CHAPTER - III

METHODOLOGY

INTRODUCTION

This chapter deals with the research framework and the hypotheses of the present study. Primary and secondary data were collected for the study. Primary data is collected from the respondents it deals with the job satisfaction of teaching professionals at the workplace. The expectations from these respondents and their own beliefs and values are examined. The secondary data was collected from refereed journals, magazines, newspapers and websites. An overview of the research design, sample design, calculation of sample size, details of pilot study and statistical tools used for analysis is included in this chapter.

3.1 METHODOLOGY

Research methodology is a way of systematically solving the research problem. It may be understood as a science of studying how research is done. In it, a study about the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology. Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, mode the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques are relevant or not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying the various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means is that it is necessary for the researcher
to design his methodology for his problem as the same may be different from problem to problem. From this, we can conclude that research methodology has many dimensions and research methods do constitute a part of the research methodology. The scope of research methodology is wider than that of research methods.

When we talk of research methodology, we not only talk of the research methods but consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated by the researcher himself or by others.

3.2 RESEARCH DESIGN

The formidable problem that follows the task of defining the research problem is the preparation of the design of the research project, popularly known as the "research design". Decisions regarding what, where, when, how much, by what means concerning an inquiry or a research study constitute a research design. "A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure".

The research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. The design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data.

The overall research design can be divided into the following parts:

a) The sampling design which deals with the methods of selecting items to be observed for the given study.
b) The observational design which relates to the condition under which the observations are made.

c) The statistical design which deals with the question of how many items are to be observed and how the information and data gathered are to be analyzed and

d) The operational design which deals with the technique by which the procedure specified in the sampling, statistical and observational design can be carried out.

The research design must contain a) a clear statement of the research problem (b) Procedure and technique to be used for gathering information (c) the population to be studied and (d) methods to be used in processing and analyzing the data.

Source of Data

The task of data collection starts after a research problem has been defined and the research design chalked out. There are two types of data.

Primary data: are those which are collected afresh for the first time and are original in character. The primary data was collected with the help of a questionnaire consisting of around seventy five statements.

Secondary data: are those which have already been collected. It can be obtained and compiled from journals, magazines, doctoral theses, working papers, newspapers and web sites.
3.3. SAMPLING TECHNIQUE

Simple Random Sampling refers to that sampling procedure in which each and every unit of the population has an equal opportunity of being selected. Further, in simple random sampling, each institution and individual is chosen randomly and entirely by chance, such that each institution and individual has the same probability of being chosen at any stage during the sampling process. Simple random sampling is a probability sampling and gives fair and unbiased results.

Selection of Institution

For the purpose of the current study, Self Financing Engineering colleges were selected based on the number of years since its inception. There are around two hundred Institutions in and around Chennai. Fifteen colleges were selected which are fifteen years old and the remaining ten colleges which are less than fifteen years since its inception. Majority of the Self financing Institutions in Tamil Nadu are Engineering Colleges, hence Self financing Engineering colleges were selected in and around the Chennai city, which are predominantly self financing institutions.

Selection of Respondent

The selection of respondents is based on experience, education and number of years working in self financing institutions which are in and around Chennai. The respondents were selected from various departments. Survey questionnaires were distributed to respondents designated as Assistant professors, Associate professors and Professors working in Self Financing Engineering Colleges. All the selected engineering colleges are affiliated to Anna University were chosen for the study.
3.4 RESEARCH INSTRUMENT

Questionnaire

The questionnaire is popular with individual researcher's and private organizations. A number of questions are printed in a definite order. The questionnaire was handed over to the staff personally or posted to the respondents, they have to read the questions and tick the answers in the space provided in the questionnaire itself. The questionnaire is a low cost tool when the sample size is large. It is free from interviewer bias and respondents have adequate time to think and fill it up. This method has a low rate of return, questionnaires may be lost some of them may be filled up in a careless manner and may have to be rejected.

Scaling techniques

The respondent using the rating scale judges properties of an object without reference to other similar objects. The ratings for opinion may be like "agree - disagree" , "strongly agree-strongly disagree", "neither agree- nor disagree , for satisfaction the ratings may be like " satisfied - dissatisfied", "highly satisfied-highly dissatisfied", " neither satisfied - nor dissatisfied" , for expectation the ratings may be like " high expectation - low expectation", "very high expectation - very low expectation ", "Neither high expectation - nor low expectation". Five point scales are generally used as more points on the scale provide an opportunity for greater sensitivity of measurement.

