CHAPTER-III

RESEARCH METHODOLOGY
3.1 Research:

Research methodology is the way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. George Lundberg (1948) defined research as a scientific method as one consisting of systematic observation of the research problem and related data, classification and interpretation of data.

Zina O’Leary (2005) explained research as an innovative and strategic thinking process that involves continuously assessing, re-assessing and making decisions regarding the best possible means for finding reliable information, right analysis and tracing realistic solution.

This chapter includes essential research and research methodology used in this research study. This chapter starts with research, research methodology, research design, sample design and area of study used in the research. Subsequently, how the data was collected and the research instruments used in this study are also explained. To achieve high degree of accuracy all the steps were carried out in most careful way to keep reliability and validity.

3.2 Research Methodology:

Research Methodology is defined as a systematic way of solving a research problem. It let know about methods used in the research process starting from investigation to conclusion of the research study. The methodology used to find out and analyze correlation between job satisfaction and employee productivity in telecommunication sector in Madhya Pradesh is presented in this chapter. The chapter also explains research design, data collection, step up of construct, development of investigative questions of job satisfaction and employee productivity, data sampling and tools for data analysis used in the research study.

3.3 Research Design:

Research design outlines the collection and analysis of data. Methods of data collection, data analysis, what, how much, where and when data should be collected is mention in the research design.
One of the most common research designs exploratory, descriptive and causal researches frequently used by the researchers. In the present research study, exploratory and descriptive research study is used as a purpose of the study to analyze the collected data.

3.4 Sample Design:

Population of the study includes all technical and non technical public and private telecommunication sector employees. Population covers the Madhya Pradesh state, the cities (Jabalpur, Panna, Ujjain, Indore, Gwalior, Shivpuri, Hosangabad, Bhopal, Udaipur) were planned to be involved. The cities with the highest population in each geographical region were assumed to represent Madhya Pradesh. Cities that are located in as particular geographical regions are identified as East, West, North, and South of Madhya Pradesh.

3.4.1 Sampling Technique:

Saunders, Lewis & Thornhill (2007) defined sampling techniques as methods used in select sample from the given population of specific research field by reducing it to convenient size. In present research study Simple Random Sampling and as well as Judgmental Sampling were used to collect data from public and private telecommunication sector of Madhya Pradesh.

3.4.2 Sample Frame:

Sample frame includes all, both technical and non technical public and private telecommunication sector employees of Madhya Pradesh region only.

3.4.3 Sample Size:

Rowe, Burns & Bush (2010) advocated that sample size used in research has an influence on how the sample findings truthfully represent the population of the specific research field. There has been different opinion about proper sample size for a meticulous research study. Few observations are lists below:
Hair (2006) advised that for factor analysis sample size of more than 100 is fine and the same as a common rule used as the sample should be 5 times the number of variable in study.

3.4.4 The Sample:

As the focus of this study is to identify correlation between job satisfaction and employee productivity, so the research work consists of individual technical and non-technical employee and manager of public and private telecommunication sector in Madhya Pradesh. Total sample size of 800 public and private telecommunication sector employees as respondent, which includes 400 employees as respondents from public telecommunication sector, while 400 employees from private telecommunication sector. This size of sample is more than enough for the qualitative conclusions as per studies state above.

3.5 Data Collection:

After identifying the target population of the research study data collection follow in following way.

3.5.1 Data Collection Design:

For data collection keeping in mind the research objectives, universe is defined as “all technical and non-technical employees and managers of public and private telecommunication sector in Madhya Pradesh”. Only those individuals who were employee of public and private telecommunication sector at the time of data collection were included in the study. Responses were collected from 800 employees of public and private telecommunication sector.

3.5.2 Data Collection Procedures:

Data was collected from public and private telecommunication sector employees using structured questionnaire. The survey was conducted in Madhya Pradesh by researcher himself. Primary and secondary data was used for data collection. The primary data was collected on the basis of survey technique through self-designed questionnaire and secondary data was used for reviews for which the sources include text books, periodicals, peer reviewed journals and the internet. In the construction of questionnaire variables were examined by literature and various theories of job satisfaction and employee productivity, most of which are provided in this thesis. In the light
of these theories and literature, a group of topics and subtopics related to job satisfaction and employee productivity was created. Both questionnaires were developed in accordance with those topics and subtopics. These questionnaires were subject to expert opinion. The experts provide feedback concerning the formation and content of both questionnaires. In terms of content, the items were modified so with the intention of they become understandable and more direct. In addition, some items were added to both the questionnaire which were mind to be missing when the content of job satisfaction and employee productivity were considered. After expert opinion some items were added in job satisfaction questionnaire and some were added in employee productivity questionnaire. In the light of expert feedback the format of questionnaire was reshaped. All the necessary change was made in both the questionnaire in express and appearance of the items.

