

Investigating the Effectiveness of Construction Practices in Delayed Residential Projects in Ratnagiri City through Time and Cost Perspective

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Abstract – Delay could be defined as the time overrun either beyond completion date specified in a contract or beyond the date that the parties agree upon for delivery of a project. It is slipping over its planned schedule and is considered the common problem in construction projects. Delay in a construction project is considered one of the most common problems causing a multitude negative effect on the project and its participating parties. Therefore, it is essential to identify the actual causes of delay to minimize and avoid the delays and their corresponding expenses.

Key Words: – Delay, Effectiveness, Overrun, Time Effectiveness and Cost Effectiveness, etc.

1. INTRODUCTION

Today, India is the second fastest growing economy in the world. The Indian construction industry is an integral part of the economy and a conduit for a substantial part of its development investment is poised for growth on account of industrialization, urbanization, economic development and people's rising expectations for improved quality of living. Delays are one of the biggest problems in construction firm's face. Delay can lead to many negative effects such as lawsuits between owners and contractors, increased costs, loss of productivity and revenue, and contract termination. Delays in a construction project can be such a problem and a very serious issue for the parties involved such as client, consultants, and contractors. Construction delays will lead to bad relations between these parties and the cost of a construction project will be increased along the addition of the time given. Delays generally regarded as the most common problem, complex, risky and frequently encountered in a construction project. Delays are one of the biggest problems in construction firm's face. Delay can lead to many negative effects such as lawsuits between owners and contractors, increased costs, loss of productivity and revenue, and contract termination.

1.1 SCOPE OF RESEARCH

The scope of the project is to investigate the effectiveness of construction practices in delayed residential projects and finding the effective solutions regarding on the problems to minimize time and cost perspective of construction projects. It is based on minimization of the time and cost overrun of the future construction of residential projects by implementing effective solutions on limitations of the construction projects. The residential construction projects are growing rapidly due to the development of the city. Hence it is necessary to the adoption of the effective solution of the construction practices. Cost, time, and quality have proven their importance as the prime measures for project success. Delays in a construction project are a universal phenomenon. They are usually accompanied by cost overruns. Delay has a negative effect on clients, contractors, and consultants in terms of growth in adversarial relationships, mistrust, litigation, arbitration, and cash-flow problems. A project may be regarded as a successful Endeavour until it satisfies the cost, time, and quality limitations applied to it. However, it is not uncommon to see a construction project failing to achieve its goal within the specified cost, time, and quality. Construction delay is one of the most recurring problems in the construction industry and it has an adverse effect on project success in terms of cost, time, quality, and safety. There are several factors that cause a delay in construction. Delay may be caused by clients, users, consultants, designers, owners, contractors and suppliers. Time and cost management of any a new construction project as reflected in the effectiveness of construction practices. This study is particularly an investigation survey research trying to establish the effective solutions on the factors related to delay construction project management principles in asset management within the Ratnagiri city economy. In this context, the research relied extensively on research questions and field interviews in achieving its aim and objectives. Hence it is necessary to the adoption of the effective solution of the construction practices.

1.2 THE STATEMENT OF THE RESEARCH PROBLEM

Many construction projects in Ratnagiri city are often running into troubles and time completion failures. So, it may result in an increase in time and cost overrun of that project. That studies show that what are the critical factors of causing a delay in construction projects. Many a Previous case studies had been shown the various factors and methods to minimize delays in construction projects but still these projects are going delay in their time and cost due to various reasons. It indicates that there is either lack of awareness of the suggested construction practices or there are limitations for the effective adoption of their suggestion. It may vary from case to case to the construction projects. The construction project is unique in nature. It is necessary to find the actual reasons for the delay to those projects and to find awareness and limitation of those solutions for achieving effectiveness in construction practices. Therefore, it is necessary to focus on the effectiveness of construction practices and applied during each phase of a project's lifecycle.

