CHAPTER - 4

RESEARCH METHODOLOGY

4.1 RESEARCH PROBLEM

This study attempts to integrate consumers’ perception factors into a solid research framework to comprehend better consumer Private Label perception in the Chennai retail stores in two product categories (i.e. food products and grocery items). The table below indicates the consumers’ trend in spending their income among different items which are needed in order to meet day to day requirements. Food essentials occupy the most important place among all other essential expenses spent by the individual and it can be found that major chunk of income is spent on food and grocery items. This study rightly aims to shed light on the how the consumption trends have impact on consumers’ perception towards private label food and grocery items in influencing their buying behavior

Table 4.1 Consumption Trends

<table>
<thead>
<tr>
<th>Consumption Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Essentials</td>
<td>45.68%</td>
</tr>
<tr>
<td>Essential Services (water, power, rent, and fuels)</td>
<td>10.1%</td>
</tr>
<tr>
<td>Clothing</td>
<td>4.9%</td>
</tr>
<tr>
<td>Footwear</td>
<td>0.63%</td>
</tr>
<tr>
<td>Medicare</td>
<td>4.25%</td>
</tr>
<tr>
<td>Transport &amp; Communication</td>
<td>14.51%</td>
</tr>
<tr>
<td>Recreation, Education, and Culture</td>
<td>Less than 4%</td>
</tr>
<tr>
<td>Home Goods</td>
<td>3.25%</td>
</tr>
</tbody>
</table>

Source: Indian Readership Survey (IRS)
4.2  RESEARCH DESIGN

The researcher has employed a research design called Exploratory research design to investigate perception of Private Label Brands in the Indian grocery food sector. A non-probability, convenience sampling technique was used to administer a consumer survey. The sampling method is justified as follows: The researcher endeavored to obtain a sample which was representative of supermarket shoppers in Chennai. Questionnaires were deployed using the self administered, mall intercept method at local shopping centers in Chennai.

4.3  INSTRUMENTATION

The instrumentation used for this study is Questionnaire. It has been framed to study the Perception of Consumers’ who comes to purchase from the retail outlets operating in and around Chennai. A comprehensive questionnaire comprising of 4 parts have been developed for customers.

Part I consists of questions of dichotomous and multiple-choice format; eight on demographic variables of customers. The options for Age are > 20 yrs’, 20 to 39 yrs’, 40 to 60 yrs’, and above 60 yrs. The options for Total Household Income are > 15,000.Rs, 15,000 to 30,000.Rs, 30,001 to 45,000.Rs, 45,001 to 60,000.Rs, and above 60,000.Rs. The options for Gender are ‘Male’ and ‘Female’. The options for Occupation are ‘Business’, ‘Service in Government ‘, ‘Service in Private Sector’, ‘Professional’, ‘Student’ and ‘Others’. The options for Educational Qualification are ‘Not Completed Schooling’, ‘Up to Higher Education’, ‘Graduate’, ‘Post-Graduate’, and ‘Any other specify’. The options for Martial Status are ‘Married’, ‘Single’. The options for Type of Family are ‘Joint’ and ‘Nuclear’. The option for ‘Family Size’ is given ‘1 to 3’, ‘4 to 6’, and ‘7 to 9’ and ‘above 9’.

Part II consists of questions of general shopping behavior of respondents. The type of retail format influence buying behavior, besides store location and the distance that the consumer has to travel have always been considered as a basic criterion in the store choice decision. In fact, for small basket, fill-in trips it’s very

Besides Part III of the questionnaire attempts to reveal what consumers think about buying behavior towards PLB Grocery/ Food items. The options whether consumers buy private label food and grocery items are ‘Yes’, ‘No’, ‘Sometimes’, and ‘Depends’. The types of brand frequently purchased by the consumers have been covered in this research with the option ‘Private Label brand’, ‘Manufacture brand’. The number of times the consumer have purchased private label or manufacturer brand in the last five shopping trip enables to understand consumers involvement towards brands and the preference they attach to PLBs or National brands, the options related to this issue are given as open ended question. While market share of private label brands has been growing worldwide, the difference of the market shares between product categories remains tremendously uneven. The options related to categories of private label food and grocery items are ‘ Staples’, ‘Food item’, ‘Cooking oil’, ‘Milk related items’, ‘Spices’, ‘Fresh Fruits/ Vegetables’ and Any others.