3.6 Area of Study: Madhya Pradesh

Madhya Pradesh (M.P.) is a state in central region in India. Bhopal is its capital and Indore is the largest city. Due to its geographical location in India it is named “heart of India”. It is the second largest state in the country by area; its total area is 308,245 km² with over 75 million populations. Madhya Pradesh is the sixth largest state by population in India.

The Chief Minister of M.P. is Mr. Shivraj Singh Chouhan. Madhya Pradesh state is surrounded by other states given below:
Table 3.1

Geographical Location of Madhya Pradesh

<table>
<thead>
<tr>
<th>Rajasthan</th>
<th>Rajasthan - Uttar Pradesh</th>
<th>Uttar Pradesh</th>
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<tbody>
<tr>
<td>Gujarat</td>
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<td>←Chhattisgarh→</td>
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3.7 Research Instrument Design:

Questionnaires were re-standardising for the data collection instruments of the study. Two questionnaires were designed; first questionnaire was to get the job satisfaction level of employees and second was to get employee productivity. Each questionnaire consisted of two sections. The first section included demographic information about the employees (name, age, gender and name of the company). The second section was designed on the five-point Likert scale. The survey instruments are adapted versions of the originally developed scales.

3.8 Measurement Scale:

All the questions were measured on 1 to 5 point Likert scale. It is explained below that what 1, 2, 3, 4 and 5 set for:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree
MEASUREMENT SCALES

3.8.1 Job Satisfaction:

Scale to measure Job Satisfaction was developed by including 20 items from various research works after extensive literature review. The list of questions used in the scale is in appendix.

3.8.2 Employee Productivity:

Scale to measure Employee Productivity was developed by including 15 items from various research works after extensive literature review. The list of questions used in the scale is in appendix.

3.9 Proposed Hypotheses:

The hypotheses developed to achieve the objectives of this research work are as follows:

H01: There is no correlation between job satisfaction and employee productivity in public telecommunication sector employees.

H02: There is no correlation between job satisfaction and employee productivity in private telecommunication sector employees.

H03: There is no significant difference between job satisfaction of public and private telecommunication sector employees.

H04: There is no significant difference between employees productivity of public and private telecommunication sector employees.

H05: There is no significant difference between job satisfaction of male and female public telecommunication sector employees.

H06: There is no significant difference between job satisfaction of male and female private telecommunication sector employees.
H07: There is no significant difference between job satisfaction of employees of different age groups of public telecommunication sector.

H08: There is no significant difference between job satisfaction of employees of different age groups in private telecommunication sector.

3.10 Statistical Tools and Techniques:

SPSS version 20 was used to analyse the data with the application of different tools and tests. The details of tools and tests used are mentioned below:

3.10.1 Inferential Statistics:

Reliability, Exploratory Factor Analysis and Correlation Analysis were used through SPSS 20.

3.11 Statistical Tools Used:

Appropriate statistical tools like Correlation analysis, Independent samples t-test, One-way ANOVA, Factor Analysis were applied with the help of software the Statistical Package for Social Sciences (SPSS, 20), which resulted in explanation, interpretations and findings of the research study.

