CHAPTER 3

METHODOLOGY AND MODEL

3.1 INTRODUCTION

The methodology adopted in this research is of descriptive survey. After studying the literature, the actual construction project cost overruns were identified and based on the items that are responsible for the cost overruns in construction industry, a set of questions was prepared. Sample data were collected through distribution of questionnaire. The reliability and relevance of the questions were tested on the sample data and certain questions were corrected in the sample survey before the distribution of final questionnaire. This concept is as per Walker’s model (1997).

The questionnaire as in table 4.7 was distributed to the respondents who were involved in various construction projects in Tamil Nadu, Pondicherry, Kerala, Andrapradesh and Karnataka states in India interviewed personally. The respondents were,

(i) Project Managers / Site Engineers
(ii) Contractors / Builders
(iii) Others : Consultants / Architects

Addresses of organizations for the survey were collected from the Builders Association of India. The feedback from the respondents through the questionnaire was collected. In addition, other reasons and data for the cost overrun in their respective projects were also collected.
Finally there were 150 successful responses for cost overruns and these were taken as data.

In this research, the project is broken down into five stages (i) Initiating stage, (ii) Planning stage, (iii) Executing stage, (iv) Controlling stage, (v) Completion stage.

All the data collected through survey were analysed using the Statistical Packages for Social Scientists (SPSS) that provides a comprehensive range of statistical programme suitable for facilitating the work of analysis.

The statistical analysis is the most powerful tool for making appropriate decisions and hence it is adopted in this research. T-test and ANOVA were chosen to find mean and significance to analyse along with Factor Analysis and Regression Model.

3.2 PREPARATION OF DATA

The data were collected from 150 respondents through survey questionnaire pertaining to 89 items under five stages of the project. These data were conveniently segregated in the form of different files so as to use the data for statistical analysis.

The 150 respondents were selected in such a way that the project managers, the contractors and others have around 10 projects of experience each. The questionnaire was designed to draw data not only from the present project but also from their past ones so that the data will cover reasonable number of construction projects.
The questionnaire survey was conducted after collecting six background informations from the respondents including: (i) Age group, (ii) Name of the Department, (iii) Present responsibility, (iv) Years of total experience in project, (v) Experience in present company, and (vi) Type of Projects.

All the identified 89 items were considered for general ranking. After taking out the selected known 5 items as Dependent Variable, the balance 84 items were taken for Factor Analysis.

### 3.3 STATISTICAL ANALYSIS

Using the above data, a step by step analysis was conducted as follows:

1. Ranking analysis for the items at each of the five stages of the Project.
2. Combined ranking analysis for all the stages.
3. Over all ranking analysis for all the 89 items.
4. Ranking analysis for the cost oriented items.
5. Ranking analysis for the time oriented items.
6. Ranking analysis for the resources oriented items: men, materials, machinery.
7. Ranking analysis for the items related to persons responsible.
8. T-test, ANOVA for the items under six background informations.
3.4 FACTOR ANALYSIS AND REGRESSION MODEL

Factor Analysis identified a small number of items to represent relationship among sets of many interrelated variables. Regression model was chosen as the principal tool to relate a number of independent variables to a dependent variable to explore the relative significance of the items.

Eighty Four items were taken for factor analysis to extract into a small number of underlying items. Then multiple regression model was used to find the very important items among the underlying items.

3.5 FLOW OF ANALYSIS PROCEDURES

The details of the methodology are given in the flow chart (Figure 3.1).
Figure 3.1 Flow chart showing the details of Analysis