CHAPTER 3
RESEARCH METHODOLOGY

This chapter deals with the techniques and procedure that were used in the process of
data gathering and in data analyzing. It focuses on the research design, the population
for the study and the sample, sampling techniques, research instrument, method of
data collection and method of data analysis.

Objectives of the Study

The main objective of the study is to measure the cost-effectiveness of training
programmes for employees. Some of the other objectives of the study are:

1) To study the impact of training programmes upon performance of employees.
2) To study the impact of training programmes upon job satisfaction of the
   employees.
3) To study the relevance of the budget allocation for the training programmes
   and Return on Investment of the programmes.
4) To identify gaps in training outputs.
5) To draw conclusions based on observations and findings.

Research Design: Research design is a blue print for conducting the research project.

Type of research study: The present research study is both an evaluative and
descriptive in nature.

Research Technique: The research technique used was structured questionnaire which
was distributed to employees at various levels in the sample companies.

Sampling Design:

Population: All items in any field of inquiry constitute a ‘Universe’ or ‘Population.’ A
complete enumeration of all items in the ‘population’ is known as a census inquiry. In
statistical terms population usually refers to the collection of units (be they people,
plants, cities, suicidal authors, etc.) to which we want to generalize a set of findings or
a statistical model. In the present study population was Insurance companies of India.
Sample: A smaller collection of units from a population used to determine truths about that population. Generally, it’s not feasible to study the whole population because of lack of time, money, or some other reasons. That’s why we used to select a sample from the population. There are various sampling techniques, broadly, classified into main two categories: random sampling techniques and non-random sampling techniques. The choice of the sampling technique was influenced by the objectives of the study, time and money constraints etc.

Table: 3.1

<table>
<thead>
<tr>
<th>Type of business</th>
<th>Public Sector</th>
<th>Private Sector</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Insurance</td>
<td>1</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>General Insurance</td>
<td>6</td>
<td>21</td>
<td>27</td>
</tr>
<tr>
<td>Reinsurance</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>44</td>
<td>52</td>
</tr>
</tbody>
</table>

*Includes specialized insurance companies - ECGC and AIC.

Source: IRDA Annual Report 2011-2012

As per IRDA annual report FY 2011-2012 top ten insurance companies in India was:

Life Insurance Sector:

Life Insurance Corporation of India (202,889.28)

ICICI Prudential Life Insurance Co. Ltd. (14,021.58)

SBI Life Insurance Co. Ltd. (13,133.74)
HDFC Standard Life Insurance Co. Ltd. (10,202.40)

General Insurance Sector:

New India Assurance Co. (8542.87)

United India Insurance Co. Ltd. (8179.29)

ICICI Lombard General Insurance Co. Ltd. (5150.14)

Bajaj Allianz General Insurance Co. Ltd. (3286.62)

IFFCO Tokio General Insurance Co. Ltd. (1975.24)

Tata AIG General Insurance Co. Ltd. (1641.57)

(Figures in brackets are Gross direct premium income in Rs. Cr.)

Four companies was taken for the study, two from life insurance sector (one from public and one from private sector) and two from general insurance sector (one from public and one from private sector) which were on the top in the above report. Namely, LIC India and ICICI prudential life Insurance Co. Ltd. (for life); New India Assurance Co. Ltd. and ICICI Lombard General Insurance Co. Ltd.(for non-life). A sample of 500 employees was taken for conducting the study. The sample was selected on the easy availability and accessibility of the employees. Thus convenience sampling (non-random sampling) method was used for the study. Further, it was diversify in four strata having 125 employees each. Then from each strata employees are choose randomly. Thus here following stratified sampling (random sampling) method. For determining the sample size published table given in the paper ‘Determining Sample Size’ by Glenn D. Israel (1992) was followed. As a rough thumb rule, number of statements in the questionnaire multiply by 10 could be the sample size too. Respondents were requested individually and online to fill up the questionnaire. 323 responses were received. But after scrutinizing only 320 responses were found good to be use. Hence, useable response rate is 64%.
Questionnaire design:

The scales of interest were derived from the literature where available. Structured questionnaires were merged to develop the questionnaire of interest for the present study (details in Appendices). The questions were designed to facilitate the respondents to identify major strengths and weakness of the training programmes of their organizations. The endeavors were to identify the key training issues, on which employee’s perception can be obtained. The respondents were requested specifically to ignore their personal prejudices and use their best judgment on a 5 point Likert scale. The 5 point of the scale indicated in the questionnaire are- 1. Strongly disagree, 2 disagree, 3-Neutral, 4-Agree and 5- Strongly Agree. Questionnaire consist some questions on socio-demographic characteristics. One open-ended question with provision of space for opinions and suggestions was also there.

