CHAPTER 3
METHODOLOGY OF RESEARCH

3.1 INTRODUCTION

Research is an intellectual activity undertaken with the object of advancing the frontiers of human knowledge and abilities. Historically, it has provided a base for the advancement of human civilization and culture. Through research people have explored and exploited the bounties of nature for making human life comfortable, safe and purposeful.

Research thrives largely on the sensitivity and responsiveness of researchers toward what is happening around them. Social scientist keeps in regular touch with social problems through research and uses this knowledge to provide solutions of social problems. Research is well established now in the field of business management.

The English word ‘Research’ is derived from the French work ‘recherché’ which means to seek again. Research is an activity that directed at “the systematic search for pertinent information on a topic.” Most early researches were directed at revealing the mysteries of nature. This process is still going on with greater vigor and emphasis. Thus, the activity undertaken to satisfy the urge to re-examine and re-understand the world around may rightly be called research. Research may be also defined as the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles or theories, resulting in prediction and possibly ultimate control of events.

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3.2 MEANING OF RESEARCH

When a research study is taken by someone to find the answer to a specific problem, the research process

1. is being taken within a structure of a set of approaches,
2. to check the reliability and validity, the techniques and methods have been tested,
3. should be objective and unbiased.

The research process includes above three content, without which the process can not be called as research process.

Research is basically a process to solve a specified problem and find out new knowledge. Research is a scientific method to solve the problem which includes mathematical and statistical analysis of the data to find out the best solution.

3.3 CHARACTERISTICS OF RESEARCH

Research is a process to solve a specific problem and to find out a new knowledge. This research process includes mathematical and statistical analysis to find out the solution of the research problem. A research process must have some characteristics such as: controlled, valid, critical, accurate, systematic and experimental.

- **Controlled:** In the day to day life there are many reasons which affect the result of a research study. The person who is doing the research study should set up the research study plan in way in which he should control such factors to minimize their effects on the study.
- **Rigorous:** One must be scrupulous in ensuring that the procedures followed to find answers to questions are relevant, appropriate and justified.
- **Systematic**: The process of research should be in a proper way and in a proper manner. All the stages of research process should be in a proper sequence. The activities of research process such as: problem formulation, data collection, classification, tabulation, analysis etc should be performed in a systematic way.

- **Valid and verifiable**: The process of research should be valid. The subject of the research study should be valid for the research. The process and the outcomes of the research study should be correct and should be verified by the person who is doing research and by the others.

- **Empirical**: The outcomes of the research study should be based on proper evidence gathered from data collection and analysis. The outcomes should come from the experimental analysis.

- **Critical**: The process of data collection should be unbiased and free from drawback. Each stage of the data collection should be re-examined by person who is collecting the data to minimize the errors. Proper scrutiny of the research process is needed for the true and fair outcomes of the research study.

The above characteristics are needed in a process to be called a research process.

**Objectives**: From the view point of objectives, a research can be classified as:

1. Descriptive research attempts to describe systematically situation, problem, phenomenon, service or program, or provides information about, or defines approaches towards the problem of research.

2. Co-relational research shows a relationship between two or more aspects. It shows the relation between the changes in one aspect to another.
(3) Explanatory research shows the clarification on the situation. How and why is explained by the explanatory research. It clarifies why there is a relationship between two aspects and how.

(4) Exploratory research explore or expend the area of an existing knowledge. This kind of research investigates father knowledge and opportunities in a particular research study.

In practice, mostly first three types of categories are used in research study.

3.4 PROCESSING AND ANALYZING DATA

Processing and analyzing data is the next stage of data collection. It involves various activities which are performed to summarize the collected data and to organize the collected data in a proper way to find out the results of the research problem.

The data processing activities are as follows:

1. **Editing**: Editing is a process to modify the data or a process to make any change in the data. Data is edited to remove the errors if any.
2. **Classification**: Classification is a process to classify the data according to the nature of the data and the research. The whole collected data is classified into different categories.
   
   (a) **Classification on the basis of trait**: The data is classified according to the similar kind of qualities and attributes. These similar qualities can be religion, sex, literacy etc. If we talk about the numerical terms, it can be height, weight, income etc.
   
