CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter details about research methodology for the present study. Research means a search for facts, answers to questions and solutions to the problems. It is a purposive investigation and an organized inquiry. Research methodology is the description, explanation and justification of various methods of continuing research. Research design is a logical and systematic plan prepared for directing research study. It is the program that guides the investigator in the process of collecting, analyzing and interpreting data.

3.2 RESEARCH DESIGN

This study is descriptive in nature. The main reasons for descriptive research design is to describe the personal profile of the respondents like age, gender, marital status, experiences, etc. The theme of the descriptive study is that nothing is manipulated i.e information is collected without changing the environment. Sometimes, this study is also known as relational or observational studies. According to the Office of Human Research Protections, (OHRP) is defined as any study that is not truly experimental is descriptive study. This study is mainly conducted to demonstrate associations or relations between things in the world.
3.3 SAMPLING DESIGN

The present study’s goal was to find out the perception of the employees towards voluntary retirement scheme among BSNL Tamilnadu Circle from the major districts like Chennai, Coimbatore, Trichirapalli and Madurai. The first step was to identify the employees between the age group of 45 to 55 years who were having the minimum experience of 15 years and who wish to opt / are willing to go for Voluntary Retirement Scheme. During that time, the sampling procedures were designed to identify approximately in the range of 1500 to 2000 employees who have satisfied the condition of minimum experience of 15 years and those who wish to opt for Voluntary Retirement Scheme. In order to gather the samples, the researcher approached the administrative department of each circle to get the details of the employee’s age group between 45-55 years. The information provided by the administrative department satisfies only 62% (1240 employees) of the estimated population in subjective age group. From the details provided, the researcher started randomly selecting the samples for the research included in the study. Simple random sampling is an unrestricted probability sampling, every element in the population was known and an equal chance of being selected as subject. Finally, (Dillman 1978) 25% employees (410) show interest in answering the question and were willing to opt for Voluntary Retirement Scheme from the total of 1240 employees. This study began with 1240 employees in the year 2013 and the completion of data collection was done by the end of May 2015.

3.4 INSTRUMENTATION AND DATA COLLECTION

For effective flawless data collections and questionnaire preparation, the following methods are used survey, interview and case study. Among these three, interview method is an appropriate method to use when exploring practitioners, perspective due to the qualitative nature of
information. First set of potential was compiled from the semi structures, face to face interviews with 30 employees from the identified sample. The interview was scheduled during the leisure time and after the working hours. The interview schedule includes the open ended questions covering the factors like personal factors, job related factors, financial factors, special factors and health related factors that influence those who opt for VRS, life satisfaction factors after VRS, Enjoyment factors after VRS.

The interview lasted approximately 10-15 minutes during which the respondents are allowed to speak freely and openly about their opinion and perception towards VRS. Finally, the recordings from the interviews were independently reviewed by the experts for the content validity to fine tune the questionnaire items. Other items suggested by the literature reviews are included in the questionnaire. To make questionnaire more inclusive, the additional sources such as activity with family, activity with friends, experts from private sectors and opinions are incorporated in the questionnaire. After incorporating all the changes, the questionnaire was completed. Now the grammatical conventions were standardized across all the items in the questionnaire. Finally, a standard five point likert rating format was adapted to the questionnaire. The specific support from each of the rating scale matched the content of the particular item, but most items required a rating of either frequency, degree of satisfaction or degree of acceptance. The general instruction statement was given in the questionnaire, large printing and uncluttered arrangements were used to make the question easy to read ant also outside the source of error.

3.5 PILOT STUDY

After finalizing the number of items in the questionnaire, an initial version of questions was pilot tested from the target population of 75 employees randomly chosen from Chennai, Coimbatore, Trichirapalli and
Madurai which includes the first interviewed 30 employees. The Semi-structured interview technique is used to collect data. After completing the interview, again the questionnaire was reviewed to discover any new items that has to be included or to discover if any items are confusing, difficult to understand. Based on the response and reactions from the respondents, the questionnaire is altered after obtaining opinion form the experts again. Final version of the questionnaire includes 75 items.

