

*RESEARCH METHODOLOGY*

---

---

## **CHAPTER – III**

### **RESEARCH METHODOLOGY**

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how the research is done scientifically. In research, various steps are generally adopted by a researcher in studying the research problem along with the logic behind them. In order to achieve the objective of the study and to analyse the factors considered, an appropriate methodology is developed. The collection of data and analysis strategy are planned accordingly.

#### **3.1 RESEARCH OBJECTIVES**

The objectives of the study, “Determinants of Service Quality – A study with reference to Health Insurance Industry” are

1. To study the awareness about different health insurance policies among the respondents.
2. To analyse and compare the service quality perceptions and expectations of the policy holders, using SERVQUAL model, in select insurance companies in India.
3. To determine the factors influencing service quality of the select firms.

#### **3.2 AREA OF THE STUDY**

The study was conducted in Coimbatore district.

#### **3.3 SAMPLE SELECTION**

The present study is concerned with the quality of service rendered by the New India Assurance Company and Bajaj Alliance General Insurance Company. A non-probability sampling procedure namely convenience sampling method was used to select sample respondents for the study. Totally 250 questionnaires were distributed to the health insurance policy holders of both the companies, 125 each and the appropriate data was collected for the study. For New India Assurance Company, the data was collected from the respondents belonging to three branches in Coimbatore namely R.S. puram branch, Big Bazaar street branch and Peelamedu branch. For Bajaj Alliance General Insurance Company, the data was collected from the respondents belonging to two branches in Coimbatore namely Thudiyalur branch and Government College of technology branch.

### 3.4 PERIOD OF STUDY

The study covered a period of six months commencing February to July 2012.

### 3.5 SOURCES OF DATA

For the research study, two general insurance companies providing health insurance, one public company and another private company were selected and both the companies fall under the category of top 10 players of insurance in India. The companies are, **The New India Assurance Company limited** and **Bajaj Allianz General Insurance Company Limited**. The required data for the present study was collected through a structured questionnaire developed by Parasuraman et al (1988) with 22 statements under five dimensions. The responses have been captured in 7 point Lickert scale. The service quality of both the companies were analysed based on the expectations and perceptions of the corresponding health insurance policy holders.

### 3.6 SERVQUAL TECHNIQUE

SERVQUAL technique was adopted as the instrument to assess service quality based on the study of Parasuraman et al (1988). Data was collected through an instrument developed using five service quality dimensions (tangibility, reliability, responsiveness, assurance and empathy) with 22 questions in order to improve the response rate. The answers were offered using a 7-point Lickert-type scale anchored by “1 – strongly disagree” to “7 – strongly agree. Hence, two column format questionnaire was framed to generate separate ratings of “expected” (E), “perceived” (P), with two identical, side-by-side 7-point scales, mentioned earlier. This approach was carried out because it might be considered as diagnostically rich (Parasuraman et al., 1994). In this study SERVQUAL instrument has been modified to suit the research requirement. The assessment was targeted to the health insurance policy holders of New India Assurance Company limited and Bajaj Allianz General Insurance Company Limited.

Gap Score = Expectation – Perception

Un-weighted Score =  $\frac{\text{Average score of five dimensions}}{\text{Number of dimensions}}$

Weighted Score = Un-weighted Score \* Weights of each dimensions

### 3.7 TOOLS USED FOR ANALYSIS

The collected data was analysed and presented in the form of tables to suit the study and also to interpret the results.

The following tools were used to analyse the data collected through SERVQUAL instrument.

1. **Simple percentages**
2. **Mean score**
3. **Reliability Analysis**
4. **Chi-square Analysis**
5. **Correlation Analysis**
6. **Regression Analysis**
7. **Factor Analysis**

#### 1. Simple percentages

Simple percentages were calculated to find the proposition of various variables like male and female, different age groups, occupation, educational qualifications, annual income of the respondents etc.

#### 2. Mean score:

Mean, also known as arithmetic average, is the most common measure of central tendency and may be defined as the value which is divided by the total of the values of various given items in a series by the total number of items.

$$\text{Mean } \bar{X} = \frac{\sum X}{N}$$

N = Number of observations

$\sum X$  = Total of the observations

#### 3. Reliability Analysis

Reliability analysis allows studying the properties of measurement scales and the items that make them up. The Reliability Analysis procedure calculates a number of commonly used measures of scale reliability and also provides information about the relationships between

individual items in the scale. Intraclass correlation coefficients can be used to compute interrater reliability estimates.

Cronbach's alpha is the most common measure of internal consistency ("reliability"). It is most commonly used when there are multiple Likert questions in a survey/questionnaire that form a scale and there is a need for testing the reliability of the scale. The reliability analysis was done to measure the reliability of the factors under study.

#### 4. Chi-square Analysis

The chi-square test is one of the simplest and most widely used non-parametric tests in statistical work. The Chi-square test was first used by Karl Pearson in the year 1900. The quantity Chi-square describes the magnitude of the discrepancy between theory and observation.

It is defined as: 
$$\text{Chi-square} = \sum \frac{(O-E)^2}{E}$$

Where  $O$  refers to the observed frequencies and  $E$  refers to the expected frequencies.