   (b) **Classification on the basis of class-intervals**: The collected data can be classified on the basis of class intervals such as weight, age, production, income, tariff, occupancy etc. The data is classified on the basis of class interval to do the statically analysis to find out the solution of the research problem.
3. **Tabulation of Data:** Tabulation is a process to summarize the collected data in the form of tables. The data is arranged in the rows and columns for the further analysis of the collected data. Tabulation is necessary because:

(a) It summarized the data in the numerical table form which makes the research process very easy.

(b) It makes the process of comparing the data very easy.

(c) It becomes very easy to find out the errors in the collected data and those errors can be removed by the editing.

(d) The quantitative table form of collected data makes the mathematical and statically calculation very easy.

The tabulation can further be classified in terms of simple and complex tabulation. Simple tabulation is a one way form of table. Simple tabulation is easy to prepare and gives fast analysis of the collected data. While on the other hand complex tabulation is a two way tabulation which is complex as compare to the simple tabulation. Complex tabulation is a time taking process of tabulation on the collected data.

### 3.5 DATA ANALYSIS METHODS

Qualitative Data Analysis: The qualitative analysis of data involves the analysis of non quantitative data. This process involves the analysis of questionnaires and interviews. The data collected in other then numerical form is analyzed by this method. This qualitative data analysis is also known as content analysis. The responses of the respondents of the research are analyzed by the qualitative data analysis method. This method involves the following steps:

**Step 1:** In the first step of the qualitative data analysis is to identify the main objective of the research and to design the data collection and analysis form. The questionnaires and interview questions are designed to collect the data for the research study to find out the solution of the research problem. The researcher
needs to be careful to design the questions for the data collections. While collecting the data the communication plays very important role. If the communication will not be in a proper form, the data collected by the researcher will not be true and fair. The respondent can respond in different words and those words should be understood properly by the researcher to get the accurate research results.

**Step 2:** Assign codes to the main objective: The researcher has to assign codes to the main objective of the research study. The questions can be answered by the respondent in their own language and words. So the researcher needs to understand the answers of the respondent in the way they are answered. The content collected as answers of the respondents is analyzed by the researcher.

**Step 3:** The next step of qualitative analysis is to classify all the responses of the respondents. The content should by classify on the basis of nature and characteristics of the content.

**Step 4:** The next step of the qualitative data analysis is to analyze the classified data content. The collected data is analyzed by the researcher to find out the results of the research study. This is the final step of qualitative research method. The collected data content should by properly communicate and should be unbiased to give the true and fair results of the research problem.

**Quantitative Data Analysis:** Quantitative data analysis is the widely used data analysis method of the research study. Mostly this method is adopted by the researchers. The collected data can be analyzed by computer or can be analyzed manually.

**Manual Data Analysis:** Manually data analysis method is suitable, where numbers of respondents are in small numbers and where the calculations are not critical. Where the numbers of respondents are in a large number, the manual data analysis is not possible.
Manual data analysis method is a time taking method. The data is analyzed by human efforts. The tables graphs etc are prepared by the human efforts which can be easily prepared by the computer in a few seconds. The calculation which can be easily done by the computer accurately is done by the researcher manually.

It is very difficult to do the statistical analysis of the collected data manually. The accuracy of the data analysis is depends on the knowledge and the expertise level of the researcher. One mistake in manual calculation can change the results of the research study. This manual analysis takes time to give the final results.

**Data Analysis by computer:** Computer is widely used for the data analysis. It takes less time to analyze the collected data as compare to the manual data analysis. The analysis done by the computer is accurate as compare to the manual calculations and analysis. It is very easy to analyze the data by using the computer. Mostly the SPSS software for windows is used for the data analysis. The drawback of the computer data analysis is, if the data inputted wrongly in the computer, the outcomes of the research study will not be accurate.

**Reporting and Findings:** Report writing is the last stage of the research process. It is the most difficult step of the research process. From the finding of research problem to the final result of the research study shown in the report of the research. The report shows the work of the researcher. Conclusions and findings are shown in the report of the research study. The language of the research report should be formal and clear.

**Research Design:** The research design is the most important part of the research process. It defines how the research will be done and what will be the procedure. In other words it is a blue print of the research process. It includes the practical details of the research process. Form the starting to the end, all the activities of research should be included in the research design.
**Data Analysis and Interpretation:** This part of the research study includes the analysis of the collected data from primary and secondary data collection sources. To find out the final solution the data is analyzed by using various statistical and mathematical methods.

**Summary and Conclusions:** Summary and conclusions are the main part of the research process. This part shows the final outcome of the whole research process.