3.6 RELIABILITY TEST

In order to find out the internal reliability items related to perception of Bharat Sanchar Nigam Limited employees towards Voluntary Retirement Schemes in the Tamil Nadu Circle, the measure of Cronbach’s Alpha was utilized. The result of the Cronbach’s Alpha suggested the overall reliability of the test. It is evident from the study that the employees’ level of perception of Bharat Sanchar Nigam Limited employees towards Voluntary Retirement Schemes in Coimbatore is highly reliable for most of the items and greater than recommended level (0.7) and has achieved the internal reliability. Similarly, the researcher has also verified the reliability under five different dimensions to analyze the perception towards Voluntary Retirement Scheme which are considered for the study as shown in the Table no 3.1.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Factors</th>
<th>Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Major Factors</td>
<td>15</td>
<td>0.707</td>
</tr>
<tr>
<td>2.</td>
<td>Specific Factor</td>
<td>15</td>
<td>0.872</td>
</tr>
<tr>
<td>3.</td>
<td>Health Factor</td>
<td>8</td>
<td>0.848</td>
</tr>
<tr>
<td>4.</td>
<td>Satisfaction Factor</td>
<td>15</td>
<td>0.846</td>
</tr>
<tr>
<td>5.</td>
<td>Enjoyment Factor</td>
<td>7</td>
<td>0.864</td>
</tr>
</tbody>
</table>
3.7 FRAMEWORK OF ANALYSIS

The vital objective of the study is to examine the perception of the BSNL employees towards Voluntary Retirement Schemes. The data collected for the purpose of the study were quantified, categorized and tabulated. Such data were further subjected to statistical procedures to fulfill the objectives of the study using the statistical tools like: Percentage Analysis and Mean Score Analysis, arithmetic tools and the like: Garrett Ranking Scale and hypothetical tools such as One Way ANOVA and Chi-Square Test, log linear model are carried out. The Multivariate analyses used in the study are Multiple-Regression, Discriminant Analysis, Factor Analysis (EFA & CFA) and finally, Structural Equation Modeling.

3.8 TOOLS EXPLANATION

3.8.1 Mean Score

Mean is the simplest measurement of central tendency and is a widely used measure. Its chief use consists in summarizing the essential features of a series and in enabling data to be compared. A team score for a particular characteristic can also be measured by taking the average, or mean, of all team member scores. Using this method, the amount of each trait for individual members is combined to form a group-level measurement of that trait (Barrick et al. 1998). Calculating means is much more quantitative and reliable than using simple averages, especially in economic and social studies where direct quantitative measurements are possible. An attempt has been made to measure the demographic factors of the BSNL Employees and their perception towards Life Satisfaction factors after Volunteer Retirement Services.
Thus, the basic statistical formula

\[ \overline{X} = \frac{\sum X}{N} \]

where \( \sum X \) = Summation of the value of the \( i^{th} \) item \( X \), \( I = 1, 2, 3, \ldots, N \)

\( N \) = Total number of items

3.8.2 Weighted Mean

The Weighted mean is a mean where there is some variation in the relative contribution of individual data values to the mean. Each data value (\( X_i \)) has a weight assigned to it (\( W_i \)). Data values with larger weights contribute more to the weighted mean and data values with smaller weights contribute less to the weighted mean. The factors such as Major Factors, Specific Factors, Health Factors, Satisfaction Factors and Perceived enjoyment factors were measured based on their opinion rating.

The formula is

\[ \overline{X_w} = \frac{\sum W_i X_i}{\sum W_i} \]

There are several reasons why one might want to use a weighted mean.

- Each individual data value might actually represent a value that is used by multiple people in the sample. The weight, then, is the number of people associated with that particular value.
• The sample might deliberately be over representing or under representing certain segments of the population. To restore balance, one would place less weight on the over represented segments of the population and greater weight on the represented segments of the population.

• Some values in the data sample might be known to be more variable (less precise) than other values. One would place greater weight on those data values known to have greater precision.

