

STRATEGIES OF FAST TRACK MODE OF CONSTRUCTION

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Abstract - : Fast tracking is the process of overlapping sequential activities or phases in parallel to compress the project schedule. These studies discuss about the three main strategies affects the fast track mode of construction such as Delay management, Resource management and Choice of technology. This study also determines the most significant factors affecting the fast construction project. More details collect through the literature survey and by face to face interviews with experts in the industry. Fund is the major reason for the delay in the fast track construction. Shortage of quality materials is the crucial issue faced in resource management. Most of the construction firms depends on modern techniques for fastening their work. These are the main factors affecting the fast track constructions.

The implementation of fast track methods in conventional construction result in the variation of time and cost. The conventional method of construction can be convert to fast track by implementing the concepts such as resource levelling techniques, linear transportation method from supply chain management. The comparison of cost and time in the conventional and fast track can be analyzed by the implementation of Earned Value Management. The implementation results that increase the total cost of 27.87% and reduced the duration of construction by 40%.

Key Words: fast track construction, Delay Management, Resource Management, Choice of technology, resource levelling techniques, linear transportation method, Earned Value Management

1. INTRODUCTION

The construction industry is one of the main sectors that provide important ingredients for the development of an economy. In India construction is the second largest industry therefore having a proper control on complexities of construction projects is the area of interest for all in construction sector. Fast-Track construction in which design and construction functions are overlapped [1]. Reduce construction duration the fast-track technique has emerged, where overlapping goes one step further. This is achieved by overlapping the design and construction phases within each individual package. Under this approach the owner's architect develops schematic drawings and preliminary specifications, which are immediately used to estimate the project budget and get construction started. Without a full set of detailed plans and specifications, prospective bidders who are getting a rough idea of the work are asked to formulate a contract price [2]. The fast track projects mainly applied in the projects which directly affect the public.

The three main strategies are delay management, resource management, choice of technology which affecting the fast track constructions. For implementing the concept of fast track construction in a conventional project through the implementation of concept such as resource levelling techniques, linear transportation in supply chain management. Cost and time variation analyzed by implementing the earned value Management.

1.1 OBJECTIVE OF THE STUDY

- To identify the various strategies which are mostly influencing the fast track construction.
- To find why these key strategies are influential in fast track construction.
- Detail study about the strategies such as Delay management, Resource management, Choice of technology
- To make recommendations to overcome or discard those critical factors in future fast track projects.

1. FAST TRACK CONSTRUCTION

A fast track construction project can be defined as a project where the time constraints of an owner to utilize a structure cause standard design and construction procedures and timelines to be compressed in order to meet the owner's schedule for use of the structure. In a project of this type, time is of the essence, thus the need for time sensitive decisions is critical and takes precedence over other forces that would generally have greater weight in a standard design and construction sequence. In a fast track project processes that normally would run in sequence must be run in parallel.

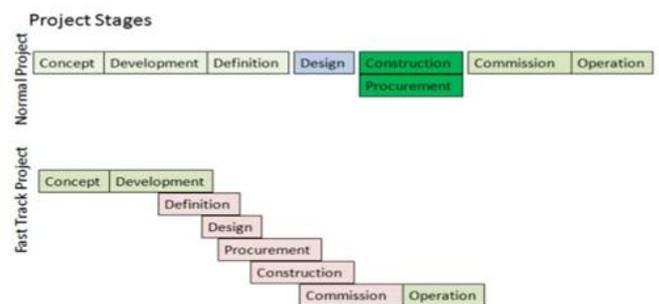


Fig.1. Comparison of Conventional Project with Fast Track Projects

2 STRATEGIES OF FASTTRACK CONSTRUCTION

Fast tracking strategies are used to achieve shorter project duration. Different types of strategies are affecting the fast track construction, here we discussing about main three strategies such as Delay management, Resources management, Choice of technology. Fast-track construction ensures early completion of projects without dilution of quality.

2.1 DELAY MANAGEMENT

In construction, delay could be defined as the time overrun either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project. It is a project slipping over its planned schedule and is considered as common problem in construction projects. The project-team comes together to create that unique development on a particular site under circumstances that will never be repeated. They may be complex, demanding high level of co-ordination of permissions, people, goods, plant and materials and construction can begin despite many uncertainties, and as a consequence, delays are common

2.2. RESOURCE MANAGEMENT

Construction companies face the challenge of delivering often complex projects to a schedule, within a budget, and hopefully with a reasonable profit margin. Resource management is the process of planning the resources necessary to meet the objectives of the project, and to satisfy the client's requirements. Without proper resource management, projects can fall behind schedule, or can become unprofitable. The objective is to ensure the adequate and timely supply of resources, whilst at the same time maximizing the utilization of resources between projects. The basic resources for a project are follows.

- Human resource
- Money
- Machine
- Materials

2.3 .CHOICE OF TECHNOLOGY

As in the development of appropriate alternatives for facility design, choices of appropriate technology and methods for construction are often ill-structured yet critical ingredients in the success of the project For example; a decision whether to pump or to transport concrete in buckets will directly affect the cost and duration of tasks involved in building construction. Technological advances are rolling out almost daily. The choices made during the rushed, fast-track construction time frame affect the organization's ability to take advantage of technology. Advantages of using latest technology for the work are follows.