3.5 SAMPLE SIZE

The study is limited only to self financing engineering colleges in and around Chennai city. The sample size was calculated by using the statistical formula.

\[ n = \frac{(ZS/E)^2}{2} \]

Where \( Z \) = Standardized value at 5% level from statistical table. = 1.96
$S = \text{Sample SD (from pilot)}$

$= 0.644$

$E = \text{Expected Sampling Error}$

$= 5\% = 0.05$

$L_n = \left( \frac{ZS}{E} \right)^2 = \left( \frac{(1.96)(0.644)}{0.05} \right)^2 = 637$

With 5% standard error and pre-test SD=0.644, the minimum sample required is 637 but the researcher decided to collect information from about 776 respondents and only 754 questionnaire were returned. Out of the collected 754 questionnaire the incomplete and partially filled 22 questionnaire were removed to be left with 732 sample size. So the final sample size for the current study is 732.

**Pre Test and Reliability Test**

Pilot Study was conducted to test the questionnaire for its reliability and validity. A sample size of 75 respondents was selected from the leading self financing institutions in Chennai. The reliability for the pilot study was statistically tested using Cronbach’s Alpha and it was found to be 0.980.

**Cronbach's Alpha and Test of Reliability**

The standardized Cronbach's alpha can be defined as a

$$\text{Standardized} = \frac{K \cdot r}{1 + (K - 1) \cdot r}$$
Where 'k' is number of respondents and 'r', the mean of the two non-redundant correlation co-efficient (ie. the mean of an upper triangular correlation matrix).

Cronbach's alpha is related conceptually to the spearman - Brown prediction formula. Both arise from the basic classical test theory result that the reliability of test scores can be expressed as the ratio of the true score and total score (Error plus true score) variances:

**Tools and Techniques used for Analysis**

1. The mean scores have been used to identify the level of job satisfaction of Teaching faculty.

2. The values of standard deviation have been used to measure the spread or dispersion of the scores and to find out the most representative mean.

3. The chi-square test of independence has been applied for finding out whether two or more attributes are associated or not.

4. The t-Test has also been applied to test the significance of variation in mean scores and that of association between two or more attributes.

5. Percentages, Ranking techniques, and Rank correlations have also been used in the course of data analysis.

Likert’s five point scale has been used to find the overall job satisfaction of the total respondents. The analyzed data have been summarized and interpreted using tables. Data analysis for the present study was made by using the various parametric and non-parametric statistical tests namely, descriptive analysis, t-test, ANOVA, Chi-square, f-test, correlation, multivariate tools and Regression analysis using IBM software SPSS v-16 and AMOS.

**Analysis of Variance (ANOVA):** Analysis of variance is a collection of statistical models, and their associated procedures, in which the observed variance is
portioned into components due to different explanatory variables. ANOVA allows for the study of a single factor or several factors, but will only measure one variable. ANOVA is a fundamental technique which partitions the total sum of squares into components related to the effects used in the model.

**t-test:** A t-test is a statistical hypothesis test in which the test statistic has a students’ t distribution if null hypothesis is true. This test is used in a situation where the research wants to compare two statistics. The basic assumptions for t-test are one random sampling, independent measurements, normal distribution and equal variance. The basic utility of a t-test is that it produces a straightforward easy to interpret results of significance.

**Chi-square test:** It also referred to as chi-square test or \( \chi^2 \) test, is any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Also considered a chi-squared test is a test in which this is asymptotically true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a chi-squared distribution as closely as desired by making the sample size large enough.

**Path analysis:** It is used to describe the directed dependencies among a set of variables. This includes models equivalent to any form of multiple regression analysis, factor analysis, canonical correlation analysis, discriminate analysis, as well as more general families of models in the multivariate analysis of variance and covariance analyses (MANOVA, ANOVA, ANCOVA). In addition to being thought of as a form of multiple regression focusing on causality, path analysis can be viewed as a special case of structural equation modelling (SEM) – one in which only single indicators are employed for each of the variables in the causal model. That is, path analysis is SEM with a structural model, but no measurement model. Other
terms used to refer to path analysis include causal modelling, analysis of covariance structures, and latent variable models.

**Regression analysis:** It is a statistical process for estimating the relationships among variables. It includes many techniques for modelling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables. More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'Criterion Variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed. Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables – that is, the average value of the dependent variable when the independent variables are fixed. Less commonly, the focus is on a quintiles, or other location parameter of the conditional distribution of the dependent variable given the independent variables. In all cases, the estimation target is a function of the independent variables called the regression function. In regression analysis, it is also of interest to characterize the variation of the dependent variable around the regression function which can be described by a probability distribution.

**Correlation analysis:** Correlation is a term that refers to the strength of a relationship between two variables. A strong, or high, correlation means that two or more variables have a strong relationship with each other while a weak, or low, correlation means that the variables are hardly related. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while a value of +1.00 represents a perfect positive correlation. A value of 0.00 means that there is no relationship between the variables being tested. The most widely used type of correlation coefficient is the Pearson r, which is also referred to as linear or product-moment correlation. This analysis assumes that the two variables being analyzed are measured on at least interval scales. The
coefficient is calculated by taking the covariance of the two variables and dividing it by the product of their standard deviations.

