CHAPTER I
INTRODUCTION

ORIGIN AND GROWTH OF TYRE INDUSTRY IN INDIA

Every since the first Indian tyre company, Dunlop rubber company (India) was incorporated in 1926, the tyre industry has grown rapidly and today its is a Rs. 9,000 crore industry. India has 2.61 lakh villages, connected by 6.23 lakh kms of metalled roads and 9.81 lakh kms of unmetalled roads. These villages are linked to small towns and cities. There is a daily traffic of over 4.12 lakh trucks, 1.27 lakh buses, 7.23 lakh cars, and thousands of taxis, two-wheelers, three-wheelers, tractors and animal drawn vehicles on Indian roads[1]. There exists a vast potential for the tyre industry in India. The fortune vehicles on Indian roads. There exists a vast potential for the tyre industry in India. The fortune of the tyre industry depends on the agricultural and industrial performance of the economy, the transportation needs and the production of vehicles. Hence, this is a very sensitive industry, which has to adapt itself to a highly volatile environment.

Market Profile : While the tyre industry is mainly dominated by the organised sector, the unorganised sector holds way in bicycle tyres. The major players in the organised tyre segment consist of MRF, Apollo Tyres, Ceat and JK Industries, which account for 63 percent of the
organised tyre market. The other key players include Modi Rubber, Kesoram Industries and Goodyear India, with 11 percent, 7 per cent and 6 per cent share respectively. Dunlop, Falcon, Tyre Corporation of Indian Limited (TCIL), TVS-Srichakra, Metro Tyres and Balkrishna Tyres are some of the other players in the industry. MRF, the largest tyre manufacturer in the country, has strong brand equity[2]. While it rules supreme in the industry, other players have created niche markets of their own.

**Sector Specifics** : The tyre industry is a major consumer of the domestic rubber production. Natural rubber constitutes 80 per cent of the material content in Indian tyres. Synthetic rubber constitutes only 20 per cent of the rubber content of a tyre in India. World wide, the ratio of natural rubber to synthetic rubber is 30:70. Apart from natural and synthetic rubber, rubber chemicals are also widely used in tyres.

**Segmentation** : The tyre industry caters to three types of markets-original equipment manufacturers (OEMs), replacement and export markets.

1. OEMs

2. The tyre demand from the OE segment is a function of automobile production. The volumes depend on whether the manufacturer has a tie up with any OEMs like Maruti, Telco, Mahindra & Mahindra
etc. Margins are lower in this business and suppliers concentrate on volumes to spread out overheads. The table below gives the proportion of sales to OEMs, STUs and the government sector for different categories in FY2001.

Table 1.1: OEM sales (in nos.).

<table>
<thead>
<tr>
<th>Category</th>
<th>Replacement</th>
<th>% STUs</th>
<th>% OEMs</th>
<th>% Govt.</th>
<th>% Exports</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck &amp; Bus</td>
<td>5637700</td>
<td>65.5</td>
<td>434319</td>
<td>5.0</td>
<td>617470</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>180000</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1742264</td>
<td>20.2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>861753</td>
<td></td>
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<tr>
<td>Passenger Car</td>
<td>418844</td>
<td>61.5</td>
<td>-</td>
<td>2523270</td>
<td>37.0</td>
<td>15000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.2</td>
<td>86147</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.3</td>
<td>6813261</td>
</tr>
<tr>
<td>Jeep</td>
<td>525663</td>
<td>45.0</td>
<td>-</td>
<td>629690</td>
<td>54.5</td>
<td>-</td>
</tr>
<tr>
<td>LCV</td>
<td>1333073</td>
<td>63.3</td>
<td>-</td>
<td>351280</td>
<td>16.7</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>423418</td>
<td>20.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2107771</td>
<td></td>
</tr>
<tr>
<td>Tractor Front</td>
<td>688031</td>
<td>58.0</td>
<td>-</td>
<td>469150</td>
<td>39.6</td>
<td>-</td>
</tr>
<tr>
<td>Tractor Rear</td>
<td>317053</td>
<td>37.2</td>
<td>-</td>
<td>469150</td>
<td>55.1</td>
<td>-</td>
</tr>
<tr>
<td>Tractor (Trailer)</td>
<td>277429</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Scooter</td>
<td>6113186</td>
<td>65.1</td>
<td>-</td>
<td>3248823</td>
<td>34.6</td>
<td>-</td>
</tr>
<tr>
<td>Motor Cycles</td>
<td>6794046</td>
<td>60.7</td>
<td>-</td>
<td>4367570</td>
<td>39.0</td>
<td>-</td>
</tr>
<tr>
<td>Mopeds</td>
<td>1298299</td>
<td>48.3</td>
<td>-</td>
<td>1389948</td>
<td>51.7</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>27173324</td>
<td>61.4</td>
<td>434319</td>
<td>1.0</td>
<td>14066351</td>
<td>31.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>195000</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.4</td>
<td>44273298</td>
</tr>
</tbody>
</table>

Source: State transport undertakings, OEMs: Original equipment manufacturers.

The above table brings out a striking change in the tyre industry. The exports share has grown for all types of tyres except scooters.
Exports have grown from 18.3% to 20.2% for truck tyres, from 0.47 to 1.26% for passenger car tyres, from 18.3% to 20.1% for LCV tyres and from 0.21% to 0.31% for motorcycle tyres.

It also indicates that the replacement market for passenger cars, scooters and mopeds are significant. The replacement market share for passenger car tyres rose from 51.6% in FY 00 to 61.5% in FY 01. Similarly in the case of scooters, percentage sales to replacement market increased from 56.1% to nearly 65.1%. The OEM market for truck and bus tyres has fallen due to ongoing recession. Percentage supplies to the government and state transport undertakings have remained more or less stagnant in FY01 as compared to FY00.

3. Replacement Market

4. The demand from the replacement market flows from the vehicles sold in the earlier years. Apart from that, the economic-cum-industrial growth is the other key demand determinant. The market accounts for 61.4% of the total tyre consumption in FY01 and 65.5% of total truck tyre demand. In FY00, the replacement market accounted for 57.8% of the total market. The increase last year could be explained by the fact that OEM supplies to the truck and bus, passenger car, LCVs and scooter segments have decreased on the back of lower production. Margins are better in this segment as the prices are 10-15% higher than the OE segment. This segment is affected by retreading which involves
laying of new threads on a worn out tyre to increase its life. Table 3 gives sales made to the replacement market under different categories in FY01.

Table 1.2: Replacement Market Sales (in nos.)

<table>
<thead>
<tr>
<th>Category</th>
<th>Replacement Market</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck &amp; Bus</td>
<td>5637700</td>
<td>65.5</td>
</tr>
<tr>
<td>Passenger Car</td>
<td>4188844</td>
<td>61.5</td>
</tr>
<tr>
<td>Jeep</td>
<td>525663</td>
<td>45.0</td>
</tr>
<tr>
<td>LCV</td>
<td>1333073</td>
<td>63.3</td>
</tr>
<tr>
<td>Tractor Front</td>
<td>688031</td>
<td>58.0</td>
</tr>
<tr>
<td>Tractor Rear</td>
<td>317053</td>
<td>37.2</td>
</tr>
<tr>
<td>Tractor (Trailer)</td>
<td>277429</td>
<td>100.0</td>
</tr>
<tr>
<td>Scooter</td>
<td>6113186</td>
<td>65.1</td>
</tr>
<tr>
<td>Motor Cycles</td>
<td>6794046</td>
<td>60.7</td>
</tr>
<tr>
<td>Mopeds</td>
<td>1298299</td>
<td>48.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>27173324</strong></td>
<td><strong>61.4</strong></td>
</tr>
</tbody>
</table>

*Source: ATMA*

5. Export Market: In the light of the prevailing domestic market situation, all the major players have taken to exports to reduce inventory build-ups. Average annual compound growth rate during last one decade was 19%. There have been sustained exports for over a decade to more than 50 countries. All large tyre companies are exporting with over 30% exports to US. More than 20% of total Truck & Bus tyres produced domestically are exported. Indian cross play tyres have excellent
Replacement Market Sales (in Nos.)

Fig. - 1
acceptance in developed countries. All large tyre companies are engaged in sustained exports as a long-term commitment.

The bulk of the exports are the older cross ply technology tyres catering to the replacement market of older vehicles abroad. Truck and bus tyres account for around 72.5% of the tyres exported followed by LCVs with 17.6%. The world export market for tyres is estimated at US$10 billion, indicating that significant potential exists for Indian companies to increase their exports.

However, most of these export markets are already being catered to by global tyre manufacturing giants. Therefore, though export potential exists, it is limited to geographical areas not serviced by the global majors. However, the large replacement market for older cross ply tyres will continue to be the main target market for Indian exporters in the near term.

The basic problem is that the tyre manufacturers never showed any interest in serious exports. They felt that export was an activity to be taken up during times of recession in the local market. Exports require drive from the management with an ambition to become a global player. They also require keeping abreast of changes in technology and methodology adopted by tyre manufacturers overseas so that the Indian companies can leverage their strengths.

