465</td>
<td>31881</td>
<td>151550</td>
<td>815896</td>
<td>12.45</td>
<td>138</td>
</tr>
<tr>
<td>1983-84</td>
<td>779604</td>
<td>38575</td>
<td>158651</td>
<td>976830</td>
<td>19.72</td>
<td>165</td>
</tr>
<tr>
<td>1984-85</td>
<td>897948</td>
<td>43508</td>
<td>195302</td>
<td>1136758</td>
<td>16.37</td>
<td>192</td>
</tr>
<tr>
<td>1985-86</td>
<td>1190917</td>
<td>49947</td>
<td>231217</td>
<td>1472061</td>
<td>29.50</td>
<td>248</td>
</tr>
<tr>
<td>1986-87</td>
<td>1394246</td>
<td>54566</td>
<td>253803</td>
<td>1702615</td>
<td>15.66</td>
<td>286</td>
</tr>
<tr>
<td>1987-88</td>
<td>1437112</td>
<td>61112</td>
<td>294011</td>
<td>1792235</td>
<td>5.26</td>
<td>301</td>
</tr>
<tr>
<td>1988-89</td>
<td>1636323</td>
<td>79361</td>
<td>317999</td>
<td>2033683</td>
<td>13.47</td>
<td>341</td>
</tr>
<tr>
<td>1989-90</td>
<td>1731686</td>
<td>83752</td>
<td>348638</td>
<td>2164076</td>
<td>6.41</td>
<td>362</td>
</tr>
<tr>
<td>1990-91</td>
<td>1820766</td>
<td>89162</td>
<td>363781</td>
<td>2273709</td>
<td>5.09</td>
<td>380</td>
</tr>
<tr>
<td>1991-92</td>
<td>1603736</td>
<td>76750</td>
<td>341087</td>
<td>2021573</td>
<td>-11.09</td>
<td>337</td>
</tr>
</tbody>
</table>


**Pre-liberalisation Period**: During this phase, there were primarily eight manufacturers in the industry. Hindustan Motors Ltd (HML) and Premier Automobiles Ltd (PAL) dominated the car segment, Bajaj Auto Ltd and API were the leaders in scooters, Enfield India and Escorts Ltd in motorcycles, API and Bajaj Auto Ltd in three-wheelers, and TELCO in heavy and medium commercial vehicles category. Mahindra & Mahindra
(M&M) was the only jeep manufacturer. Exhibit 2.6 shows automobile production during pre-liberalisation period.

Exhibit 2.6: Automobile Production (1951-84)

<table>
<thead>
<tr>
<th>Category</th>
<th>Production (in'000 nos.)</th>
<th>Increase Annual Rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1951</td>
<td>1984</td>
</tr>
<tr>
<td>Mopeds</td>
<td>0.5*</td>
<td>386.6</td>
</tr>
<tr>
<td>Scooters</td>
<td>0.5</td>
<td>303.4</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>0.4</td>
<td>173.3</td>
</tr>
<tr>
<td>Com. Vehicles</td>
<td>9.5</td>
<td>93.2</td>
</tr>
<tr>
<td>Cars</td>
<td>12.4</td>
<td>64.0</td>
</tr>
</tbody>
</table>

* - 1962
Source: Adapted from Indian Economy since 1950-51, Centre for Monitoring Indian Economy, Bombay, February 1986, P.2.1 (ii).

In the pre-liberalisation period, mopeds recorded the highest annual growth rate followed by scooters and motorcycles. During the same period, cars and commercial vehicles grew moderately.

Post-liberalisation Period: The policy reforms introduced in small doses in 1983 and 1984, but mainly in 1985, accelerated the growth of automobile industry. Government policies like easing the entry of firms, allowing capacity expansion, permitting foreign collaboration, prescribing minimum economies of scale of production, and reducing constraints on growth and competition by broad banding (product-mix), etc. made a positive impact on the growth of the automobile industry in India.
Although the automobile industry was one of the nine industry groups chosen for the purpose of prescribing minimum economic capacities (as the growth of the industry was adversely affected by fragmentation of capacity), yet the liberalisation policy has had a paradoxical impact on the industry. On the one hand, many companies achieved economies of scale of production while on the other, some companies suffered on account of fragmentation of capacity. The reason being that the Government granted licences to too many manufacturers without taking into consideration the market demand. However, despite such handicaps, the automobile industry has shown remarkable growth in the post-liberalisation period.

Due to the broader economic malaise in 1991, the automobile industry had to face recessionary trends. Many producers were forced to cut down production. As a result, production of vehicles declined in 1991-92.

2.3.2 Rate and Pattern of Growth

The production of all types of automobile vehicles grew at an annual rate of about 18 per cent between 1951 and 1984. The industry experienced a rising trend during the period 1985-91. Considerable growth is being witnessed by almost all the segments of the industry. Exhibit 2.7 shows the production and annual rate of growth of automobile products.
Two-wheelers recorded an average annualised growth rate of 8.8 per cent during the period 1985-92 while the four-wheelers grew at an average rate of 10.8 per cent during the same period. As is evinced from Exhibit 2.7, there are wide variations in annual growth rate in various segments as well as within a particular segment.

Exhibit 2.7 : Automobile Production during 1985-92
(in '000 nos.)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mopeds</td>
<td>455.3</td>
<td>11.4</td>
<td>449.8</td>
<td>-1.2</td>
<td>475.6</td>
<td>5.4</td>
<td>477.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Scooters</td>
<td>422.3</td>
<td>42.1</td>
<td>595.1</td>
<td>29.0</td>
<td>625.5</td>
<td>4.8</td>
<td>659.0</td>
<td>5.1</td>
</tr>
<tr>
<td>Motorcycles</td>
<td>248.0</td>
<td>41.7</td>
<td>314.7</td>
<td>21.2</td>
<td>300.6</td>
<td>-4.6</td>
<td>411.6</td>
<td>26.9</td>
</tr>
<tr>
<td>All Two-Wheelers</td>
<td>1125.6</td>
<td>31.8</td>
<td>1359.6</td>
<td>17.2</td>
<td>1401.8</td>
<td>3.01</td>
<td>1547.9</td>
<td>8.8</td>
</tr>
<tr>
<td>Jeeps</td>
<td>26.8</td>
<td>20.8</td>
<td>27.7</td>
<td>3.2</td>
<td>32.3</td>
<td>14.2</td>
<td>35.1</td>
<td>9.2</td>
</tr>
<tr>
<td>Cars</td>
<td>102.4</td>
<td>60.1</td>
<td>116.0</td>
<td>11.7</td>
<td>148.5</td>
<td>21.8</td>
<td>159.9</td>
<td>7.0</td>
</tr>
<tr>
<td>Com.Veh.</td>
<td>99.7</td>
<td>5.1</td>
<td>101.2</td>
<td>1.5</td>
<td>108.0</td>
<td>0.7</td>
<td>117.3</td>
<td>8.6</td>
</tr>
<tr>
<td>All Four-Wheelers</td>
<td>228.9</td>
<td>20.9</td>
<td>244.9</td>
<td>6.9</td>
<td>288.8</td>
<td>17.9</td>
<td>312.3</td>
<td>8.1</td>
</tr>
</tbody>
</table>


The share of two and three-wheelers in the whole of automobile production was 71 per cent in 1980-81 which increased to 81 per cent in 1986-87 but later declined to 77
per cent in 1991-92. The share of various segments in automobile production is shown in Exhibit 2.8.