- Faster construction time
- Saving in materials
- Building can be more flexible and easy in installation
- Maximum utilization of resources

3. QUESTIONNAIRE SURVEY

In the initial stage, a literature search and a detailed study on the Working strategy of a construction industry was conducted. The literature review was conducted through the books, internet and international project management journals. Through that selected the three main strategies for the study which affect the fast track construction i.e, Delay management, Resource management, Choice of technology. The questionnaire survey was conducted across the districts in Kerala. Through the survey, the major factors that related to the Strategies were obtained .The was survey conducted by visiting forty project managers in the construction firm. The Likert scales were used for the survey.

3.1 Reliability Test

The collected data was checked for reliability of research using Cronbach Alpha Value in SPSS.when Likert-type scales it is imperative to calculate and report Cronbach's alpha coefficient for internal consistency reliability for any scales or subscales may be using. We used the rule of thumb for the Survey analysis is '≥ .9: Excellent', '≥ .8: Good', '≥ .7: Acceptable', '≥ .6: Questionable', '≥ .5: Poor' and '< .5: Unacceptable". The Cronbach's alpha value obtained in the SPSS analysis is .939. It is <.9 .so the Cronbach's value is greater than 0.9, the results of questionnaire survey is excellent and can be used as genuine data for the research.

3.2 Relative Importance Index (RII)

The RII was calculated by using the formula as below:

$$RII = \sum W/A * N$$

Where, w = weight of scale; A = highest weight ('5' in this case); N = total number of respondent. The Relative Importance Index was important in identifying the major

The main five factors which affects the strategies are follows,

3.2.1 Delay Management

The main five factors with their RII value as shown in the table1.

Table.1 Ranking of Factors

Rank	Factors	RRI
1	Fund:	.818.
2	Availability of resources	.810
3	Red-Tapisom:	.742
4	Environmental conditions	.742
5	Space constraints	.732

- **Fund:** The crucial issue faced in the construction industry. Obtaining funds for executing work on contracts is a huge burden for construction contractors. Finance is required to bridge the time between expenditure and revenue.
- **Availability of resources:** A key factor adversely affecting project performance is the improper handling and management of materials on site. Materials management is particularly problematic on fast-track.
- **Red-Tapisom:** The influence of redtapisom is directly affect the fast track Construction. The permit sanctioning of each work in the construction is delayed due to the malpractices in the authority. Most of the public works may be delayed due to the illegal activities occur in the authority.
- **Environmental conditions:** Good environmental condition is essential for the smooth running fast track condition .construction works in some particular area mainly delayed duo to the ecological
- **Space constraints:** The deficiency of the space for the work is the one of the Factor affect the fastness of work. The construction of roads, fly overs, mainly affect the space constrain problems.

3.2.2 Resource Management

The main factors which affects the resource management as shown in the table .3

Table.2 Ranking factors

Rank	Factors	RRI
1	Shortage of quality materials	.842
2	Shortage of skilled labors	.811
3	Organizational influence and culture	.801
4	Government rules and regulation	.791
5	Strike	.782

- **Shortage of quality materials:** The shortage of the quality materials for the work is major issue faced by the resource management.
- **Shortage of skilled labors:** The main element for the construction firm. When the shortage of the labor directly affect the construction firm.
- **Organizational influence and culture:** The selection and purchasing depends on the strength of the organization.
- **Government rules and regulations:** The influence of the rules and regulations may be affect the market prizes.
- **Strike:** Strike in the market directly affect the resources shortage.

3.2.3 Choice of Technology

- **Change from conventional method to modern technology:** some of the construction firm mainly using the conventional method for the construction.
- **Fund:** Fund is the basic element for purchasing the new technology.
- **Availability of skilled labors for the latest technology:** Suitable skillful labors are essential for the application latest technology
- **Quality assurance and control:** The technology adopted is always ensuring the quality and the efficiency
- **Environmental factors:** When we adopt some methods they affect the environment directly or indirectly

The main five factors which affects the strategy 'choice of technology as shown below tbale.3

Table.3 Ranking Factors

Rank	Factors	RRI
1	Change from conventional method to modern technology	.889
2	Fund	.785
3	Availability of skilled labors for the latest technology	.742
4	Quality assurance and control	.719
5	Environmental factors	.710

3.3 RECOMMENDATIONS TO OVERCOME THE ISSUES RELATED WITH FAST TRACK CONSTRUCTIONS.

- Detailed study about the project
- Create good management structure for the project
- Frequent progress meetings
- Use of Proper financial management
- Use up-to-date technology
- Use proper and modern construction equipment
- Providing proper training to all workers
- Proper material procurement
- Clear information and communication channels
- Frequent coordination between the parties involved
- Conduct proper quality checking.

From this we understood that the total cost for the fast track work is increased by 26.38%.which is less than 30% it is acceptable value in the construction industry.

CONCLUSION

The main challenge in construction sector is to create certainty about delivery on time, on budget and to the targeted quality and safety. Fast track construction is a solution for the problem. Fast tracking strategies are used to achieve shorter project duration. Different types of strategies are affecting the fast track construction. Delay management, resource management, choice of technology is the three different important strategies that affect the fast track construction. The most important causes were delays in fast track construction are contractor's payments, shortage of material in construction, change in material, etc. Without proper Resource management projects can fall behind schedule or can become loss. The application of latest technology at construction industry will help to complete the project with short duration. Different methods are available in each strategy for their betterment and their application will helps for the success of a construction.

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