The following points about the chi-square test are worth noting:

1. The sum of the observed and expected frequencies is always zero.  
Symbolically,  $\sum (O-E) = \sum O - \sum E = N - N = 0$
2. The chi-square test depends only on the set of observed and expected frequencies and no degrees of freedom  $v$ . It is a non-parametric test, also known as distribution-free test, since no assumptions are made about the parameters of the population.
3. The chi-square distribution is a limiting approximation of the multinomial distribution.
4. Though chi-square distribution is essentially a continuous distribution, the chi-square test can be applied to discrete random variables whose frequencies can be counted and tabulated with or without grouping.

For very small number of degrees of freedom, the chi-square distribution is severely skewed to the right. The chi-square analysis was done to find out the association between socio-economic factors and the service quality expectation and perception level.

#### 5. Correlation Analysis

According to Simpson and Kafka, "Correlation analysis deals with the association between two or more variables". Correlation analysis helps in determining the degree of

relationship between two or more variables but not the cause and effect of the relationship. Even a high degree of correlation does not necessarily mean that a relationship of cause and effect exists between the variables or, correlation does not necessarily imply causation or functional relationship though the existence of causation always implies correlation. It establishes only covariation. The explanation of a significant degree of correlation may be any one, or combination of the following reasons:

- (i) The correlation may be due to pure chance, especially in a small sample.
- (ii) Both the correlated variables may be influenced by one or more other variables.
- (iii) Both the variables may be mutually influencing each other so that neither can be designated as the cause and the other the effect.

The formula for calculating Pearson's correlation is

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{(\sum x^2 - \frac{(\sum X^2)}{N})} \sqrt{(\sum Y^2 - \frac{(\sum Y^2)}{N})}}$$

The correlation analysis was done to find out the relationship between the expectation and perception level of service quality by the respondents.

## 6. Regression Analysis

Regression analysis is a branch of statistical theory that is widely used in almost all the scientific disciplines. The uses of regression are not confined to economics and business only. Its applications are extended to almost all the natural, physical and social sciences. The regression analysis attempts to accomplish the following:

1. Regression analysis provides estimates of values of the dependent variable from values of the independent variable. The device used to accomplish this estimation procedure is the regression line.
2. The second goal of regression analysis is to obtain a measure of the error involved in using the regression line as a basis for estimation. For this purpose the standard error of estimate is calculated.
3. With the help of regression coefficients the correlation coefficient is calculated. The square of correlation coefficient (r), called coefficient of determination, measures the

degree of association of correlation that exists between the two variables. The greater the value of  $r^2$  the better is the fit and the more useful the regression equations as a predictive device.

### **Multiple Regression**

Multiple regression is an extension of simple linear regression in which more than one independent variable (X) is used to predict a single dependent variable (Y). The predicted value of Y is a linear transformation of the X variables such that the sum of squared deviations of the observed and predicted Y is a minimum. For computations, the interrelationships among all the variables are taken into account in the weights assigned to the variables.

With two independent variables the prediction of Y is expressed by the following equation:

$$Y'_i = b_0 + b_1X_{1i} + b_2X_{2i}$$

The multiple regression analysis was done, to find the variables that contribute for higher level of perception of service quality of the insurance companies.

### **7. Factor Analysis**

Factor analysis is a method for investigating whether a number of variables of interest are linearly related to a smaller number of unobservable factors. In factor analysis, the parameters of these linear functions are referred to as loadings. Under certain conditions, the theoretical variance of each variable and the covariance of each pair of variables can be expressed in terms of the loadings and the variance of the error terms. The communality of a variable is the part of its variance that is explained by the common factors. The specific variance is the part of the variance of the variable that is not accounted by the common factors. Factor analysis usually proceeds in two stages. In the first, one set of loadings is calculated which yields theoretical variances and covariances that fit the observed ones as closely as possible according to a certain criterion. These loadings, however, may not agree with the prior expectations, or may not lend themselves to a reasonable interpretation. Thus, in the second stage, the first loadings are "rotated" in an effort to arrive at another set of loadings that fit equally well the observed variances and covariances, but are more consistent with prior expectations or more easily interpreted.

### **Principal Component Method**

A method widely used for determining a first set of loadings is the principal component method. This method seeks values of the loadings that bring the estimate of the total

communality as close as possible to the total of the observed variances. When the variables are not measured in the same units, it is customary to standardize them prior to subjecting them to the principal component method so that all have mean equal to zero and variance equal to one.

The factor analysis was done to determine the factors that influence the expectation and perception level of service quality of the select health insurance companies.

## 8. ANOVA

ANOVA is a statistical method for making simultaneous comparisons between two or more means; a statistical method that yields values that can be tested to determine whether a significant relation exists between variables.

### One-Way Anova

One-Way ANOVA is used to compare the means of three or more groups to determine whether they differ significantly from one another. Another important function is to estimate the differences between specific groups. The most common method to detect differences among groups in one-way ANOVA is the F-test, which is based on the assumption that the populations for all samples share a common, but unknown, standard deviation. ANOVA was done to find the association between various socio-economic factors and the expectation and perception level of service quality by the respondents.

$$F = \frac{\textit{Estimate of population variance based on between samples variance}}{\textit{Estimate of population variance based on within samples variance}}$$

## HYPOTHESIS

The following hypotheses were framed for the purpose of analyzing of data:

1. There is no association between the socio-economic factors and customer perception of service quality of the health insurance companies.
2. There is no significant difference in the customer perception regarding service quality of both the public and private sector health insurance companies.