

Planning and Scheduling of Project using Microsoft Project (Case Study of a Multistory Building in India)



^{#1}Sneha M. Raut, ^{#2}Sumit B. Bhosale, ^{#3}Chetan D. Patil, ^{#4}Aniket R. Pawar,
^{#5}Ganesh D. Dhone

sumitbhosale0889@gmail.com
sneharaut135@gmail.com

^{#12345}Department of Civil Engineering,

G. H. Raisoni College of Engineering & Technology,
Pune, India.

ABSTRACT

Planning and scheduling have become an essential part of any project for the timely and economical completion of the project. A proper construction schedule can be used for different purposes. To implement construction project, a proper planning and scheduling is of vital important in order for the project to be executed and run smoothly. MS-Project is the most widely used software product for project planning and control. It's both flexible and powerful, but it's also overcomplicated, and it lacks a few important features. This document shows a way of making the best of this interesting and sometime frustrating product for preparing a simple and straightforward project plan. Those primary objectives are to create a quality project, completed on time, within budget, and in a safe work environment. Therefore, the focus of this research is to conduct and exploratory study on developing planning and scheduling in construction project. In conclusion, no doubt that information from the research can benefit both the practiced and the education of project management.

Keywords: MS Project, Project management, Planning, Scheduling.

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I. INTRODUCTION

Project Management is the Application of knowledge, skills and Techniques to project activities to meet project requirements. It is a strategic ability to do something successfully for organizations, enabling them to patch the project results to Organizational goals and thus, better compete in their markets. It can be also defined as the process and activity of planning, organizing, inspiring, and controlling resources, procedures and protocols to achieve specific goals in scientific or daily problems.[2] A project is a temporary aim designed to produce a special product, service or result with a defined starting and end (usually time-constrained, and often constrained by funding or deliverables), undertaken to meet eccentric goals and objectives, typically to bring about beneficial change or added value. The temporary nature of projects stands in contrast with business as usual (or operations), which are recurring, permanent, or semi-permanent functional activities to produce products or services. In implementation, the management of these two systems is often quite distinct, and as such requires the development of divergent technical skills

and management strategies. It has always been practiced casually, but began to evolve as a prime profession in the mid-20th century. [8]

About Microsoft Project

Microsoft Project is a project management software program developed and sold by Microsoft, which is designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing the budget, and analyzing workloads. Project creates budgets based on assignment work and resource cost. Resource definitions (Labour, equipment and materials) can be shared between projects using a shared resource pond. Each resource can have its individual calendar, which defines what days and time is resource present. Resource rates are used to calculate resource assignment costs. Each resource can be assigned to multiple tasks in multiple projects and each task can be assigned numerous resources. The execution of the scheduled task work based on the resource availability as defined in the

resource calendars. All resources can be defined in Work, Material and Cost. [8]

Schedules can be resource leveled, and task networks are visualized in a Gantt chart. Additionally, Microsoft Project can identify divergent classes of the users. These different classes of users can have differing access levels to projects, views, and other data. Customization of aspects in Microsoft Project such as calendars, views, tables, filters, and fields are stored in an enterprise global which is accessible by all users.

Table 1 : Views in MSP

View	Purpose of View
Gantt Chart	View task list and a visual representation of the task over time
Tracking Gantt	Monitor progress on tasks and compare to a Baseline
Calendar	See tasks on a visual calendar. Able to filter by resource and print a calendar for an individual resource or resource group.
Task sheet	View and edit information about tasks
Resource Sheet	View and edit information about resources
Task Usage	View and edit hours resources are assigned to work on tasks. The view is arranged by task.
Resource Usage	View and edit hours resources are assigned to work on tasks. The view is arranged by resource.

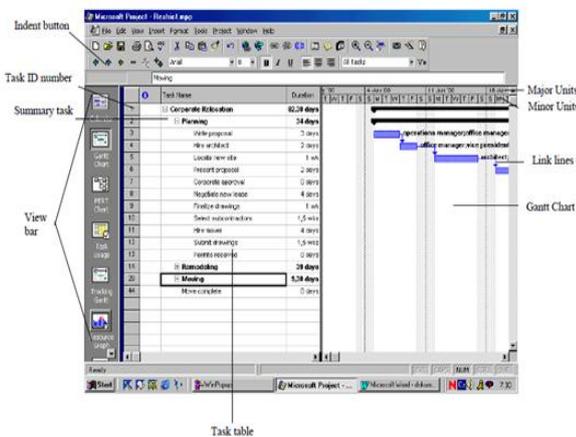


Fig. 1 Parts of Microsoft Project Windows

II. EASE OF USE

A. Scheduling technique using network models

With the help of Microsoft Project, it's easily to understand and visualize the flow and network of the project. One can easily see the Critical Path which is the Longest Path of the Project, Parallel Activities, Slack which is also called as Total Float of the Activity can be visualized, Relation between activities is understood by networking. Owing to this there are fewer obligations while executing and project and right measure can be taken easily. [8]

B. Reduction in the Total Duration of the Project

Microsoft Project gives a clear view to understand the project easily. After making proper alteration by using the slacks of parallel activity and crushing the parallel activities the duration of the project has been shown in Graphical form comparing the day required by traditional way and by use of Microsoft Project. The Graph clear indicates that duration to complete the project by Microsoft Project is less than the Traditional Method obtained from the data of Case Study.

