CHAPTER – 3
RESEARCH METHODOLOGY

This study which attempts to find whether a specific casual relationship exists between demographic factors and work motivation, had literature evidences emphasizing the need for further exploration. This chapter briefs on the population, sample and the geographical areas of the study, data collections and statistical tools used.

Annexed to the problem identification and specification done, the task left was to get answers to those research questions as unambiguously as possible. It is important that way to obtain the relevant evidences to evaluate and accurately describe some phenomenon. In a nutshell, the question that needs asking is – What type of evidences or test theory is needed to answer the problem in a convincing fashion.

The research methodology is very crucial as it helps the collection of relevant evidences with minimal expenditure of efforts, time and money. Selection of the research methodology depends on various factors. One of the critical factors is the purpose of the study.

The purpose of this study is the major reason why the researcher here has chosen quantitative methodology. Here the relationship between demographic factors and work motivation is studied. With the choice of the quantitative method, the researcher biases (which is a problem in both qualitative and quantitative research) can be controlled too. This compelled the choice of quantitative methods.

3.1 Sample of the Study
The Universe of this study is the IT and Non-IT organizations of Kerala and Karnataka. The number of IT organizations in Karnataka during the time this research was proposed was more than two hundred and in Kerala it was around thirty. The biggest challenge was to penetrate to the organizations to conduct the study. Security norms, agreement with the clients and general apprehensions of allowing an external person to collect information
from inside were major reasons why it was almost impossible to get the consent from organizations. A high level of confidentiality was committed to those who agreed to cooperate with the study.

Eighty organizations were contacted for this study but positive responses after several rounds of follow ups were seen only from 12 organizations. The primary data collection was done from nine organizations. Five of them are IT organizations (four from Kerala and one from Karnataka) and four are non-IT organizations (two from Kerala and two from Karnataka).

It was a multi stage sampling method that was adopted for this research. Initially, the IT and non-IT organizations were finalized and then a portion of the employees of these organizations were contacted for the data collection. The questionnaire was distributed randomly to the employees of the organizations identified for this study. Care was taken to ensure representation from most of the demographic groups.

The total number of responses considered for the analysis was seven hundred and twenty (720).

3.2 Area of the Study
The geographical areas taken for this study were Kerala and Karnataka. During the time this topic was proposed for research, Bangalore in Karnataka and Trivandrum in Kerala were booming as the IT industry hubs. This promising growth was instrumental in deciding upon these states as the geographical areas for the study. In the last few years Kochi in Kerala has seen growing as an IT intense city, owing to the development of Infopark, which is one of the Government supported IT parks in Kerala. This trend will continue with the arrival of the currently proposed incorporation of the ‘internet city’. Internet city is an undertaking happening in collaboration with the Government of Kerala and an Organization from Dubai.
The non-IT industries such as manufacturing and service industries are prevalent in the cities of Bangalore, Trivandrum and Kochi. New generation non-IT industries such as insurance, finance and consulting are also having their presence in these cities. The focal areas for the data collection for this study were the three cities of Kochi, Trivandrum and Bangalore.

3.3 Methods of Data Collection: Tools and Techniques

Of the various available methods, the questionnaire method was chosen here for data collection. It was decided, in the design stage itself, to collect relatively large amount of data from the people who are employed in both IT and non-IT organizations. The questionnaire method is most suitable when it comes to large amount of data collection. The administration of the questionnaire was also not difficult in this case, as the sample group of employees were educated.

Dessler (2000) points out the following advantages for the questionnaires method of data collection:

- It is a quick and efficient way to obtain information from a large number of individuals.
- It is less costly when compared to the interview method.
- A questionnaire can maintain participants’ anonymity.

The questionnaire method also has the advantage of giving the respondents necessary time to read the same and understand it at their own pace before responding. However, there are some disadvantages associated with this method, and as per Bless and Smith (1996) they are:

- The response rate could be low.
- The education level, age group, etc. of the respondents may not be known individually in advance many times.
- There is risk of incomplete reports which can only be discarded.
Above all, the response time also could be more. In this case several follow ups were done to elicit the responses. Also the researcher was personally present for the administration in most cases.

3.3.1 Questionnaire
The questionnaire designed to collect the data had mainly three sections. The first section was for collecting information regarding the demographic factors of the respondents. Demographic factors included age, gender, marital status, education, level in the organization, experience in years, annual family income, etc.

The second section was the questionnaire section. This section had 53 statements which were prepared covering various motivational variables important for the employees. These motivational variables were identified with the help of literature information, expert interviews and practical wisdom.

The last section was for collecting the organization, related information such as the location of the organization, Multi National presence, number of employees, annual turnover, etc.

The Likert seven point psychometric scale was assigned for marking the responses, with one extreme having ‘very strongly agree’ and the other extreme having ‘very strongly disagree’ as options.

