CHAPTER – 1
INTRODUCTION

1.0 Introduction

About half of total investments in our country go to the construction sector. Studies show that construction costs in India are increasing around 50 percent over average inflation levels. This cost increase is due to increase in the cost of essential building materials such as steel, cement, bricks, timber and other inputs as well as cost of labour. As a result, the average construction cost of a structure ranges from 2500-3500 per square feet approximately for a standard type of house. Economically weaker, low income groups and lower middle income groups cannot afford these rates. It becomes necessary to adopt the use of alternative building materials and construction technologies to save the scarce resources. This may be done by upgradation of local technologies using local resources or by application of modern materials and techniques.

1.1 Statement of the Problem

The construction is the second largest economic activity in India next to agriculture. The volume and scope of construction industry can be directly linked with the population and size of the country. Our population is increasing at a fast pace, and in tune with the population growth, the infrastructure facilities have also to be developed especially in the housing
sector. Construction cost has been increasing at a steep rate for a last few years. What contributes to this high cost are mainly material cost and labour cost. Moreover to that the craze of the people of today for having fashionable frills and designs has also become a factor for the cost escalation.

Another aspect is that the materials of construction like sand, broken stone rubble etc. are becoming scarce these days and the action of procuring these materials from the earth are creating ecological problems too. Moreover, conventional building materials like burnt bricks, steel and cement that are high in cost, utilize large amount of non renewable natural resources like energy, minerals, top soil, forest cover etc. The increased dependence on external materials and man power, harm the local economy and environment.

In this scenario, it is high time to think of some alternative technologies which are cost effective and environment friendly to reduce the cost of construction and save our planet.

By adopting appropriate cost effective and environment friendly construction techniques, the activities can be managed to a great extent. Only some limited organizations are in the field doing research and practicing the cost effective construction techniques. Organizations like Cost ford, Nirmiti Kendra and Habitat have been practicing the cost effective construction techniques for a last few decades.
Costford is the premiere and pioneer organization in the construction field which has been practicing cost effective and environment friendly construction techniques and technologies and popularizing these construction practices. A scientific study is needed to uncover the positive impacts of these cost effective and environment friendly construction technology practices in the construction field as well as in the society. This needs a systematic and scientific study of the functioning of Costford. There were no meaningful studies undertaken previously to examine the cost effective technologies practiced by Costford. Thus, it seems that there exists a research gap. The purpose of the present study is to fill this research gap by conducting a scientific and meaningful study on this topic entitled “Management of cost effective construction with special reference to Costford.”

1.2 Significance of the Study

Traditionally, from the early historic period onwards man has been constantly devising means of safeguarding himself against the onslaught of nature and wild animals. With the advancement of knowledge and civilization, man started constructing huts and houses and started living in groups. With the passage of time, new techniques of construction developed and construction activity turned into an Industry. Thus construction industry is the single largest important undertaking in the economy of a country. As the population level in our country is increasing
at a steep rate, the infrastructure facilities have also to be developed in tune with that, especially in the housing sector.

As the rising cost has become a real menace and the environment is becoming more and more polluted and sophisticated the need for a cost effective and environment friendly approach in the construction process cannot be ignored. The concept of green architecture has already come into existence. Green architecture, also known as sustainable design, is a method of design that minimizes the impact of building on the environment. There are large amounts of materials used and energy consumed during the construction and operation of an average building. So, one of the growing areas of interest for many environmentalists is the implementation of green technologies when constructing new facilities in order to produce buildings that are more energy efficient and have less impact on the nature environmentally during operation.

Moreover, people are keeping some sort of prejudices towards certain materials like cement, steel and bricks. These materials consume lot of energy, which again is a scarce item in the earth. Increasing demand made on these materials not only leads to the scarcity of materials and further environmental problems but also resulted in steep prices.

In view of the above facts, it is high time to think of some cost effective and environment friendly techniques for building construction in order to reduce the cost of construction and save our planet. Apart from the conventional way of constructing buildings, the construction activities
can be managed to a great extent through cost effective and environment friendly construction techniques.