**Recommendations:** In this part of the research study process the researcher gives the recommendations on the basis of the results of the research study. This is a most important part of the research report. In few reports this part is given in the beginning of the research report but mostly it is given at the end of the research report.

**Suggestions for the further research study:** Suggestions for the further research is the end part of the research report. This part helps those people who want to do further research in the similar field in future. In this part the researcher gives suggestions on the basis of his experience, it shows how the research can be continued in future. This part is very useful for the further studies in the similar field. The opportunity of the further research can be analyzed by this part of the research report.

**3.6 PROBLEM INVESTIGATED**

Today, financial management is one of the most vital and critical areas of corporate management. The subject-matter of financial management is changing at a rapid pace and it has acquired a critical significance due to increasing business and other important developments at national and international levels having a direct impact on the corporate financial policies. All corporate entities arise out of the savings of the society. Savings in developing countries like India
are meager and the scarce resource of savings has to be deployed in many developmental activities. It is very essential that the resources that go into corporate sector of the economy should be well-managed so as to generate future resources for development. Thus, the financial management has become a subject of considerable importance and the maximization of shareholders’ wealth through optimum utilization of its resources is the only true objective of financial management.

Financial management deals with right procurement of funds and their effective and efficient utilization. Financial management is concerned with the efficient acquisition and allocation of funds. In operational terms, it is concerned with the management of flow of funds and involves decisions relating to procurement of funds, investment of funds in long-term and short-term assets and distribution of earnings to the owners.

The government of India liberalized the insurance in March 2000 with the passage of the Insurance Regulatory and Development Authority (IRDA) Bill, lifting all entry restrictions with some limits on direct foreign ownership. Presently there is 26% capital investment is allowed to the foreign partners in an insurance company. It is proposal that this foreign investment limit should increased to 71%. Tariff advisory committee, appointed by government of India look after the rates of premium of most of the general insurance policies.

The entry of private life insurance players has increase the growth rate of the life insurance industry in India. The public sector life insurance companies were restructured. Since 2001 the private insurance companies started selling their insurance polices in life as well as non-life segments. The life insurance industry in India is not developed.

Life Insurance Corporation of India was the only player in the life insurance sector, till the entry of private life insurance players. Out of the total insurable population of India, only 19% were insured. Earlier the insurance
policies sold by the life insurance corporation of India was only for the tax saving purpose rather to protect the life. Transparent and flexible products were not available. The policy holders were under insured. The life insurance practice in India has been changed with the entry of private life insurance players.

Innovative products, smart marketing and aggressive distribution. That’s the triple whammy combination that has enabled fledgling private insurance companies to sign up Indian customers faster than anyone ever expected Indians, who have always seen life insurance as a tax saving device, are now suddenly turning to the private sector and snapping up the new innovative products on offer. The growing popularity of the private insurance shows in other ways. They are coining money in new niches that they have introduced. The state owned companies still dominate segments like endowments and money back policies. But in the annuity or pension products business, the private insurers have already wrested over 33 percent of the market. And in the popular unit-linked insurance schemes they have a virtual monopoly, with over 90% of the customers.

Now, in life insurance sector, LIC is facing competition of private players. It can be seen that at one side, there is an established government owned Life Insurance Corporation of India and on the other side, private companies in partnership of foreign companies made the market competitive. Companies of both sides are engaged in capturing Indian insurance market. At the same time, they are aware of profitability or not, whose business strategy is more profitable. These are some questions against the management of these companies. The present study is based on the problem to know about the profitability of life insurance sector in India in the present scenario.

### 3.7 Objectives of the Study

The main objective of the present study is to find out the profitability condition of the life insurance sector in India. For this purpose, two life insurance
companies have been chosen. First, Life Insurance Corporation Ltd. is from public sector whereas the other ICICI Prudential Life Insurance Company Ltd. is from private sector. This study of both public and private sector companies can give an opportunity to analyze the difference in profitability.

The basic objective of the present study is to appraise the financial performance of life insurance companies under study on the basis of following criteria:

(1) To understand the concept and mechanism of life insurance.

(2) To diagnose the profitability position of selected life insurance companies.

(3) To study the performance of public and private sector life insurance units in a comparative manner.

(4) To study the performance of LIC after the entry of private players in life insurance sector.

(5) To trace out the factors responsible for lower or higher profitability of life insurance companies under study.

