

Productivity of a Residential Building

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Abstract : In recent trends a wide range of building materials are available for the construction of civil engineering structures. The total cost of materials may be up to 60% or more of the total cost incurred in construction project dependent upon the type of project. Effective construction materials management is a key to success for a construction project. Construction waste is another serious problem in construction industry. The performance of the construction industry and its contribution to the welfare of society in comparison to other industries such as the manufacturing industry has lately been the focus of many commissioned reports and academic research publications. The so-called —iron triangle of time, cost and quality have been the most important metrics of construction project performance, especially for the selection of appropriate procurement methods.

Keywords –Construction Management, Productivity, IS Code, Construction, Civil, Management.

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I. Introduction

Construction Management (CM) also known as Construction Project Management defines all activities involved in the planning, coordination and control of construction projects from the start to completion. It blends construction skills with business principles in an attempt to produce functional projects with minimal wastage. Construction managers work with a diverse workforce to ensure that each step of the project is completed both in time and on budget [1]. Construction Managers must therefore be technically competent, innovative, entrepreneurial, community leaders and people who enjoy social as well as global awareness. Construction Project Management (CM) is a professional service that uses specialized, project management techniques to oversee the planning, design, and construction of a project, from its beginning to its end. The purpose of CM is to control a project's time, cost and quality. On the other hand, prolonging the project execution time usually results in contractors that have to deal with cost overruns due mostly to the following causes: extra expenses on management personnel, cost escalations of materials, increase of financial cost, paying contract penalties, and so forth [15]. Moreover, given the usual competitive environment in the construction industry, contractors that fail to complete projects on time may get their reputation harmed and become impeded to obtain new contracts. Project quality can also be affected due to construction delays since the construction team usually dedicates less time to quality control when the main concern is completing the project on time. When this is the case, workers are usually pushed to work overtime and to increase the production rate, which very often entails failures and reworks [14].

II. Objective

- To maintain a daily progress report.
 - To abreast the productivity and compare it with the standards which would help the client to distinguish between a delayed project and on time project.
 - To procure materials on time whenever needed.
- To judge whether the project is on time or delayed [3].

III. Methodology

During the execution of a project, procedures for project control and record keeping become indispensable tools to managers and other participants in the construction process. These tools serve the dual purpose of recording the financial transactions that occur as well as giving managers an indication of the progress and problems associated with a project [11]. The problems of project control are aptly summed up in an old definition of a project as "any collection of vaguely related activities that are ninety percent complete, over

budget and late." The task of project control systems is to give a fair indication of the existence and the extent of such problems. Finally, the issues associated with integration of information will require some discussion[12].

For collecting the data, observation was made which are as follows:

Technique of construction and precautions used.

- Progress in a particular time period (1 week).
- The other technique of collecting the data was taking interview. We interviewed with Engineers, laborers, contractor, people residing in vicinity on topics like
 - Management of manpower and their assigned jobs.
 - Legal issues (administrative approvals) faced by contractors.
 - Materials involved and the ideas of designing them.

Period to be allowed for working to avoid disturbance.

IV. Need To Study Productivity

It is an extremely vital performance measurement tool within the construction industry. Productivity growth is important to an individual enterprise, an industry or an economy. Productivity improvement in construction industry may have a significance impact on improving GDP. Improving relative productivity growth improves a Developer's competitive position [10].

Factors affecting productivity:

- Overtime and fatigue
- Attitude
- Occupancy
- Concurrent operations
- Absenteeism and turnover
- Errors and omissions
- Reassignment of manpower
- Mobilize/demobilize
- Insufficient material handling
- Hazardous work area
- Climatic factors
- Government clearances
- Tool and equipment shortage

Table 1- Trade wise Productivity Comparison:

Sr. No	ACTIVITY	QUANTITY	UNIT	MANDAYS	ALL INDIA SCHEDULE OF RATE	ACTUAL PRODUCTIVITY	Variation with standard %
1	CONCRETING	1439.23	M ³	2222	3.25	0.648	80
2	TILING	10100.42	M ²	2112	5	4.782	4.4
3	SKIRTING	402.96	RM	660	3.85	0.611	84.155
4	EXTERNAL BLOCKWORK	747.16	M ³	792	1.1	0.943	14.525
5	INTERNAL BLOCKWORK	542.10	M ³	528	1.1	1.027	6.363
6	EXTERNAL PLASTER	6185.26	M ²	880	10	7.029	29.7
7	INTERNAL PLASTER	16122.84	M ²	1716	10	9.396	6
8	PAINTING	31089.78	M ²	2640	17	11.776	30.705
9	POP	25077.76	M ²	2640	10	9.499	5
10	WATERPROOFING	987.76	M ²	352	20	2.806	85.95
11	SHUTTERING	14714.59	M ²	6048	3	2.433	19
12	REINFORCEMENT	580,000	KG	6600	100	87.879	12.12