The share of all types of four-wheelers in the total output of industry declined to 19 per cent in 1986-87 from 29 per cent in 1980-81. However, its share gradually went up thereafter and now stands at 23 per cent.

Exhibit 2.8 : Production Trend of Automobile Products

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Scooters</td>
<td>34</td>
<td>26</td>
<td>30</td>
<td>36</td>
<td>31</td>
<td>34</td>
<td>33</td>
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<td>35</td>
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<td>Motorcycles</td>
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<td>17</td>
<td>18</td>
<td>20</td>
<td>18</td>
<td>19</td>
<td>20</td>
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<tr>
<td>Mopeds</td>
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<td>32</td>
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<td>27</td>
<td>22</td>
<td>19</td>
<td>18</td>
<td>19</td>
</tr>
<tr>
<td>Three-wheelers</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL (A)</td>
<td>71</td>
<td>77</td>
<td>80</td>
<td>81</td>
<td>80</td>
<td>79</td>
<td>79</td>
<td>77</td>
<td></td>
</tr>
</tbody>
</table>

| Cars         | 5       | 6       | 7       | 7       | 8       | 8       | 8       | 7       | 8       |
| Jeeps        | 2       | 2       | 2       | 2       | 2       | 2       | 2       | 2       | 1       |
| Buses/Trucks | 8       | 5       | 4       | 3       | 3       | 3       | 4       | 4       | 4       |
| LCVs         | 3       | 3       | 2       | 2       | 2       | 2       | 2       | 2       | 3       |
| Others       | 11      | 7       | 5       | 5       | 5       | 5       | 6       | 6       | 7       |
| TOTAL (B)    | 29      | 23      | 20      | 19      | 20      | 20      | 21      | 21      | 23      |

| A + B        | 100     | 100     | 100     | 100     | 100     | 100     | 100     | 100     | 100     |

2.3.3 Capacity Utilisation

The automobile industry has experienced poor capacity utilisation after the announcement of liberalisation measures in 1985. Prior to the declaration of various policy measures regarding automobile industry, the average utilisation of production capacity was about 85 per cent. Exhibit 2.9 shows the utilisation of production capacity during 1983-92.

Exhibit 2.9: Capacity Utilisation by Automobile Industry (in per cent)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CAPACITY UTILISATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983-84</td>
<td>86.7</td>
</tr>
<tr>
<td>1984-85</td>
<td>83.3</td>
</tr>
<tr>
<td>1985-86</td>
<td>80.3</td>
</tr>
<tr>
<td>1986-87</td>
<td>61.5</td>
</tr>
<tr>
<td>1987-88</td>
<td>62.0</td>
</tr>
<tr>
<td>1988-89</td>
<td>66.5</td>
</tr>
<tr>
<td>1989-90</td>
<td>58.8</td>
</tr>
<tr>
<td>1990-91</td>
<td>61.7</td>
</tr>
<tr>
<td>1991-92</td>
<td>54.9</td>
</tr>
</tbody>
</table>

Apart from low capacity utilisation during the second half of 1980s and early 1990s in general, there are variations in capacity utilisation among the various automobile units. A large number of small units -- especially in the two-wheeler segment -- has led to the unnecessary fragmentation of capacity. Thus, the automobile industry has experienced major problems with regard to the utilisation of capacity which is vastly in excess of immediate requirements. One simple reason being that the Government have been sanctioning production capacities in excess of the officially projected demand for products. However, there are other reasons as well which have led to low capacity utilisation.

2.4 MARKET CHARACTERISTICS

In Indian society, a motor car is looked upon as a symbol of luxury. Government policy with regard to the automotive industry has for many years reflected this ambivalence. Strangulating Government controls over the last four decades had made sure that its true potential is never realised. However, the industry was assigned a priority status in the economic policy announced in 1985. The process began in 1982 with the lone public sector undertaking -- (Maruti Udyog Ltd) -- entering into technical and financial collaboration with the well-known Japanese automobile giant, Suzuki Motor Co. In January 1985, the scheme of ‘broad banding’ was introduced whereby existing manufacturers were allowed to go for product-mix. Due to these, and other more such reasons,
the 1980s have witnessed a significant growth in the automobile industry, especially in the two-wheeler, car, jeep and light commercial vehicle segments.

2.4.1 Products and their Demand

The automobile industry roughly constitutes of nine types of vehicles, under four broad categories, for the Indian market. Exhibit 2.10 shows the different products of the industry.

Exhibit 2.10 : Automobile Products

I : COMMERCIAL VEHICLES

1. Light Commercial Vehicle (LCV)
2. Medium Commercial Vehicle (MCV)
3. Heavy Commercial Vehicle (HCV)

II : CARS & JEEPS

4. Passenger Cars
5. Jeeps

III : TWO-WHEELERS

6. Scooters
7. Motorcycles
8. Mopeds

IV : THREE-WHEELERS

The demand projection for various types of vehicles is estimated to be 3,445,000 numbers for 1994-95 and the total vehicle production would increase by about 74 per cent over that of 1991-92. During the 1990s, the rate of growth of all
types of vehicles is expected to be 11 per cent. Exhibit 2.11 shows the demand projections for the period 1993-2000 A.D.

In terms of sales, medium and heavy commercial vehicles account for 61.3 per cent of the market share of commercial vehicles segment and light commercial vehicles for the remaining 38.7 per cent. It is expected that the demand for this segment will increase by 10 per cent during the 1990s. At present (1991-92), passenger cars account for 82.6 per cent of total four-wheeler sales while jeeps account for 17.4 per cent. The demand for this segment is expected to be of the order of 9 per cent and 14 per cent respectively during the 1990s.

Exhibit 2.11: Demand Estimates for Automobile Vehicles
1993-2000 A.D. (in '000 numbers)

<table>
<thead>
<tr>
<th>YEAR</th>
<th>LCVs</th>
<th>M/HCVs</th>
<th>TOTAL</th>
<th>Cars</th>
<th>Jeeps</th>
<th>Two-wheelers</th>
<th>Three-wheelers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>105</td>
<td>95</td>
<td>200</td>
<td>260</td>
<td>70</td>
<td>2500</td>
<td>150</td>
</tr>
<tr>
<td>1994-95</td>
<td>115</td>
<td>100</td>
<td>215</td>
<td>280</td>
<td>80</td>
<td>2700</td>
<td>170</td>
</tr>
<tr>
<td>2000 A.D.</td>
<td>175</td>
<td>125</td>
<td>300</td>
<td>450</td>
<td>120</td>
<td>4500</td>
<td>250</td>
</tr>
</tbody>
</table>

Average annual growth rate (per cent) during 1990s
15.0 5.8 10.0 9.0 14.0 9.0 14.5

Source: Adapted from The 28th Report of the Association of Indian Automobile Manufacturers (AIAM), Bombay, 1989, P.27 (These demand projections have been made by the sub-group appointed by the Eighth Plan Working Group on Road Transport for the Eighth Five Year Plan).
The product-mix of the Indian automobile industry has changed significantly over the years. Until the early 1970s, commercial vehicles constituted one-third of the private transport vehicles and the market was small and stagnant. By the end of the seventies, personal transport vehicles increased to nearly six times the commercial vehicles. During the 1980s, further diversification took place. Personal transport vehicles, especially two-wheelers, became increasingly available. As a result, by the end of 1980s, personal transport vehicles constituted more than 15 times of the commercial vehicles.