1.3 Research Questions

On the basis of exploration of the research problem, the following questions are raised

i. Is there any cost difference between the Costford construction and the conventional construction practices?

ii. What are the reasons for the cost difference between the Costford construction and ordinary construction practices?

iii. Is there any relationship between the Cost effectiveness and Management practices in Construction works?

iv. Are the HR Management practices having an influence on the cost effectiveness in construction?

v. Is there any relation between the Costford technology and cost effectiveness?

vi. How far the Financial Management and Inventory management practices are influencing the Cost effectiveness of Costford?

vii. What are the reasons for the client’s satisfaction towards the construction techniques followed by Costford?

1.4 Scope of the Study

Housing shortage is one of the most difficult and challenging issues we are facing today. Most of the people cannot hope to afford even the cheapest houses available in the markets. There has been tremendous
activity in the housing front both in the public as well as in the private sectors. But these housing programmes are hampered by a number of limitations. The lack of adequate finance for keeping pace with the growing demand for shelter is one of them. The development of alternative technologies of building construction can reduce the problem of housing to a great extent.

Here in this study, the scope of the study is limited to the Cost effective construction techniques and technologies practiced in the construction field for the ultimate benefit of the society. The construction practices, especially, the cost effective ones being practiced and propagated by the organization Costford alone is taken for the study. Again, the study is focused on the management aspects of the cost effective construction practices followed by Costford. Finally, the scope of the study is limited to the geological jurisdiction of the State of Kerala.

1.5 Objectives of the Study

The Objectives of the study are:

1. To identify the different factors contributing to the cost effective construction
2. To compare the cost effective construction techniques and the conventional method of construction
3. To assess the effect of Human Resource Management practices in achieving the cost effectiveness in Costford
4. To assess the impact of cost-effective construction technology and Inventory management practices on the cost effectiveness.

5. To assess the level of Financial Management practices by the Costford in achieving the cost effectiveness in construction.

6. To study the factors influencing level of customer satisfaction of Costford clients.

7. To suggest measures for further improvements needed if any, for the organization.

1.6 Hypotheses of the Study

H1. There is significant difference in cost between Costford construction and Conventional method of construction;

H2. Cost effectiveness in Costford construction is significantly related to the HR practices such as Training effectiveness Job Environment and Job Satisfaction of employees.

H3. Cost effectiveness in Costford construction is significantly related to the Technological Management practices being followed by the Costford.

H4. Cost effectiveness in Costford is significantly related to the Inventory Management practices followed by the organisation.

H5. Cost effectiveness in Costford is significantly related to the Financial Management practices followed in the organization.

H6. Clients are significantly satisfied with the Costford construction.
1.7 Variables of the Study

**Dependent variables**

i. Training Effectiveness
ii. Job Environment
iii. Job Satisfaction
iv. Inventory Optimisation
v. Financial Control
vi. Customer Satisfaction
vii. Technology utilisation

**Independent Variables**

i. Regularity of Training
ii. Time schedule of Training
iii. Content of Training
iv. Knowledge Level
v. Efficiency Level
vi. Peer group relationship
vii. working time
viii. Labour problems
ix. Employee-client relationship
x. Employee turnover
xi. Flow of communication
xii. Job security
xiii. Monetary benefits
1.8 Methodology and Database

The study is basically empirical cum analytical in nature. The empirical research relies on experience or observation. It is a data based research coming up with conclusions. An analytical study is primarily concerned with testing hypothesis and specifying and interpreting relationships. It concentrates on analyzing data in depth and examining relationships from
various angles by bringing in as many relevant variables as possible in the analysis plan. It employs advanced statistical techniques.