3.11.1 Reliability:

The reliability of questionnaire is measured using the Cronbach’s alpha. Cronbach’s alpha is a popular statistic for measuring reliability. It is specified by a Cronbach’s alpha greater than the cut-off value of 0.70 (Bagozzi and Yi, 1988; Diamantopoulos and Sigia, 2000; Nunnaly, 1978.) A rule of thumb recommend that reliability coefficients approximately 0.90 are excellent and values approximately 0.80 are satisfactory. Reliability can be measured with internal consistency which is the degree to which the items that construct the scale are all evaluating the same original attribute (i.e. the extent to which the items „hang together” ). Internal reliability can be measured in different ways. The most commonly used statistic is Cronbach coefficient alpha in reliability measurement. This statistic gives a signal of the average correlation between all of the items that formulate the scale. Values range from 0 to 1, with higher values represents greater reliability.
Failure to meet the reliability constraint may lead to removal of troublesome items. 20 items of job satisfaction were tested and the reliability (Cronbach Alpha) was found .867. After dropping the four items (2, 5, 11, and 13) reliability (Cronbach Alpha) of 16 items were found .889. 15 items of employee productivity were tested and their reliability (Cronbach Alpha) was found .710 and after dropping the four items (2, 6, 9, and 15) from the questionnaire reliability (Cronbach Alpha) of 11 items were found .832.

3.11.2 Factor Analysis:

Factor analysis of the data was conducted to find the dimensionality of the questionnaire. The KMO test was applied to test the sampling adequacy which determines the responses given by sample or respondents are adequate or not. The value should be more than .05 to lead the factor analysis. Kaiser (1974) suggest value for KMO should be 0.5 as minimum that are hardly accepted, values between 0.7 to 0.8 are taken as adequate, and values above 0.9 are superb.

Bartlett’s test explains a different indication of the strength of the relationship among variables which have taken in the study. This tests the null hypothesis that the correlation matrix is an identity matrix. There should be some relationship between variable for factor analysis and if the correlation matrix were an identity matrix then all correlation coefficient would be zero. Therefore, the significant value should be less than 0.05. The significant value of the test tells us that correlation matrix is not identical; there is some relationship between the variables we hope to include in the analysis.

3.11.3 Correlation:

In this study, data analysis was conducted through correlation. Correlation is a statistical technique that shows how strongly pairs of variables of the present study are interrelated. Correlation computes the level to which two quantitative variables, job satisfaction and employee productivity go together. High value of job satisfaction are associated with high value of employee productivity, a positive correlation exists. When high value of job satisfaction is associated with low value of employee productivity, a negative correlation exists. Correlation can tell you just how much of the variation in employee job satisfaction related to their
productivity. The Pearson or product-moment correlation is the most common type statistical Module. The module comprises a variation on different variables called partial correlation.

3.11.4 T-test:

T-tests are used in the statistical analysis to compare two different means to find whether they are from the same population. T-test in statistical analysis assumes that whether two groups are equally distributed and have relatively equal variances.

3.11.4.1 Independent sample t-test:

To find the differences between the means of two independent or unrelated groups the independent sample t-test is applied. Independent sample t-test is used in between groups design, analysis a control and experimental group. With independent sample t-test, independent and dependent variables must have their score on different groups. Independent sample t-test was used for comparing means of two groups. In present study independent sample t-test was applied to compare the mean scores between two groups in following places:

- Comparison of mean score of job satisfaction between public and private telecommunication sector employees.
- Comparison of mean score of employee productivity between public and private telecommunication sector.
- Comparison of mean score of job satisfaction between male and female employees in public telecommunication sector.
- Comparison of mean score of job satisfaction between male and female employees in private telecommunication sector.

3.11.5 ANOVA (Analysis of Variance):

Analysis of Variance enables the researcher to separate the total variation of the data into division which may be attributed to different “sources” or “causes” of variation. This technique consists of classifying and cross classifying statistical results of the research data and testing that the means of particular classification is significantly different or not.
R. A. Fischer was develop a technique ANOVA. The test used in ANOVA technique is known as F test. The F-Test is based on the ratio of two variances and also known as “Variance Ratio”

\[ F = \frac{\text{Between group variance}}{\text{Within group variance}} \]

3.11.5.1 One-way ANOVA:

The one-way analysis of variance (ANOVA) is used in the study to determine statistical significant differences between the means of three independent groups. To determine which specific group differed from each other, post hoc test is applied in the respective data. In the result of one-way ANOVA if no statistically significant differences between group means were determined as \( p > .05 \), post hoc test will not be usually carried out.

In present research study ANOVA is applied to compare means of more than two age groups in following places:

- Comparison of “mean score” of job satisfaction among employees of different age groups in public telecommunication sector.
- Comparison of “mean score” of job satisfaction among employees of different age groups in private telecommunication sector.