Details of the structured questionnaires which were used to design the questionnaire for the present study.

Klein, G. and Jain, S. (2010) develops a questionnaire for their study titled “The Association of Project Management Certification with Personal and Project Outcomes” published by asapm, at www.asapm.org. Questionnaire of this study was used to get the opinions of employees on the financial matters and demographics for the present study.

Islam, MD. S.(2011). Effectiveness of Training in Life Insurance Sector: Evidence from India. IEEE from this study structured questionnaire for performance section was used.

Bowie, P., Skinner, J. and Wet, C. D. (2013) in their study titled “Training health care professionals in root cause analysis: a cross-sectional study of post-training experiences, benefits and attitudes” used a structured questionnaire. This questionnaire was used to construct questions from 2nd to 6th in our questionnaire.

Sivasubramanian and Umaselvi in their study titled “To study the Employee perception of HR practices – Attitudinal and Behavioral outcomes with regard to role of perceived organizational support in IT / ITES Sector” used a structured
questionnaire. This questionnaire was used to get the opinions of employees for training programmes.

Spector, P.E. (Psychology, University of South Florida, Copyright 1994) developed a structured questionnaire on job satisfaction and have copyrights of this too. This questionnaire was used to construct the job satisfaction part of our questionnaire.

Pilot study

A pilot study was conducted to assess the reliability of the designed questionnaire; to tackle the issues of understandability, ease of answering and time needed to complete the questionnaire.

Reliability is the consistency of a measurement. Reliability of an instrument is concerned with the replication of the data or outcomes (Litwin, 1995).

 reliabile: consistent and reproducible

Highly reliable criteria measures are important. Cronbach's alpha is the most common form of internal consistency reliability coefficient. Cronbach (1951) suggested that if in questionnaire, several factors exist then the reliability should be checked separately to items relating to different factors. Reverse phrasing items should be change into positive one before checking reliability.

In questionnaire used in present study, the reliability of each variable was high (Cronbach’s alpha >= 0.7). Performance emphasized ‘easiness of work’ was measured with six items (α = .84). Personal outcome related to ‘monetary and promotional benefits’ was accessed with three items (α = .88). Job satisfaction level emphasized the ‘satisfaction level of employees after training programmes’ was measured with six items (α = .64). Reactions emphasized how ‘employees feels about
training programme’ was measured with five items (α = .81). Values must not be lower than .60 (Cronbach 1951). This shows data has satisfactory internal consistency.

Sampling technique: Sample technique used is convenience (non-random) and stratified random sampling.

Sources of Data Collection: The main tasks in the research process are data collection and data analysis. Whatever the data is collected should be relevant to the problem under study. Present study is based on both primary as well as secondary data. The primary data were collected through structured questionnaire. Survey research is used widely used in education as well as in other research areas (McMillan, 2004). According to McMillan, survey research is popular because it is versatile and efficient and the results are generalizable. The data has been collected through filling of questionnaire by employees/Developing officers/agents of sample companies. The data so generated has been tabulated using tables, charts, graphs; and appropriate statistical tools were applied to draw the inferences accordingly.

The secondary data are the published sources of information, which were collected from various published sources. These include annual reports of sample companies, annual reports of the Insurance Regulatory and Development Authority of India (IRDA). Secondary data were collected from different sources like articles from national and international recognized journals, websites, texts, white papers, research papers, trade journals, and periodicals published in the daily newspaper etc. The standard literature, were also examined for the descriptive part of the study.

Variables: A concept which can take on different quantititative values is called a variable. As such the concepts like weight, height, income are all examples of variables. If one variable depends upon or is a consequence of the other variable, it is termed as a dependent variable, and the variable that is antecedent to the dependent variable is termed as an independent variable. In the present study, experience of survey participants, different dimensions of training programs were took as independent variables. Performance, job satisfaction and reactions’ of employees were taken as dependent variables.
Statistical techniques used: The most important statistical measures’ that are used to summarize the research data are mean, standard deviation, skewness, kurtosis, percentages, tabulation, Analysis of Variance (ANOVA), correlation analysis, F-test, multiple regression and other mathematical tools. Graphics were used to show the clear pictures of the analysis. According to Chambers, Cleveland, Klein, and Tukey (1983), “there is no statistical tool that is as powerful as a well-chosen graph”.