Personnel discussions held with the Engineers, supervisors and some of the clients of Cost ford helped to frame two sets of questionnaires: one for the employees of Cost ford and the other, for the clients of Costford. Preliminary discussions with the experts in the industry and academicians helped to narrow down the study into the key aspects of cost effectiveness. Detailed review of literature enabled to gain familiarity with the theoretical perspectives of alternative technologies and construction aspects. The discussions, site visits and extensive literature reviews enabled the researcher to identify the relevant variables to be used in the study.

1.8.1 Database Designing

The study uses both primary and secondary data. Primary data are those which are collected afresh for the first time and thus happen to be original in nature. The secondary data, on the other hand, are those which have already been collected by someone else and which have been passed through statistical process.

1.8.1.1 Collection of Secondary Data

Published data were available from various publications of Central, State and Local Governments, publications of international bodies and their subsidiary organizations, technical journals, books, magazines and newspapers, reports and publications of various associations connected
with business and industry, report prepared by research scholars, public records and statistics and other sources of published information. Unpublished data obtained from trade association, labour bureaus and other public/private individuals and organization were also used for this study.

1.8.1.2 Collection of Primary Data

For the study, the researcher has collected primary data from the employees and clients of Costford. The employees include Engineers, Architects, Administrators, Supervisors, Office staffs etc. The details of clients were collected from the Costford and they were met personally as well as over telephone and e-mails. In order to collect data from respondents, questionnaires were prepared. The questionnaires consist of a series of questions arranged in a definite order. These questionnaires were distributed to the respondents and collected back duly filled by them. The respondents, who could not be met directly, were contacted over telephones and through e-mails and the corresponding responses were collected. In case any dilemma or confusion in filling the details, the ideas, aims and objectives were clarified and the responses were collected accordingly.

1.8.2 Population of the Study

The Population or the sampling frame of the study is the whole employees of the Costford in the main as well as sub centres spread through the State of Kerala. The customers or clients of Costford for the
past five years are also included in the population of study. As far as the employees of Costford are concerned, the total population was worked out as 126 and the clients of Costford for the past five was calculated as 788. For the study, the State of Kerala is divided into two zones viz. ‘Zone 1’ and ‘Zone 2’. The Costford centres coming under Thiruvananthapuram to Ernakulam Districts are grouped into ‘Zone 1’ and the remaining centres in the northern states of Kerala are grouped into ‘Zone 2.’ Altogether, the total population of the study came to 914.

1.8.3 Sampling Design

In this study, the population is comparatively small, clear and of homogeneous nature. Hence Random sampling method is adopted for the selection of samples. This sampling technique gives each element an equal and independent chance of being selected. The random samples are drawn through lottery method. The sampling size is estimated through Sloven’s formula \( n = \frac{N}{1 + N(e)^2} \) where \( n \) is the sampling size, \( N \) is the total population and \( e \) is the level of significance. A total of 320 elements were taken as sample for the study.

1.8.4 Measurement Designing

The data are collected through observation, unstructured interviews and structured questionnaires. Two sets of questionnaires were prepared - one for the employees of Costford and the other for the clients of Costford. The various scaling techniques such as nominal, ordinal, interval and ratio scales are used in the questionnaire, depending on the
data type. The Likert scale is used extensively for the study. In this technique, the respondent is asked to respond to each of the statements in terms of several degrees, usually five degrees and in certain cases two degrees of agreement or disagreement. At one extreme of the scale, there is strong agreement or highly positive attitude and at the other, there is strong disagreement or highly negative attitude and between them lie intermediate points.

1.8.5 Statistical Tools

The researcher used Statistical tests such as Percentage analysis, Mean score analysis, Z test, t Test, ANOVA test, in addition to the correlation and Regression. The statistical software SPSS ver.17 is used for the analysis. The conclusions were arrived based on the tests of significance. Secondary data are also utilized for testing the Hypothesis.

1.9 Limitations of the Study

1. Costford undertook the execution work for some Government Departments also. It was not possible to collect the exact response from some of the Government officials.

2. There remained the possibility that people may answer according to what they think they should feel rather than how they really feel.

