# CHAPTER – III

# RESEARCH METHODOLOGY

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# CHAPTER 3

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## 3.1 Introduction

The methodology for the present study, "A Study on the Performance Evaluation of Life Insurance Corporation of India during the Post Liberalization Period" is discussed under two major divisions

To analyze the overall performance of LIC, the researcher has segmented two parts. One is to measure the business and financial performance of LIC through secondary data and the other is to know about the policyholder's satisfaction towards LIC of India through primary data, since measuring financial and business performance alone may not be sufficient for evaluating the performance of LIC.

## 3.2 Formulation of hypothesis to be tested for Business Performance and Financial Performance of LIC of India

The following are the hypotheses which are to be tested

- LIC is highly competitive than the private insurance companies operating in India.
- Performance of LIC is determined by its profit earning efficiency.
- During the study period LIC has exhibited high degree of operational efficiency.
- LIC is considered as efficient in managing its Life Fund.

### 3.2.1 Period of the Study

The present study will cover thirteen years from 2001-02 to 2013-14. This period would cover the first decade of Post Liberalization and the second decade's beginning years of LIC's performance which has undergone a drastic change after liberalization, privatization and globalization. This period also covers LIC's performance during and after the global recession which began in the year 2008.

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### 3.2.2 Data collection instruments

Data have been collected from various annual reports of Life Insurance Corporation of India, annual reports of IRDA, statistical year book of LIC, Yogakshema and news bulletins of the LIC. Magazines related to insurance like Insurance Chronicle, Insurance Times, Business Today, Business World etc. have also been used. A number of websites relating to insurance such as www.licindia.com, www.irdaindia.com etc have also been visited for the purpose of data collection.

### 3.2.3 Tools and Techniques

For the effective conduct of this study both financial and statistical tools were applied. The Statistical Package for Social Sciences (SPSS) was used to analyze the data and draw the inferences.

### I Financial Tools

The Financial tools used for the study are as under,

1. Index
2. Ratio Analysis

a. **Index:** Index has been applied to observe the year on year growth or decline trend of the financial parameters. It is calculated by taking the current year value and base year value. The index numbers study the relative changes in the level of a phenomenon at different periods of time, they are especially useful for the study of the general trend for a group phenomenon in a time series data. It can be used to forecast future events. The index figures or trend percentages give a bird's eye view of the comparative data by presenting it in a form easy to interpret. The following formula is applied:

$$\text{Indexing} = \frac{\text{Current Year}}{\text{Base Year}} \; x \; 100$$

In the current study the year 2001-02 was considered as base year period.

**b. Ratio Analysis**

The study used solvency ratio to measure the financial solvency of LIC. Financial Solvency is used to measure company's' ability to meet its debt and other requirements. In order to know whether a company's cash flow is sufficient to meet its total liabilities, the solvency ratio is used. The higher a company's solvency ratio, the lesser the probability that it will default on its debt obligations. It is calculated as follows:

$$\text{Solvency Ratio} = \frac{\text{After Tax Net Profit} + \text{Depreciation}}{\text{Total Liabilities}}$$

**II. Statistical Tools Applied**

The Statistical tools used for the study are discussed in this section of the study. The study has applied Mean, Standard deviation, Co-efficient of Variance, Compound Growth Rate, Pearson's Correlation, Multiple Regression and Paired "t" test.

**a. Summary Statistics**

Measures of Summary statistics had been applied to measure mean and, standard deviation between the financial parameters of LIC

**i. Mean**

Arithmetic Mean is the total of the values of the items divided by their number. A.M is the abbreviation and x (read as x-bar) is the symbol for arithmetic mean. The terms 'mean' and 'average' (singular) also refer to arithmetic mean.

$$x = \frac{\sum x}{N}$$

x denote a given value. $\sum x$ denotes the sum of all x values $\sum$(read, sigma) is a symbol which is used to denote the sum or the total of the values given after the symbol

**ii. Standard Deviation**

Standard deviations are taken from actual mean. The following formula is applied:

$$\sigma = \sqrt{\sum x2/N}$$

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Calculate the actual mean of the series, i.e., X

Take the deviations of the items from the mean, i.e., find $(X - \overline{X})$

Denote these deviations by x.

Square these deviations and obtain the total $\sum x^2$

Divide $\sum x^2$ by the total number of observations, and extract the square-root. This gives us the value of standard deviation.