During 1991-92, there was a decline in demand for automobile products resulting in 11 per cent decline in sales. Various factors were responsible for the drop in sales, inflation being one reason for the decline in sales of personal vehicles. Another major reason was the reduction of rate of depreciation admissible on vehicles from 33 per cent to 20 per cent. Further, this rate can be charged on a pro rata basis, depending on the date of purchase. This meant losing out on the year-end sales of vehicles, especially to the corporate clients. Moreover, the high operating cost due to rise in petrol prices was a deterrent for postponing fresh purchase of vehicles. However, the excise relief provided to the automobile industry in the 1993-94 Union Budget is expected to boost sales of automobile products.
2.4.2 Pricing

The pricing of vehicles in the automobile industry seems to have become the bone of contention between the manufacturer and the consumer. Although all types of vehicles experienced rise in prices in 1985 -- when vehicles produced by Japanese collaborations came on the roads -- yet it is the light commercial vehicles segment in the industry which seems to be drawing flaks from all quarters.

Ever since the LCVs were first introduced in the market in December 1986 with Japanese collaboration, LCV manufacturers have increased the price of their product 24 times. Besides, in December 1990, several manufacturers raised the prices of their vehicles thrice in a period of less than a fortnight. Consequently, over the last three years the prices of these vehicles have gone up by more than Rs 1.5 lakh. Similarly, the car manufacturers too have increased their prices quite invariably. The public sector undertaking, MUL, has created a record of sorts by raising the prices of its products three times in the course of single 12-month period. The two-wheelers segment has also been witnessing price hikes more often than not in the past five years.

The industry puts the blame of constant price hikes on the 'misbehaviour' of the yen-rupee exchange rate. In line with the Government's liberalisation policy, the import pricing
was fixed in yen instead of the dollar. But the unrelenting appreciation of yen against the rupee since 1982 increased the cost of imported components by at least three times. Other reasons assigned for constant rise in prices of vehicles include non-availability of raw materials from within the country, and incidence of high excise and customs duties. By the estimates of their own phased manufacturing programmes submitted to the Government, several manufacturers should have brought the level of indigenisation to 95 per cent by 1991. But, as things stand, about 20 per cent of components is still imported.

The raw materials constitute a major proportion of vehicle cost. Since most of the raw materials have to be imported, the cost of vehicle keeps rising when the procurement of raw materials is costlier. The increase in prices of steel and aluminium is another reason for rise in prices of vehicles.

Imposition of higher excise duty on fuel-efficient vehicles in 1988-89 budget too increased the price of automobile products. The increase in freight charges on pig iron, etc. and hike in tyre prices are some other reasons of price hike in the automobile industry. Ancillary units have also raised prices after their raw material costs went up. Moreover, lack of economies of scale and poor capacity utilisation have contributed in their own way in pushing up the prices.

During the current recessionary phase, many manufacturers absorbed a part of the increased costs to attract buyers.
This, however, led to decline in profitability. The excise relief in the 1993-94 Union Budget was passed on to the consumers to boost sagging sales. Notwithstanding the frequent price increases, at present, the Indian automobile products are highly price competitive.

2.4.3 Product Promotion

Different promotional activities are undertaken in the automobile industry to cater to the needs of different segments. A specific promotional mix is designed to the needs of the user in each segment. For the promotion of its products, the automobile industry has been adopting a permutation and combination of various promotional strategies.

For trucks and buses, the pay-load capacity of the vehicle is important. Usually, the manufacturers produce trucks which can carry a load of 8-16 tonne. The promotional activity in such a case is adopting sales promotion through sales teams to bulk consumers like state road transport corporations, large private transport companies, heavy vehicle fleet operators, and other institutional buyers.

To the car user fuel-efficiency, utility of the vehicle, and style is important. The luxury car user prefers sophisticated design and comfort. As a result, producers of passenger cars have either changed their design to suit
consumer choice or have collaborated with overseas car manufacturers to increase fuel-efficiency of the vehicle, or have combined both.

The promotional strategy for two-wheelers has been in the form of improved fuel-efficiency, adaptability to local conditions, and better look. Companies operating in this segment usually promote their product and its qualities through electronic and print media—similar to the car and jeep manufacturers. However, Enfield India— the maker of heavy duty and rugged motorcycles— has also relied on institutional sales by selling their product to armed forces, paramilitary forces, and the police.

Product promotion has gained considerable importance in the post-liberalisation period. Due to the increased competition—especially in the two-wheeler segment—there is a noticeable shift in the promotional strategies since 1985. Several companies have embarked upon aggressive methods for sales promotion. One strategy is to set up auto financing subsidiaries to help the prospective buyers. Almost all major companies have introduced hire-purchase scheme with the specific objective of boosting sales of its products. Noteworthy is the fact that except for a few, all such subsidiaries have come into existence in the post-liberalisation period.

Moreover, many banks and financing agencies have come forward to offer consumer finance on attractive terms. The
prevailing interest rates vary from 10 to 14 per cent flat. Many banks provide up to 100 per cent finance including cost of accessories, taxes, etc. Apart from group finance schemes, they also offer individual finance with small down payments. As customers would like to own their vehicles today and pay for the same in convenient instalments, such a promotional strategy has largely been successful.

In order to promote their products during the current recession, some companies provided special dealer incentives while others launched economy models which were priced lower -- for example, MUL's Omni brand of passenger vans are cheaper by about Rs 25,000. Premier Automobiles Ltd started offering a three-year warranty to boost its sales. Further, with demand saturating in the urban market, manufacturers started promoting their products in the rural areas. An interesting shift witnessed during recession was that instead of marketing products, manufacturers were marketing their finance schemes.

2.4.4 Distribution

There exists an elaborate distribution network through which various types of automobile products are supplied to the consumer. More than 5,000 dealers of automobile vehicles in the country stock and market the various kinds of vehicles. It must be mentioned that an automobile dealer is the vital link between the manufacturer and the customer,
and most important of all between the customer and product. It is his role that promotes the sales first, and it is his service that promotes it again and again\textsuperscript{38}. The dealers have a unified organisation at the national level which is known as the Federation of Automobile Dealers Association (FADA).

With the emergence of new market conditions, the role of dealers is changing rapidly. Manufacturers are looking for small, eager but performing dealers with a sound financial base. They are also extending their own field force to support dealers' activities. Manufacturers are also taking up campaigns of customer contacts to build up brand and customer loyalty. After sales service is becoming as important as the distribution network itself. Dealers are expected to invest in this area and extend exclusive services\textsuperscript{39}.

In the post-liberalisation period, some companies have themselves opened their own subsidiaries for distribution facilities. These subsidiaries of automobile producers sell their product either under hire-purchase scheme or by giving other liberal incentives. As regards the institutional buyers, the companies themselves negotiate and directly distribute the products to the customer.

Due to increased competition during the past few years, companies have started distribution facilities on a country-
wide basis, rather than concentrating on demographic distribution, in order to explore newer markets. These facilities are now also being extended to semi-urban, mufassil and rural areas to locate new buyers of their products.

