Chapter 3

Research Methodology

In this chapter researcher discusses the different tool and techniques which is use in this research. This chapter consists of the information about the research design, source of data collection, and conceptual model. The research objectives, the research questions and research hypothesis also discusses in detail in this chapter. Factor analysis which is use to reduce the number of factors is also mention in this chapter. Perceptual mapping and Kevin Lane Keller model also discusses in this chapter.
3.1 Rationale of the Study

It has been evident from previous chapter that very limited research have been done to identify the factors of brand positioning of lubricant in other countries but in Indian context it has yet not been done. Some research studies have been carried out in other countries where comparative analysis between different lubricants brands have been done but this type of research has yet not been carried out in India. No research work on conceptual framework for brand positioning of automotive lubricant has been observed by the best knowledge of researcher. This research is an effort to determine the brand positioning of PSU’s automotive lubricant for four wheeler segment. Comparative analysis has been done between brand positioning of PSU’s automotive lubricants brands (Servo, Mak Lubricant and HP Lube) and private lubricant’s brands (Castrol, Superfleet and Veedol). The research has been carried out in Delhi and New Delhi region. This research has been carried out only for four wheeler segment.

3.2 Business Problem

Automotive Lubricant oil market is very competitive and PSUs brands are continuously loosing their market share in Indian automotive lubricant market.

3.3 Problem Statement

PSU’s brands are lagging behind the private brands on brand positioning of automotive lubricant for four wheeler segments.
3.4 Research Question

1- What are the important factors of brand positioning of automotive lubricant brands for four wheeler segment?

2- What are the differences between brand positioning of private and PSU’s automotive lubricant brands with respect to four wheeler segments?

3- How a conceptual framework be developed for brand positioning of PSUs automotive lubricant brand for four wheeler segments by using Kevin Lane Keller model?

3.5 Research Objectives

1. To identify the important factors of brand positioning automotive lubricant brands for four wheeler segment.

2. To identify the differences between the brand positioning of private and PSU’s automotive lubricant brands with respect to four wheeler segment.

3. To develop the conceptual framework for brand positioning of PSU’s automotive lubricant brand for four wheelers segment by using Kevin Lane Keller model.

3.6 Scope of the Study

The survey has been carried out in the Delhi and New Delhi region which has more number of vehicular populations than the population of three metros namely Mumbai, Kolkata and Chennai put together (Delhi government Environment
survey 2013). Also against the national average of 8 cars per thousand individual in India, Delhi has 85 private cars per thousand individuals (Delhi government Environment survey 2013). According to the Hindustan times report dated 3rd march 2013, almost 40 Lakh vehicles cross the Delhi road every day.

3.7 Research Design

The research design used in the present study is exploratory as well as descriptive. The exploratory research has been used to find out the various variables that effects the selection of automotive lubricant brands. Based on the inputs from the literature review various factors were identified that affects the selection of automotive lubricant brands. Factors analysis had been used to determine the important factors for brand positioning of automotive lubricants brand. The factors identified from this survey were used to do the comparative analysis between brand positioning of PSU’s and Private automotive lubricant brands. The second study was a descriptive study. For this study a structured questionnaire were used to measure the perception of the consumers. The questionnaire consists of questions related to the factors of brand positioning of automotive lubricant brands. After that the comparative analysis between brand positioning of PSU’s and Private brands has been done. Finally, the obtained result has been fitted into the Kevin Lane Keller model of brand positioning.
Flow Chart of Research Methodology

Identification of the Factors

Perceptual Mapping between PSU’s and Private Brands

Hypothesis Testing by Z-Test

Conceptual Framework for Brand Positioning of PSU’s Automotive Lubricant Brands

Conclusion

Fig: 3.1
3.8 Conceptual Model

3.8.1 Perceptual Mapping

Attribute based perceptual mapping has been used to do the comparative analysis between PSUs and private automotive lubricant brands. In attributes based perceptual mapping any one of the three techniques is used:

(i) Factor Analysis

(ii) Discriminant Analysis

(iii) Correspondence Analysis

Researcher used the factor analysis to determine the important factors of brand positioning of automotive lubricant brands for four wheeler segment. These factors are treated as dimensions of perceptual mapping. Two factors have been taken simultaneously for the perceptual mapping. Perceptual mapping give the factors on which PSU’s brand are lagging behind the private brands for four wheelers segment.

3.8.2 Kevin Lane Keller Model of Brand Positioning

Kevin Lane Keller model of brand positioning has been used to develop the conceptual framework for brand positioning of PSU’s automotive lubricant. The Kevin Lane Keller model has been mention in Literature Review Fig 2.10.
3.9 Research Hypothesis

Hypothesis testing has been used to validate the result of objective II.

3.9.1 Hypothesis for four wheelers segment consumers.

**H01:** There is no significance difference between the Trustworthiness of PSU’s and Private automotive lubricant brands.

**H1a:** There is a significance difference between the Trustworthiness of PSU’s and Private automotive lubricant brands.

**H02:** There is no significance difference between the Quality and Reliability of PSU’s and Private automotive lubricant brands.