The Indian tyres industry has exported 2,403,304 units in FY01 up 10.9% as compared to FY00. America continues to be the largest market
for the tyres exported from India. India exported 20.2% of the bus and truck tyres produced in the country. With the domestic demand continuing to be far less than the supplies, the companies should focus more on exports. In exports the margins are always less and therefore the volumes must be hiked to earn more. The companies should focus on increase the volume of exports to both traditional markets as well as new ones so as to earn the maximum revenue from exports. New markets such as South America and Vietnam hold very good promise. Indian tyres can also make roads in Brazil where the road conditions are same as in India.

India's tyre exports, however, forms less than 1% of the world market size of 1.6 bn units. Globally, major tyre companies have phased out manufacturing of cross ply tyres. Low labor costs, technology and improving to 80 per cent. Most of the transporters in India retread their tyres twice during its lifetime, while a few fleet owners even retread thrice. In their zealoustan to economies costs, they overlook the reality that retreading reduces the quality of the tyre. It is highly popular in the South unlike in the North where the transporters overload their trucks and have to ply their vehicles in a rough terrain an environment in which buying a new tyre is the best option. Though retreading has penetrated 25 per cent of the tyre market, it has not made much of a dent in the rapidly growing two-wheeler and passenger car segments.
Market Size, Segment And Growth:

The Indian tyre industry is worth about Rs98bn in terms of value in FY01. In terms of volumes, the industry produced 42.47 mn units of tyres in FY01, at a CAGR of 9% in the last decade. The table below indicates the production figures for the tyre industry vis-a-vis the production trend in the automobile industry. As expected, the two streams of data have a high coefficient of correlation of about 95%.

Table 1.3 : Production Volume

<table>
<thead>
<tr>
<th>Year</th>
<th>Tyres (mn nos.)</th>
<th>Auto (mn nos.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY90</td>
<td>17</td>
<td>228%</td>
</tr>
<tr>
<td>FY91</td>
<td>18</td>
<td>241%</td>
</tr>
<tr>
<td>FY92</td>
<td>18</td>
<td>217%</td>
</tr>
<tr>
<td>FY93</td>
<td>20</td>
<td>205%</td>
</tr>
<tr>
<td>FY94</td>
<td>24</td>
<td>239%</td>
</tr>
<tr>
<td>FY95</td>
<td>28</td>
<td>300%</td>
</tr>
<tr>
<td>FY96</td>
<td>30</td>
<td>369%</td>
</tr>
<tr>
<td>FY97</td>
<td>33</td>
<td>421%</td>
</tr>
<tr>
<td>FY98</td>
<td>34.2</td>
<td>4.26%</td>
</tr>
<tr>
<td>FY99</td>
<td>37.56</td>
<td>4.477%</td>
</tr>
<tr>
<td>FY2000</td>
<td>42.14</td>
<td>5.098%</td>
</tr>
<tr>
<td>FY2001</td>
<td>42.47</td>
<td>4.996%</td>
</tr>
<tr>
<td>CAGR</td>
<td></td>
<td>9.00%</td>
</tr>
</tbody>
</table>

Source: SIAM and ATMA
Production volume during FY 1996 to FY 2001

Fig. - 2
Two-Wheelers:

Production of two-wheeler tyres has also followed the general trend of two-wheeler sales. If we take the scooter segment, for e.g. production of scooter tyres have declined at 3.26% CAGR between FY96 and FY01, which is mostly in line with the total scooter production decline at a rate of 8.06% CAGR in the same period. In the motorcycle tyre segment, the growth rate has been a healthy 22.65% CAGR matching, that of motorcycle sales, that grew by 22.07% per annum. Production of moped tyres has shown some interesting movements. It has dropped by a sharp 14.55% per annum since FY97. Production suddenly dropped by more than half in FY98 and has continued to further decline in FY01, when the production of mopeds dropped 76.9%.

### Table 1.4: Production of Two Wheelers

<table>
<thead>
<tr>
<th>(Mn nos.)</th>
<th>FY96</th>
<th>FY97</th>
<th>FY98</th>
<th>FY99</th>
<th>FY 2000</th>
<th>FY 2001</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scooters</td>
<td>1.40</td>
<td>1.31</td>
<td>1.28</td>
<td>1.32</td>
<td>1.26</td>
<td>0.88</td>
<td>8.06</td>
</tr>
<tr>
<td>Motor cycle tyres</td>
<td>4.07</td>
<td>4.46</td>
<td>5.58</td>
<td>7.28</td>
<td>9.28</td>
<td>11.20</td>
<td>22.65</td>
</tr>
<tr>
<td>Motor cycles</td>
<td>0.81</td>
<td>0.99</td>
<td>1.13</td>
<td>1.39</td>
<td>1.79</td>
<td>2.18</td>
<td>22.07</td>
</tr>
<tr>
<td>Moped tyres</td>
<td>8.34</td>
<td>7.95</td>
<td>3.85</td>
<td>2.34</td>
<td>5.16</td>
<td>0.12</td>
<td>14.55</td>
</tr>
<tr>
<td>Mopeds</td>
<td>0.65</td>
<td>0.68</td>
<td>0.67</td>
<td>0.56</td>
<td>0.60</td>
<td>0.58</td>
<td>1.93</td>
</tr>
</tbody>
</table>

Cars: Production of passenger car tyres has more or less followed the general trend of the particular segment. The table below shows the
Production of tyres and cars during FY 1996 to FY 2001

Fig. – 3
growth rate of the car and the car tyre market in the last five years. From the table below, it is apparent how close is the tyre production to its corresponding vehicle segment.

**Table 1.5 : Production of Passenger Cars**

<table>
<thead>
<tr>
<th>(Mn nos.)</th>
<th>FY96</th>
<th>FY97</th>
<th>FY98</th>
<th>FY99</th>
<th>FY 2000</th>
<th>FY 2001</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyres</td>
<td>3.32</td>
<td>3.89</td>
<td>4.26</td>
<td>4.57</td>
<td>6.05</td>
<td>6.81</td>
<td>15.80</td>
</tr>
<tr>
<td>Cars</td>
<td>0.26</td>
<td>0.41</td>
<td>0.40</td>
<td>0.39</td>
<td>0.58</td>
<td>0.51</td>
<td>17.08</td>
</tr>
</tbody>
</table>

**Tractors**: Production of tractor rear has also followed the general trend of the particular segment. However, production of tractor front tyres has grown at a smaller rate as that of the tractor segment. On the other hand, production of trailer tyres has been consistently falling since FY97 when it sharply dropped by half to 0.36mn tyres as compared to FY96. Production of rear tyres has grown at a CAGR of 4.67% since FY96 while front tyres have done so at a CAGR of 3.50%.

The negative trend in production of trailer tyres can be explained by the fact the trailer tyres mostly sell in the replacement market. Trailers to not essentially come along with a tractor. Farmers attach a trailer to a tractor for transporting goods to the market or for other such uses. Hence, there cannot be a link between tractor production and trailer tyre production[^3]. The low CAGR growth in case of tractor front tyres front tyres could also be explained by the fact that around 45-50%
of supply is to the replacement market, which could be used for driving other kinds of vehicles (may be animal drawn ones).

Table 1.6: Production of Tractors

<table>
<thead>
<tr>
<th>(Mn nos.)</th>
<th>FY96</th>
<th>FY97</th>
<th>FY98</th>
<th>FY99</th>
<th>FY2000</th>
<th>FY2001</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front tyres</td>
<td>0.98</td>
<td>1.04</td>
<td>1.08</td>
<td>1.09</td>
<td>1.20</td>
<td>1.19</td>
<td>3.50</td>
</tr>
<tr>
<td>Rear tyres</td>
<td>0.66</td>
<td>0.68</td>
<td>0.79</td>
<td>0.84</td>
<td>0.90</td>
<td>0.85</td>
<td>4.67</td>
</tr>
<tr>
<td>Trailer tyres</td>
<td>0.69</td>
<td>0.36</td>
<td>0.21</td>
<td>0.22</td>
<td>0.30</td>
<td>0.28</td>
<td>(2.75)</td>
</tr>
<tr>
<td>Tractors</td>
<td>0.19</td>
<td>0.22</td>
<td>0.26</td>
<td>0.25</td>
<td>0.27</td>
<td>0.24</td>
<td>4.76</td>
</tr>
</tbody>
</table>

HCVs (Truck and Bus):

Production of HCVs tyres has not followed the general trend of production of HCVs. For e.g., in the year FY01 when the HCV segment was going through one of its worst recessionary periods, tyre production fell only marginally. This could be attributed to the rise in exports by 6.24% yoy to 1.743mn during the year.