3.8 SCOPE OF THE STUDY

The present study has a vital scope as the insurance sector in India is growing rapidly and new players are coming in the market. It gives more choices to the person who wants to take life insurance policy and increased competition between existing and new life insurance companies. The study is useful not only for the selected companies under study but also for other companies which are in the same field, government, persons having life insurance policies and who are willing to take such policies.
3.9 REVIEW OF LITERATURE

Here is some research work and literature, I have gone through before starting the present work:

“Operational Efficiency Analysis of Life Insurance Companies of India”. This research was done by Mr. Syed ShakirNaqvi under the supervision of Dr. O.P. Gupta in the year 2007. This study was done of special reference to Life Insurance Companies. The study covered a period from 2001-02 to 2006-07 and critically examined the operational performance of Life Insurance Companies.

Units studied for this research work were:

- Birla Sun Life Insurance Co. Ltd.
- HDFC Standard Life Insurance Co. Ltd.
- ICICI Prudential Life Insurance Co. Ltd.
- Tata AIG Life Insurance Co. Ltd.
- Life Insurance Co. Ltd. India

“Appraisal of Financial Performance of General Insurance Companies in India”. This was a comparative study between selected general insurance companies. The research was done by Ms. Ayushi Jaimini under the supervision of Dr. M.I. Gupta in the year 2005. This study was done to measure the financial performance of General Insurance Companies. Most of the study was based upon the secondary data.

“Accounting Practice and Procedure in General Insurance Corporation of India”. This research was done by Mr. Ram Kishore Meena in the year 1993. This study was done of special reference to General Insurance Companies. In this study data was collected from 1988-89 to 1992-93 and critically examined the performance of General Insurance Companies.
“Performance Appraisal of selected Nationalized Banks in India”. The study was done and submitted by Ms. Shikha Jain under the supervision of Dr. M.C. Gupta in the year 2003. The study was done on the following banks-

- Central Bank of India
- Bank of India
- Punjab National Bank

The period of study was 1997-98 to 2001-02. The object, of the study was to find out the performance appraisal of nationalized banks through profitability ratio, efficiency ratio and productivity ratio and with the help by financial parameters.

“Analysis of Financial Statement of Insurance Companies”. This research was done by Mr. Lalu Lal Gupta in the year 2004. The study was done on life insurance companies of India. The period of the study was from 1996-97 to 2000-01. The major object of this research was to measure working efficiency by financial ratios.

“Performance and Profitability of leading Insurance companies”. This study was based on particular life insurance companies. The period was from 1986-87 to 1990-91. The major object of this research was performance and profitability of leading insurance companies. In this topic profitability ratios (Net Profit, Operating profit, Net worth) were included.

“Financial Statements- Analysis and interpretation”. This article was written by Dr. M.K. Agarwal in Financial Management in the year 1988. In this article, writer tells about meaning, nature and limitations of financial statement and different techniques of interpretation of financial statements.

This thesis has made an effort to measure operational efficiency of commercial banks on the basis of profitability and financial strength with special reference to priority sector. But, how assets and liabilities of banks should be managed is not discussed. Moreover, how operational efficiency and profitability can be increased by proper management of assets and liabilities is not mentioned in the thesis. Thus, proposed research will be very useful in this manner as it will suggest different measures to increase profitability by proper management of assets and liabilities in banks.

“Performance Appraisal of Commercial Banks in Rajasthan” by Manish Jain: A Ph.D. thesis submitted in the University of Rajasthan, Raipur (1998): There are many criteria on which performance of commercial banks can be evaluated. But, profitability and financial strength are main criteria on which one can measure performance of a concern and same is followed by the researcher. Banks are managing fund by accepting deposits from public and earn profit by lending it at higher rate of interest. Banks are showing their borrowings and loan as liabilities and assets. So, profitability of a bank depends upon proper management of assets and liabilities. In the proposed research, it will be checked how far commercial banks in India are doing so.