3. Respondent bias in answering the questions related with financial affairs can be there.

4. Likert’s scale is widely used in this study. It cannot be said that the five positions marked on the scale are equally spaced. Hence with a Likert’s
scale, the researcher can simply examine whether respondents are more or less favourable to a topic, but it is not possible to tell how much more or less they are.

1.10 Operational Definitions

1) Training

It is a learning process that involves the acquisition of knowledge, sharpening of skills, concepts, rules, or changing of attitudes and behaviours to enhance the performance of employees. Training has specific goals of improving one's capability, capacity, productivity and performance.

2) Job Environment

Job environment normally consists of the employer's premises and other locations where employees are engaged in work related activities, which are present as a condition of their employment. In the present study, the environment consists of the premises in which the employees of costford are engaged for the work. The drawing room for preparation of plan, sites for the various construction works etc also come under this.

3) Employee Involvement

Employee involvement is creating an environment in which people have an impact on decisions and actions that affect their jobs. In the present study, employee involvement consists of the extent of participation on the part of engineers, architects, supervisors, and administrators on the
decisions regarding the initiation and execution of construction works and their timely completion in an optimum way.

4) **Job Satisfaction**

Job satisfaction is a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences. It is the sense of inner fulfillment and pride achieved when performing a particular job. Job satisfaction occurs when an employee feels that he has accomplished something of importance and value worthy of recognition.

5) **Job Stress**

Job stress is a stress involving work. It is the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope. Whenever there is poor match between job demands and the capabilities, resources or needs of the worker, some sort of harmful physical or emotional response occurs which is usually called job stress.

6) **Reward System**

A reward system is a formal or informal programme used to recognize individual employee’s achievements, such as accomplishment of goals or projects or submission of creative ideas. In the present study, reward system consists of both monetary and non monetary rewards.

7) **Performance Appraisal**

A performance appraisal, employee appraisal, or performance review is a method by which the job performance of an employee is
evaluated generally in terms of quality, quantity, cost and time typically by the corresponding superiors. It is part of career development and assesses an individual employee’s job performance and productivity in relation to certain pre established criteria and organizational objectives.

8) **Induction Training**

It is the training given to new employees. The purpose of the induction training over a certain period is to help a new employee settle down quickly into the job by becoming familiar with the people, the surroundings, and the job. It is actually given to the fresh hands as an initial preparation upon taking up a post.

9) **Training Effectiveness**

Training is a systematic development of knowledge, skills and attitudes required by an individual to perform adequately a given task or job and the literary meaning of effectiveness is producing intended or expected result.

10) **Customer Satisfaction**

Customer satisfaction is a measure of how a product or service supplied or rendered by an organization meet or surpass customer expectation. Here in this study, the customer satisfaction is the meeting of the expectation levels of the clients of costford with the reality in execution of the cost effective construction projects.
1.11 Period of the Study

The Literature reviews and materials were gathered upto the end of 2011. The questionnaire preparation was carried out during 2011. The instruments were distributed among the respondents and the required data were collected by January, 2013. By the end of 2013, the researcher was in a position to find out the results of the study by carrying out the analysis of the data collected.

1.12 Scheme of Presentation

The research study conducted is classified into six chapters and the scheme of presentation of the report is as follows.

Chapter 1: Introduction – Provides an introduction to the study, statement of the problem, significance, scope and objectives of the study, limitation of the study, research methodology, operational definition of the terms used in the study.

Chapter 2: Review of Literature - Contains the review of relevant literature and various studies related to the topic of study.

Chapter 3: This chapter is about the profile of construction industry and theoretical framework of the study. The profile in general and with respect to the Kerala scenario is described. In theoretical framework, cost effectiveness in construction and the management aspects are detailed.

Chapter 4: In this chapter, a well detailed explanation of the organization ‘Costford’ and its activities are given.
Chapter 5: Data Analysis and interpretation, deals with the detailed analysis done on the basis of the hypothesis framed for the research work.

Chapter 6: The summary of findings, conclusions and recommendations are presented in this chapter.