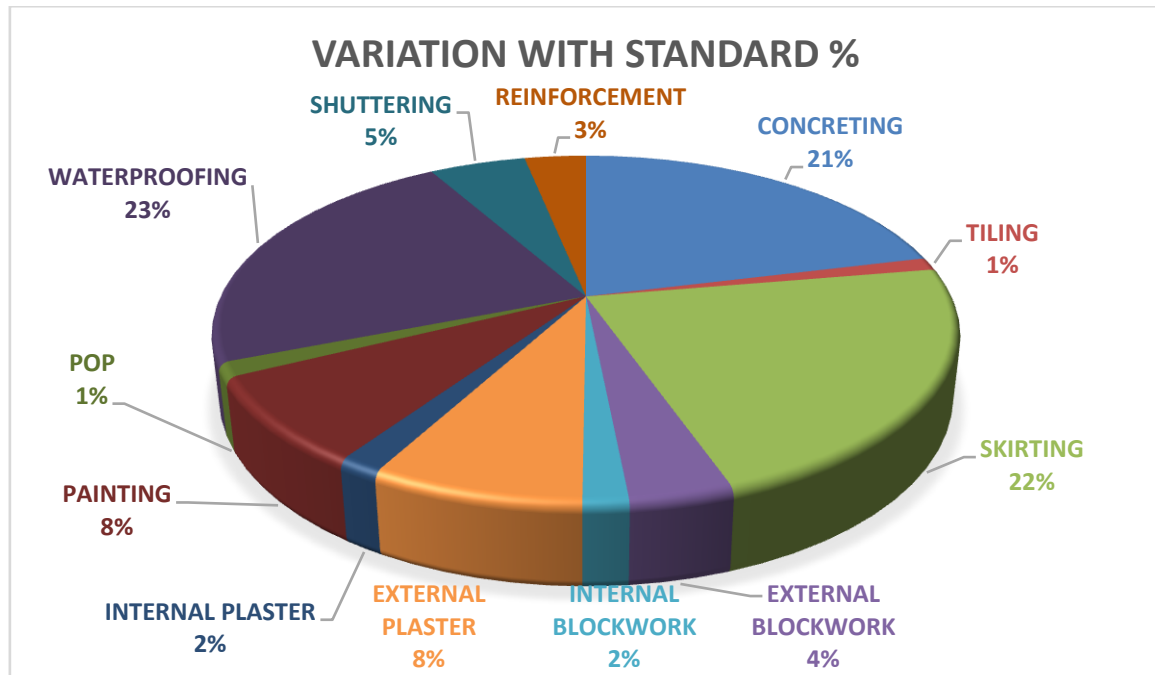


Fig 1- Variation with Standard %

V. Result Obtained

After analyzing the activities and calculation of mandays, we obtained actual productivities of different activities being performed at site. The productivities were compared with the standard productivity which is used for construction from the IS Codes [13].

Methods to improve productivity

- Availability of resources.
- Training programs for labour.
- Good supervision, Good incentives.
- Optimizing site facility.
- Value Engineering.

VI. Future Scope

As the increasing trends of construction projects completing after the deadline in India it has now become necessary for as the budding civil engineers to look after the same and minimize the delays caused at any construction site. To avert this problem and manage time, cost and quality of the final product we need to know the importance of construction management and use different techniques in implementing the project [5][6].

VII. Conclusion

In the past years, the urban areas have been expanding through various construction projects and building redevelopments. Majority of these projects, especially the small scale ones, are often undertaken by ignorant contractors and even builders. They might not possess the required qualifications as a civil engineer but have experience in these fields [7][14][15].

- Many at times the small scale projects get constructed without proper project planning and methodical implementations.
- The productivity of each activity at each site is different due to the natural and manmade obstacles such as topography of site, approach to site etc.
- The work breakdown of the activities if not done efficiently may cost heavy losses.
- Due to some unfortunate events in the past, there may be material and equipment shortage at site.
- Delay in obtaining Clearance Certificate by the developer from the government due to which the project was stalled for a few weeks.

Thus, we can improve productivity by optimizing the resources, checking the availability of resources, providing proper training programs to labors.

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