CHAPTER II

RESEARCH METHODOLOGY
2.0. METHODOLOGY:

For the achievement of the objectives I adopt following methodology:

At the time of starting of the study car tyre radialisation was at a very low level. To understand the reason for low radialisation it is necessary to get the information from the users and the manufacturers of car and tyre. It is also required to find out the expectations of the consumer from the manufacturers and the government and vice versa. For this I collected the data as under:

2.1. SECONDARY DATA:

To understand the problems faced in car tyre radialisation, it is necessary to understand right from the basics of surface transportation in our country. This opens the door for understanding the type of vehicles suitable for it or suitability of road for the available vehicles. Once this is clear then the marketing problems and prospects can be analysed in a systematic way. For this I collected the secondary data in three parts.

1. Data is collected regarding the development of surface transport in the last century. This helped in understanding the changing nature of surface transport in the country.

2. Data is collected about the changing phase of cars in the country. For proper understanding, data is
collected right from the history of cars to the development of cars to the car market scenario at the beginning of study. Keeping in mind the radialisation, car industry segmentation is done. This has provided clear picture about the usage of radial tyres in various types of vehicle. To understand the changing phase of car industry data about various car manufacturers is also collected. Tyre being one of the consumables of car, any change in the car technology has direct impact on the car tyre.

3. Finally third and the most important phase of the secondary data are the details regarding tyres. An in depth study about what is pneumatic tyre, how it was developed. How the tyre is manufactured, various types of tyres available in the country. What are the advantages of radial tyres over the cross ply tyre. How many tyre manufacturers are in the country and their capacities about the radial tyre manufacturing. Radial tyre market scenario at the beginning of the study.

Above secondary data was collected from various associations like:

(i). Society of Indian Automobile Manufacturers (SIAM).

(ii). Automotive Tyre Manufacturers Association (ATMA).

(iii). Commercial Libraries.

(iv). Car Manufacturers.

(v). Tyre Manufacturers.
2.2. **PRIMARY DATA:**

Once the secondary data is collected, work for the collection of primary data and the analysis of it was started. Primary data is collected by way of **field study**. Sources of primary data are:

(i). Car Owners: a). Car for personal usage,  
   b). Car for commercial usage i.e. taxies.

(ii). Car and Tyre manufacturers.

(iii). Car and Tyre Dealers

(iv). Industry Experts.

For primary data collection, structured and unstructured questionnaire is used. Structured questionnaire was used to get the information from the consumers and unstructured questionnaire i.e. primarily personal discussion and the check list is used to get information from the car and tyre manufacturers and dealers.

For primary data collection it is essential to find out the total car market size, here car market size is basically the cars using both crossply and radial tyres, because the cars using only radial tyres are not part of the marketing problems for the tyre manufacturers. This market size is the base for deciding the sample size for data collection.
2.3. **MARKET SIZE:**

To estimate the market size of passenger car radial tyres in India, the Indian car market can be divided into two segments:

1. First segment is of the cars, which use both radial and conventional car tyres.

2. Second segment is of the cars, which use only radial tyres.

All the new generation cars are essentially fitted with radial tyres. It is the first segment of cars, which uses both conventional and radial tyres. In this segment we have Maruti 800, Maruti Omni, Ambassador, Premier Padmini, Tata Sumo and Tempo trax. These are going to form the part of market size.

At the beginning of my study, some of the Maruti models (Maruti 800, Omni), Premier Padmini, Ambassador and most of the multi-utility vehicles were using both conventional/ cross ply tyres.

From the sales point of view, the market share of these cars was close to 40% plus there was a big market of existing cars.

Though from the Year 1999-2000 production of Premier Padmini cars has come to zero but still on Indian roads
more than 10% share of existing cars is occupied by Premier Padmini. Most of these cars are in taxi segment in places like Mumbai.

It is the case with Ambassador also. Though the sale wise in the Year 1999-2000 it had less than 4% share but today these cars enjoy same share as Premier Padmini, most of the ambassador cars are in the Taxi Segment or in Govt. Department. In the smaller towns like Veraval, Bhavnagar, Nashik, Jalgaon, Kolhapur, Varansi etc. are the places to name a few where still Ambassador cars are most seen in Taxi segment.

Raipur, Surat, Chandrapur, Ahmedabad etc are the places where Maruti vans (Omni) are also seen in the taxi segment.

Keeping in mind the life of the cars and sale in last 15 years we find that the total number of cars in India are about 5.0 million. Based on the above factors and the current market share of above mentioned cars of about 40%, the total numbers of cars using both radial and conventional tyres are about 2.0 million vehicles.

