CHAPTER IV

RESEARCH METHODOLOGY

4.1. INTRODUCTION

This chapter outlines the research design, sampling procedure, sources of data, design of questionnaire and statistical techniques used for data analysis.

4.2. RESEARCH DESIGN

Research design is an arrangement of conditions for collection and analysis of data in a manner that aims to combine the relevance to the research purpose with economy in procedure. The descriptive research design has been employed for the present study.

4.3. SAMPLING PROCEDURE

The Chennai city has been purposively selected for the present study. The male customers of cosmetic products have selected by adopting random sampling technique through pre-tested and structured questionnaire.

4.4. SAMPLE SIZE DETERMINATION

The sample size for the present study is determined by using the following formula:

\[ n = \frac{t^2 \times p \times (1-p)}{m^2} \]

- \( n \) = Required sample size
- \( t \) = Confidence level at 95% (standard value of 1.96)
- \( p \) = Response from the male customers
- \( m \) = Margin of error at 5% (standard value of 0.05)

**Step1:**

\[ n = \frac{(1.96)^2 \times 0.3 \times (1-0.3)}{(0.05)^2} = 323 \]
Step 2:

To correct for the difference in field survey, the sample size is multiplied by the design effect (D). The design effect is generally assumed to be 1.50 for field survey.

\[ n \times D = 323 \times 1.50 = 486 \]

Step 3: Contingency

The sample is further increased by 5% to account for contingencies such as non-response or recording error.

\[ n + 5\% = 486 \times 0.05 = 510. \text{ Hence, it is round to 500.} \]

Hence, the sample size for the present study is 500 male customers of cosmetic products in Cheanni.

4.5. SOURCES OF DATA

4.5.1. PRIMARY DATA

The data and information have collected from the primary source of male customers of cosmetic products through pre-tested structured questionnaire which was developed after an extensive review of literature. Initially a pre-test among 50 male customers of cosmetic products (10% of the total sample size) through the questionnaire method as well as personal discussion method was conducted for two purposes. The first one was to limelight the weaknesses of the questionnaire with respect to the understandability of the statements and the second one was to check on the time taken by the respondents to fill up the questionnaire. The loopholes in the questionnaire were mitigated to some extent and a modified questionnaire was then administered for field study.

4.5.2. SECONDARY DATA

The data and information have also collected from the secondary sources of journals, research papers, research reports, conference proceedings, magazines, newspapers and websites.
4.6. DESIGN OF QUESTIONNAIRE

PART-I – It consists of socio economic features such as age, educational qualification, occupation, marital status, type of family, family size, total experience in employment, monthly income, monthly income of family and residential area. Besides it also includes buying influencer and reasons for purchasing cosmetic products.

PART II – It includes brand preference, factors affecting the brand preference, frequency of purchase, period of using and satisfaction of shampoo brands.

PART III – It consists of brand preference, factors affecting the brand preference, frequency of purchase, period of using and satisfaction of hair oil brands.

PART IV – It deals with brand preference, factors affecting the brand preference, frequency of purchase, period of using and satisfaction of face powder brands.

PART V – It includes brand preference, factors affecting the brand preference, frequency of purchase, period of using and satisfaction of body soap brands.

The Cronbach’s alpha of the scale for the various components of questionnaire is varying from 0.90 to 0.84 indicating acceptable level of internal consistency. After approval of questionnaire validity, 600 questionnaires were circulated in total for the collection of primary data. Out of which 527 questionnaires were returned and defective questionnaires from 27 respondents were rejected and 500 responded questionnaires were finalized for analysis and interpretation of the primary data collected.

4.7. STATISTICAL TECHNIQUES

The processing, classification, tabulation, analysis and interpretation of data are done with the help of SPSS (Statistical Package for Social Sciences) software package. The following statistical tools and mathematical techniques have been applied on the data collected from the respondents.
4.7.1. DESCRIPTIVE STATISTICS

In order to examine the socio-economic profile of men customers of cosmetic products, the frequency and percentage analysis have been applied.