2.5 THE STATE OF COMPETITION

The Indian automobile industry is more than four decades old now. Earlier, in the 1940s, only overseas companies like General Motors and Ford used to assemble vehicles by CKD kits. But due to change of governmental policy, they were forced to wind up their business. Till early 1980s only two companies -- HML and PAL -- shared the total output of about 60,000 passenger cars. The rest of the requirement were met by six other companies.

The year 1983 marked an important watershed in the history of the Indian automobile industry. The advent of the public sector Maruti Udyog Ltd, and its entering into technical and financial collaboration with Suzuki Motor Co. of Japan, to produce 800 cc cars opened the floodgates of contemporary Japanese technology into the Indian market. The Indian Government's liberalisation of industrial policy in 1985 set in motion a near total transformation of the industry through modernisation and upgradation of technology which had for decades experienced obsolescence.
2.5.1 **Major Players**

After the announcement of liberalisation measures, a new generation of companies have come up in Indian automobile market. The new generation companies can be classified into two groups -- the older ones which have gone for foreign tie-ups, and the new starters in the market. Exhibit 2.12 lists the major automobile companies in India.

**Exhibit 2.12 : Major Automobile Manufacturers**

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>MANUFACTURERS</th>
<th>CATEGORY</th>
<th>MANUFACTURERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>M &amp; HCVs</td>
<td>Ashok Leyland Ltd TELCO</td>
<td>Jeeps</td>
<td>Mahindra &amp; Mahindra Maruti Udyog Ltd</td>
</tr>
<tr>
<td>LCVs</td>
<td>Bajaj Tempo Ltd DCM Toyota Ltd Eicher Motors Ltd Mahindra &amp; Mahindra Swaraj Mazda Ltd TELCO</td>
<td>Scooters</td>
<td>Bajaj Auto Ltd Kinetic Honda Motors LML Ltd Maharashtra Scooters</td>
</tr>
<tr>
<td>Cars</td>
<td>Hindustan Motors Maruti Udyog Ltd Premier Automobiles</td>
<td>Motor-cycles</td>
<td>Bajaj Auto Ltd Enfield India Ltd Escorts Ltd Hero Honda Motor Ltd TVS-Suzuki Ltd</td>
</tr>
<tr>
<td>Three-Wheelers</td>
<td>Bajaj Auto Ltd API Ltd</td>
<td>Mopeds</td>
<td>Bajaj Auto Ltd Kinetic Engg Ltd Majestic Auto Ltd TVS-Suzuki Ltd</td>
</tr>
</tbody>
</table>

As of now, there are just two companies manufacturing medium and heavy commercial vehicles (MHCVs and HCVs), eight companies manufacture light commercial vehicles (LCVs), four companies are actively engaged in the manufacturing of passenger cars, two are manufacturing jeeps, four companies are producing scooters, five manufacture motorcycles, six
are engaged in the manufacture of mopeds and two companies are manufacturing three-wheelers. Out of the 26 active manufacturers of automobile products, ten have come up in the post-liberalisation period. As a result, competitiveness within the industry has increased in the last eight years.

2.5.2 Market Share

A spate of foreign collaborations in the last decade, the introduction of newer types of vehicles produced by better technology and the prescribing of minimum economic scales of operations are some of the reasons which have increased the level of competition within the industry. As a result, the market share of various companies too have been undergoing rapid changes. Exhibit 2.13 shows the market share of major automobile companies.

TELCO has the largest share of 73 per cent in the medium and heavy commercial vehicles category, followed by Ashok Leyland which holds 27 per cent of the market share. In the light commercial vehicle segment, TELCO leads with a market share of 46 per cent followed by Bajaj Tempo which has 26 per cent of the LCV market share. Among the passenger car manufacturers, Maruti Udyog Ltd is a formidable market leader with a market share of 70 per cent. In case of jeeps, Mahindra & Mahindra Ltd has a whooping 83 per cent of the market share. The only other jeep manufacturer besides M & M is Maruti Udyog Ltd which commands 17 per cent of the market share. With Scooter India Ltd ceasing production due to
accumulated losses, the three-wheeler segment too has just two manufacturers. Bajaj Auto Ltd has a formidable market share of 91 per cent while API accounts for the rest 9 per cent.


<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>M &amp; HCVs</th>
<th>Jeeps</th>
<th>LCVs</th>
<th>Scooters</th>
<th>Three-Wheelers</th>
<th>Mopeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELCO</td>
<td>73</td>
<td>Mahindra &amp; Mahindra</td>
<td>83</td>
<td>Bajaj Auto</td>
<td>91</td>
<td>Kinetic Engg</td>
</tr>
<tr>
<td>Ashok Leyland</td>
<td>27</td>
<td>Maruti Udyog Ltd</td>
<td>17</td>
<td>Maharashatra Scooters</td>
<td>64</td>
<td>TVS-Suzuki</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eicher Motors</td>
<td>28</td>
<td>Majestic Auto</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DCM Toyota</td>
<td>5</td>
<td>Bajaj Auto</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mahindra &amp; Mahindra</td>
<td>5</td>
<td>Others</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Swaraj Mazda</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Others</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Cars</th>
<th>Jeeps</th>
<th>Three-Wheelers</th>
<th>Mopeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maruti Udyog Ltd</td>
<td>70</td>
<td>Hero Honda</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Premier Automobiles</td>
<td>20</td>
<td>Bajaj Auto</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Hindustan Motors</td>
<td>10</td>
<td>Escorts</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bajaj Auto</td>
<td>91</td>
<td>TVS-Suzuki</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>API</td>
<td>9</td>
<td>Majestic Auto</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bajaj Auto</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Others</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>


Bajaj Auto has the largest market share (64 per cent) in the scooters category of two-wheelers segment followed by Maharashatra Scooters (13 per cent) and Kinetic Honda (12 per cent). The scenario related to market share in the motorcycle category is, however, different where Bajaj Auto...
has a market share of just 27 per cent. The market leader is Hero Honda with a share of 31 per cent. The share of motorcycle produced by Japanese collaborations in the total motorcycle market is 94 per cent. TVS-Suzuki has 33 per cent of the mopeds market followed by Kinetic Engineering (31 per cent) and Majestic Auto (18 per cent).

2.5.3 Export Market

A major advantage of the automobile industry's growth is the fact that for the first time the country has been able to export cars not only to African, Australian and Asian markets but even to the rigidly quality-conscious European market. This success on the export front, however, has largely been confined to Maruti Udyog Ltd. Other exporters of automobile products include Mahindra & Mahindra (jeeps), TELCO (commercial vehicles), and Bajaj Auto (scooters and three-wheelers). The value of total automobile exports from India is placed at around Rs 619 crore. Exhibit 2.14 shows automobile exports since 1985-86.

