



e-ISSN:2582-7219



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

Volume 7, Issue 6, June 2024



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.521



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ijmrset@gmail.com



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Planning and Scheduling Costing of G+4 Residential Building by Using Microsoft Project Software Compared with Traditional Method

Shreya Gaikwad, Pratibha Alandkar, Reshma Shende

P.G. Student, Department of Civil Engineering, RMD Sinhgad Technical Institute Campus, Warje, Pune,
Maharashtra, India

P.G. Coordinator, Department of Civil Engineering, RMD Sinhgad Technical Institute Campus, Warje, Pune,
Maharashtra, India

P.G. Coordinator, Department of Civil Engineering, RMD Sinhgad Technical Institute Campus, Warje, Pune,
Maharashtra, India

ABSTRACT: In construction project management, the aim is to achieve precise goals through meticulous planning, scheduling, execution, monitoring, cost optimization, and efficient resource allocation. This involves directing project timelines to ensure successful completion within specified cost and time parameters. However, improper project management practices and reliance on traditional methods often diminish the efficiency of the construction industry. This inefficiency manifests in prolonged project durations, increased overhead costs, and compromised work quality. To address these shortcomings, the Microsoft Project Software serves as an effective project management tool. This software facilitates schedule development, resource assignment, progress tracking, and budget management. Specifically, the project focuses on planning, scheduling, costing, and resource allocation for a residential building (G+4). Various methodologies, including bar charts and critical path analysis, are employed using Microsoft Project Software.

KEYWORDS: Microsoft Project, Scheduling, Planning, Costing.

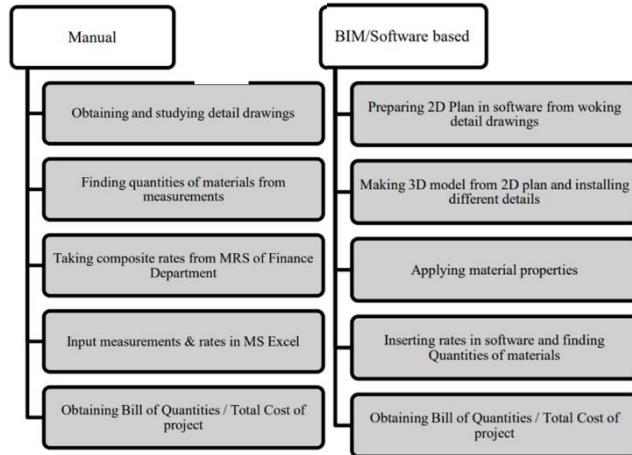
I. INTRODUCTION

The construction industry is an integral part of India's infrastructure and economic development. It faces many challenges, such as time and cost overruns due to poor design, poor planning, lack of commitment, and quality control. Management skills play a crucial role in ensuring timely completion of work, with the necessity for a reporting mechanism to track organizational success and failures. Rural areas are in urgent need of tools for economic development, land use, and environmental planning, with time constraints looming. A potential solution to these challenges lies in the adoption of newly introduced software for expedited work completion.

Microsoft Project, developed and marketed by Microsoft, is a project management software designed to aid project managers in schedule development, resource allocation, progress tracking, budget management, and workload analysis. Widely acclaimed as the leading tool for project scheduling and resource levelling, Microsoft Project enables project managers to circumvent delays caused by resource allocation conflicts by automatically adjusting resource calendars, tasks, dependencies, and constraints. By analyzing activity durations and scheduling, the software facilitates the preparation of material resource procurement sheets. Essentially, Microsoft Project assists project managers in developing plans, assigning resources, tracking progress, managing budgets, and analyzing workloads.



II. METHODOLOGY



Manual method:

1. A detailed estimation sheet of each item is prepared.
2. The exact nature and class of materials to be used are to be found.
3. Different Formulas that are used for cost estimation in the manual approach
4. In this method, first the total length of the wall is found and then it is multiplied by the width and its height to get the volume.
5. In the manual approach, the centre line method is used for cost estimation
6. Rates are found at which the different items of work are carried out as per the MRS system from the website of the Finance Department.
7. Carry out manual estimation; the drawing of the project, such as plans and sections, is taken in hand.

MSP:

Step 1 – Start a new project: A project focuses primarily on time sometimes one might know the expected start date of the project the expected finish date or both.

Step 2 – Representing project calendar: Calendars are the primary means by which one controls when each task and resource can be scheduled for work in the project. The project calendar defines the general working and non-working days and time for tasks.

Step 3 – Assign resources to the task: Resources include the people, equipment and materials needed to complete the work of the project.

Step 4 – Gantt chart view: The Gantt chart became a standard way of visualizing schedules. On a Gantt chart, task, and summary tasks all appear as Gantt bars.

Step 5 - Critical Path: A critical path is the series of tasks that will push out the plans in date if any of those tasks are delayed.

Step 6 – Creation of Baseline: A baseline is a group of nearly 20 primary reference points that one can set to a record of the original project plan when that plan is completed and refined.

