

Traditional Method and Planning in Cost Analysis of Residential Building

Tanmayee Mujumdar¹ Nikita Kandalkar² Snehal Wagh³, Nayana Khairnar⁴, Chaitanya Bhosale⁵

^{1,2,3,4}Student, Department of Civil Engineering, Loknete Gopinathji Munde Institute of Engineering Education & Research, Nashik, Maharashtra, India

⁵Professor, Department of Civil Engineering, Loknete Gopinathji Munde Institute of Engineering Education & Research, Nashik, Maharashtra, India

Abstract - This is the study that will provide the information regarding the proper planning of activities in housing construction projects. The effective management of activities reduces not only the construction cost but also project completion time or project duration. This enhances the profit of a construction industry. There are a lot of non-value adding activities or wastes in construction practices and many among those were left unnoticed or unattended.

This process of "Activity Based Costing in Construction Management" will be carried out on the basis to study the waste concepts and the level of "ACTIVITY BASED COSTING" in local construction practices based on philosophies and principles drawn by Activity Based Costing. A quantitative survey has been carried out through structured questionnaires over a randomly selected group of managerial personnel in construction activities.

Key Words: Activity Based Costing, Microsoft Excel, Traditional Estimating Method.

1. INTRODUCTION

Activity Based Costing is a way of costing approach that assigns resource costs to cost objects such as products, services, or customers based on activities performed for the cost objects. The premise of this costing approach is that a firm's products or services are the results of activities and activities use resources which incur costs. Costs of resources are assigned to activities based on the activities that use or consume resources (resource consumption drivers), and costs of activities are assigned to cost objects based on activities performed for the cost objects (activity consumption drivers). Activity based Costing recognises the causal or direct relationships between resource costs, cost drivers, activities, and cost objects in assigning costs to activities and then to cost objects. Activity based Costing assigns factory overhead costs to cost objects such as products or services by identifying the resources and activities as well as their costs and amounts needed to produce output. Using resource consumption cost drivers. This helps to speed up the project performance and minimize the project duration. For the construction projects, an effective resource management is always crucial for planners. Comparing the characteristics of the resource management issues in highly automated industry, the complexity of resource management in labour intense construction projects arises from the diversity of resource acquirement. The firm then assigns the cost of an activity to

products or services by multiplying the cost of each activity by the amount of the activity consumed by each of the cost objects. In case of similar projects found in the construction industry, the repetitive activities are repeated throughout the project. These activities represent the work to be performed and enable the project to run smoothly. In the project, improper planning affects the project greatly. And nowadays small scale industries are also facing the problem of improper planning. The goal of this paper is to present a method or applying ABC in construction and an example of applying ABC in construction, exploring the relationship between activity based costing. The paper includes a review and evaluation of prior applications of ABC in construction.

1.1 Objectives

Basically in this thesis we have conducted an exploratory study on implementation of Spreadsheet software (eg. MS Excel). In every aspect of a project first, Planning and Scheduling stage was followed by the Monitoring and Controlling stage. The objectives for the project are stated below:

- To study the scheduling technique using network models (CPM).
- To reduce the total time and then the actual execution of project's duration.
- Ease of work.
- To reduce the cost by proper allocation of resources.
- To achieve Economy.

1.2 Methodology



Literature survey is carried out from the relevant journal papers, manuals and books which are mentioned in references. This will help in getting updated knowledge on the subject besides helping in the study of various types of resources used in the construction industries and management of same resources.

- At initial stage the project will be studied from Details drawings obtained from construction site. Planning of all the activities will be done and scheduling will be done depending upon the number of activities in Software.
- The data is collected from the housing construction project. The data is based on the residential buildings consisting of various types of blocks. The following data is collected from the construction site for various types of blocks i.e. expected Completion time of project, Quantity of work for each activity, optimistic, pessimistic and most likely time for each activity, expected skilled and unskilled labour required for completion project etc.

Sr. No	Task Name	(By Planning) Summarized Cost	Duration	(By Traditional Method) Summarized Cost	Duration
A	Resi. Apartment	1,86,80,368.11	360 days	2,00,05,045	395 days
1	Civil Work	1,71,20,456.11	320 days	1,87,28,456.88	345 days
2	Plinth Level Structure	15,83,597.40	45 Days	15,98,600	45 days
3	RCC Work	60,51,327.97	161 Days	62,25,300	163 Days
4	Masonry Works	7,50,903.19	128 Days	7,78,658	132 Days
5	Water Proofing Works	11,44,323.13	24 Days	12,03,256	25 Days
6	Plaster Works	16,25,100.47	79 Days	17,02,478	81 Days
7	Colouring Works	7,43,787.98	55 Days	7,42,998	55 Days
8	Flooring & Dado Works	21,35,670.19	82 Days	21,45,458	82 Days
9	Doors & Window Works	17,17,958	90 Days	17,25,878	90 Days
10	S.S Railing	2,02,219	20 Days	2,05,256	20 Days
11	Kitchen/Pantry Platform	3,78,840	30 Days	3,80,541	31 Days
12	Plumbing	5,25,453	20 Days	5,26,545	19 Days

- Analyse the above collected information and prepare a result. In the analysis to minimize the overall project duration in the construction projects by activity based and spread sheet are used to prepare optimum scheduling for the effective utilisation of the project on the basis of data collected from housing project.