Table 1.7: Production of Truck and Bus

<table>
<thead>
<tr>
<th>(Mn nos.)</th>
<th>FY96</th>
<th>FY97</th>
<th>FY98</th>
<th>FY99</th>
<th>FY2000</th>
<th>FY 2001</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyres</td>
<td>7.62</td>
<td>8.02</td>
<td>7.98</td>
<td>7.91</td>
<td>8.97</td>
<td>8.61</td>
<td>2.66</td>
</tr>
<tr>
<td>HCVs</td>
<td>0.13</td>
<td>0.16</td>
<td>0.10</td>
<td>0.08</td>
<td>0.11</td>
<td>0.09</td>
<td>(3.46)</td>
</tr>
</tbody>
</table>

LCVs: Production of LCV tyres has not followed the general trend of production of LCVs. In fact it is a stark opposite to the trend. While
Production of tyres during FY 1996 to FY 2001

Fig. - 4
Production of tyres and HCVs during FY 1996 to FY 2001

Fig. - 5
production of LCVs has fallen by 10.94% CAGR since FY97. Production of LCV tyres has grown at a CAGR of 13.82%. The answer, perhaps, lies of one takes a closer look at the performance in the export market of LCV tyres. Exports rose sharply by 63% yoy to 158,180 units in FY97 after falling for the past three years. In FY98, exports more than doubled to 337,865 units. In FY99, it dropped to around 0.3mn units, which is also reflected in the marginal drop in tyre production. In FY01, exports again rose 16.7%.

Table 1.8: Production of LCVs

<table>
<thead>
<tr>
<th></th>
<th>FY97</th>
<th>FY98</th>
<th>FY99</th>
<th>FY 2000</th>
<th>FY 2001</th>
<th>CAGR (%)</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyres</td>
<td>1.83</td>
<td>1.86</td>
<td>1.86</td>
<td>1.98</td>
<td>2.11</td>
<td>13.82</td>
<td>2.66</td>
</tr>
<tr>
<td>LCVs</td>
<td>0.09</td>
<td>0.07</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
<td>(10.94)</td>
<td>(3.46)</td>
</tr>
</tbody>
</table>

Source: ATMA report 1998-99

Economies make Indian manufacturers competitive in cross ply tyres. Huge over capacity forced the domestic manufacturers to tap the export market in cross ply tyres. Tyres are exported at one-third the price because raw materials are imported duty free and there is no duty on tyre on tyre exports. Table 4 indicated the export data for different categories of tyres in FY01.
Table 1.9: Exports

<table>
<thead>
<tr>
<th>Category</th>
<th>Exports</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck &amp; Bus</td>
<td>1742264</td>
<td>20.20</td>
</tr>
<tr>
<td>Passenger Car</td>
<td>86147</td>
<td>1.30</td>
</tr>
<tr>
<td>Jeep</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LCV</td>
<td>423418</td>
<td>20.10</td>
</tr>
<tr>
<td>Tractor Front</td>
<td>28747</td>
<td>2.40</td>
</tr>
<tr>
<td>Tractor Rear</td>
<td>65898</td>
<td>7.70</td>
</tr>
<tr>
<td>Tractor Trailer</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Scooter</td>
<td>23319</td>
<td>0.30</td>
</tr>
<tr>
<td>Motor Cycles</td>
<td>34511</td>
<td>0.30</td>
</tr>
<tr>
<td>Mopeds</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2404304</td>
<td>5.40</td>
</tr>
</tbody>
</table>

Source: ATMA

Raw Materials: The tyre industry is raw material intensive, which accounts for more than 60% of the production cost. Therefore, prices of raw materials directly affect the profitability of tyre companies. Since most of these raw materials are petroleum based, their prices fluctuate with the international prices of petroleum products. The main raw materials for tyre are rubber (natural or synthetic), carbon black, nylon tyre cord and rubber chemicals. Except natural rubber, the costs of all other raw materials in tyre production are related to crude oil prices. Table 1 shows the proportion of each raw material in term of their value and weight.
Table 1.10 : Raw materials

<table>
<thead>
<tr>
<th>Raw</th>
<th>Materials</th>
<th>By Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber</td>
<td>52</td>
<td>49</td>
</tr>
<tr>
<td>Carbon Black</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>Nylon tyre cord</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Chemicals</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Natural Rubber**: Natural rubber accounts for 52% of the value of the tyre. In India mixture of both natural as well as synthetic rubber is used for making tyres. However the consumption ratio is towards higher usage of natural rubber due to Indian climatic conditions, over loading of vehicles and poor road condition. In India the consumption of natural to synthetic rubber is 80:20 which is in stark contrast to international ratio. The industry uses RSS-4 grade rubber.

India’s 90% of the rubber production comes from Kerala. Domestic rubber production has increased at a compounded growth rate of 9% annually from 1991 to 1997 after which the production slowed down. However In FY 2001, rubber production soared and crossed double-digit mark at 10.2%. 

(19)
Raw Materials (in %)

Fig. - 6

- Rubber: 50.00%
- Carbon Black: 10.00%
- Nylon tyre cord: 20.00%
- Chemicals: 25.00%
- Others: 30.00%
**Synthetic Rubber**: Synthetic rubber is generally of two types-poly-butadiene rubber (PBR) which forms 40% of the synthetic rubber used in tyres. The other variety is Styrene Butadiene Rubber (SBR) primarily used in passenger car radials to give the grip to the tyres. At present, IPCL is the only domestic producer of PBR. However, it is able to meet only 44% of the tyre industry's requirement. Thus India is a significant importer of synthetic rubber. There is an urgent need to increase production capacity of SBR to supplement natural rubber.

**Carbon Black**: Carbon black is a key raw material used in the manufacture of automotive tyres. More than 70 per cent of the demand for carbon black is from the tyres segment, carbon black feed stock (CBFS) is the key raw material used to manufacture carbon black. Roughly 2.2 tonnes of CBFS is required to produce one tonne of carbon black. Its main use is as a reinforcing agent in tyres\(^4\).

Though there are more than twenty types of CB, the ones used for tyre production are mainly of three types, N 220, N 330 and N 660. N 660 is mainly used in the carcass of the tyres, N 330 is used for the tread and N 220 is used for the tread of heavy-duty tyres. On an average, about 45% of the CB consumed by the tyre industry is of the N 660 variety, 28% of N 220 and 27% of N 330 variety.
Truck tyres consume 20 Kgs of CB per tyre, while smaller tyres like Maruti consume 1.5 Kgs. Overall approximately 60-65% of the CB produced in India is consumed by the tyre industry. Indian market is dominated by the top three players in the industry- Philips Carbon Black, Hitch, Carbon (unit of Indian Rayon) and Cabot India (a subsidiary of Cabot Corporation, US).

**Nylon Tyre Cord** : This is mainly a reinforcing material and lends strength and tenacity to the to a tyre. It is placed below the tyre tread, in contact with the road. Almost 90% of nylon cord manufactured in India is consumed by the industry. The tyre cord fluctuates in consonance with the prices of caprolactum its main input.

**Rubber industry in post GATT era** :

With the lifting of physical barriers on imports of all commodities by April 2001, as also phasing out of various subsidies for exports, the rubber industry is in for a very rough tide. With the slowdown in economy compounding the problem, the automobile majors are in for a major shake-out.
Table 1.11 : Consumption Patterns of Major Raw Materials :

(All Figures in Tonnes)

<table>
<thead>
<tr>
<th>Raw Materials</th>
<th>Consump.</th>
<th>Tyre-sector (%)</th>
<th>Non tyre-sector (%)</th>
<th>Import</th>
<th>Tyre Imports* (%)</th>
<th>Non tyre Imports (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Rubber</td>
<td>628000</td>
<td>50</td>
<td>50</td>
<td>16400</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>SBR</td>
<td>53800</td>
<td>49</td>
<td>51</td>
<td>33200</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>PBR</td>
<td>49200</td>
<td>81</td>
<td>19</td>
<td>11400</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>Carbon Black</td>
<td>245000</td>
<td>69</td>
<td>31</td>
<td>30000</td>
<td>66</td>
<td>34</td>
</tr>
<tr>
<td>Nylon</td>
<td>66000</td>
<td>95</td>
<td>5</td>
<td>25000</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Rubber Chemicals</td>
<td>24000</td>
<td>60</td>
<td>40</td>
<td>3000</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>Steel Tyre Cord</td>
<td>1800</td>
<td>100</td>
<td>0</td>
<td>1800</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Butyl Rubber</td>
<td>37900</td>
<td>64</td>
<td>36</td>
<td>37900</td>
<td>64</td>
<td>36</td>
</tr>
</tbody>
</table>

*Manly duty free imports against export of tyres.