## b. Co-efficient of Variation

Coefficient of Variation is the widely used and most popular relative measure of two or more group of variables. The group which has less C.V.is said to be more uniform or more stable or more homogeneous. More Coefficient of Variation indicates greater variability or less consistency or less uniformity or less stability or less homogeneity.

$$C.V = \frac{\sigma}{x}$$

## c. Annual Compound Growth Rate

The annual compound growth rate measures the average annual growth rate. In this study the researcher has measured the average annual growth of LIC for the various variables measured and analyzed. Computation of growth rates is the most prevalent method for this purpose. The method of computation should be in such a way which uses the entire series of observations. The basic approach is to specify the variable under study as a fraction of time. To understand the concept of compound growth rate, let us assume that the value of Y in base period (t=0) is 100 and it grows over time at the rate 10per cent for every the value of Y at different points of time be as follows.

$$\widehat{B} = yt - \frac{\frac{(\sum y^2)(\sum t)}{n}}{\sum t - \frac{(\sum t)^2}{n}}$$

## d. Pearson's Correlation

Karl Person's Correlation has been applied to analyze the relationship of the intra performance of LIC among its variables used in the study.

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The most common measure of correlation is the Karl Pearson product-moment coefficient of correlation (r). This measure states the strength and direction of linear correlation. This is measured by the formula:

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

Where

R = the Pearson correlation coefficient

N = the total number of pairs of X and Y

X = raw score on the X variable

Y = raw score on the Y variable

The sign and the absolute value of a correlation coefficient describe the direction and the magnitude of the relationship between two variables.

- The value of a correlation coefficient ranges between -1 and +1.
- When the absolute value of a correlation coefficient is greater, the linear relationship is stronger.
- A positive correlation means that if one variable gets bigger, the other variable tends to get bigger.
- A negative correlation means that if one variable gets smaller, the other variable tends to get larger.

**e. Paired *"t"* Test**

Paired *t* – Test has been used to compare the public sector giant LIC with private insurers using relevant performance parameters. In case two samples are related, researcher use paired t-test (or what is known as difference test) for judging the significance of the mean of difference between the two related samples. It can be used for judging the significance of the coefficients of simple and partial correlations. The appropriate test statistic, t, is calculated from the sample data and then compared with its probable value based on t-distribution (to be read from the table that gives probable values of t for different levels of significance for different degrees of freedom) at a specified level of significance for respective degrees of freedom for accepting or rejecting the null hypothesis. It should be taken into account that t-test applies only in case of small sample(s) when population variance is unknown.

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$$t = \frac{\bar{x} - \mu_{H0}}{\sigma_3 / \sqrt{n}} \text{ with (n-1) degrees of freedom}$$

Where, $\bar{x}$ = Mean of differences

$\sigma$ = Standard deviation of differences

$n$ = Number of variables/cases.

**f. Multiple Regression**

Multiple regression analysis is applied to evaluate the operational efficiency and financial efficiency of LIC. Multiple regression analysis is a powerful technique used for calculating the unknown value of a variable from the known value of two or more variables- also called the predictors. Moreover, multiple regression analysis helps in predicting the value of Y for given values of $X_1$, $X_2$, …, $X_k$.

In general, the multiple regression equation of Y on $X_1$, $X_2$, …, $X_k$ is given by:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + \dots\dots\dots\dots\dots + b_k X_k$$

**3.3 Formulation of hypothesis to be tested for Policyholder's satisfaction towards LIC of India**

**3.3.1 Sources of Data collection**

In order to assess the policy holders' satisfaction, primary data were collected through survey method.

**3.3.2 Formulation of hypotheses**

To know the significant difference between demographic variables and level of satisfaction of respondents on LIC the following hypotheses were framed and tested with one way ANOVA.

1. $H_0$: There is no significant difference between the demographic variables of the respondents over the level of satisfaction towards LIC.
2. $H_0$: There is no significant difference of opinion between the level of satisfaction of respondents towards various parameters of LIC and its Policies

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### 3.3.3 Research design of the study

The study adopted both descriptive and exploratory research in analyzing the overall performance of Life Insurance Corporation. The study adopted descriptive as the methods of research utilized are survey methods. The main purpose of Exploratory Research is the formulation of research problem for developing working hypothesis or for investigation purposes.