Attributes of Private Label Brands plays significant role in consumers perception towards PLBs and the attributes taken for analysis are ‘Satisfaction’, ‘Risk’, ‘Package’, ‘Taste’, ‘Social Acceptability’, and ‘Availability’. Selection of PLBs depends on the factors that consumers looks in for buying Private Label Brands the factors that have been focused in this research study are ‘Popularity’, ‘Advertising’, ‘Store Name’, ‘Trust in Brand’, ‘Availability’, ‘Quality’, ‘Nutritional’, ‘Word of Mouth’, ‘Free Offers’ and ‘Discounts’. Similarly comparison has been made with regard to factors that highly influence consumers to purchase or not to purchase private label and national brand.
The attributes that makes consumers to look for National brands have been taken for analysis and the attributes covered are Variety, Quality of the brand, on impulse, not satisfied with previous brand and New in market. The factors that act as key motivators to purchase private label brands has been asked to Rank order by the respondents and the factors that have been taken for analysis are Price, Quality, Discount and Offers, Store Image, Home delivery, Additional emergency requirement, Convenient opening and closing hour’s, No other source available, Proximity to home and Easy entrance and exit.

The medium through which retailers try to communicate their marketing program plays significant role in creating positive attitude towards Private label brands. Different marketing technique followed by retail outlets were analyzed and they are Pamphlets, Billboards, Direct Mail, Word of Mouth, Television, Newspaper, In Store promotion, Just by looking around, Magazines and While shopping/ Window display.

Part IV of questionnaire deals with consumer factors related with Private label food and grocery items and the factors that have been covered are related to perception towards PLB Grocery and Food items where analysis on attitude has been made by using five statements related to attitude, Product Familiarity towards PLB Food and Grocery items are analyzed using three statements, Purchase Intention are analyzed using three statements, Perceived Economic situation has contributed significantly to the growth of private label brands and six related statements has been used for analysis. Perceived Benefits are analyzed using five statements, perceived quality is analyzed using four statements, Price sensitivity is analyzed using four statements, Perceived Risk are analyzed using five statements, Brand Sensitivity are analyzed using five statements, Brand Attributes are analyzed using three statements and Brand loyalty are analyzed using five statement.
4.4 PRE-TESTING

The pretesting of the questionnaire was done to ascertain whether the questionnaire captured the required information that would fulfill the objectives of the study and to determine the reliability of the research instrument. The pilot study for the questionnaire measures the consumer perception factors among 50 consumers who were representatives of supermarket shoppers in the retail outlets in Chennai.

4.5 RELIABILITY TEST

Table 4.2. Reliability of the Questionnaire

<table>
<thead>
<tr>
<th>Factor</th>
<th>Reliability score alpha coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>.756**</td>
</tr>
<tr>
<td>Familiarity</td>
<td>.702**</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>.781**</td>
</tr>
<tr>
<td>Economic Situation</td>
<td>.714**</td>
</tr>
<tr>
<td>Benefits</td>
<td>.702**</td>
</tr>
<tr>
<td>Quality</td>
<td>.727**</td>
</tr>
<tr>
<td>Price</td>
<td>.696**</td>
</tr>
<tr>
<td>Risk</td>
<td>.826**</td>
</tr>
<tr>
<td>Brand sensitivity</td>
<td>.725**</td>
</tr>
<tr>
<td>Brand Attributes</td>
<td>.708**</td>
</tr>
<tr>
<td>Brand loyalty</td>
<td>.709**</td>
</tr>
</tbody>
</table>

** Significance at 0.01 level

From the above table it is ascertained that the items in part IV of the questionnaire are highly reliable and the samples satisfy the normal distribution rationally.
4.6 **SAMPLING FRAME**

The geographical area of the study chosen as the universe was the Chennai city, the capital of Tamil Nadu, India. The reason for choosing the city Chennai was that, the large Indian conglomerates such as Reliance, Bharti, Aditya Birla and Future have already made huge investments in the retail sector. All major cities in the country today have a presence of organized retail players. They aimed to provide a complete destination experience for all segments of society. In recent years, emergence of hyper and super markets is trying to provide customer with variety of facilities is a landmark in the evolution of retail sector.