“Trade Unionism in Life Insurance Corporation of India” a research study carried out by Shri Praveen Bahl in 1986 and submitted to University of Rajasthan describes that the welfare activities of trade unions in life insurance industry are almost negligible. Most of the welfare activities are conducted by the corporation itself, consequently not much is left for trade unions. However, trade unions are putting efforts to provide more and more welfare activities with the available financial resources. He concluded that because of the direct intervention of the Government, the trade unions have reduced their direct confrontation with the management. He suggested that, now the time has changed and AIIEA will have to change its agitational and confrontational approach with constructive and collaboration ideology.
“Management of Operation in the Life Insurance Corporation of India (1970-1988)” A Ph.D. thesis submitted by Shri N.K. Kumbhat to the University of Rajasthan in 1990. In this research work, Shri Kumbhat found that though the LIC of India has made satisfactory progress but at the same time it failed to achieve the desired goals in many fields like rural area remained neglected and there was no improvement in the quality of services. He concluded that LIC has not emerged as a Protector and Savior of those who have sought its assistance through insurance policies. The shortfall was the result of failure of human side of the corporation as well as of some external forces and constraints which have impeded its growth.

“Performance Appraisal of Employee in Leading Banking Organizations and Insurance Companies in Chandigarh” A Ph.D. thesis submitted by Khushdip Kaur in 1996 reveals the performance appraisal of employees of four leading banks and three insurance companies in Chandigarh. During the research, the researcher found that the methods, techniques and procedures differed in the units of the two sectors. It was noted that the banks evaluate the performance of employees on the basis of sixteen points while the insurance companies have separate method for the appraisal for various types of staff. Work knowledge and work performance play a significant role in both the sectors. It was noted that targets are arbitrary and employees are consulted very rarely.

“Operational Efficiency of General Insurance Companies” A Ph.D. thesis submitted by Shri Prakash Chand Sharma in 2004 reveals that foreign insurer have started their activities in the Indian General Insurance Market, the GIC and its subsidiaries have to change their working style to survive in the present context of globalization and liberalization. He found that the service efficiency of GIC and its subsidiaries was not satisfactory and overall performance should be improved specially in context to settlement of claims so that the company may be able to face the challenges of privatization and become an efficient company in India as well as abroad. He also suggested that four tier
system of working should be converted into three tier system and branch offices should be given more strength and power.

‘Performance Evaluation of State Financial Corporations in India (A Comparative Study of Delhi and UP State Financial Corporations)’ - A Ph.D. thesis submitted by Shri Rohit Chaudhary in 2007. In this thesis the researcher made a comparative study of Delhi and UP Financial Corporation by using the technique of ratio analysis for profitability, judged the service efficiency by using the techniques of financial management and statistics. He concluded that the operational efficiency needs to be improved by using corrective measures.

“Evaluations of Banking Sector with Globalization” by Ghoil D.C., ‘Journal of Commerce and Information Technology’, Vol. 12, No 1, Jan-June 2012, pp. 61-70 : The main objective of the study is to examine the profitability of public sector commercial banks in India and compare them with private sector banks and foreign banks. It also intends to examine the profitability position, and ability of public sector commercial bank vis-a-vis private and foreign banks to their return on various indicators. Paper suggested some models which may be useful for the proposed study.

“Banking and Financial Sector Reforms in India” by Banerjee, A. and Singh S.K. (2012), Deep and Deep Publications Pvt. Ltd., New Delhi. Banking sector reforms has started a new era for banking sector. This book covers all financial and banking sector reforms and background. For the same outcomes of reforms is also discussed to evaluate bank’s performance accordingly. Book also provides guidelines for credit decision and methodology that should be followed while taking lending decisions.

Indian Insurance: A Profile by Narayanan, H. (2010): The book highlighted features of Indian insurance markets, development of insurance sector in India, major players in insurance sector and insurance products offered to Indian policyholders. The book also provided detail of growth of life insurance
and general insurance in India with appropriate statistics. Various phases of growth and development of insurance sector are presented in an efficient manner. The comparison of life insurance and life insurance is also provided in Indian and global context. The detail of LIC and private players is given in this book related to number of life insurance policies, growth in life insurance premium, life insurance density and number of agents in life insurance etc.

Trading of Life Insurance Policies - A Critical Study by Dr. K.S. Jaiswal and Mrs. Depti Saha in Indian Journal of Finance (Oct-Nov, 2007). In this article, the authors said that the life insurance is a contract for the payment of a sum of money to the person assured (or nominee) on the happening of the event insured against. Life insurance is said to be superior to other forms of savings because of protection, aid to thrift, liquidity, tax relief etc. In India, LIC is the biggest company dealing in life insurance business. LIC was established as a statutory corporation under the Life Insurance Corporation Act of the Parliament which received the consent of the Government on 18th June 1956. The Act came into force on 1st July 1956 and the Corporation began to function w.e.f. 1st September 1956, since then carrying on life insurance business in India.