International Scenario : The world tyre industry is worth around US$70bn. The industry is marked by a presence of around half a dozen major players who together occupy 70% of the world market share. The table below indicates the individual market share of the major players.
Table 1.12: International Scenario

<table>
<thead>
<tr>
<th>Companies</th>
<th>Market share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michelin</td>
<td>19.4</td>
</tr>
<tr>
<td>Bridgestone</td>
<td>19.4</td>
</tr>
<tr>
<td>Goodyear</td>
<td>16.6</td>
</tr>
<tr>
<td>Continental</td>
<td>7.1</td>
</tr>
<tr>
<td>Sumitomo</td>
<td>4.69</td>
</tr>
<tr>
<td>Pirelli</td>
<td>3.9</td>
</tr>
<tr>
<td>Yokohama</td>
<td>3.5</td>
</tr>
<tr>
<td>Kumho</td>
<td>1.7</td>
</tr>
<tr>
<td>Others</td>
<td>23.5</td>
</tr>
</tbody>
</table>

Source: The Financial Times

The worldwide tyre industry is likely to witness more restructuring efforts after the deal between Goodyear and Sumitomo of Japan. Analysts are speculating that there will be only six to seven major players across the globe. The 'pig three' of the industry i.e. Michelin, Bridgestone and Goodyear (before its alliance with Sumitomo) each had annual sales of US$12bn. Inevitably, the alliance has increased the competitive pressure on second-tier majors, notably Continental of Germany, Pirelli of Italy and Yokohama of Japan. They would also have to go on the acquisition route in order to survive. The structural developments are taking place against a background of continuing overcapacity in the industry, estimated at around 30% and slow growth in Latin America and the Asia-Pacific region in the wake of their financial crises.
Market Shares in International Tyre Companies

Fig. - 7
Table 1.13: World wide Sales of Tyres

<table>
<thead>
<tr>
<th>Mn nos.</th>
<th>Cars</th>
<th>% of total</th>
<th>Truck</th>
<th>% of total</th>
<th>Total</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEM</td>
<td>217.7</td>
<td>31.10</td>
<td>50.6</td>
<td>20.3</td>
<td>268</td>
<td>28.3</td>
</tr>
<tr>
<td>Replacement</td>
<td>482.4</td>
<td>68.90</td>
<td>198.2</td>
<td>79.7</td>
<td>681</td>
<td>71.7</td>
</tr>
<tr>
<td>Total</td>
<td>700.1</td>
<td>100.00</td>
<td>248.8</td>
<td>100.0</td>
<td>949</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: The Financial Times

One striking feature, which comes out prominently from the above table, is that major part of world sales of car and truck tyres is to the replacement market. The replacement market is self-perpetuating and has inbuilt growth despite short-term setbacks from time to time. As the worldwide automotive sales is rising by a marginal 2% per annum, sales to the replacement segment will continue to dominate.

However, some recent trends in new vehicle manufacturing will go to help the OEM segment. World over the time needed to bring a car from the drawing board stage to the market place has shrunk from six to two years in the last decade. Today, tyres are being purpose-developed for each new model with technicians working alongside car suspension engineers. Secondly, new markets like Indian and China offer the world major tyre producers a large market to exploit.

In its latest industry analysis, the Economic Intelligence Unit (EIU) forecasts that sheer muscle in terms of marketing and technical
development will enable the three biggest players to continue to take an ever-larger share of the global market, reaching 70% by 2005 from little more than 50% now.

Most of the RSS-4 grade natural rubber required by the Indian tyre industry is domestically sourced, with only a marginal amount being imported. This is an advantage for the industry, since natural rubber constitutes 25 percent of the total raw material cost of the tyres.

The two types of synthetic rubber used in tyres are Poly Butadiene Rubber (PBR) and Styrene Butadiene Rubber (SBR). The former is used in most of the tyres, while the latter is mainly used in the radials for passenger cars. Synthetic rubber accounts for 14 per cent of the raw material cost. Unlike in the case of natural rubber, India imports 60 per cent of its synthetic rubber requirements.

Apart from rubber, major raw materials are nylon tyre cord and carbon black. The former is used to make the tyres strong and impart tenacity to it. The latter is responsible for the colour of the tyre and also enhances the life span of the tyre. Nylon tyre cord comprises 34 per cent, while carbon black accounts for another 13 per cent of the raw material cost. In India, the carbon black used is of the N 660, N 220 and N330 variety.
To sum up, the tyre industry is highly raw-material intensive, with raw material costs accounting for 70 percent of the cost of production. Fortunately for the industry, the rubber and carbon black prices have taken a beating recently, which means lower costs for the tyre industry. The export-import policy allows free import of all types of new tyres and tubes. However, import of retreaded tyres, either for use or for reclamation of rubber is restricted. This has led to used tyres being smuggled into the country under the label of new tyres. Though tyre import and all raw materials for tyres except natural rubber are under open general license (OGL), only import of natural rubber from Sri Lanka is eligible under OGL.

**Sector trends**: Crossply tyres have been used in India for several decades. In these tyres, the ply cords run across each other or diagonally to the outer surface of the tyre. Rayon and nylon tyre cords are used as the reinforcing medium. These tyres can be retreaded twice during their lifetime and are hence preferred by Indian transport operators who normally overload their trucks. A vehicle with the normal carrying capacity of around 12 tonnes is usually loaded with double the capacity. Moreover, one also has to contend with the bad suspensions and bad road conditions. No wonder, 95 per cent of the tyres used in India are crossplies.

Radial tyres have their cords running radially from bead at 90 degrees angle to the rim or along the outer surface of the tyre. The
reinforcing mediums used in these tyres are polyester, Nylon, fibreglass and steel. Hence, these tyres are 20 percent more expensive than the crossplies. But they have a longer life and provide lower fuel consumption. The unhealthy condition of the Indian roads has resulted in radial tyres accounting for only 5 per cent of the tyre industry as against a global trend of 60 per cent. With two-thirds of the capacity of all major tyre manufacturers being reserved for radials, this is a real cause for concern.

**Outlook** : Globally, the OEM segment constitutes only 30 per cent of the tyre market, exports 10 percent and the balance from the replacement market. In India, the scenario is quite different. Nearly 85 per cent of the total tyre demand in the country is for replacement. This anomaly has placed the retreaders in a better position than the tyre manufacturers. Retreading is looming over the tyre industry as a colossal threat. The Combatore based Elgi Tyres and Tread Ltd., the largest retreader in India, is giving the tyre barons sleepless nights.

Had it not been persistent efforts of Goodyear, Dunlop, Michelin, Seiberling and Goodrich, we might still be rattling around on rigid steel and wooden wheels. Their combined efforts have now grown in a $70bn global tyre industry. The industry has come a long way—both globally as well as domestically. In India, they tyre industry was born in 1926 with the establishment of the first tyre company—Dunlop Rubber Company. As
the automobile sector began to take roots in the country, the tyre industry saw the entry of many players and concurrently grew until the late 70s. With waves of liberalization sweeping the land in 1992, the industry saw the entry of many global players as part of joint ventures.

Developments in the tyre industry have to be viewed from the perspective of its strong linkages with the performance of the agricultural and industrial sectors, overall exports, transportation and a multiplicity of other factors. As a result, tyre industry operates in an environment, which is dynamic and driven by the performance of other sectors. Performance of the segment is linked to that of automobile and surface transport sectors.

The last decade saw an average annual growth rate of 9%. However in FY01, the growth was mere 2.6%. This is because the tyre industry is dependent upon automobile industry and the vehicle production actually declined by 7.5% in FY 2001. Tough times seem to be in store for the industry, with weakness expected to continue well in FY02.

The major dampness was due to M & HCVs sales, which account for nearly a fourth of the market for tyres. The tyre industry cannot negate the importance of this sector due to the twin factors of high volumes and high value. More pertinently, operating in this segment helps them to economize on scale. Sales of M & HCVs were held back by a sharp slowdown due to rising fuel prices and weaker economic growth.
Another woe was the fact freight and cargo movement too slowed down. As a result the replacement market, which accounts for 66% of the market, too took a hammering. The major players MRF, Ceat and Apollo who account for one third of the OEM segment either had to cut down production or pile up inventories.

The annual results of all major tyre manufacturers in FY01 corroborate this fall in demand. All the major players have seen their bottomline squeezing or have reported loss. The competition remains severe with pressure on price margins. Therefore to prosper, the thrust lies on volumes and full capacity utilization (present capacity utilization is about 82%). With the plans of capacity expansion in pipeline, the problem of companies may be further aggravated. The first two months of FY02 also have been disappointing as there is lack of demand and sales are skidding. The recession in tyre industry is to stay for some more time, as the market has shown no signs for any dramatic recovery.

Already global giants have deferred their plans to enter India in present conditions. The French tyre major, Michelin, which was planning to start operations in India, has deferred its decision to invest Rs 5bn in radial tyre manufacturing project, which was to be set up in Pune. Italian tyre major Pirelli has postponed out of equity deal that was to take place with Birla tyres.
**Tyre-Outlook** : The tyre industry recorded near stagnant performance in FY01 in line with the decline in the automobile sector. The market weakness witnessed in the FY01 is forecast to continue well into this year, and passenger car sales are forecast to drop by 10% for the year as a whole. With GDP growth undermined by lacklustre consumer confidence, and thus lower spending due to higher energy cost, it is expected that the passenger car volumes achieved last year cannot be sustained. The commercial vehicle segment is expected to be more resilient this year, however, mainly because the light segments are expected to bounce off the already very depressed levels.

New models will stimulate demand for utility vehicles, and this segment is expected to outperform in the medium term. For the heavy truck segment, a further year of decline is expected before a more sustained recover takes place from 2002. Consumer and business confidence will improve progressively throughout the year, as the domestic inflationary factors are worked through and as the global economic environment improves. It is expected that all vehicle segments start a sustained growth cycle from next, with new record volumes sold each year to 2005.