Please see Appendix 1 for the questionnaire.

3.3.2 Secondary Data
Secondary data were collected from various published and unpublished reports, journals, websites, books, periodicals and booklets. Publications from various organized bodies such as NASSCOM, FICCI and CII were also taken.
3.4 Pre-testing
The pilot test was conducted in 2008 before the actual study. This was done to check whether the instrument had content validity and if there was any problem for the employees in responding to the questionnaire. The pre-test also helped to understand broadly the response time and percentage of filled in data received.

It was the paired questionnaire method that was used in the pre-test questionnaire. The questionnaire had 45 pairs of statements covering all important work motivational factors.

Here the respondents had to allocate marks to each of the statements in the pair from the total marks of five (5). A sort of ‘forced’ preference was expected from each of the pairs. The pre-test was done among 70 employees of four IT and non-IT organizations. Most of the questionnaires were mailed across to people and some were administered directly by the researcher. Based on the analysis and interviews with the respondents the questionnaire was redesigned. The pre-test responses were not taken for the final analysis.

3.5 Data Collection
From the state of Kerala and Karnataka a few IT and non-IT organizations were identified for the data collection. The type of industries covered here are IT, ITES, Manufacturing, Consulting and Banking Finance. A survey was done in nine organizations of Kerala and Karnataka. Care was taken to include organizations of different sizes. The size was decided based on the number of people in the organization and annual sales turn over.

One of the major challenges during the research was to penetrate into these organizations through the top management to connect with their employees for the data collection.

HR heads and CEOs of seventy (70) organizations were contacted directly and the purpose of the study was discussed with them in detail. The details were explained either
over the phone, at personal meeting or over email. Many organizations contacted had issues preventing the administration of this questionnaire. Several personal and telephonic follow ups were needed to get at least a few consents.

The main method adopted for data collection was direct distribution of the hard form of the questionnaire which was followed by necessary instructions. This process was carried out mostly by the researcher herself. On a few occasions, a person trained for this did the administration. This was done at the organization’s premises. With this method the ‘number of questionnaires distributed’ Vs ‘the number of filled in forms received’ ratio was relatively good. In some cases, the questionnaires were mailed where the HR team of the organizations administered the same among the employees and mailed them back.

The total responses received initially were eight hundred and eighty (880) which included data from both Kerala and Karnataka. The number of responses was bigger from the IT industry. The target employees of this study were primarily the staff category / knowledge employees and their ratio is bigger in the IT industry compared to that in the non-IT industry. This has been reflected in the collected data.

However, a data cleaning procedure was done where responses with repeated numbers in the scale (for example all the responses with just one point in the seven point scale) and responses with missing information were eliminated. Finally only 720 response sheets were considered for the final analysis.

3.6 Tools for Analysis
The different statistical tools and methods used in the study are briefed below:

3.6.1 Descriptive Statistics
Descriptive statistics allow researchers to present the data acquired in a structured, accurate and summarized manner (Huysamen, 1990). The descriptive statistics utilized in the current research to analyze the demographic data included frequencies, percentages, means and standard deviations.
3.6.2. Factor Analysis

Factor analysis is generally used to check the interrelationship among a large number of variables. This is about explaining these variables in terms of some common latent dimensions or factors. Factor analysis also helps in condensing the data.

In this study factor analysis was used to check whether the fifty three (53) variables used in the questionnaire had some grouping within them based on the common underlying factors.

Principal Component Analysis (PCA), which is appropriate to develop a smaller number of artificial variables (called principal components) when measures on a number of observed variables are already available, has been used here. This data reduction method is used when there’s ‘data redundancy’. ‘Data redundancy’ here means correlation of some of the variables. This could be also be because they are measuring the same construct. In the process, PCA looks at a linear combination of variables so that the maximum variance can be extracted. After removing this variance it looks at the second linear combination which reveals the maximum proportion of the remaining variance.

Variables with Eigen values above one (1) have been considered in the study. Also the option of ‘scree plot’ was looked at when it came to deciding on the variables to be considered for analysis. Scree means the debris lying in the base of a mountain and a plot that looks like side of a mountain. To obtain the Scree Plot, all the Eigen values are to be plotted in descending order. The Scree plot proposes to stop the analysis where mountain ends and the debris begins.

Also in this study ‘rotation’ has been used to make the output more understandable and to help the factors to be interpreted. The ‘varimax rotation’ has been chosen which is a orthogonal rotation of the factor axes. The ‘varimax rotation’ maximizes variance of the squared loadings of a factor on all the variables in the factor matrix. The ‘varimax rotation’ provides the most common rotation option.
To test the reliability of the score that came out in the factor analysis, Cronbach’s alpha which is one of the most popular reliability statistics was used. Cronbach’s alpha determines the internal consistency or the average correlation of items to gauge reliability.