“Private Players and Life Insurance Industry” by Pooja Bhalla and Gagandeep Kaur, published in Indian Journal of Finance, Vol. 1, No. 2, June-July 2007. In this article the authors opined that the insurance industry in India has witnessed a sea change during the last 5 years. The deregulation of insurance industry and setting up of the insurance regulator IRDA has led to the entry of private and foreign players in this sector. This has put an end to the age long monopoly enjoyed by LIC since 1956. Insurance industry is one of the fastest growing industries in the country. Private players with their innovative products, smart marketing, wider distribution network and better customer service have been successful in attracting a large number of customers. Market share of private players has jumped to 28.56% in the year 2005-06 from a mere 1.35% in 2001-02. Market trend shows a faster growth for the industry with more people buying life insurance. The order of the day is either perform or perish. So in order to satisfy
and retain the customers LIC has to strive hard and get ready to compete with private players.

**Consumer Voice Report on the Insurance Sector** - This report refers to the study on consumer’s satisfaction quotients for insurance service providers conducted by Voice Society with the support from the Government of India, Ministry of Consumer Affairs, Food and Public Distribution. The field activity of the study was facilitated by Planman Consulting. The objective of the study was to rank the insurance companies, present in India on the basis of consumer satisfaction levels which closely analyzed

- Consumer’s expectation needs, demands, preferences and achievements. Variations and personalized service offerings.
- Analysis of present customer redressal system and the gaps therein.
- Level of consumer right protection in the insurance sector. Existing industry trends with respect to customer satisfaction.

**Premium Income of Indian Life Insurance Industry**: A Total Factor Productivity Approach by Ram Pratap Sinha published in ICFAI Journal of Financial Economics, 2007, Vol. V, No.1. In this article, the author has discussed about the premium income of life insurance companies. He has also discussed about the various methods adopted by the life insurance companies for the elimination of premium and to attract the general public.

After study of this work and consulting with the supervisor, it was felt that there are so many hidden facts which are to be uncovered about the working performance of Insurance Industry. So I selected topic “Profitability Analysis of Life Insurance Sector” for further analysis particularly in respect to working performance of Insurance Industry.
3.10 SIGNIFICANCE AND RELEVANCE OF THE STUDY

This study can provide guidelines to the insurance companies under study and other insurance companies working in the same field. The study will be helpful for the government, financial institutions, investors and consumers at large.

3.11 DATA COLLECTION

The nature of data which is collected and used for this research is secondary in nature. The primary data and information have been collected through the structured personal interaction with officials and other staff of the selected life insurance companies for the study. Secondary data were collected from the annual reports of selected life insurance companies for the period under study from the year 2002-03 to 2011-12, Yogakshem, statistical year book of LIC. Apart from these various magazines devoted to the issues related to insurance and journals, newspapers and various reports of IRDA have also been used to supplement data and information required for the study. A number of other websites relating to insurance business such as www.licindia.com, www.iciciprulife.com, www.irdaindia.com, www.bimaonline.com etc have also been visited for the purpose of data collection.

3.12 HYPOTHESIS

The present study had been conducted with the view to evaluate and appraise the working performance of selected Life Insurance Companies. The study also attempts to measure the efficiency and effectiveness of the units under study. The units under study faced multifarious problem during the period of study. The study therefore presupposes the leading factor obstructing and pressing
the growth of the units under study are, the poor operating and financial performance.

If the operating and financial performance had been efficient and effective, the units under study would have been put back upon better footing. The study based on hypothesis that the profitability of the Life Insurance Companies under study is not satisfactory and there are prospects to improve it.

(1) \( H_0 \): There is no significant difference between current ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(2) \( H_0 \): There is no significant difference between absolute liquidity ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(3) \( H_0 \): There is no significant difference between return on total assets ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(4) \( H_0 \): There is no significant difference between return on shareholder fund ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(5) \( H_0 \): There is no significant difference between actuarial efficiency ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(6) \( H_0 \): There is no significant difference between operating expenses ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(7) \( H_0 \): There is no significant difference between commission expenses ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(8) \( H_0 \): There is no significant difference between first year premium to total premium ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(9) \( H_0 \): There is no significant difference between renewal premium to total premium ratio of LIC and ICICI Prudential Life Insurance Company Ltd.