As expected, FY02 has started on a dull note, with no signs of dramatic recovery. In the first two months of the year, production continued to decline. This could be attributed to stagnant production of
truck and bus tyres and a sharp fall in the production of tractor and scooter tyres. With prediction of good monsoons, the situation is likely to be bettered for commercial vehicles.

Also that fact that prices of major inputs like nylon tyre cord fabric and carbon bloc have firmed up in the past year has meant that operating margins of tyre companies are under pressure. Average natural rubber (RSS-4) prices during the FY02 are expected to be higher than in the FY2001.

Prices had already risen by 3% on an average in FY01 as compared to FY00. Recent trends suggest a fall in rubber production in the country. Rubber is the main raw material for tyres and as long as prices remain firm, margins for the tyre industry will remain effected. The prices of nylon tyre cord fabric and carbon black have risen in the past six months due to a sharp rise in petroleum prices during the period. The operating margins as a result have been badly affected.

With the lifting of quantitative restrictions, China and Taiwan may emerge as strong competitors in both domestic as well as international markets. China has an advantage in terms of lower prices. Chinese tyres are cheaper by as much as 25%. On the other hand, Indian tyres are considered to be of better quality than Chinese tyres and command a premium of around $5 in the US market. But this advantage may not last
for long as the Chinese are said to be catching up. In the longer run, Indian companies will have to do with a larger international presence in the domestic market.

The Indian tyre industry—an overview

Highlights:

* The tyre industry is a Rs. 9,000 crore industry.

* The fortune of this industry depends on the agricultural and industrial performance of the economy, the transportation needs and the production of vehicles.

* While the tyre industry is mainly dominated by the organised sector, the unorganised sector holds sway in bicycle tyres.

* In the last five years (1994-95 to 1998-99), the industry managed to achieve a compounded annual growth of only 4.40 per cent. However in the last fiscal the industry registered a growth of 7 percent.

* Natural rubber constitutes 25 per cent of the total raw material cost of the tyres.

* The ratio of natural rubber content to synthetic rubber content is 80:20 in Indian tyres, whereas world wide, the ratio of natural rubber to synthetic rubber is 30:70.
PRESENT

(i) Export Incentive:

INDIA'S rubber processing industry can now import duty free natural rubber (NRI against advance license, which was banned by the Director General of Foreign Trade (DGFT) Since september 2001. NR[^5], Import has been made possible by the recent order of the supreme court, which upheld the Bombay High courts order which Said the Director general of Foreign trade (DGFT) cannot amend rules without governments permission.

The Rs 1,500 crore rubber processing industry is now expected to once again challenge the central government's decision to allow imports only through two parts-kolkata and vishakapatna, which is as major disadvantage rubber processors especially their export activities.

In September 2001, the DGFT issued a circular asking the licensing authorities not to issue advance licenses for rubber imports. The supreme court upheld the order of the Bombay High court, which had 'vacated' the center's decision prohibiting import of natural rubber through the advance since route the government and the DGFT had challenged the Bombay High court order given against it in the SC in october last year, where the writ petition was filed by Narendra Udeshi, a rubber processor. Rubber is the only commodity that the government has pat strict restrictions of import only through 2 ports.
In a landmark judgment the Supreme court dismissed the special Leave Petition filed by the DGFT against the order of the Mumbai High Court quashing the internal circulars restricting the import of Natural Rubber required for export production under the advance Import Licence scheme.

The Government, on the one hand talks of exports as a National Priority, but has been succumbing to the political manipulations of vested interests in the rubber plantation sector. Natural Rubber, in India, has always commanded higher prices than the international market for the last 15 years as per the figures of Rubber Board. Inspite of this, Natural Rubber was a canalized item for the last 50 years since independence and the planters enjoyed a very protected environment, which made them so complacent that they turned a totally blind eye to international requirements of quality, packing and development of new grades required in the international scenario. The Rubber Board did a commendable job in organizing the planters to obtain the highest yield of Rubber with the lowest rubber cost among rubber producing countries in the world. But it failed to act as a bridge between the consumers and producers of rubber. The Rubber Board succumbed to the mechanizations of the big money-lobby, who are the root cause for holding to ransom both the one million small planters and also a very large number of small rubber product manufacturers all over the country.
After the Government gave clear assurances to the WTO about lifting of quantitative restrictions, the authorities, in league with the rubber Board and big-wigs in the plantation sector, succumbed to the pressure and issued internal circulars through the offices of the DGFT and restricted import or purchase of natural rubber through the STCV which was also discontinued from December 2001. This was done ostensibly to get better prices for the local producers of Natural Rubber. Such artificial props cannot be used in a market-driven economy. World prices of Rubber were at its lowest in the early part of 2002. Additional restrictions in import were imposed by issuing notifications restricting the import of rubber through Kolkatta and Visakapatnam Ports giving the flimsy reason that Office of the DGCIS, is located in Kolkatta. Then why permit import at visakapatnam? if it can be Vizag, it can be any other port since all major ports are computerized, specially for the reason that the rubber manufacturing industries and exports are being effected from the western and Northern Regions which account nearly 80% of the production of export of rubber products.

Furthermore, the notification made it mandatory that all imported rubber should conform to BIS specification even though the specifications were laid out only for block rubber. The tests are to be carried out at Kottayam, which causes a delay of 6 to 15 days thereby holding up consignments and adding to costs on account of detention, demurrage and
further transaction costs. It takes 20 to 30 ingredients to make a rubber product. With the final product meeting the requirements of the buyers, it does not make sense to test only one input. On the other hand, the same Indian Rubber is being marketed in India and also exported without any such checks. How can we be such hypocrites[6].

Now that the Supreme Court has given clear directions, I hope the rubber Board and the planters will appreciate that there are small and poor planters in the same way that there are small entrepreneurs who are trying to make both ends meet in a high cost economy inspite of huge transaction costs. Indian Rubber manufactured products exports have had a compounded growth of 20% over the last 15 years present Exports in 2002-03 totaled nearly Rs. 2200 Crores.

In Automobile tyre exports. India had only multi-national tyre companies up to 1960, but by the year 1985 an almost 100% ownership and production of tyres in Indian by Indian nationals. Indian-owned tyre giants still dominate the scene, but it is expected that in 2010 foreign tyre companies in Indian will be equally sharing the Indian tyre markets. At the same time, some of the Indian companies will also be the major players in the export markets.

Indian tyres have already earned a great reputation for quality in the world markets and it is only reasonable to visualize enormous growth for some of our tyre companies that have already established good brand equity in the foreign markets[7].
India has over 5000 rubber factories with a large supply of trained labour, technicians and entrepreneurs and it is a matter of time before we emerge as one of the supply point for all types of rubber goods like cycle tyres, Scooter tyres, Truck and Bus tyres etc. India, in my view will emerge as the second or third largest manufactures of rubber products next only to China and probably U.S.A. by the year 2010[8]. The enormous facilities available in India for a foreign rubber manufactures are immeasurable. Besides the availability of all raw materials at international cost, Indian rubber factories have fairly modern machinery or equipment at considerably lower prices than internationally cost, experienced labour, engineers and rubber technicians cost only a fraction of the cost of their counterparts in the western countries. Therefore, India has a competitive edge to become a production base for all rubber products and should attract international attention sooner than later.

The commerce ministry has decreed that any foreign manufactures of rubber goods will be given, Indian natural rubber, without the purchase tax of 12%, cent of Rs. 1500 per ton and in addition, government will pay a subsidy of Rs. 3500 per ton which means a total reduction of about Rs. 10,000 per ton over the market price in India. At the same time, the Govt. has directed a cess of Rs. 1500 and Production tax of about Rs. 6000/- per ton be levied if any local rubber manufacturer acquires Indian natural rubber.
Thus the foreign rubber goods manufacturer will get Indian natural rubber at Rs. 40,000 per ton when the prevailing prices in India are about Rs. 50,000 but the Indian rubber manufacturer will have to pay Rs. 57,500 a price of Rs. 17,500 more per ton of rubber i.e. Rs. 17.50 per Kg. India has 650,000 tons of natural rubber to offer and has actually exported 50,000 tons in 2002 even through India's total production of natural rubber is not enough to meet the requirement of the India factories during this year or in the past 50 years not it will sufficient in the next 50 years. Through the Prevailing Indian Natural rubber pries are 50% more than the notified prices of N.R. and are the highest prices in the world, the commerce ministry is following a restrictive policy against its import which has also a protective import duty of 25% the cumulative effect of which will be the availability of Indian natural rubber to a foreign factory at $ 30 cheaper than its Counter part in India. Normally, this step difference in the price of the raw material would be sufficient to cripple the whole Indian rubber manufacturing Industry. If the rubber industry is still surviving through with great difficulty, there are some favourable factors, which are not like to reveal test it may benefit competitors.

According to the Recent data released in March gave reason for Indian tyre manufacturers to cheer, as it showed that total tyre production in January 2003 surged 22%, whole tyre exports during the month leapt by 37%.
Tyre production for the month of January 2003 was at 4.6 m units, as against 3.7m units in the year ago period. Exports during the month were at 3,213,667 units, compared with 229,084 units in January 2002. For the first ten months of the fiscal year, tyre production grew 19% to 42.7m units, while exports rose 17% to 2.8 m units.