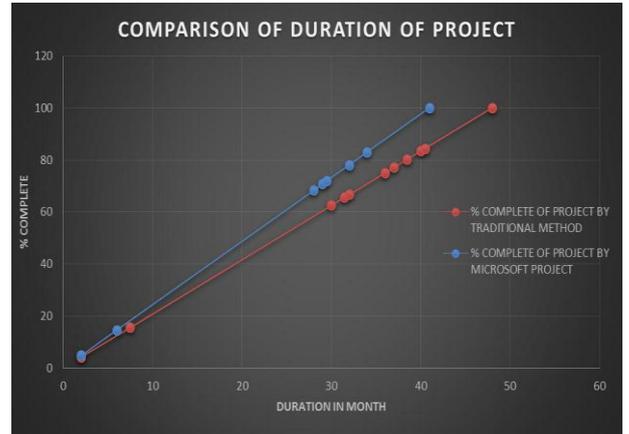


Fig. 2 Comparison of duration of project

Proper analysis of the Resources and allocating them without being over allocated is possible using Microsoft Project. By using the fewer Resources where slack time is enough available helps to reduce the cost of the project by 2% of overall cost of the Traditional way of Management.

C. Ease of work for Labour

By providing all the governmental holidays of India workers, it makes good environment for Labour to work in the organization. While on other hand, making workers to work for fix timing 9AM to 6PM with one hour of break helps stress free surrounding for workers which makes them willingly work on the field.

III. OBJECTIVES

Basically this paper will conduct an exploratory study on implementation of Microsoft Project in every aspect of a project which comprise of Planning and Scheduling stage followed by the Monitoring and Controlling stage.

In this regards, in term of construction management, this paper is written for the objective that is

1. Application of Microsoft Project software in planning & scheduling of multi-storey building.

Planning & Scheduling of Multistorey Building With MSP:

A. Create A New Project Plan

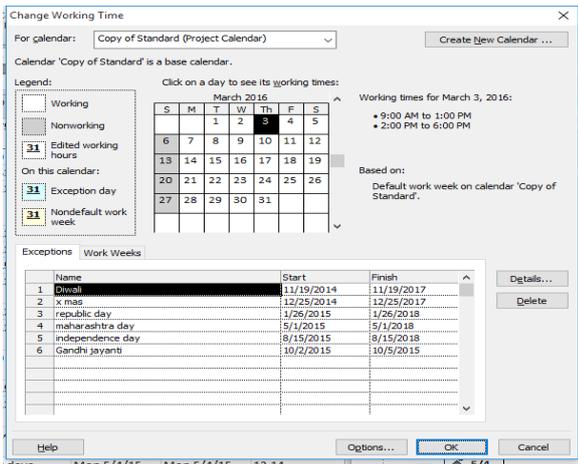


Fig. 3 Window shows the creation of calendar

B. Adding Task & Duration

Task ID	Task Name	Duration	Start	Finish
1	Completion Programme for Sector-6 WING AB	759 days	Tue 11/11/14	Sat 4/29/17
2	Issue of Work Order	0 days	Tue 11/11/14	Tue 11/11/14
3	Building Work	539 days	Tue 11/11/14	Fri 8/12/16
4	Excavation for foundation up to hard strata	13 days	Wed 4/1/15	Wed 4/15/15
5	Antitarmite tretment	13 days	Thu 4/9/15	Thu 4/23/15
6	PCC below footing	13 days	Fri 4/10/15	Fri 4/24/15
7	Foundation Work	15 days	Mon 4/13/15	Wed 4/29/15
8	Reinforcement for foundation	13 days	Mon 4/13/15	Mon 4/27/15
9	Shuttering for footing	13 days	Tue 4/14/15	Tue 4/28/15
10	Concreting for Foundation	13 days	Wed 4/15/15	Wed 4/29/15
11	Completion Of Foundation Works	0 days	Wed 4/29/15	Wed 4/29/15