Mean: is a simple statistical model of the centre of a distribution of scores.

Analysis of Variance: is a statistical procedure that uses the F-ratio to test the overall fit of a model.

Correlation analysis: studies the joint variation of two or more variables for determining the amount, direction of correlation between two or more variables.

Standard Deviation: is most widely used measure of dispersion of a series. It is an estimate of the average variability (spread) of a set of data measured in the same units of measurement as the original data. In simple words, Standard Deviation is a measure of how well the mean represents the data. It is the square root of the variance.

Standard Error: is the standard deviation of the sampling distribution of a statistic. For a given statistic (e.g. the mean) it tells us how much variability there is in this statistic across samples from the same population. Large values, therefore, indicate that a statistic from a given sample may not be an accurate reflection of the population from which the sample came.

Skewness and kurtosis: Skewness is a measure of the symmetry of a frequency distribution. Symmetrical distributions have a skewness of 0. Kurtosis measures the degree to which scores cluster in the tails of a frequency distribution. To check that the distribution is scores is normal, we need to look at the values of skewness and kurtosis in the SPSS output. Positive values of kurtosis indicate a pointy distribution whereas negative values indicate a flat distribution. The further the value is from zero, the more likely it is that the data are not normally distributed.
F-ratio: a test statistic with a known probability distribution (F-distribution). It is the ratio of the average variability in the data that a given model can explain to the average variability unexplained by that same model. It is used to test the overall fit of the model in simple regression and multiple regression, and to test for overall differences between group means in experiments.

Goodness-of-fit: an index of how well a model fits the data from which it was generated. It’s usually based on how well the predicted by the model correspond with the data that were actually collected.

Normal distribution: a probability distribution of a random variable that is known to have certain properties. It is perfectly symmetrical has a skewness of 0 and has a kurtosis of 0.

Multiple Regressions: an extension of simple regression in which an outcome is predicted by a linear combination of two or more predictor variables. The form of the model is $Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_nX_n + e$ in which the outcome is denoted as $Y$, and each predictor is denoted by $X$. Each predictor has a regression coefficient $b_i$ associated with it, and $b_0$ is the value of the outcome when all predictors are zero.

Stepwise linear regression: Regression model that is developed (and run) in stages where new independent variables are added to the regression model one at a time in a decreasing order of increased $R^2$ so long as the resulting increase in the F statistic is still significant.

Type I error: occurs when we believe that there is a genuine effect in our population, when in fact there isn’t.

Type II error: occurs when we believe that there is no effect in the population when, in reality, there is.

Cost- Benefits ratio: A cost-effectiveness analysis is a type of evaluation analysis that generates results where cost is in the numerator, and a measure of effectiveness is in the denominator. (Lin et al., 2013) Cost-effectiveness analysis is one of a number of techniques of economic evaluation, where the choice of technique depends on the
nature of the benefits specified. Cost-benefit analysis is one such technique for evaluation of programmes. Cost-benefit analysis is the analysis of training costs in monetary units to benefits derived from training in nonmonetary terms. (Swanson, R.A. (et al.) 1978)

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\text{Return on investment (ROI)} = \frac{\text{Benefits} - \text{Cost of Program}}{\text{Cost of program}} \times 100
\]

Software used: SPSS version 18 and MS Excel used for data analysis.

Span of the study: The present study consist of seven years from 2007 to 2014.

Format of writing Bibliography: American Psychological Association (APA) Style has been used for writing bibliography.

Limitations of the study: Since, very large population size, sampling approach has been used in this study. As such, the study suffers from the limitations of sampling. The sample size could be small. The study was conducted in selected branches in Northern India which may not give the exact picture of the situation. Thus the results may not be generalized for the entire population. Primary data has chances of bias and fallacies, thus could effects the results. The study also depends on secondary financial data collected from the published financial annual reports of companies. Thus study incorporates all the limitations that are inherent in the financial statements. They are not adjusted for inflation. Despite these limitations researcher tried make a clear data analysis and interpretation as far as possible.