3.8.3 Garrett Ranking Technique

This technique was used to rank the problems faced by the respondents in the area of competency mapping. As per this method, respondents have been asked to assign the rank for all factors and the outcome of such ranking was converted into score value. In other words, respondents were asked to rank according to the magnitude of the attribute. The order of merit given by the respondents was converted into ranks by using the following formula.

\[
\text{Percentage Position} = \frac{100(R_j - 0.5)}{N_j}
\]

The percentage position of each rank thus obtained was converted into scores by referring to the table given by Henry Garrett. Then for each factor, the scores of individual respondents were added together and were divided by the total number of respondents for whom the scores were added. These mean scores show the highest and lowest mean based on the factors influencing the BSNL employees towards VRS Services that were arranged in
the order of ranks and consequently inferences were drawn on the basis of scores achieved.

3.8.4 One-Way Analysis

The basic principle of ANOVA is to test for differences among the means of the populations by examining the amount of variation within each of these samples, relative to the amount of variance made viz., one based on between samples variance and the other based on within samples variance. For the study, the demographic factors of the BSNL employees are compared with the determinants contributing towards their perception towards VRS Services with the Tukey’s method.

3.8.5 Chi-Square

Chi-Square Test is an important test among the several tests of significance. Chi-Square is symbolically written as $\chi^2$ (pronounced as Ki Square). It is a statistical measure used in the context of sampling analysis for comparing a variance to a theoretical variance. For the purpose of the study, the relationship between demographic factors such as age, marital status, type of family, status in the family, monthly income, occupation, etc. of the respondents and their perception towards major factors leading towards Voluntary Retirement Services. Chi square test enables to explain whether or not two attributes are associated. Hence, it is pertinent to use the tool to find the significance between demographics of the rural households and their level of awareness towards savings and investment as well as demographics of the respondents and factors influencing savings are taken for analysis. Chi-square is calculated as follows,

$$\chi^2 = \sum \frac{(o_{ij} - E_{ij})^2}{E_{ij}}$$
Oij = observed frequency of the cell in the i\textsuperscript{th} row and j\textsuperscript{th} column.

Eij = expected frequency of the cell in the i\textsuperscript{th} row and j\textsuperscript{th} column.

Degree of freedom plays an important part in using the chi-square distribution and tests are based on it. The degree of freedom is worked out as follows:

\[ d.f = (c-1)(r-1) \]

where ‘c’ means number of columns and ‘r’ means number of rows.

### 3.8.6 Log Linear Model

The term log-linear derives from the fact that one can, through logarithmic transformations, restate the problem of analyzing multi-way frequency tables in terms that are very similar to ANOVA. Specifically, one may think of the multi-way frequency table to reflect various main effects and interaction effects that add together in a linear fashion to bring about the observed table of frequencies. For the present study, a simple non-linear model based on the variables such as Gender, Health Impact and Health Factors in which the first two are the independent variables and the Health factor is the dependent factor.

### 3.8.7 Discriminant Analysis

Since DFA is involved in classification of problems, and also to ascertain the efficiency of the DFA, all the variables which satisfy the entry and removal criteria were entered into the function. Normally, the criteria used to select the variables for inclusion in the function is minimum F to enter into the equation (i.e) F statistic calculated for the qualified variable to enter into the function is fixed as $\geq 1$. 
Similarly, any variable entered in the equation will be removed from the function if F statistic for the variable calculated is < 1. The 2 groups are defined as

Group 1 - Low level
Group 2 - High level

The mean and standard deviation for these groups and for the entire samples were given for each variable considered in the analysis. An attempt has been made to discriminate the important variables between groups of respondents with lower level of mean perception towards enjoyment and the higher level of mean perception towards enjoyment among BSNL employees.

3.8.8 Factor Analysis

Factor analysis is used to study a complex product or service in order to identify the major characteristics or factors considered important by the respondent. The purpose of factor analysis is to determine the responses to the several numbers of statements, which are significantly correlated. Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved variables called factors. Factor analysis is related to Principal Component Analysis (PCA), but the two are not identical. Latent variable models, including factor analysis, use regression modeling techniques to test hypotheses producing error terms, while PCA is a descriptive statistical technique. In order to identify the life satisfaction, 15 variables in the form of statements describing the types of factors that may influence the BSNL employees after VRS were included in the questionnaire.
3.8.9 Confirmatory Factor Analysis

CFA allows the researcher to test the hypothesis that a relationship between the observed variables and their underlying latent construct(s) exists. The researcher uses knowledge of the theory, empirical research, or both, postulates the relationship pattern a priori and then tests the hypothesis statistically. According to Ahire, Golhar and Waller (1996), Confirmatory Factor Analysis (CFA) provides enhanced control for assessing unidimensionality as compared to Exploratory Factor Analysis (EFA) and is more in line with the overall process of construct validation. Unidimensionality refers to the extent to which the items on a factor measure one single construct. In the present study, CFA was run using AMOS. The default model was considered to be zero order CFA was done for all the three constructs viz. Job Aversion, Compulsion / Dependents Health Situation, and Economic Condition. After this, standardized model CFA was conducted after carrying out the modification indices for all the three constructs.