In January 2003, the production of bus and truck tyres rose 25% to 8.7m units, while that of LCV tyres neared 270,000 units a rise of 33%. For April January 2003, bus and truck tyre output grew 16% while LCV tyre production rose 22%. The two segments together account for over 70% of the Industry’s sales in India, and over 85% of its exports earnings.

Passenger car tyre output grew 19% in January to 762,440 units. For the April-January 2003 period, the production of car tyres was up to 16%.

Exports of truck and bus tyres showed surged by 50% in January 2003, to 209,300 units. Whole LCV tyres, at 61,347 units showed a growth of 47%. The export of passenger car tyres rose by 83% to 31,378 units.

(ii) Pricing Strategy:

Prices can take on a number of assumed names the fare you pay a cab driver, the admission you pay at a theatre, and the toll you pay when existing the pennsylvania turnpike are all forms of price similarly, the tuition you and your parents pay to your college, the rent you handover to your landlord, and the users fee required for entry to a national park
are also prices\cite{9}. Regardless of the situation or the terminology, price represents the seller notion of the value customers are likely to place on the good or service being offered. When we compared the price of two tyres, we consider operating, repair and insurance costs because all these things add to real cost of owning a car. In its product sense, price includes time, frustration and anything else that the buyer has to give up to obtain and use a product.

Price and product are closely interrelated prices marketers can command in the market for a given product will determine how much they can afford to spend to produce that product. Prices are frequently changed over the course of the product life cycle. For example as a product category declines, marketers often have to lower the price in order to keep the product competitive. A second way that price relates to product is in product line proving in which marketers use price to distinguish various classes of similar products, third price can have as much to do with customer perceptions of a product as the product's features and benefits.

Price also plays a big role in promotional effort. MRF tyre company telling its customers that it offers high-quality, exclusive product. In fact, some premium producers go out of their way to let customers know how expensive their products are for example J.K. Radial tyres.
In tyre Industry there are six steps of the pricing process:

1. Analyze market conditions
2. Identifying pricing constraints
3. Establish pricing objectives
4. Analyze profit potential
5. Determine Initial Price levels
6. Adjust and manage prices

**Analyze Market Conditions**: Tyre marketers firstly understand customer demand and competition when setting prices. Unfortunately, customer demands and competitive behaviour can be difficult to measure and products.

In practice, tyre marketer rely on combination of analyses, judgment in some cases, plain old gusswork.

(a) **Estimating demand**: How may people will buy next vehicle? What many will buy a J. K. tyres? What will happen to sales if M.R.F. tyres increases the prices? Uncovering the relationship between demand and price is one of the most important task face in the planning process. The fundamental tool used here is called demand curve.

(b) **Price elasticity of Demand**: If customer demand for a products changes as the price changes, customer are clearly Sensitive to price.
Price Sensitivity is the indicator of how much demand will change for a given change in price.

\[ \text{Elasticity} = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \]

(c) **Analyzing competition**: Another aspect of understanding market influences on price is to understand the effect of competition. Apollo tyre company analyzes how their competitors price, what level of discounts they are willing to offer. At the next level, the company wants to predict how they might behave in a given situation. It is important to realize that the presence of strong competition can dramatically change the demand curve and sensitivity.

**Identify Pricing constants**: There are many forces that place limits on the range of possible prices. Some of these are internal forces, whereas others are government regulations and competition that affect pricing decisions.

(a) **Costs**: The price a company gets for its product must cover the cost of production and marketing, plus a variety of other expenses and still leave enough for profit.

(b) **Government Influences**: To protect consumers and encourage fair competition, the government has enacted a variety of price-related legislation over the years and all marketers need to be aware of legal ramifications.
(c) **Price Fixing**: When two or more companies supplying the same type of products agree on the prices they'll charge on the formulas they use to set prices they are engaging in a practice known as price fixing. For example, ceat and T. V. S. Tyre etc. Price fixing is illegal two exceptions are when the government itself fixes prices or when regulated public utilities set prices for their services.

**Price Discrimination**: Price discrimination applies only to tangible goods of the same grades and quality; it doesn't apply to services. Furthermore, the difference in prices has to be proven to adversely affect competition, So this Strategy is not applicable in tyre Industry. The best example is Going to discounts to senior citizens and students.

**Predatory pricing**: Sometimes the governments considers a price to be so low that it unfairly hurts competitions. This is specially tyre if the seller sets prices that are below its own costs and lower than it changes in other markets. Such tactics are considered predatory pricing and are illegal if your intent is to drive competitors out of business.

**Establish pricing objectives**: There are general five categories of pricing objectives.

- Profitability
- Sales
- Price leadership
Positioning

Survival

Profitability: Pricing objectives are frequently expressed as some variation of profitability. For example, a CEAT tyre company aim for a certain percentage profit, say 25 percent. This means that for every Rupee of product sold, 75 percents will be consumed by design, production, marketing, all other, costs, leaving 25 cents for profits. The 25 percent figure is called company's profit margin, which is the ratio of profit to sales.

Another form of profitability objective in return on investment, which is the ratio of profit of the capital invested in the company. A related way to express profit is return an equity.

Sales Objectives: The second category of pricing objectives centers around a target level of sales. This is expressed either as an absolute number of products sold over some unit of time or as a percentage of market share.

Price leadership: Which exists when one firm in an Industry tends to influence the direction of prices such a firms is usually the firm to raise or lower prices, and other companies in the industry follow suit in order to remain competitive. M.R.F. tyre company has served as a price leader in tyre industry.
Positioning Objectives: Tyre Industry use price as a means of positioning their products in the minds of potential customers. High prices are associated with quality, prestige or exclusivity, and companies use premium prices as a way to faster those sorts of images.

Survival Objectives: The final class of pricing objectives is simply survival. Firms that are in trouble will try to find whatever price points will put in enough sales to keep the company operating. Survival pricing means that the firms try to beat the prices of competition, even if that means selling for no profit or for negative profit.

Analyze Profit Potential: In order to analyze profit potential, marketers estimate profit by combining price sensitivity data with cost data. The next step was to calculate total revenue by multiplying the price and demand figures at each point in the curve. Now it's time to bring cost into the picture, which will then lead the profit.

Marginal Analysis: The techniques of marginal analysis indicates profit potential by comparing marginal cost with marginal revenue, which is the additional revenue generated by the sale of one more unit. Companies get maximum profit when marginal cost is equal to marginal revenue.

Break even Analysis: The second techniques for profit analysis is breakeven analysis, which shows the minimum number of units that must be sold at a given price for the company to break even. "Breaking even" means that the company recoups all of its costs but doesn't even any profit the sales level required to break even in calls break even point.
Determine Initial price levels: Tyre Marketers have developed quite an array of pricing techniques to help set initial price levels. These fall into three categories.

- Demand based pricing techniques
- Cost based pricing techniques
- Competition based pricing Techniques.

**Demand based pricing techniques**: The first group of price setting is based on an analysis of customer perceptions and needs. The techniques are considered demand based because some aspect of customer demand is the theme behind each one.

**Cost and profit based pricing techniques**: Cost and profit based techniques are taken together because they share an important attribute they don't take external forces such as competition and customer perceptions into account. So if used by themselves, these techniques can lead to prices that are too high for the market to accept or too low to capture all the potential revenue. In this respect, these techniques are usually considered rather weak, and companies that rely on them exclusively are occasionally subject to criticism by marketing observers. Combination of techniques to make sure to considered both external and internal forces.

**Competition based pricing**: The third category of pricing techniques looks primarily at the competition, and then set prices relative to their prices.
Leader pricing: Some times tyre companies use an attractive price on one product to pull customers away from competition and stimulate demand for other products techniques is known as leader pricing.

Positioning and Pricing: The final pricing techniques is used to position products relative to the competition. This notion was introduced earlier with prestige pricing. But companies are considering competitive pricing and positioning so it may also want to position our product or less expensive or at the same time.

Adjust and Manage prices: The next steps in the pricing process define the overall pricing agenda that can establish a general price level. Now its time to take a look at the ongoing administrative aspect of pricing, which is adjusting and maintaining prices in response to market place changes and specific customer and competitive situations. The market price, which is the actual selling price is frequent different from the list price, in some cases it is radically different one of the most common reasons for the difference is the use of discounts and allowances.

Discounts and Allowance: Tyre Manufactures use both discounts and allowances to encourage consumers to try new products, to stimulate demand, to clear out excess inventory, and to entice customers to make large purchases. Discounts are direct reduction from the list price, such as 10-percent-off sale. Allowances on the other hand, are indirect reductions from the list price such as rebates and trade-ins.
Trade Discounts: Manufacturers grant giant discounts to wholesalers and other marketing channel partners, and these breaks are called trade discounts. Trade discounts are based on the services that there channel partners are expected to perform.