2. OBJECTIVES

The research is aim at identification of effectiveness of construction practices. To achieve aims, objectives have been identified as follows:

1. To study the reasons for delaying the construction projects.
2. To investigate the effectiveness of construction practices used in current projects through time and cost perspective and to identify the practices which are not adopted effectively.
3. To analyses the current construction practices through time and cost perspective.
4. To find out the possible solution to improve the construction practices

3. METHODOLOGY

Initially, a literature review was made in order to find out the delay causing factors in a construction project which assisted in making a questionnaire survey with the professional experts and other participants of Ratnagiri construction projects in order to find out the relative importance of those found causes with respect to the Indian context. The research methodology will explain how the objectives of this study can be achieved. This study was carried out based on literature review and questionnaire survey. Subsequently, data collection from the questionnaire survey being analysed using the statistical methods and their results are presented. It follows by some discussions, conclusions, and recommendation. To find out the awareness and limitations of the effectiveness and identification of the construction practices which are not adopted effectively, these construction projects are classified into the practices which are related reasons responsible for the delay in each construction practices

4. Data collection

Data collection is the most critical part of the study since the accuracy of the data determines the success or failure of the research. Data obtained through these questionnaires will be analyzed accordingly using appropriate analysis techniques. Responses from questionnaires are then be compiled and analyzed. Data collected from different questions was gathered to answer different objectives. The analysis is done based on various categories by using the statistical methods. In order to identify the most important factors that cause delays, the common effect of delays, and methods of minimizing construction delays, fifteen sets of survey questionnaire were distributed to the targeted respondent. About ten sets were distributed to the contractors and five sets were distributed to the consultants. The questionnaire survey was completed by directors, project managers, project engineers, site manager, designers/engineer, and supervision engineers. Data required for the calculation of quantities such as floor plans, footing details plan, column details, etc. was collected. Each construction project is classified according to their construction practices and rates per units are collected from their particular projects.

5. Analysis of results

For the analysis of effectiveness of the construction practices through time and cost perspective of the construction project, construction practices are classified as excavation, concreting, wall work and plastering for finding effectiveness in construction practices. Calculations are made for standard values of 1 cubic meter or 1 square meter of construction practices and then finding total effectiveness in that whole construction practices. Construction practices are classified as follows:

1. Excavation: The excavation depth is 2 meter contains soft soil up to 1.8 meters from ground level and 0.2 meter hard strata from soft soil.
2. Concrete Work: In concrete work the construction practices are classified as Footing PCC, Footing, Floor PCC, plinth beam work, column work, slab, and beam work.
3. Wall work: For wall work Laterite stone is used as a construction of walls. Size of Laterite Stone is 0.380 M X 0.150 M X 0.230 M Quantity required for different activities in a construction project are calculated
4. Plastering: For plastering purpose, Conventional Plaster of minimum 12-15mm thickness was used for wall surface.

These construction practices was checked through the practices adopted and possible solution of that each activity. For finding the effectiveness of the construction project, a possible solution was adopted on case study of Nirman Group of Construction, Ratnagiri. Details of those case studies according to their construction practices with respect to time and cost perspective as shown in below chart are as follows:

Site Name : Nirman Construction, Maruti Mandir, Ratnagiri							
Activities		Practices Adopted		Possible Solutions		Saving in Time	Saving in Cost
		Manually		Automation/ RMC/ Modern Technology			
		Cost	Time	Cost	Time		
1.	Excavation	504000	35	453600	28	7	50400.00
2	Concreting work						
	Footing PCC	218750	6	207812.50	2	4	10937.50
	Footing	1245475	23	1120927.50	5	18	124547.50
	Floor PCC	711000	15	639900	3	12	71100.00
	Plinth beam	595336	9	535802.40	2	7	59533.60
3.	Column	434640	19	391176	4	15	43464.00
4.	Slab and beam	2120512	23	1908460.80	10	13	212051.20
5.	Wall work	4763316	35	4757251	30	5	224251.00
6.	Plastering	2466000	55	2219400	50	5	246600.00

6. CONCLUSION AND DISCUSSION

The construction practices are causes in time overrun that results in causing delay excavation activity is approximately 15%. Similarly, in concreting work it is 10%, wall work is 15% and in plastering it is up to 5%. In case cost overrun excavation, activity is approximately 8%. Similarly, in concreting work it is 5%, wall work is 5% and in plastering it is up to 5% In Nirman group of construction, Maruti mandir, Ratnagiri the current construction practices are going to delay time perspective by 15% and cost perspective by 5% respectively because of lack of adoption of effective construction practices. To achieve the effectiveness in the construction practices through its project life cycle it is necessary to increase the awareness in construction practices with the adaptation of the modern construction methods and techniques and advances construction equipments. With the adaptation of the modern construction techniques and methods, construction practices can be saved in time overrun approximately about 15% and in cost overrun approximately about 5% to 10%.

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