Exhibit 2.14: Automobile Exports

<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOTAL EXPORTS (in Rs crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985-86</td>
<td>67</td>
</tr>
<tr>
<td>1988-89</td>
<td>210</td>
</tr>
<tr>
<td>1989-90</td>
<td>270</td>
</tr>
<tr>
<td>1990-91</td>
<td>312</td>
</tr>
<tr>
<td>1991-92</td>
<td>619</td>
</tr>
</tbody>
</table>

Although, at present, exports constitute a small part of the market yet many manufacturers are trying to carve a niche for themselves as it is a highly significant area for potential growth. Since many countries are dependent on import of automobile products and the domestic market will be saturated in future, many companies are taking steps to consolidate and increase the recent growth in exports. These include homologation of products exportable to major developed countries, further upgradation of manufacturing technology and productivity for achieving quality/price competitiveness, closer contact with overseas markets, and the induction of innovative product technology. During the pre-liberalisation period factors like obsolete technology, high product costs, lack of competition and a starved domestic market had hampered the automobile industry's export performance.

At present, India exports its vehicles to Bangladesh, Bhutan, Ethiopia, France, Germany, Hungary, Italy, Kenya, Malaysia, Mauritius, Nepal, Oman, Poland, Qatar, Spain, Sri Lanka, Thailand, Uganda, UAE, UK, Yugoslavia, Zambia, etc. and some other Asian and African countries. Exports to West European countries is a recent phenomenon. MUL has entered the French market quite strategically as the country is considered to be the gateway to European Community.

2.5.4 Major Suppliers

The automobile component industry is an integral part of the main industry and the fortunes of the two are closely
interlinked. An average automobile is constituted of near about 14,000 parts, the total body being divided into a number of systems and sub-systems. Suppliers of automobile components considerably influence the industry as it is critically dependent on the auto parts suppliers. To meet the demand for the growing vehicle industry, a number of new projects with foreign technical collaborations have come up in the component industry. This is in addition to the steps taken by manufacturers to upgrade technology either through in-house research and development, or through technical collaborations for specific products.

The component manufacturers have improved the quality of products and process control equipments because unless the components supplied match specifications in all respects, they are not accepted by automobile producers. Earlier, Indian auto ancillary sector had only outdated production technology and unreliable product quality. However, the last few years have witnessed quite a number of joint ventures for the production of various components and accessories.

Government policy also gave a fillip to the growth of auto ancillaries sector. Stipulation of a minimum indigenous content at the commencement of production, and fixation of rate and period of indigenisation helped in the development of component sector. Another major step was broad banding of component industry enabling the existing manufacturers to
extend the product range and benefit from the optimum use of resources and economies of scale. The automotive component industry was delicensed in 1985.

Presently, there are more than 250 units in the organised sector and over 5,000 units in the small scale sector. The current turnover by the automobile component units in the organised sector is Rs 2568 crore. In 1981-82, there were about 50 units in operation in the organised sector with production worth Rs 18 crore. Thus, alongside of the growth in the manufacture of vehicles, the component industry has not only grown in size but has also acquired the expertise and capability to produce a majority of the components required by the vehicle manufacturers. Exhibit 2.15 shows the value of production by the automobile component industry.

The development of an indigenous automobile component industry is very significant as in its absence the automobile industry would not be able to resist price increase in the end-product. A quality automobile component industry would also help in bringing down the country’s import bill and earn foreign exchange. At present, India exports automobile components worth Rs 380 crore.

Besides the immense contribution of the vendors to the automobile industry, there exists a darker side too. Spurious and sub-standard automobile spares, which dominate the replacement market pose a serious threat to original
equipment manufacturers (OEMs). The replacement market accounts for one-third of the OEMs turnover. Spurious parts, which are either reconditioned, scrapped or rejected genuine parts, or duplicates, thrive in the replacement market because of their low price and easy availability to consumers, while at the same time they ensure the dealers a higher profit margin, better credit facilities and uninterrupted supplies.

Exhibit 2.15: Production Value of Auto Components

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (Rs crore)</th>
<th>Year</th>
<th>Value (Rs crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970-71</td>
<td>133</td>
<td>1987-88</td>
<td>1180</td>
</tr>
<tr>
<td>1975-76</td>
<td>252</td>
<td>1988-89</td>
<td>1543</td>
</tr>
<tr>
<td>1980-81</td>
<td>532</td>
<td>1989-90</td>
<td>1790</td>
</tr>
<tr>
<td>1985-86</td>
<td>975</td>
<td>1990-91</td>
<td>2156</td>
</tr>
<tr>
<td>1986-87</td>
<td>945</td>
<td>1991-92</td>
<td>2568</td>
</tr>
</tbody>
</table>


2.5.5 Major Buyers

The large scale buyers of automobile products -- especially all types of commercial vehicles -- are state road transport undertakings (SRTUs) which own a fleet of over one lakh buses, private transport companies, fleet operators, defence, airways, large public and private sector companies. Institutional buyers are primarily organised in the form of dealers, and buses and truck operators' associations.
However, there is absence of any buyers' association at the national level. Interestingly, despite stiff competition in the automobile industry, buyers have no power to exert influence on the price of automobile products.

Not in the too distant past, only the heavy and medium commercial vehicles found institutional buyers. But as of now, even passenger cars are bought by defence, government ministries, multinational companies, and other public and private sector enterprises. Jeeps have always been sold to the armed forces, paramilitary forces, police, and the forest departments. Three-wheelers too find institutional buyers but their number is considerably less. After the introduction of LCVs in 1985, many buyers of medium commercial vehicles are switching over to LCVs. Since LCVs are available in different pay-load capacities -- ranging from 2 to 6 tonne pay-load -- it is more convenient and fuel efficient.

However, with the advent of pick-up vans, the LCV manufacturers are bound to face stiff competition. Pick-up vans are capable of multi-faceted operations, doubling as carriers of goods as well as personal transport vehicles. Moreover, the fast growing services -- from courier to repairment -- find them more useful and convenient than heavier and conventional commercial vehicles. It can even be used as substitutes for the jeep, especially in the rural markets.
Among the two-wheelers, it is Enfield India whose motorcycles are sold to defence and other armed forces because of their sturdiness, adaptability to different road conditions, and greater horse power. Of late, the two-wheeler segment has been witnessing changing buyer preferences. In the period immediately following Government’s liberalisation policy, the preference for motorcycles produced by Japanese collaborations were on the rise, and scooters accounted for just 37 per cent of two-wheeler sales compared to 30 per cent of motorcycles. However, the preferences of buyers are reverting to scooters. Motorcycles now account for 26 per cent of the sales while scooters are accounting for 50 per cent. The market segment for mopeds is also shrinking. In 1987-88 mopeds accounted for 35.6 per cent of total two-wheeler sales which has now come down to 24 per cent.

2.6 RESOURCE USAGE

The Indian automobile industry -- which is a material-intensive industry -- has perennially suffered due to lack of raw materials despite the availability of cheap labour. Moreover, since the announcement of liberalised policies in 1985, the industry has also witnessed fragmentation of capacity due to the presence of several manufacturers which have capacities far too small for any meaningful scale of economies.
Lack of long-term planning with regard to the industry and provision of a protective cover to it off-set competition among the automobile manufacturers in the initial decades. With excise duties on final products and customs duty on imported components fluctuating almost every year, the Government policy towards the Indian automobile industry seems to be that of devising variations on a central theme.

The growth of trade unionism in India, too, has had its impact on the industry. It is worth mentioning here that the first "bandh" organised in the country was in support of the workers' demand of Premier Automobiles Ltd in 1954.