4.7 **SAMPLE SELECTION**

A non-probability, convenience sampling technique was used to administer a consumer survey. The sampling method is justified as follows: The researcher endeavored to obtain a sample which was representative of supermarket shoppers in Chennai. Questionnaires were deployed using the self administered, mall intercept method at local shopping centers in Chennai.

4.8 **SAMPLE SIZE**

A sample size of 800 respondents is selected from various retail formats dealing with Private label products and it was representatives of shoppers who buy private label food and grocery items. Among 835 samples from the representative of supermarket shoppers, 824 returned the questionnaire. Out of this 824 only 800 were usable.

4.9 **FRAMEWORK OF ANALYSIS**

The statistical package used for the analysis of the data is SPSS (version 16.0)
a. Descriptive Analysis

Descriptive statistics describe the basic features of the data in a study and provides simple summaries about the samples and measures. In this study, descriptive statistics is done for eleven dimensions namely Attitude, Familiarity, Involvement, Perceived Economic Situation, Perceived Benefits, Perceived Quality, Price Sensitivity, Perceived Risk, Brand Sensitivity, Brand Attribute and Brand Loyalty. Findings from this study would help to identify the key aspect in each dimension that would contribute significantly to that dimension.

The formula for mean is: Mean = x = Σx / n

Where, Σx is the sum of all the sample observations, and n is the number of sample observations.

The formula for Standard Deviation is:

\[ s = \sqrt{\frac{\sum (x_i - x)^2}{n - 1}} \]

whereas is the sample standard deviation, \( s^2 \) is the sample variance, x is the sample mean, \( x_i \) is the ith element from the sample, and n is the number of elements in the sample.

b. t-test

The t-test assesses whether the means of two groups are statistically different from each other. T= difference between means of groups / standard error of the difference between means. The standard error of the difference is a measure of the precision with which this difference can be estimated.

The researcher can conclude from "large" absolute values of t that the samples were drawn from different populations. A large t indicates that the difference between the treatment group means is larger than what would be expected from sampling variability alone (i.e., that the differences between the two groups are
statistically significant). A small t (near 0) indicates that there is no significant difference between the samples.

Degrees of Freedom- Degrees of freedom represents the sample sizes, which affect the ability of the t-test to detect differences in the means. As degrees of freedom (sample sizes) increase, the ability to detect a difference with a smaller t increases.

**P Value**-The P value is the probability of being wrong in concluding that there is a true difference in the two groups (i.e., the probability of falsely rejecting the null hypothesis, or committing a Type I error, based on t). The smaller the P value, the greater the probability that the samples are drawn from different populations. Traditionally, you can conclude there is a significant difference when P < 0.05.

Confidence Interval for the Difference of the Means:

If the confidence interval does not include zero, the researcher can conclude that there is a significant difference between the proportions with the level of confidence specified. This can also be described as P < a (alpha), where a is the acceptable probability of incorrectly concluding that there is a difference.

The level of confidence is adjusted in the Options for t-test dialog; this is typically 100(1-a), or 95%. Larger values of confidence result in wider intervals and smaller values in smaller intervals.

T-test power is affected by the sample size of both groups, the chance of erroneously reporting a difference, a (alpha), the difference of the means, and the standard deviation.

Alpha (a) - Alpha (a) is the acceptable probability of incorrectly concluding that there is a difference. An error is also called a Type I error (a Type I error is when you reject the hypothesis of no effect when this hypothesis is true).
The value is set in the Options for t-test dialog; a value of \( a = 0.05 \) indicates that a one in twenty chance of error is acceptable, or that you are willing to conclude there is a significant difference when \( P < 0.05 \).