3.6.3 Inferential Statistics
According to Sekaran (2000, p. 401), “inferential statistics allow researchers to infer from the data through analyzing the relationship between two variables; differences in a variable among different subgroups; and how several independent variables might explain the variance in a dependent variable.” The following inferential statistical methods were used to test the research hypotheses.

3.6.3.1. \( t \)-Test
The \( t \)-Test is used to compare means of two different groups to find out whether the groups are statistically different. The \( t \)-Test assumes that samples are randomly drawn from normally distributed population. The \( t \)-Test can be conducted on one sample, paired samples, and independent samples. In this study it is the independent sample method that has been used. If two samples are taken from different populations and their elements are not paired, the two independent samples can be used to compare the means.

3.6.3.2 One-way ANOVA
When an independent sample \( t \)-Test is used to compare means of two groups, the One-way ANOVA (Analysis of Variance) is used to compare the means of more than two groups.

3.7 Independent Variables and Dependent Variables in the Study
The independent variables used in this study are:

1) **Age**: A logarithm of numbers was used here to measure age. There were three age groups considered for this study: ‘below 25 years’, ‘between 26 and 35 years’ and ‘above 35 years’.
2) **Gender:** The two gender groups used were ‘female’ and ‘male’.

3) **Marital Status:** There were three groups based on ‘marital status’: ‘married’, ‘unmarried’ and ‘divorced’.

4) **Education:** The detailed educational classification included in the questionnaire was Diploma, Degree in Science or Arts, Engineering Degree, Post Graduation in Engineering, Post Graduation in Science or Arts, MSc/MCA/Computer Science PG, MBA/LLB/LLM or Any Other. Later this was broadly grouped into professionally qualified and Non-professionally qualified as well.

5) **Level in the Organization:** Level in the organization input was collected to find out the position of the individual in terms of his/her responsibility. Levels in the organization were grouped into six which were: Team Member, Subject Matter Expert, Team Lead, Managerial, Senior Managerial and Leadership.

6) **Work Tenure:** Work tenure was measured in years. Four tenure groups were formed based on the number of years starting with ‘less than five years’ and ending with ‘above 15 years’. The other two groups in between were ‘5-10 years’ and ‘10-15 years’.

7) **Annual Family Income:** Annual family income was measured in Indian currency with denominations in lacs. The income was grouped under seven (7) different heads. The first head was ‘below 2.5 lacs’ followed by the group ‘2.5- 5 lacs’. The remaining four groups were in the ascending order keeping in mind the same interval which were ‘5-7.5 lacs’, ‘7.5-10 lacs’, ‘10-12.5 lacs’ and ‘12.5 -15 lacs’. The last group was ‘above 15 lacs’.

8) **Industry Difference:** The industries were classified as IT industry and non-IT industries.

9) **Geographical Regions:** The study proposed a comparison of findings of the two states of Kerala and Karnataka. The geographical classification was done as Kerala and Karnataka.

A dependent variable is that factor which is observed and measured to determine the effect of the independent variable. ‘Motivational factors’ are the dependent variables here. Factor analysis of the 53 variables (statements), condensed the dependent variables
into ten and they were the ones considered for the analysis. The 10 factors that evolved are:

1) **Fair Systems:** This factor is about the fair and transparent environment, processes and systems in the organization.

2) **Enjoyable Work:** This is about the preference of the tasks one executes, opportunity to use one’s skills, abilities, etc.

3) **Growth:** Opportunity to do something path breaking, opportunity to be a part of a growing organization, opportunity to contribute to the profits and revenue of the organization, holding a respectable positions, etc. cover the factor ‘growth’.

4) **Work Life Balance:** Work life balance indicates the convenience of balancing work and home, the concept of flexi time working, convenience of the location, etc.

5) **Money Motive:** This factor is about the financial independence, perks and benefits, need to fulfill family obligations, need for financial security and the like.

6) **Duty Need:** This is about viewing work as a duty, being a role model for others, job as a means to serve the society directly or indirectly, etc.

7) **Affiliation:** Opportunity to interact with others, understanding and supporting colleagues, etc. cover this factor.

8) **Fair Management:** This factor is about the guidance and knowledge inputs from the superiors, the transparency and lack of bias that the management practice, etc.

9) **Hygiene:** This covers transportation, cafeteria and such conveniences the organization arranges.

10) **Engagement:** Opportunity to learn and perform, opportunity to learn continuously, opportunity to be busy and engaged, etc. are the core themes behind the factor ‘engagement’.

Details of factor loading and grouping of variables are given in Appendix 2.
3.8 Period of the Study
Secondary data collection was started in 2006. The pre-test was done during end 2008 and the primary data collection was completed by the middle of June 2010.

3.9 Flow of the Research

- Literature Review
- Identifying factors of motivation
- Pilot Study
- Modification of tools
- Data Collection
- Data Analysis
- Discussions of Results