2.6.1 Raw Materials

Automobile manufacturing is a material-intensive process. A number of raw materials are used by the industry, the supply of which exerts considerable influence on production. Thus, materials management is an important managerial task in the automobile industry.

The primary raw materials used by the automobile industry are: steel, aluminium, lead coated sheets, aluminium forgings, cold-rolled coils and sheets, etc. Modern automotive applications, especially for fuel-efficient vehicles, increasingly use raw materials like alloy and higher grade steels, aluminium grades, engineered plastics,
and rubber components. Most of these materials are imported as these are not indigenously available.

Non-availability of cold-rolled (CR) coils and sheets threatens the production schedule of automobile manufacturers as these are imported and industry is heavily dependent on them. Moreover, there is a severe shortage of CR coils and sheets in the world market because of heavy demand by other major automobile manufacturing countries. Deliveries of these coils are usually made only six to nine months after the orders are placed. Similarly, the Indian steel makers do not supply extra deep draw (EDD) quality steel sheets, lead coated sheets used in petrol tanks, and aluminium forgings.

Most of the advanced raw materials such as engineered plastics, zinc alloys and other non-ferrous metals are imported through canalising agencies like MMTC and STC through a long and tedious process. Moreover, there are wide variations in the prices of raw materials in the international market. Further, the quality of components and equipments is not consistent as the quality of basic inputs is inconsistent in the world market. The cost of imports fluctuate with changes in import duties.

While the industry is improving production and sales in the domestic and overseas markets, the manufacturing costs have been increasing steadily on account of dearer inputs and
upwards adjustments in the prices of aluminium and steel, as also of coal, nickel, and automotive tyres. A comparative analysis of select steel prices reveals that the differential between domestic and international prices ranges up to 126 per cent to the disadvantage of the domestic economy. Prices of steel and aluminium have risen to more than 40 per cent in the past few years. Even the specialised paints used by the automobile sector has recorded a steep rise in prices. There are also obstacles like the non-availability of power and other inputs at reasonable cost for the industry to remain competitive. As a result, the automobile industry is facing a constant threat of declining profitability.

In view of the rising operational costs, the margin of manoeuvre before the automobile producers has narrowed down. Many are improving the norms of production by optimising the consumption of raw materials. As it is, the wastage of raw materials in the production process, is rather high -- in some cases as high as 30 to 40 per cent.

2.6.2 Cost Structure

Raw material costs constitute about 50 to 60 per cent of the total manufactured price of a vehicle, though in some cases it is 65 per cent or even more. Therefore, the industry needs advanced raw materials at low cost to combat the ever-increasing competition. Contrarily, there is a
marked rise in manufacturing cost of automobile products due to the sharp appreciation of the Japanese currency Yen and slow progress of indigenisation*. Coupled with inflated cost of imports, the industry is facing losses, mounting debts and declining profitability. In 1991-92, increases in the administered prices of steel, aluminium, other alloys, power, fuel, etc. led to high costs of indigenous inputs. On the other hand, import compression measures combined with continuous depreciation of the rupee hiked the cost of imported components which in the case of LCVs is as high as 45 to 50 per cent.

Taxes and duties constitute as much as 70 to 80 per cent of the price of a vehicle. And with Government policy with regard to excise and customs duties changing almost every year, the manufacturers have linked the prices of vehicles with every budget. The high rates of customs and excise duties have led to price escalations all round, and ultimately it is the buyer to whom the additional burden is passed on.

However, the presently recession-hit automobile industry heaved a sigh of relief when excise duty was cut in the 1993-94 Union Budget. Excise duty on passenger cars has been brought down to 40 per cent as against the earlier duty of 55 per cent. Similarly, excise duty on buses, trucks and three-wheelers has also been lowered from 23 per cent to 15 per cent.
per cent. This benefit is also applicable to diesel LCVs as well. Due to falling volume of sales in the recent past, almost the entire excise relief has been passed on to the consumers by most manufacturers. As a result, prices of automobile products have come down.

Otherwise also, Government policy have had a direct impact on the cost structure of the industry in the past. For instance, in the Finance Act 1989, the Government changed the structure of excise duty applicable to different types of vehicles. This duty, ranging from 15 to 25 per cent, was applied on the basis of cubic capacity of the engine. In addition to this, a special excise duty of 5 per cent was also levied. Such a duty structure meant a substantial increase in consumer prices -- especially for vehicles above 2000 cc. Cumulatively, at times, there is as much as 198 per cent duty on imports. Labour costs, however, is barely 10-15 per cent of the price of a vehicle. In case of a passenger car, labour cost is just 2 per cent of its cost.

Despite all such constraints, the growth in production of automobiles has remained unhampered except for the recent recession in the industry. However, due to the high incidence of customs and excise duties, and the heavy depreciation charges on the manufacturing facilities, the profitability of companies is not as high as one would expect from its impressive turnover.
2.6.3 **Economies of Scale**

The earnings of Indian car makers under the controlled price regime and low licensed capacity of the past three decades were so poor that they could hardly meet the investment needs of development from internal resources\(^7\). The experience of the early 1930s showed clearly the benefits that large volume production could bring for the consumer in terms of low cost and product reliability\(^8\).

To counter the uneconomic scale of operation, the scheme of Minimum Economic Scale (MES) of operations was introduced in 1986-87 to enable industrial undertakings to expand their installed capacities to economically viable scales of operations\(^9\). Earlier, the scheme of re-endorsement of licensed capacity was announced in January, 1986 in order to encourage fuller utilisation of capacity and maximisation of production\(^10\). The minimum licensed capacity per annum for different categories of vehicles is shown in Exhibit 2.18.

**Exhibit 2.18 : Minimum Economic Scale of Operations**

<table>
<thead>
<tr>
<th>TYPE OF VEHICLE</th>
<th>MINIMUM LICENSED CAPACITY PER ANNUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Cars</td>
<td>50 (30 for cars above 2,000 cc)</td>
</tr>
<tr>
<td>Two-wheelers</td>
<td>200 (500 for units expected to export)</td>
</tr>
<tr>
<td>Commercial Vehicles</td>
<td>25</td>
</tr>
</tbody>
</table>

Uneconomic scales of operation no longer apply to many segments of the Indian automobile industry. Economies of scale have been made possible by the burgeoning domestic market, especially in the case of two and three-wheelers, jeeps and commercial vehicles.

However, with liberalisation of policy for foreign technology induction and production, there was over-licensing of capacity and many new units invested heavily in the creation of new facilities. These developments led to underutilisation of capacity as the licensed and installed capacity exceeded the growing demand -- in some segments to the extent of 100 per cent.75

Exhibit 2.17: Registered and Installed Capacity Variations (1991-92)

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>UNITS</th>
<th>REGISTERED CAPACITY</th>
<th>INSTALLED CAPACITY</th>
<th>% LESS THAN REGIS.CAP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVs</td>
<td>13</td>
<td>3,13,000</td>
<td>2,64,500</td>
<td>15.5</td>
</tr>
<tr>
<td>Cars</td>
<td>5</td>
<td>2,30,000</td>
<td>2,16,000</td>
<td>6.1</td>
</tr>
<tr>
<td>Two-Wheelers</td>
<td>24</td>
<td>50,00,000</td>
<td>32,00,000</td>
<td>36.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>42</td>
<td>55,43,000</td>
<td>36,80,500</td>
<td>33.8</td>
</tr>
</tbody>
</table>


It is evinced from the exhibit that installed capacity is far less than the registered capacity. Most of the manufacturers are using about 60 per cent of their capacity.
They have not been able to implement the subsequent phases of expansion because of delay in implementing the indigenisation programme, rising cost of components and, more recently, due to inadequate growth in demand. Government's earlier policy to locate new units in backward areas also thwarted potential economies of scale.