3.6 CONCEPTUAL MODEL FOR THE RESEARCH

In the present study, the following factors are considered for determining the job satisfaction of respondents. They are Teaching and curriculum, Management, Participation and freedom in Decision Making, Discharge of Routine Work, Inter Personal Relationship, Student care and counselling, Compensation Rewards and Benefits, Other Benefits, Infrastructure and Environment, Infrastructure in general, Infrastructure Lab / Library, Infrastructure in terms of Teaching Aids, Career Development and Academic program, Career Development Seminar / conference, Career Development and Funding Project/ Consultancy.

![Conceptual framework of Job Satisfaction](image-url)

Fig. III. 1. Conceptual framework of Job Satisfaction
3.7 HYPOTHESES

The following Null hypotheses (H₀) have been used for the present study to find the job satisfaction of teaching professionals in self financing engineering colleges which are in and around Chennai city.

- There is no significant relationship between qualification and job satisfaction
- There is no significant relationship between gender and job satisfaction
- There is no significant relationship between marital status and job satisfaction.
- There is no significant relationship between designation and job satisfaction.
- There is no significant relationship between annual income and job satisfaction.
- There is no significant relationship between years of experience and job satisfaction.
- There is no significant relationship between pay structure and job satisfaction.
- There is no significant relationship between number of colleges worked and job satisfaction.
- Job satisfaction and there is no significant relationship between various dimensions and job satisfaction.
- There is no significant relationship between various dimensions and designation.
- There is no significant relationship between various dimensions and years of experience
- There is no significant relationship between various dimensions and age.
- There is no significant relationship between various dimensions and annual income.
• There is no significant difference between the mean ranks among the job satisfaction dimensions.

• There is no significant difference between the mean ranks among the factors of Compensation Rewards and Benefits.

• There is no significant difference between the mean ranks among the factors of Inter –Personal Relationship.

• There is no significant difference between the mean ranks among the factors of Student care and Counselling.

• There is no significant difference between the mean ranks among the factors of Infrastructure and Environment.

• There is no significant difference between the mean ranks among the factors of Infrastructure in terms of Teaching Aids.

• There is no significant difference between the mean ranks among the factors of Career Development and Academic program.

• There is no significant difference between the mean ranks among the factors of Career Development and Funding Project/Consultancy.

• There is no significant difference between the mean ranks among the factors of Career Development Seminar /Conference.

• There is no significant difference between the mean ranks among the other benefits.

• There is no significant relationship between age and teaching and curriculum.

• There is no significant relationship between designation and teaching and curriculum.
There is no significant relationship between annual income and teaching and curriculum.

There is no significant relationship between designation and Management.

There is no significant relationship between designation and Compensation Rewards and Benefits.

There is no significant relationship between years of experience and compensation Rewards and Benefits.

There is no significant relationship between the dimension Compensation Rewards and Benefits and marital status.

There is no significant relationship between the dimension Compensation Rewards and Benefits and gender.

There is no significant relationship between the dimension Compensation Rewards and Benefits and number of colleges worked.

There is no significant relationship between designation and the dimension Inter – Personal Relationship.

There is no significant relationship between annual income and the dimension Inter – Personal Relationship.

There is no significant relationship between age and the dimension Inter – Personal Relationship.

There is no significant relationship between number of colleges worked and the dimension Inter – Personal Relationship.

There is no significant relationship between age and the dimension Discharge of Routine Work.
There is no significant relationship between annual income and the dimension Discharge of Routine Work.

There is no significant relationship between number of colleges worked and the dimension Discharge of Routine Work.

There is no significant relationship between number of colleges worked and Infrastructure and Environment.

There is no significant relationship between years of experience and the dimension Career Development and Academic program.

There is no significant difference between the mean ranks among the opinion, current and expectation of the dimensions of job satisfaction.

3.8 LIMITATIONS OF THE STUDY

All research has its own limitations and this study is no exception. All possible efforts were made to maintain objectivity, validity and reliability of the study, yet certain limitations need to be kept in mind whenever its findings are considered for implementation. The results are based on the responses provided by the respondents chosen through appropriate sampling technique. The views and ideas of the respondents are time dependable and it differs over time.

- The study is area specific and thus cannot be generalized for other parts of the country having dissimilar environmental conditions.

- The study was limited only to the self finance engineering institutions in and around Chennai alone as majority of the self financing institutions are engineering colleges.

- Due to vague, biased and similar responses of faculties which arrived because of lack of interest and time constraint, the subjectivity cannot be ruled out.
• Difficult and expensive to track and keep the high volume of records needed accurately and constantly update them periodically.

This evaluation is based on the primary data generated through questionnaire and collected from the concerned person and because of these the finding entirely depends on the accuracy of such data. It has the element of fear from the side of faculty. It is affected by the personal relationships the teaching staff shares with the management. The factor of personal bias can play the part of spoilsport. The personal characteristic of the person can play an important role in answering the questions. Location factor can play an important role in getting indifferent answers.