### 3.3.4 Population of the study

According to LIC of India Diaries and Planners, there are 26 branches operating under Coimbatore division. Hence, the population frame would be the 26 branches operating in Coimbatore division, in the state of Tamil Nadu, India which includes Tiruppur branch, Coonoor branch, R.S.Puram branch, Ootacamund branch, Gudalur branch, Udumalpet branch, Avanashi Branch, Bhavani branch, Erode north branch, Erode south branch, Avinashi road branch, Dharapuram branch, Sivagiri branch, Perundurai branch, Gobichettipalayam branch, Podanur branch, Tatabad branch, Peelamedu branch, Sulur branch, Singanallur branch, Sathyamangalam branch, Kangayam branch, Pollachi II branch, Pollachi I branch, Mettupalayam, and North Coimbatore.

### 3.3.5 Sampling frame

The sampling frames are the source list of the defined target population. The sampling frame for the present study would be the policyholders from the eight branches who continuously pays premium without lapsation.

### 3.3.6 Sampling technique

Cluster sampling is adopted for the selection of sampling branches. Out of 26 branches operating under Coimbatore division, the researcher has selected 8 branches which falls under Coimbatore city. Out of the sample branches, the respondents are selected through convenience sampling technique.

### 3.3.7 Sample size

Size of the sample refers to the number of items to be selected from the universe. Two hundred respondents were taken as sample by adopting convenient

sampling method by equally selecting 25 respondents in each branch. Details of policyholder's have been collected from registered agents of LIC.

**Table 3.1 Geographical distribution of respondents in the study area**

| S.No | Name of the Branch | No. of Respondents |
|------|--------------------|--------------------|
| 1 | RS Puram Branch | 25 |
| 2 | Avinashi road Branch | 25 |
| 3 | Podanur Branch | 25 |
| 4 | Tatabad Branch | 25 |
| 5 | Peelamedu Branch | 25 |
| 6 | Sulur Branch | 25 |
| 7 | Singanallur Branch | 25 |
| 8 | North Coimbatore Branch | 25 |
| | Total | 200 |

### 3.3.8 Period of data collection

The study covered the time period of (2012- 2017) and the information from the respondents were gathered during June 2015 to August 2015.

### 3.3.9 Reliability and validity of the tool

Content validity and reliability of the tool were tested, applying Cronbach's alpha technique. The reliability was found to be 0.79, indicated that the tool was reliable. The tool was also validated by the experts from insurance agents, statisticians and subject experts and their valid suggestions were incorporated.

### 3.3.10 Pilot study

The questionnaire was pre-tested with 20 samples among the selected samples. Based on the sample respondents opinion and feedback, necessary modifications were incorporated in the questionnaire.

### 3.3.11 Data collection instruments

Structured Questionnaire was administered to the respondents. The questionnaire was designed to collect information like personal details, preferred choice of investments, selection of policies and the satisfaction level of respondents towards LIC of India and its policies.

### 3.3.12 Tools of analysis

To attain the objectives of the study, various statistical tools have been adopted. They are descriptive analysis / percentage analysis, Garrett's Rank, , Average Score Analysis, Student't' test and Analysis of Variance.

a. **Percentage Analysis:** The descriptive analysis is mainly used to study profile variables to find the distribution of the respondents falling under each category. It is also expressed in the percentage to facilitate comparison.

b. **Garrett's Rank technique:** It is used to find out the preferred choice of investments by the respondents.

c. **Average Score Analysis:** The data gathered were analyzed by using descriptive and inferential statistical methods. Mean scores and standard deviation is used to analyze the level of satisfaction of the respondents on LIC.

d. **Student 't' Distribution** The difference of opinion of respondents are measured with level of satisfaction using the Student 't' Distribution, when there are only two groups.

e. **ANOVA** To determine the significant difference between demographic variables and level of satisfaction of respondents on LIC.

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**3.4 Limitations of the study**

1. Secondary data has been taken from published annual reports and other reports from time to time. Hence, the limitations for secondary data are also applicable for this study.

2. The study covered only Coimbatore city for analyzing the policyholder's satisfaction over LIC of India which was based on primary data. Hence the inadequacies of primary data hold here and the results may not reflect for all India level.

3. Time and financial constraints have also limited the scope of the study.