3.8.10 Structural Equation Modeling

Structural Equation Modeling has its roots in path analysis, was invented by the geneticist Sewall Wright (Wright 1921). It is still customary to start a SEM analysis by drawing a path diagram. A path diagram consists of boxes and circles, which are connected by arrows. In Wright’s notation, observed (or measured) variables are represented by a rectangle box, and latent (or unmeasured) factors by a circle or ellipse or square box. Single headed arrows or ‘paths’ are used to define causal relationships in the model, with the variable at the tail of the arrow causing the variable at the point. Double headed arrows indicate covariances or correlations, without a causal interpretation. Statistically, the single headed arrows or paths represent regression coefficients, and double-headed arrows covariances. The relationships between the theoretical constructs are represented by regression
or path coefficients between the determinants that are considered to be exogenous variables that have impact on the life satisfaction as the base endogenous factor and the intermediate is the enjoyment which has been influenced through three other exogenous variables such as Major Factors, Health Factors and Specific Factors that conclude measuring the significance of the hypothesis.

3.9 CONCEPTUAL FRAMEWORK

The proposed research model describes how the research gap is to be filled. Each dimension is tested with the help of a questionnaire and the appropriate tools. The diagrammatic representation of this proposed research model is given below.
Figure 3.1 Framework to determine the perception towards VRS

3.10 QUESTIONNAIRE FRAMEWORK

The questionnaire is the backbone of the social sciences research. In order to strengthen the questionnaire, two sources are mandatory namely primary sources which show the new criteria of the study and secondary sources which provide the available criteria and which has the high frequency
to fix in the frame of the questionnaire. Therefore, literature review is the secondary source and it helps the researcher to identify the gap in the research.

The main purpose of the questionnaire is to find out the perception of the employees towards Voluntary Retirement Scheme. In order to find out the perception in the research, the researcher framed the questionnaire with five factors namely the first three factors such as major factors (personal, job related, financial), special factors (aversion, Compulsion and health of the dependents, economic conditions) and the health factors helps to identify the reasons to opt for VRS, the fourth factor is the perceived life satisfaction after VRS and the fifth factor is the perceived enjoyment after VRS.

Almost the important variable in the questionnaire is the demographic variable without this, it is impossible to study the reactions with the factors. So, the demographic variable used in the research is age, gender, duration of the service, marital status, health situation, size of the family, and opinion about ideal retirement age.

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Sources</th>
<th>Question Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
<td>Morse et al. 1983; Seccombe &amp; Lee 1986; Dorfman et al. 1986; Zick &amp; Smith's 1986; Anderson et al. 1986; Dorfman &amp; Moffett 1987; Matthews &amp; Brown 1987; Holden 1990; Susan D Kowalski et al. 1991; Disney &amp; Tanner 1999; Calasanti 1996; Richardson 1999; Loughran et al. 2001; Humphrey et al. 2003; Tan Hoe Kock &amp; Folk Jee Yoong 2011.</td>
<td>1,2,3,4,5,6,7</td>
</tr>
<tr>
<td><strong>Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Major Factors</strong></td>
<td>Atchley 1976; Harris &amp; Associates 1979 Elwell &amp; Maltbie-Crannell 1981; Morse et al.</td>
<td>8.1. Personal Factors</td>
</tr>
<tr>
<td>Perceived satisfaction of life after VRS</td>
<td>Patrick, 1974; Frank J Floyd &amp; Stephen N Haynes 1992; Korn 2000; Bob Buford 2006; Michael Miller 2006; Dugguh 2007; Berry 2010; Akuraun Shadrach Iyortsuun &amp; Kenneth Terngu Akpusugh 2013; Water Chronicle 2016;</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>