4.7.2. CHI-SQUARE TEST

In order to examine the association between socio-economic features of male customers and their brand preference of cosmetic products, the association between brands of cosmetic products and frequency of purchase by male customers, the association between brands of cosmetic products and period of using by male customers and association between brands of cosmetic products and level of satisfaction male customers, the Chi-Square Test has been employed and the formula is:

\[ \chi^2 = \sum \left( \frac{(O-E)^2}{E} \right) \]

Where as:
O = Observed Frequency in each category
E = Expected Frequency in the corresponding category
d.f = Degree of Freedom (n-1)
\( \chi^2 \) = Chi Square

4.7.3. ANALYSIS OF VARIANCE (ANOVA)

In order to study the difference between socio-economic features of male customers and their satisfaction about features of cosmetic brands, the analysis of variance (ANOVA) has been employed and the formula is:

\[ F = \frac{\text{Variance between Samples}}{\text{Variance within Samples}} \]

i.e. \( F = \frac{\text{Greater variance}}{\text{Smaller variance}} \)

4.7.4. CORRELATION ANALYSIS

In order to study the relationship between factors affecting the purchase of cosmetic brands and their satisfaction about features of cosmetic brands, the Person’s
The correlation coefficient is worked out. The formula for Person’s Correlation Coefficient (r) is:

\[ r = \frac{\sum XY}{N} - \frac{\left( \frac{\sum X}{N} \right) \left( \frac{\sum Y}{N} \right)} {\sqrt{\frac{\sum X^2}{N} - \left( \frac{\sum X}{N} \right)^2 \times \left( \frac{\sum Y^2}{N} - \left( \frac{\sum Y}{N} \right)^2 \right)}} \]

Where as:

- \( N \) Represents the number of pairs of data
- \( \sum \) Denotes the summation of the items indicated
- \( \sum X \) Denotes the sum of all X scores
- \( \sum X^2 \) Indicates that each X score should be squared and then those squares summed
- \( (\sum X)^2 \) Indicates that the X scores should be summed and the total squared. [avoid confusing \( \sum X^2 \) (the sum of the X squared scores) and \( (\sum X)^2 \) (the square of the sum of the X scores)]
- \( \sum Y \) Denotes the sum of all Y-scores
- \( \sum Y^2 \) Indicates that each Y score should be squared and then those squares summed
- \( (\sum Y)^2 \) Indicates that the Y scores should be summed and the total squared
- \( \sum XY \) Indicates that each X score should be first multiplied by its corresponding Y score and the product (XY) summed

### 4.7.5. EXPLORATORY FACTOR ANALYSIS

In order to identify the factors affecting the purchasing of cosmetic products by male customers, the explanatory factor analysis has been applied. The factor analysis can be expressed as:

\[ Z_{ij} = a_1 f_{1j} + a_2 f_{2j} + \ldots + a_m f_{mj} + e_{ij} \]

Where as:

- \( Z \) = Factors Affecting the Purchasing of Cosmetic Products
a = Factor Loadings
f = Factor Score
e = Residual term accounting for Errors or other Source of Variation.

4.7.6. MULTIPLE REGRESSION ANALYSIS

In order to analyse the factors affecting the purchasing of cosmetic products on the level of satisfaction of male customers, the multiple regression has been employed. The functional form of multiple liner regression models is given below:

\[ Y = \alpha + \beta_i X_i + e \]

Where as:

Y = Level of Satisfaction
Xi = Factors Affecting the Purchasing of Cosmetic Products
i = 1 to n
\( \alpha \) = Intercept
\( \beta_i \) = Partial Regression Coefficients
e = Random Error or Stochastic Disturbance Term

While \( \alpha \) and \( \beta_i \) are the coefficients which are to be estimated.

The research methodology, which includes research design, sampling technique, sampling size if the research, types and sources of data used, data collection process, questionnaire design and the statistical tools used are all explained in this chapter. The analyses and interpretation of the data collected is to be dealing in the next chapter.