**H1a:** There is a significance difference between the Quality and Reliability of PSU’s and Private automotive lubricant brands.

**H03:** There is no significance difference between the Promotional Tools of PSU’s and Private automotive lubricant brands.

**H3a:** There is a significance difference between the Promotional Tools of PSU’s and Private automotive lubricant brands.

**H04:** There is no significance difference between the accessibility of PSU’s and Private automotive lubricant brands.

**H4a:** There is a significance difference between the accessibility of PSU’s and Private automotive lubricant brands.

**H05:** There is no significance difference between the past purchase experience of PSU’s and Private automotive lubricant brands.
**H5a:** There is a significance difference between the past purchase experience of PSU’s and Private automotive lubricant brands.

### 3.9.2 Hypothesis for four wheeler segment Mechanics.

**H01:** There is no significance difference between the Incentives of PSU’s and Private automotive lubricant brands.

**H1a:** There is a significance difference the Incentives of PSU’s and Private automotive lubricant brands.

**H02:** There is no significance difference between the accessibility of PSU’s and Private automotive lubricant brands.

**H2a:** There is a significance difference between the accessibility of PSU’s and Private automotive lubricant brands.

**H03:** There is no significance difference between the Channel Relationship of PSU’s and Private automotive lubricant brands.

**H3a:** There is a significance difference between the Channel Relationship of PSU’s and Private automotive lubricant brands.

**H04:** There is no significance difference between the brand competitiveness of PSU’s and Private automotive lubricant brands.

**H4a:** There is a significance difference between the brand competitiveness of PSU’s and Private automotive lubricant brands.
3.10 Sampling Design

3.10.1 Sampling Frame

The sampling frame is the list of the target population. Here the sampling frame is the consumers who drive four wheeler and mechanics of four wheeler segment. The study is based on different factors responsible for brand positioning of automotive lubricants brands. The respondents who drive four wheelers and the mechanics of organized service centre have taken for sampling. The study had also been addressed the difference in perception of consumers and mechanics of four wheeler segment towards automotive lubricant brands in India.

3.10.2 Sources of Data collection

Primary data

Primary data has been collected from the two strata:

Four Wheeler segment consumers
Four Wheeler segment mechanics

3.11 Sampling techniques and Procedure

Stratified random sampling has been used in this research. Sample size has been calculated by using Yamane’s formula. First of all total population of four vehicles in Delhi and New Delhi has been identified which is 2412893 as per population census 2013.
3.11.1 Sampling
The sample size will be calculated by using Yamane, 1967 formula.

\[
n = \frac{N}{1 + N \cdot e^2}
\]

Where \( n \) = the sample size

\( N \) = the size of the population

\( e \) = the error of 5 percentage points.

\[
n = \frac{2412893}{1 + 2412893 \cdot (.05)^2}
\]

\[
= \frac{2412893}{1 + 2412893 \cdot .05^2}
\]

\[
= 399.93
\]

\[
= 400
\]

3.11.2 Sample Size
From the research report of automotive lubricant companies it has been identify, that 38% consumers are aware of the automotive lubricant brand and they do not influence by the mechanics whereas 62% consumers are influence by mechanics while selecting the automotive lubricant brands, (research report of Castrol,2012), which is further validated by twelve experts, six from PSU’s and Six from private brands.
3.11.3 Area of Sampling

The sample has been collected from the Delhi and New Delhi region.

3.12 Statistical Tools for Data Analysis

3.12.1 Factor Analysis

Factor analysis were use to reduced the number of factors. A positive correlation between two variables indicates that the two variables move together in the same direction. A negative correlation between two variables indicates that the two variables are moving in the opposite direction.

Interpretation of the correlation coefficient for multiple measures is very complicated because of the large number of correlation coefficient. Factor analysis is the solution of this problem.
Factor Analysis is a statistical technique that is used to reduced the number of factors or dimensions which is the combination of the group of variables.

Factor analysis process starts when consumers rate all the target brands on every possible variable.

A factor analysis process evaluates the set of all possible rating data and determined the correlation coefficient of all pair of variables. The correlation coefficient is the basis of the factor analysis.

### 3.12.2 Z – Test

Prof. Fisher has given a method of testing the significance of large sample (sample size greater than 30).

\[
Z = \frac{\bar{X} - \mu}{\frac{S}{\sqrt{n}}}
\]

Where

- \( \bar{X} = \) The mean of the sample
- \( \mu = \) The actual or hypothetical mean of the population
- \( n = \) The sample size
- \( S = \) The standard deviation of the sample
3.13 Concluding Remarks

In this chapter factors analysis has been used to determine the important factors for brand positioning of automotive lubricants. The factors identified from the factor analysis were used to do the comparative analysis between brand positioning of PSU’s and Private automotive lubricant brands. By perceptual mapping researcher identified the factors on which PSUs brand are lagging behind the private brands for four wheeler segment (consumers and mechanics). Further researcher used the z – test to validate the identified result. Researcher used the Kevin Lane Keller model of brand positioning to develop the conceptual framework for brand positioning of automotive lubricants of PSU’s for four wheeler segments.