Smaller values of \( a \) result in stricter requirements before concluding there is a significant difference, but a greater possibility of concluding there is no difference when one exists (a Type II error). Larger values of \( a \) make it easier to conclude that there is a difference but also increase the risk of reporting a false positive (a Type I error).

c. ANOVA

Analysis of Variance (ANOVA) is a collection of statistical models and their relationship procedures in which the observed variance is partitioned into components due to different explanatory variables. It is a technique whereby the total variation present in a set of data is partitioned into several components. Associated with each of these components is a specific source of variation, so that in the analysis, it is possible to ascertain the magnitude of the contribution of each of these sources to the total variation. It is used to test the equality of the means of three or more populations. The purpose of analysis of variance is to test for significant differences between variables. The interest lies in testing the null hypothesis that the category means are equal in the population.

The formula for computing independent t test is:

\[
    t = \frac{\bar{y}_1 - \bar{y}_2}{s \sqrt{\left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}
\]

where, \( \bar{y} = \text{mean} \), \( s = \text{variance} \), \( n = \text{sample size} \)
The formula for computing F test is:

\[
\frac{\sum_{i,j} (y_{ij} - \bar{y}_j)^2}{\sum_j (n_j - 1)} = \frac{SS_{WG}}{df_{WG}} = MS_{WG}
\]

SS_{WG} = Sum of Squares Within Groups

df_{WG} = degrees of freedom Within Groups

SS_{WG}/df_{WG} = Mean Square Within Groups, or MS_{WG}.

d. Chi-Square Test

Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. Were the deviations (differences between observed and expected) the result of chance, or were they due to other factors. How much deviation can occur, the researcher, must conclude that something other than chance is at work, causing the observed to differ from the expected. The chi-square test is always testing what scientists call the null hypothesis, which states that there is no association between the expected and observed result.

The formula for calculating chi-square (X^2) is:

\[
X^2 = (o-e)^2/e
\]

That is, chi-square is the sum of the squared difference between observed (o) and the expected (e) data (or the deviation, d), divided by the expected data in all possible categories.
e. Multiple Regression Analysis

Regression is the determination of statistical relationship between two or more variables. In simple regression two variables are used. One variable (independent) is the cause of the behaviour of another one (dependent). When there are more than two independent variables the analysis concerning relationship is known as multiple correlations and the equation describing such relationship is called as the multiple regression equation. Regression analysis is concerned with the derivation of an appropriate mathematical expression is derived for finding values of a dependent variable on the basis of independent variable. It is thus designed to examine the relationship of a variable $Y$ to a set of other variables $X_1, X_2, X_3, \ldots, X_n$, the most commonly used linear equation in $Y=b_1 X_1 + b_2 X_2 + \ldots + b_n X_n + b_0$. Here $Y$ is the dependent variable, which is to be found. $X_1, X_2, \ldots$ and $X_n$ are the known variables with which predictions are to be made and $b_1, b_2, \ldots, b_n$ are coefficient of the variables.

f. The Friedman test

The Friedman test is a test for comparing three or more related samples and which makes no assumptions about the underlying distribution of the data. The data is set out in a table comprising $n$ rows by $k$ columns. The data is then ranked across the rows and the mean rank for each column is compared.

g. Factor Analysis

Factor Analysis is the technique used to reduce a large number of variables into fewer number of factors based on relationships in the correlation matrix. Factor analysis extracts maximum common variance from all variables and puts them into a common score. In this study, factor analysis was done for three dimensions namely, Perceptual Factors, Marker Factors and Consumer Characteristics. These three dimensions lent themselves to factor analysis as the Eigen values of the factors that emerged out of the analysis were above 1.
h. Structural Equation Model

Structural Equation Model is used extensively in social and behavioural science research to establish the fit between empirical results from surveys and a postulated model of the causal relationships of latent variables based on the covariance between these variables. A latent variable is defined as a dependent response based on observable explanatory variables (Joreskog, 1994).

i. Frequency Analysis

Frequency Analysis involves tabulating frequencies or the number of responses obtained for a particular statement or aspect. In this study, frequency analysis was done for the demographic profile of the respondents.