- To outcome of this will be feasibility of the project before execution, during execution and after execution can be analysed.

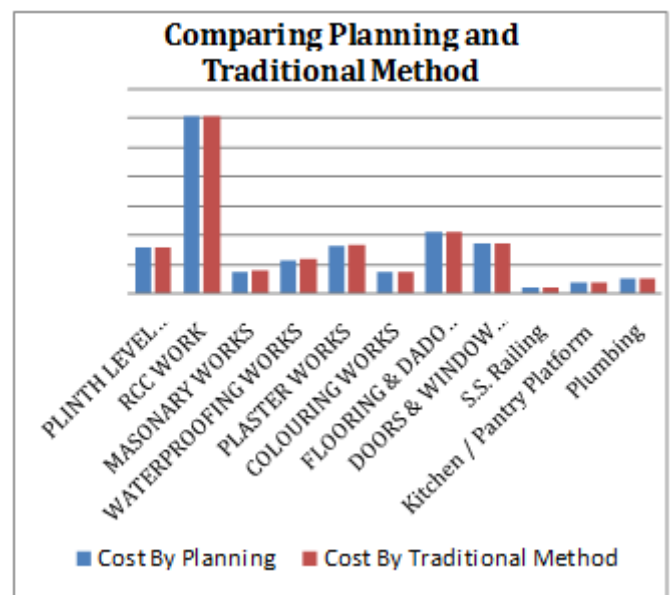
Formula used for traditional method calculations:

$$\text{Total Unit Direct Cost} = \frac{\sum \text{Direct Labour Cost} - \sum \text{Direct Material Cost}}{\text{Product Cost}}$$

Formula used for Planning / ABC Method

$$\text{ABC Cost change} = \frac{\text{ABC Cost} - \text{Traditional Cost}}{\text{Traditional Cost}} \times 100$$

2. Result



3. CONCLUSIONS

The productivity of the project in the housing construction is depending on the project completion time and minimum cost of project. For that the effective utilization of resources is necessary. The activity management is very important in the construction industry. And the planning of proper activity in a construction industry is becoming necessary. It is largely affect the housing constructions. From the study of recent scenario it is observed that, now a day's improper planning in major projects affects delay in the construction project scheduling. Delay in a construction scheduling affects the cost and time. If the schedule of project is delayed then automatically the project duration is increases and if project duration increases the total cost of the project increases and therefore the productivity of the project get reduced. And it seriously affects the owner and contractor in many ways. The initial cost of project was Rs.1, 86, 80,368.11/- for and the planned cost of project was Rs. 2, 00, 05,045/- .So finally from this study we conclude that the effective utilization of activities gives the optimum duration and effective cost reduction.

ACKNOWLEDGEMENT

We would like to acknowledge the Project Guide, Prof. Chaitanya Bhosale, Department of Civil Engineering of Loknete Gopinathji Munde Institute of Engineering Education & Research, Nashik, Maharashtra for providing us with their great experience and motivational guidance.

REFERENCES

1. Uchechukwu Ellinwa and Silas A. Buba (1993), "Study On Cost Overruns In Construction Projects –A Review" International Journal of Applied Engineering Research, ISSN 0973-4562 Vol. 11 No.3.
2. H. R. Thomas, V. E. Sanvido and S. R. Sanders, "Impact of Material Management on Productivity—A Case Study," Journal of Construction Engineering and Management, Vol. 115, No. 3, 1989, pp. 370-384. doi:10.1061/(ASCE)0733-9364(1989)115:3(370)
3. Li, Heng, Kong, C. W., Pang, Y. C., Shi, W. Z. and Yu, Ling (2003), Internet-based Geographical Information Systems for E-Commerce Application in Construction Material Procurement, Journal of Construction Engineering and Management, ASCE, 129(6), 689-697.
4. Ng, S. T., Palaneeswaran, E., and Kumaraswamy, M. M. (2003), Web-based Centralized Multiclient Cooperative Contractor Registration System, Journal of Computing in Civil Engineering, ASCE, 17(1), 28-37.
5. Harris, C. (1998) Why research without theory is not research, A reply to Seymour, Crook and Rooke. Journal of Construction Management and Economics Vol. 16, 113-116.
6. Molenaar, K. R. and Songer, A. D. (2001), Web-based Decision Support Systems: Case Study in Project Delivery, Journal of Computing in Civil Engineering, ASCE, 15(4), 259-267.

BIOGRAPHY



Tanmayee Y. Mujumdar. (Student)
B.E. Civil Engineering Department,
Loknete Gopinathji Munde Institute
of Engineering Education & Research,
Nashik, Maharashtra.