Step 7 – Tracking of the project: The simplest approach to tracking the progress is to report that The actual work is proceeding exactly as planned.

Step 8 – Result & Discussion: Total cost of the project and total duration of the project.



III. 2D & 3D MODEL OF BUILDING

The model and Material that are used are presented in this section. The table and model should be in the prescribed format.

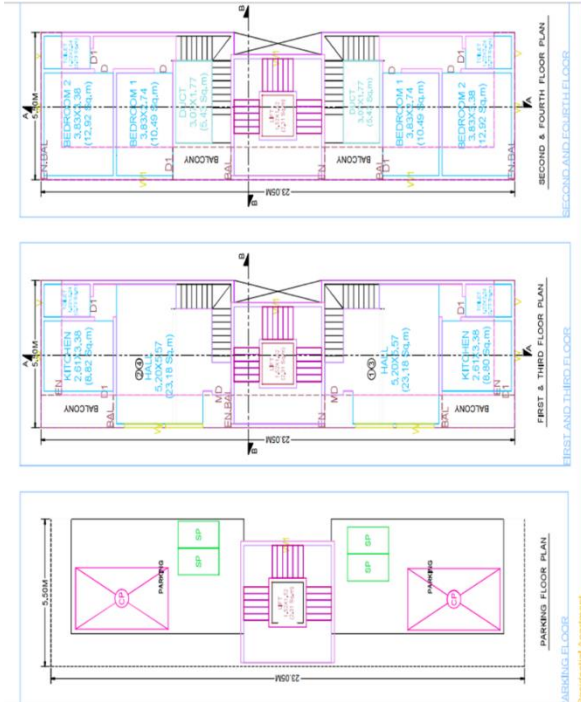


Figure 1: 2D plan of building.

Figure 2: 3D view of the building.

IV. RESULTS AND DISCUSSION

Results on MSP: From the above research, we concluded that the Estimated time of completion was 513 days. The cost of this project (labour cost and material cost) is RS. 5,751,727. Material cost on MSP is RS.4498540.

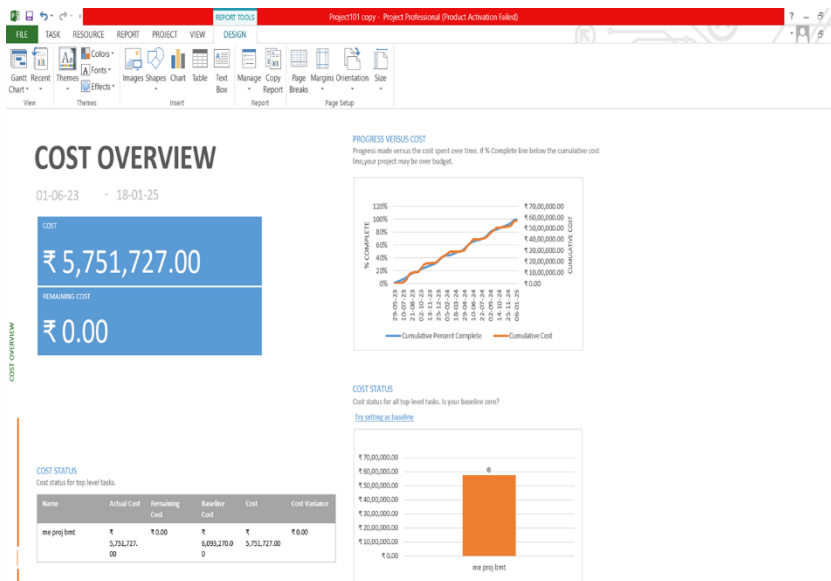


Figure 3: Results by MSP



Figure 4: Results by the manual method

Sr.no	Item Name	Unit	Quantity	Unit cost	Total Cost
1	Brick work	sqft	10880	93	1011840
2	RCC	cuft	12060	160	1929600
3	Plaster work	sqft	21760	18	391680
4	PCC	cuft	1848	135	249480
5	Tile work	sqft	4200	72	302400
6	Paint work	sqft	21760	9	195000
7	Doors	sqft	25	5000	125000
8	Windows	sqft	25	3500	87500
				Total Cost	4292500

V. CONCLUSION

From above we concluded that estimation in Microsoft projects is fast, automatic, easy, efficient and has less chance of error. It was used to plan and schedule labour activities in construction projects. The estimated time of completion was 513 days. The cost of this project (labour cost and material cost) is RS. 5751727. The study compares the planning, scheduling, and costing of a G+4 residential building using Microsoft Project software with traditional methods. The findings demonstrate that utilizing Microsoft Project software enhances the efficiency and accuracy of project management. The software enables more precise scheduling, resource allocation, and cost estimation, leading to better adherence to timelines and budgets. In contrast, traditional methods are prone to errors and inefficiencies, often resulting in delays and cost overruns. Therefore, adopting Microsoft Project software for planning and scheduling in construction projects offers significant advantages over traditional approaches, contributing to improved project outcomes and overall cost-effectiveness.

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