Price Changes: Price changes often require a careful touch, to avoid confusing or upsetting customers and to keep from triggering undesirable reactions from competitors. The first step in making a price change is to stop and see whether the change is really necessary. Companies are often tempted to cut prices when sales decline, but that might not be the best answer, because small reductions in price can cause large reductions in profit on the other hand, if you are about to raise prices, there are several steps follow to make its change as painless are possible including training your sales force and channel partners etc.

(iii) Tax structure of the Industry:

The reduction of excise duty in the recent budget released in India, combined with higher demand from original equipment manufactures (OEM), bode well for the Indian tyre Industry\[10].

It is thought that the budget will give a big boost to tyre demand, both directly and indirectly by way of derived demand.

Analysts say the cut in the excise duty is expected to have a positive impact on tyre prices and industry sales and tyre producers are
expected to retain a part of the gains from the excise reduction, which will result in greater profits.

Customs tariff on new tyres for replacement has been reduced from 35.2% to 30% while the excise duty on these products have been cut from 32% to 24% there have been no change in he customs or excise tariffs on natural rubber (NR) which remain at 30% and nil respectively. However, a cess of Rs. 1.50 per Kg has been levied in lien of excise duty for NR.

Tyre companies will also benefit from the cut in peak customs duty on key raw materials carbon black and synthetic rubber.

Currently, strong demand for tyres in India is being driven by the revival of the commercial vehicles industry. In 2002-03, growth in tyre output is expected to be between 12-14% (in tonnage terms) on account of increase in original equipment demand from the commercial vehicles segment. President of PIRIA (All Indian Rubber Indian tyres Association), confirmed that the cut in duty on automobiles and tyres by 8% will directly benefit the rubber industry. He predicted a 10 + % growth rate for the rubber industry in the forth coming year.

The customs duty on styrene butadiene rubber (SBR) has been cut to 30% from 35.2%, while the excise duty is unchanged at 16%. The net result of this is that the landed cost of SBR now stands reduced at Rs. 62,99 per tonnes as compared to the pre-budget lived of Rs. 65,176.
Meanwhile the reduction in customer duty to 30% on polybutadine rubber has reduced the landed cost at Rs. 65,168 per tonne from the pre-budget level of Rs. 68,243 per tonne.

The landed cost of carbon black has also fallen due to cut in peak customs duty to 30% carbon black now cost Rs. 42,025 per tonne as compared to the pre-budget cost of Rs. 43,706 per tonne.

Tyre prices are expected to fall by 5-6% as manufacturers pass on the duty 8% cut in excise duty to consumers, while will give a direct boost to tyre demand from the price-sensitive commercial vehicle segment.

Initial reactions to the budget from players in the tyre industry were overwhelmingly positive It was landed as being progressive and demand stimulating by ATMA (The automotive tyre manufacturers Association), which also said freight equalisation and emphasis on infrastructure would enable all sectors in the economy to reap benefits.

Even as the Indian government reduced the excise duty on tyres and tubes to 24% from 32% in the Union budget for 2003-04, the government of the northern state of Uttar Pradesh has raised the sales tax on automotive tyres and tubes by 50% this has created a prices differential of Rs. 700 to 900 per pair of bus/truck tyres as compared to neighboring status, which tax tyres and tubes at 8% and could lead to large-scale smuggling of tyres into U.P[11].
About 70% of tyres sales in India are accounted for by commercial vehicles and multi utility vehicles, which operate on inter-states routes. Tyre makers say that even after paying for transportation cost and some border kick-backs, traders would make up to Rs. 500 per pairs of bus and truck tyres. The cost of transport to anywhere in the country usually ranges at Rs. 200-300 per pairs of tyres. Tyre makers complain that they will suffer a 20 to 25% fall in legal tyre sales in U.P., with the worst-hit areas being the border districts of the state, like Ghaziabad and Noida.

Some Indian tyre manufacturers now expect complications in this sales and distribution strategy as they may have compensate their dealers in Noida and Ghaziabad by offering them dealership in Delhi.

Tyre dealers say that the action of U.P. Government invites unhealthy competition and the division of tyre trade to low-tax states.

In Raw rubber processors are now in a fix. Processors are centrifuged latex and of TSR are assessed by the Kerala Government to purchase tax at 12.65% (11% purchase tax and 15% surcharge on the tax amount) on ammoniated latex used for centrifugation and scrap rubber used for block rubber, as the income from both the processes is reckoned as business income, not agricultural income.

There is already 12.5% taxation an rubber as a whole when sold outside the state, which can be passed on to the rubber goods manufacturers who purchase and use the rubber. With the levy of tax at
the raw material stage, the scourge of double taxation is gripping the raw rubber sector. The hardest blow in this is the demand for remitting the levy with retrospective effect from 1998.

Mean whole, amendment was made to the Income tax Act reckoning income from rubber as business income. This and the three High Court verdicts gave opportunity for the kerala government to step in, even though it hat contested the prayer of the processors in the High court stating that income from rubber was an agricultural income. The sales tax department has started insuring orders to the latex processors for remittance of the purchase tax with retrospective effect form 1998 in 'which year order of the High Court was issued the processor who obtained the court verdict were caught with their trousers down.

Sales tax department extended the assessment of purchase tax to block rubber with retrospective effect, through block rubber processing is only cleaning of the dirt and impurities in the scarp rubber, the feedstock and presenting the processed rubber with property specifications. However the taxation authorities maintained that it comes within the business and the processors are liable to pay the purchase tax. Thus the provision in the income tax Act has become a thorn in the flesh for the rubber growers. It has learnt that the department is also planning to bring sheet rubbers under the purchase tax purview.
Imports do not attract the purchase tax. Even after paying the 25% customs duty, imported TSR would be very economic to them. More imports would make the processing units unviable owing to demand recession and ultimately, they will get closed down. This, in addition to affecting the normal purchase tax collection, will add to the employment problem in the state.

Hence processing of raw rubber into marketable forms cannot be considered a manufacturing activity. The provision on the income tax to consider income from rubber production as business income would also call for review, since the Kerala Government primarily depend upon this provision to levy the additional 12.65% tax.

The only other alternative in this is introduction of the value-added tax. Once VAT is introduced, double taxation would disappear as the tax paid on making a product will get set off in the final levy.

REVIEW OF LITERATURE

Goodyear Tyres History:

Looking back, the founding of The Goodyear Tyres & Rubber Company in 1998 seems especially remarkable, for the beginning was anything but auspicious. The 38-year-old founder, Frank Seiberling, purchased the company's first plant with a $3,500 down payment—using money he borrowed from a brother-in-law. The rubber and cotton that
were the lifeblood of the industry had to be transported from halfway around the world, to a landlocked town that had only limited rail transportation. Even the man the company's name immortalised, Charles Goodyear, had died penniless 30 years earlier despite his discovery of vulcanization after a long and courageous search[12].

Yet the timing couldn't have been better. The bicycle craze of the 1890s was booming. The horseless carriage, some ventured to call it the automobile, was a wide-open challenge. Even the depression of 1893 was beginning to fade. So on Aug. 29, 1898, Goodyear tyres was incorporated with a capital stock of $100,000. David Hill, who purchased $30,000 of stock, became the first president. But it was the dynamic and visionary founder, hard- driving Frank Seiberling, who chose the name and determined the distinctive winged-foot trademark that remains an integral part of the Goodyear signature, a symbolic link with the company's historic past.

Something else about these legendary early years lingers on through Goodyear's history. Something elusive and intangible, yet very real. Something about the people. People such as Frank Seberling actually trying to liquidate family-owned property in 1898 when he ended up taking that once-in-a-lifetime chance to buy-at a bargain-the seven-acre tract that became Goodyear. People such as George Stadelman, a man who avoided crowds and never made a speech, yet had a gift of integrity.
and foresight that guided Goodyear tyre sales through a critical 20 years. People such as Paul Litchfield, whose conviction and leadership helped inspire Goodyear's development for nearly six decades.

With just 13 workers, Goodyear production began on No. 21, 1898, with a product line of bicycle and carriage tyres, horseshoe pads and, fitting the gamble Seiberling was making, poker chips. The first recorded payroll amounted to $217.86 based on the prevailing wage of 13 to 25 cents an hour for a 10-hour day. After the first full month of business, sales amounted to $8,246.

Since the first bicycle tire in 1898, Goodyear peddled its way toward becoming the world's largest tire company, a title it earned in 1916 when it adopted the slogan "More people ride on Goodyear tyres than on any other kind," becoming the world's largest rubber company in 1926.

J.K. Tyre History:

JK Organisation owes its name to Late Lala Juggilal Singhania, a dynamic personality with a broad vision. Inspired by the cause of the Swadeshi movement of Mahatma Gandhi, and driven by the zeal to set up an Indian enterprise, Lala Kamlapat Singhania founded J.K. Organisation in the 19th century ushering in a new industrial era in India.

The process of industrialization and diversification was worthily and successfully carried on by Lala Kamlapat's three illustrious sons-Sir
Padampat, Lala Kailashpat and Lala Lakshmipat, aided in no small measure by the late Gopal Krishna son of Sir Padampat.