(10) \( H_0 \): There is no significant effect on the performance of LIC after the entry of private players.
3.13 TOOLS AND METHODS OF DATA ANALYSIS

The present study involves calculation of different ratios to evaluate the financial performance of selected life insurance companies in India from 2002-03 to 2011-12. Tools used for the study are as under:

- Ratio analysis
- Average
- Standard Deviation
- Coefficient of variation
- Index
- Trend Analysis
- t-Test

**Ratio Analysis**

Ratio represent the quotient relationship between two relevant variables of the financial statements an individual item, an individual item to group item or a group item to group item, which develop the meaningful relationship between these two set of variables.³

In the present study, we are interested to know the profitability of two life insurance companies. For this purpose, we have to put data of each company in the form of financial ratios. Analysis of these ratios is called ‘cross-sectional analysis, which compares financial ratios of the companies from the same industry. Ratio analysis can provide valuable information about a company’s financial health. A financial ratio measures a company’s performance in a specific area. We can use this information to make a judgment as to which company is a better investment risk. By calculating and comparing a single ratio is not sufficient to reach at any conclusion. We can obtain a better indication of the direction in which a company is moving when several ratios are taken as a group. Ratios used for the study are as under:

• Current Ratio
• Absolute Liquid Ratio
• Return on Total Assets Ratio
• Return on Shareholder Fund Ratio
• Actuarial Efficiency Ratio
• Operating Expenses Ratio
• Commission Expenses Ratio
• First Year Premium to Total Premium Ratio
• Renewal Premium to Total Premium Ratio

**Average**

Lawrence J. Kaplan defines average as- “One of the most widely used set of summary figures is known as measure of location which are often referred to as average, central tendency or central location. The purpose for computing an average value for a set of observation is to obtain a single value which is representative of all the items and which the mind can grasp simply and quickly. The single value is the point of location around which the individual items cluster”.

It is used to get the average value of a series of values, which represents the whole series. The mean value has been calculated by applying the following formula:

Average ($\bar{x}$):

$$\frac{\sum X}{N}$$

Where $\sum X = \text{Sum of the values of the series}$

$N = \text{Number of values}$

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Standard Deviation

It is used to measure the amount of variation from mean of the values. In finance and accounting, standard deviation is used to measure the investment's volatility. Standard deviation is also known as historical volatility and is used by investors as a measurement for the amount of expected volatility. The following formula is used to get the values of standard deviation of the series:

S.D.:

$$\sqrt{\frac{\sum(x-\bar{x})^2}{(n-1)}}$$

Where X= Individual Observation

N=Number of Observations

Coefficient of variation

The coefficient of variation (CV) is defined as the ratio of the standard deviation (\(\sigma\)) to the mean \(\bar{x}\). The coefficient of variation is used only for data measured on a ratio scale, as these are measurements that can only take non-negative values. The following formula is used to get the coefficient of variation:

$$\frac{\sigma \times 100}{\bar{x}}$$

Here \(\sigma\)= Standard Deviation

\(\bar{x}\)= Mean
Index

Spiegel defines index number as- An index number is a statistical measures designed to show changes in variables or group of related variables with respect to time, geographic location or other characteristics such as income, profession etc.\(^5\)

The index numbers study the 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.

Trend Analysis

The values are compared with values of other time periods. It indicates the direction of change in the values in increasing and decreasing form over the previous year.

\(t\)- Test

The test statistic in the \(t\)-test is known as the \(t\)-statistic. This test is used to study the difference between the mean disclosure values at 5 percent level of significance. The following formula is used to calculate the value of \(t\):

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}\]

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

Here \(X_1\) = Mean Disclosure of the first sample

\(X_2\) = Mean Disclosure of the second sample

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\[ n_1 = \text{Number of years of study of the first sample} \]
\[ n_2 = \text{Number of years of study of the second sample} \]
\[ S_1^2 = \text{Square of standard deviation of the first sample} \]
\[ S_2^2 = \text{Square of standard deviation of the first sample} \]

### 3.14 Limitations of the Study

Efforts have been made to collect primary data and information but it was limited due to the lack of co-operation of staff members and key-persons of the insurance companies under study. An external analyst has to function under various constraints and limitations. Since the researcher has to depend heavily upon published reports and secondary data, one of the limitations lies in the quality of the accounting data. Further, the techniques and tools of investigations have also inherent limitations, e.g. financial data are the mixture of convenience and convention. Lastly, the study is a subject to general human limitations.

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