2.6.4 Labour and Industrial Relations

The automobile industry is a significant generator of employment. At present, it employs about 2,50,000 persons in the vehicle and component sectors. The automobile sector directly accounts for 3.5 per cent of manpower engaged in manufacturing activities. In India, the automobile industry directly employs 0.01 per cent of the total population as against 6 per cent in Japan. The labour costs too are lower in India. However, with increasing competition, India's advantage on account of cheap labour has more or less been wiped out.

Automotive sector is a key element of engineering industry, and there is an unending supply of skilled engineering labour. Therefore, a resurgent auto industry in India has provided an impetus to a very wide range of economic activity. The production of a single car under Indian conditions results in over three jobs being created (both directly and indirectly), and an additional five jobs are created in the operation and maintenance of each vehicle.
Employment apart, the spread of an automobile revolution after 1985 has also transferred industrial skills into less developed and remote areas and hence accelerated the overall qualitative development of the nation's manpower base.

Out of the total workforce of 250 million, only 40 million of these workers are in the organised sector. And only 30 per cent of the workforce in the organised sector is unionised. Even the industrial relations within the automobile industry has not been very cordial. The disturbed industrial relations has been mainly due to technology upgradation and increased automation which has either increased the workload on workers or has rendered them jobless with closure of some units that could not compete in the market place despite modernisation. Moreover, the manufacturers have done little with respect to creation of alternative jobs, retraining, and redeployment. The science of ergonomics -- which revolves around the principle of changing jobs to suit the convenience of human beings -- has not been applied in the automobile industry. As a result, many prominent companies were hit by labour strife.

During recession in 1991-92, many companies retrenched their casual workers. In some companies, like Maruti Udyog Ltd, employees have been carrying lesser pay packets as the drop in production has hit productivity-linked salary schemes.
2.7 MODERNISATION AND UPGRADATION OF TECHNOLOGY

The spate of foreign collaborations have somewhat bridged the massive technology gap that divides Indian vehicles from their international counterparts. Outdated design and manufacturing processes are being replaced by more modern ones. The primitive technology of ancillaries and units supplying raw materials and consumables (which includes engine oil, grease, paint, solder, connecting wire, etc.) is also changing.

2.7.1 Improvements in Product Technology

The automobile industry is predominantly a borrower of new technology developed elsewhere. These technologies are developed in other industries for applications hardly connected to automobiles. However, there has been considerable improvement in the product technology of vehicles since the announcement of liberalisation policies. Product technology can be decomposed into certain clearly identifiable sub-sections -- the power unit, transmission mechanism, brakes, suspension, windshield wiping, etc. 81

With the introduction of new generation vehicles and indigenisation programmes, the product technology has been upgraded 82. A host of overseas companies have transferred assistance to units engaged in the manufacturing of sub-systems. Considerable advances have been made in the areas
of carburettors, ignition systems, pneumatic suspensions, magnetos, etc. Similarly, with the influx of foreign technology, quality of other components such as contact breakers, ignition coils, horns, bulbs, etc. have now come up to international standards.

In the area of finishing technology such as plastics, paints, rubber products, etc., Indian products compare favourably with manufacturers the world over. Electroplating technology is now virtually outdated. Besides, the industry now uses the more corrosion-resistant cathodic painting. Plastic suppliers, too, have improved their methods of reaction injection moulding to the stage where plastic panels for some limited applications in automobile industry are now possible at competitive cost.

2.7.2 Upgradation of Design Technology

Sleeker streamlined bodies, lighter but powerful engines, fuel-efficiency and aerodynamics of the vehicles, etc. have witnessed an upgradation in their standards during the past few years. Primarily, design technology is supposed to coordinate these systems, and the product technology, to work together harmoniously.

Considerable breakthrough has been made in the use of high strength low-weight materials for various components. Since the fuel consumption of the vehicles depend on the weight it
carries, reducing the weight to the maximum extent possible is most advantageous. As a result, steel is being replaced by polymer-based products. But Indian automobile manufacturers are still using sheet metal instead of plastics used by leading manufacturers all over the world. However, in India, vehicles need to have a longer life than required overseas, and therefore an across-the-board replacement of sheet metal parts has not been very successful. Consequently, emphasis is being carried out on the 'optimisation of components'. Besides, certain design modifications in components are also being undertaken in order to bring down the price of the vehicles.

With petrol becoming costlier, manufacturers are unable to ignore fuel-efficiency of the vehicles. Efforts have been made with regard to design improvements and an engine which can use a cheaper fuel -- namely diesel. The greatest advantage of diesel engine is that it uses less fuel than the petrol engine when the same power and torque output is applied. Besides, the financial saving that can be gained through lower fuel consumption, the substantial price difference between petrol and diesel is the additional gain. The Government of India, with funds from UNDP and the R & D cess of the Indian automobile industry, has set up a separate Engines Laboratory at the Automotive Research Association of India (ARAI), Pune, for diesel engine development.
There has also been tremendous improvement in fuel-efficiency of vehicles with petrol engines. The new vehicles, while delivering more power, use lesser fuel. It is estimated that a weight reduction to the extent of 10 per cent would reduce fuel consumption to the extent of 5 per cent. Moreover, the industry is now developed enough to replace two-stroke engines by four-stroke ones as they save 15 to 25 per cent on fuel. Some sections of the industry are also trying to develop alcohol gasohol based engines to cope with the increased outflow of foreign exchange in fuel import. Already, the use of compressed natural gas (CNG) has been introduced recently. Moreover, the aerodynamics of the vehicle are being improved to reduce wind resistance at higher speeds as air resistance also has a direct relevance to fuel consumption.

2.7.3 Modernisation of Production Technology

The quality, cost and competitiveness of automobile product depends on as much as production technology as on product technology. Manufacturing or production technology has always been the mainstay of automobile technology ever since it became a mass production item from the earlier custom-built product. Cost-reduction technological advances are mostly achieved through new production technology.

Automatic and CNC (computerised numerically controlled) machines are replacing the older ones in automobile plants.
to improve quality, productivity and output per man. Therefore, automation and flexible machines are becoming the order of the day. And efforts are being made to eliminate non-value added systems of operations.

Since automobile industry is an user industry of machine tools industry, the demand for machine tools is shifting from traditional general purpose machines to specific, high technology ones. For accelerated automation, the machine tools user industries -- especially the automotive industry -- are importing machine tools to meet their requirements of high precision and advanced technology machines. The imported machines include tool room machines with sophisticated technology, and NC (numerically controlled) and CNC machines. Moreover, the introduction of "flexible manufacturing" has enabled assembly work to be more economical.