With the total car population as 2.0 million vehicles in the market using both cross ply and radial tyre I calculated the sample size using the following method:
2.4. **SAMPLE SIZE:**

The following TWO formulae have been used to estimate the sample size for primary data collection, based on total population size

2.4.1. **FIRST FORMULA:**

\[
 n = pq \left( \frac{z}{e} \right)^2
\]

Where

- \( n \) = Sample size
- \( p \) = Frequency of occurrence = 70% or 0.70
- \( q \) = Frequency of non occurrence = 30% or 0.30
- \( z \) = Confidence level, for 95% confidence level = 1.96
- \( e \) = Tolerable level of error = 0.025

\[
 n = (0.70)(0.30)(1.96/0.025)^2
 = 0.21(3.8416/0.000625)
 = 0.806736/0.000625
 = 1290.77
\]

(Sample size-Source: Page no.94&95 -Sampling methods-Theory & practice
Text Book: Marketing Research Text & Cases
By: Dr.Rajendra Nargundkar: IIM Lucknow)
2.4.2. **SECOND FORMULA:**

\[ n = \frac{NZ^2 (pq)}{NT^2 + Z^2 (pq)} \]

Where
\[ n = \text{Adjusted sample size} \]
\[ Z = \text{Level of confidence: } @95\% = 1.96 \]
\[ T = \text{Allowable tolerance of variation} = 0.025 \]
\[ N = \text{Population size} = 20,00,000 \]
\[ P = \text{Probability of occurring the event} = 70\% \text{ or } 0.70 \]
\[ Q = \text{Probability of non-occuring the event} = 30\% \text{ or } 0.30 \]

\[ n = \frac{2000000 (1.96)^2 (0.70) (0.30)}{2000000 (0.025)^2 + (1.96)^2 (0.70) (0.30)} \]

\[ = \frac{2000000 (3.8416) (0.21)}{2000000 (0.000625) + (3.8416) (0.21)} \]

\[ = \frac{2000000 (0.806736)}{1250 + 0.806736} \]

\[ = 1613472/1250.806736 \]

\[ n = 1289.945083 \]

(Sample size-Source: Page no.176
Text Book: Modern Marketing Research
By: Prof. M.N.Mishra (Head &Dean)
Commerce Faculty, B.H.U

With above formula sample size comes to a total of 1290.
Thus, it was concluded from above two formulae that sample size could be safely taken as 1290. Following table provides the break-up of the sample collected.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Type of Contact</th>
<th>No. of Contacts</th>
<th>Total no. of cars</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Personal car owners</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Single car owners</td>
<td>488</td>
<td>488</td>
</tr>
<tr>
<td></td>
<td>b. Multiple car owners</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Two car owners</td>
<td>96</td>
<td>192</td>
</tr>
<tr>
<td></td>
<td>Three car owners</td>
<td>17</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td><strong>SUB TOTAL</strong></td>
<td><strong>601</strong></td>
<td><strong>731</strong></td>
</tr>
<tr>
<td>02</td>
<td>Commercial/Taxis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Small Taxi operators</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single taxi owners</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>Two taxi owners</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Three taxi owners</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>b. Large Taxi operators</td>
<td></td>
<td>1680</td>
</tr>
<tr>
<td></td>
<td><strong>SUB TOTAL</strong></td>
<td><strong>690</strong></td>
<td><strong>2430</strong></td>
</tr>
<tr>
<td>03</td>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>1291</strong></td>
<td><strong>3161</strong></td>
</tr>
</tbody>
</table>
2.5 **ACTIVITY BAR CHART:**

Below mentioned bar chart shows various activities undertaken for the research. Study was started in June 2000 and thesis is completed in March 2005

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Description</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Year-00</td>
</tr>
<tr>
<td>1</td>
<td>Desk Research</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pilot Study</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Primary Data Collection</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Data Analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Observation, Findings, Conclusions</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>&amp; Recommendations</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Writing of Report</td>
<td></td>
</tr>
</tbody>
</table>
2.6. **SCOPE AND LIMITATION:**

Scope of my study is restricted to the Marketing problems and prospects of radialisation of car tyres in the country. This gave me an opportunity to understand the buying behavior, consumer psychology and consumer expectations from car and tyre manufacturers. From the Tyre manufacturers’ angle, understanding of the consumer’s expectations by marketing team and providing the solutions for it, designing marketing strategies related to:

a. Educating the ignorant customer about the new product features, without hurting his ego.

b. Product development & innovations, Pricing polices.

c. Working in tandem with vehicle manufacturers for product design.

Major limitations of the research are:

a. India being geographically big, multilingual and multicultural country, choices and priorities are different.

b. Since the research is on all India basis, it has taken very long time in collecting and analysing the data. In the mean time market realities have undergone rapid changes that has drastically affected the conclusions and recommendations.