**Quality Policy**: We the people of JK Tyre will have an organization committed to quality in everything we do. We will continuously anticipate and understand our customer's requirements, convert these into performance standards for our products and services and meet these standards every time. Full customer satisfaction both internal and external is our motto.

**Commitment towards Quality**: In order to demonstrate its commitment towards quality, JK tyre has made never ending efforts to make all its products of world class quality.

**Quality Management**:

**ISO 9001**:

JK Tyre world's first tyre company to receive 'ISO 9001' certification for its entire operations in 1995 in one go. Our Quality Management System is completely integrated into all aspects of our operations.

**QS 9000**:

JK Tyre the world's first tyre company to receive Quality Management system certification 'QS 9000', in 1998 for multi location operations. We are using 'QS 9000' system as a tool for continuous incremental improvement.
Environment Management System (ISO 14001):

JK Tyre recognizes the impact that our business has on the environment and take our responsibilities for maintaining harmony with nature. We are the first tyre company in India to receive 'ISO 14001' certification for multi location operations in 1999.

"E-mark":

JK Tyre is the only Tyre Company in India having the E-mark certification on their products, a mandatory requirement for exporting tyres to European markets.

"DOT" (Department of Transport):

JK Tyre have the DOT certification on its products, a mandatory requirement for exporting tyres to US Market.

"INMETRO" (Instituto Nacional De Materiologia-Brazil)

We also have the certification from INMETRO a mandatory requirement for exporting tyres to Brazil (South America). This is a product as well as a system certification. Also this is a proof of superior quality of JK tyre and our ability to meet stringent international standards.
Apollo Tyres:

**History**: There is a power in your neighborhood that's unstoppable, a power that shines like the sun and a power you can trust when on the road, always. A power that is leading the way for all tyre-manufacturing companies in India and across the globe. Join us in the journey to the world of Apollo Tyres.

**Genesis**: There lies a legend behind every success story and ours goes back a long way to ancient Greece. Named after the Greek Sun God, Apollo has created a niche for itself in the tyre market. After three decades of consistent growth, today, Apollo shines as India's premier tyre manufacturing and distribution company.

The history of Apollo as a company goes back to the early seventies, when hard-nosed MNCs and Indian tyre majors dominated the tyre industry. Despite incurring heavy losses in the initial years, mainly due to the fact that all tyre majors in those days had high production capacities as compared to the market demand, Apollo came back as a strong player backed by strong production and marketing strategies.

Thanks to its state-of-the-art technology, goal-oriented people and clear, adventurous vision of the top management, Apollo is today, a name to reckon with, not just in the nylon, but also in the radial tyre segment.
With a view to position itself in the premium tyre segment, Apollo decided to price its brands reasonably higher than its competitors. The rationale behind this was targeting a customer segment for whom price was almost a non-issue. Our key criterion was product benefit. Premium branding led to the development of a niche that comprised to those who looked for the best tyre and not necessarily the best bargain.

This not only made the company less vulnerable to recessionary trends in the years to come but also in the recent times. While the industry has been crying wolf, Apollo has comfortable weathered the storm of recession. Little wonder then, that customer loyalty to Apollo brands has become legendary.

Believing firmly in the philosophy of 'always looking for new answers', Apollo has all along envisioned action that would challenge the conventional wisdom of the tyre industry. Call it holistic thinking or innovative marketing strategies, as a corporation Apollo has always thrived on huge challenges so as to About Apollo Tyres.

Apollo Tyres Ltd. is a Rs. 1700 crore, high performance company that makes India's most reliable tyres. Apollo is built around the core principles of creating shareholder value through reliability in its products and dependability in its relationships with its stakeholders.
The company has a network of over 7000 dealerships of which over 3500 are exclusive outlets under the brand name ‘Apollo Tyre World’.

Apollo Tyres Ltd. is leading the way in quality and has firmly established itself as one of India’s leading tyre companies. Apollo has moved decisively over the years to keep pace with changing market views and needs, by innovating state-of-the-art products to triumph over the toughest Indian road conditions.

Giving leading OEMs on-going access to the most up-to-date capabilities, flexibility and economy.

Bristling with new methods of production and quality, transforming potential into performance. Apollo’s technological innovations have set the industry standards.

For years to come, Apollo’s technology will safely transport people across the country, along highways, through city roads, over farms. Apollo makes a range of tyres for trucks, tractors and cars. Apollo radial tyres for new generation cars are setting standards in tyre performance. As Apollo makes new tracks, it anticipates no just expanding needs but future technologies. Designing and developing the tyres customers need today and must have tomorrow. Apollo Tyres has been termed as “The most energy efficient tire manufacturing plant in domestic and affiliated international plants” by their collaborators, General Tire International, USA.
Apollo Tyres Ltd. is the flagship company of the Raunaq Group. The company was incorporated in 1972 by Mr. Mathew T. Marattukalam, Jacob Thomas and his associates. Subsequently in 1974 the company was taken over by Dr. Raunaq Singh and his associates. The tyre project was implemented in 1976 and commercial production was started in the year 1977 with an installed capacity of 420,000 each of tyres and tubes. The plant is situated at Perambra, District Trichur, Kerala. The company has completed two successful expansion exercises in the years 1985-86 and 1988-89 thereby increasing the installed capacity from 420,000 tyres per annum to 667,000 tyres per annum.

ATL commissioned its second tyre plant at village Limda, District Baroda in the state of Gujarat with an installed capacity of 676,000 tyres per annum. The plant was commissioned in the year 1991. The company in technical collaboration with General Tire International company U.S.A. produces some of India’s most advanced tyres for trucks, tractors, light commercial vehicles and cars. ATL has been successfully exporting its products to USA, Russia, Europe, Australia, Middle East and a few African countries. ATL’s third plant at Pune was commissioned last year. Besides, ATL increased its capacity by taking over a sick unit, Premier Tyres Ltd. at Kerala.
MRF Ltd :

Executive summary : MRF manufactures automobile tyres, tubes, tread rubber and pre-cured treads. In F9/2000, net sales increased by a sluggish 1.67% yoy to just exceeding 23bn, reminiscent of the phlegmatic performance of the auto industry which was again an offshoot of the pessimism of the overall economy. Moreover, the company was affected by arise in raw material prices, especially nylon tyre cord and carbon black which was attributory but not the main cause of its predicament. Net profits nosedived by a whopping 35% from Rs. 986 mn to around Rs. 640.6 mn in the 99-2000 fiscal. This was mirrored by a relative fall in the operating profits of the company which was again due to the relative increases in input prices which was not couple by an equal increases in prices.

Tyres are basically of two tyres-cross-play and radial. In cross-play tyres, nylon or rayon tyre cords are arranged diagonally across. In radial tyres, polyester, nylon, Fiberglas or steel cords are arranged perpendicular to the circumference. Radial technology is an improvement over cross play and radial tyres are prices at (of 25-30%) premium. They are long lasting and have lower incidence of flats.

Tyre industry is capital intensive and as capacities come in spurts, it leads to constant demand-supply imbalances and consequent cyclicality
in prices. Variable cost is also very high, with raw materials forming nearly 70% of the costs. Profit margins are therefore thin. Production process is technology intensive and globally huge sums are invested in R&D. Tyre demand is a derived demand, dependent on the auto industry, both for OEM and replacement market. The major segments are Truck & Bus (T & B) tyres and car tyres. Value share of T & B segment is about 73%. This segment is highly competitive and margins are typically lower than in the car tyres segment. Replacement market forms the largest segment (about 58%), followed by OEM (about 22%). Export accounts for about 15%. With global demand slowing down, there is a consolidation of capacities through mergers etc.

The domestic tyre industry broadly mirrors the market characteristics of the global industry. However, due to rough road conditions, the more rugged, suitable and cheaper cross ply tyres are in vogue. Consumption of natural rubber is, therefore, proportionately higher.

MRF, has been increasing its market share inspite increased competition in most segments of the tyre sector. The company has a considerable lead over its rivals in the car, scooter and other tyre segments but faces stiff competition from other global players in the trucks and tractor segments. Though the company has a head start ahead of all others in the Indian market, thanks due to fragmented nature of
the market, yet the leaders who have recently made inroads are catching up. Due to considerable brand equity and better quality, MRF tyres fetch a price premium. The company is ideally placed in the sector to reap the benefits of the recovery in the automobile sector. The company's thrust on increasing exports to countries in Latin America, Middle East and Africa will also help boost topline growth. However, the company will face stiff competition from foreign companies like Bridgestone, Michelin and Goodyear in the radial tyre segment.

RESEARCH METHODOLOGY

Multistage stratified sampling technique was used for selecting the sample of the present study. Agra district was selected purposively in the first stage as it is convenient to the Researcher. Purposively transport Nagar were most of the workshop of Car, Scooter and Truck were there in the city. In Transport Nagar, there were eleven workshops of trucks, 3 for cars and 7 for scooters from these workshops, 2 workshops of each category was selected randomly in the third stage from each selective workshop, consumers were selected randomly with the help of systematic sampling technique. Thus 200 owner's (50 of truck, 50 of cars and 100 of scooter) were the unit of information for the present study.
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