The influx of foreign technologies in the automotive sector has enabled the forging industry to induct necessary forging technology so as to meet the requirements of closer tolerance forgings. The benefits of technology upgradation in forging industry has resulted in improvement in quality and productivity, saving of scarce raw materials and input energy. However, the area of tooling and testing has been a contentious one for the automobile industry. High costs deter the Government from establishing a public facility while industry, on its part, shied away because of fear of controls and lack of confidentiality.
2.7.4 Research and Development (R & D)

The Indian automobile industry is still in its infancy in the area of research and development (R & D). The R & D so far carried out by most manufacturers has only been in the areas of tooling, testing, and product development. The industry has yet not developed the ability to design a vehicle which meets international standards, except for the Tata Engineering and Locomotive Company (TELCO) which has indigenously designed and is producing cars. Even available R & D institutions like ARAI are not exploited to their full capabilities by auto manufacturers.

The Indian automobile industry's total in-house R & D expenditure is about Rs 135 crore. Even after making allowances for much lower wage levels in India, the R & D expenditure of leading automobile manufacturing countries are over 75 to 100 times that of India.

However, there exists a formidable R & D centre for use of the automobile manufacturers. The Automobile Research Association of India, established in 1966, is a non-commercial cooperative industrial research organisation set up by the Indian automobile industry in association with Government of India. It provides services to the Indian automobile manufacturers in the field of research in automotive engineering, design, development and evaluation of vehicles, engines, equipments, and ancillary items; and
standardisation and technical information. At present, the efforts of the industry are directed towards vehicular emission control, design and engine development.

2.8 PRESENT SCENARIO AND FUTURE PROSPECTS

The process of liberalisation has unshackled the Indian automobile industry. Manufacturing of vehicles had been delicensed, though production of the vitally important passenger cars continued to be as tightly regulated as before. Finally, on April 15, 1993 the passenger car segment was delicensed. When the Government had removed LCV production from the purview of licensing, it was ridiculous continuing with the licensing system for manufacture of cars as broad banding of items were permitted in the automobile industry. Removal of passenger cars from the licensing list would help newcomers in entering the market. Already some overseas automobile manufacturers have shown an interest in producing cars for exports because of the availability of cheap labour, and well-developed vendors for sourcing their component supplies, in the country.

Taking the automobile industry as a whole, it is expected that at least in the short run auto companies will not perform too well. A number of factors, since mid-1990 have adversely affected the industry with some of its segments taking most of the brunt. The growth of the industry suffered a set-back firstly due to the Gulf crisis of August
1990 and to some degree due to the impact of fiscal and monetary constraints placed by Government in trying to balance the Indian economy. Curbs on imports, devaluation, restrictive and costlier credit policy etc. have all contributed to this slow-down. The effect on different segments and companies has varied depending on the extent to which they were dependent on these factors. The situation was compounded following disturbances due to political and religious factors.

Accustomed to a highly-protective regime, the current strengths and weaknesses of the automobile industry are a direct result of past Government policies. A ‘partial liberalisation’ in the licensing policy led to the entry of 45 two-wheeler companies. The intense competition that resulted led to the closure of many units. Now barely ten companies and groups are active in this segment. And four companies among these active players -- Enfield India, Kelvinator India, Gujarat Narmada and Ideal Jawa -- may not remain in business for too long. Nonetheless, by the mid-1990s, India may become the largest two-wheeler manufacturer in the world. This segment is also expected to show the biggest export-led growth.

An unexplored niche that may come up in future is that of the ‘miniped’ -- or moped with engines less than 35 cc. These ‘motorised bicycles’ do not come within the purview of
the Motor Vehicles Act and therefore do not need a driving licence. As these are cheaper and more fuel-efficient, they can gain acceptance among school-going youngsters, the elderly and the low-income group who want to graduate beyond a bicycle but cannot afford a moped. Enfield India has already launched its 24 cc Mofa in this emerging segment.

In the higher engine capacity in two-wheeler segment, there is hardly any scope for creation of new products. At best, the engine capacity of motorcycles may go upto 200-225 cc. However, there is a possibility of upgradation of technology and wider model choices. Besides, the diminishing attraction for mopeds may lead to newer types of mopeds and other alternatives such as scooterettes. Qualitative and technological product upgradation may see the emergence of mini-motorcycle segment in the coming years. Moreover, the two-wheeler segment is expected to witness some realignment of forces, strategic alliances and friendly-takeovers. As regards motorcycles, economy and performance of the vehicles will gain importance in the near future. A new segment that has the potential to emerge is that of electric vehicles -- especially mopeds and scooters -- with electric starters as standard features.

The optimism for new and advanced products is, however, restricted by the fact that per capita purchasing power is still limited although about one-third of the country’s population is the burgeoning middle-class. Therefore, easier
credit facilities would enhance demand for, and growth of, passenger vehicles.

As past experience of the industry has shown, to what extent the introduction of newer concepts for passenger vehicles would galvanise overall demand is doubtful. However, an appropriate rural vehicle or a 'tractor car', or an all-terrain vehicle (ATV), or an inexpensive three-wheeler for personal transport, or any other non-derivative but original vehicle may open up new niches. This, of course, requires innovativeness, entrepreneurship, and design and developmental capabilities.

The policies of the Indian Government certainly did not favour vehicle manufacturers in the formative years. While automotive technology worldwide achieved newer heights, Indian automobile technology remained stagnant. The lack of any real competitive threat gave local manufacturers, particularly of passenger cars, little incentive to improve production techniques or even engage in active technology absorption. The eighties proved to be a watershed in the Indian automobile industry and saw a marked change in the Government's stance. This came with a growing realisation of the strategic importance of the automobile industry. And in early 1985, one of the late Rajiv Gandhi's first move towards liberalisation was to broad band the four-wheeler segment for existing car and truck manufacturers to
manufacture any four-wheeler without fresh licensing. As indigenous capabilities were limited, most manufacturers needed a foreign collaboration to be able to make any new kind of vehicle. Thereafter, the industry was injected with new technology as never before.

With the spurt in competition brought about by liberalisation, Indian vehicle manufacturers have been forced into improving their products. Unfortunately, our indigenous R & D capabilities are still obsolete. Except for undertaking minor modifications to existing models born out of foreign collaborations, Indian manufacturers, except TELCO, are still incapable of designing a new vehicle.

The technological status of the Indian automobile industry is far behind international standards. R & D, vital for technological self-sufficiency is still being neglected. Indian manufacturers, on an average, allocate less than 1 per cent of their turnover to R & D as against 3 to 6 per cent in the case of leading international manufacturers.

The recent changes announced, and directions set by the new industrial policy, will in future affect the way automobile manufacturers conduct their business. These policies have far-reaching implications and there are several dimensions that manufacturers will have to address to remain competitive and viable. Already many companies have started
finding ways and means of cost control -- something unheard of till recently. Many manufacturers now talk of organisational restructuring to cut cost while others have introduced voluntary retirement schemes (VRS) for their employees, and reduced workforce strength. Besides, technology, quality, marketing and customer service have assumed much greater significance.

The accent on technology will simultaneously bring about an awareness for increased levels of quality. The industry will have to direct its efforts in a manner that the philosophy of Total Quality Management (TQM) is embedded in every aspect of its business operations. It is believed that this decade will ensure technology, marketing and customer service as being of prime managerial concern in the country. Technological innovation and investment in modernisation of processes will result in more fuel-efficient and environment-friendly vehicles. In short, the Indian automobile industry will have to match international standards in the long term.

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