Fig. 4 Window shows the Task information & Its Duration

C. Interlinking Of Tasks

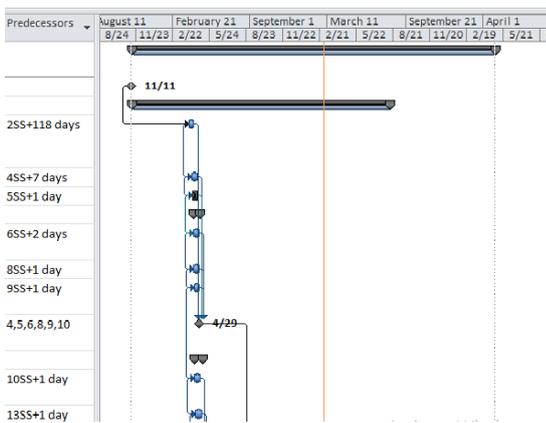


Fig. 5 Window shows the interlinking of tasks

D. Resource Creation

Resource Name	Type	Material	Max.	Std. Rate	Cost/Use	Accrue At	Base Calendar
material manager	Work		2%	₹ 600.00/day	₹ 0.00	Prorated	Standard
store keeper	Work		4%	₹ 150.00/day	₹ 0.00	Prorated	Standard
fabrication engg	Work		2%	₹ 500.00/day	₹ 0.00	Prorated	Standard
welding engg	Work		1%	₹ 400.00/day	₹ 0.00	Prorated	Standard
MIG welder	Work		1%	₹ 350.00/day	₹ 0.00	Prorated	Standard
fitter	Work		1%	₹ 200.00/day	₹ 0.00	Prorated	Standard
drilling machine	Material	machine		₹ 500.00	₹ 0.00	Prorated	
cable	Material	meter		₹ 550.00	₹ 0.00	Prorated	

Fig. 6 Window shows the resource sheet

E. Resource Allocation

Task Name	Duration	Start	Finish	Predecessors	Resource Names	Ad
sop	0 days	Wed 1/13/16	Wed 1/13/16			
order and delivery package air conditioning unit	5 days	Wed 1/13/16	Tue 1/19/16	1	fitter[1%],mate	
order deliver piping	4 days	Wed 1/20/16	Mon 1/25/16	2		
order and delivery grills	13 days	Mon 1/25/16	Wed 2/10/16	3S+3 days		
order and delivery duct	32 days	Fri 2/12/16	Mon 3/28/16	4FS+1 day		
install duct work	36 days	Tue 3/29/16	Tue 5/17/16	5		
determine layout of duct	3 days	Wed 5/18/16	Fri 5/20/16	6		
install grill	15 days	Mon 5/23/16	Fri 6/10/16	7		
install air conditioning work	20 days	Thu 6/9/16	Wed 7/6/16	6,8FS-2 days		
rough in piping	6 days	Thu 7/7/16	Thu 7/14/16	9		

Fig. 7 Window shows the Resource allocation

F. Report Generation

- Baseline Cost Report
- Baseline Work Report
- Budget Cost Report
- Budget Work Report
- Earned Value Over Time Report
- Resource Cost Summary Report
- Resource Remaining Work Report
- Resource Work Availability Report
- Resource Work Summary Report

IV. APPLICATION

We requires to refer a different types of file/document for more planning such as materiel procurement sheet, any AutoCAD drawings, PDF file which gives some standards, etc. It is very convenient if we can see that files within MSP. For that purpose we are initiate that the files can be open in MSP which is very efficient.

V. CASE STUDY

“BUILDING AB OF MHADA IN SECTOR – 6”

Name of Project Site: MHADA Construction Project by B. G. Shirke Construction Technology Pvt. Ltd.

Address: Behind P.C.M.C. Building, Near S.N.B.P. School, Morwadi, Pimpri.

Details: G +12 Multi-storey Residential Building.

Estimated Cost: Rs. 7,35,00,000 /-

Project Manager	Mr.B. N. Tapkir
Planner Engineer	Mr. Sanket Patil
Material Manager	Mr. Sanket Patil

VI. RESULT

Critical Task Report:

ID	Indicators	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1	Manually Set	Auto Scheduling	Completion Programme for Scaff	158 days	Tue 11/21/14	Sat 4/25/17	
2	Manually Set	Auto Scheduling	Reinforcement for Foundation	158 days	Tue 11/21/14	Fri 5/13/15	
3	Manually Set	Auto Scheduling	Formwork for Slab	158 days	Mon 4/20/15	Sat 5/1/15	158-1 days
4	Manually Set	Auto Scheduling	Shuttering for Footing	13 days	Tue 4/14/15	Tue 4/28/15	158-1 days
5	Manually Set	Auto Scheduling	Concrete for Foundation	13 days	Wed 4/15/15	Wed 4/29/15	158-1 days
6	Manually Set	Auto Scheduling	Formwork for Slab	13 days	Thu 4/16/15	Mon 5/4/15	158-1 days
7	Manually Set	Auto Scheduling	Shuttering for Slab Column	13 days	Thu 4/16/15	Thu 4/30/15	158-1 days
8	Manually Set	Auto Scheduling	Concrete for Slab Column	13 days	Fri 4/17/15	Mon 5/4/15	158-1 days
9	Manually Set	Auto Scheduling	Formwork for Slab	13 days	Tue 11/23/14	Mon 12/22/14	158-1 days
10	Manually Set	Auto Scheduling	Back Filling in Slab	13 days	Sat 4/25/15	Wed 5/20/15	158-1 days
11	Manually Set	Auto Scheduling	P.C.C. below Floor Slab	13 days	Tue 5/5/15	Thu 5/21/15	158-1 days
12	Manually Set	Auto Scheduling	Reinforcement for Floor Slab	13 days	Wed 5/6/15	Fri 5/22/15	158-1 days

Fig. 8 Critical Task Report

VII. CONCLUSION

Construction of building using Traditional way proves to be uneconomical and consumes more time with many complexity and enormous error which actual execution of the Project. Traditional way of planning doesn't sub divide the main task which future gets the hurdle of over allocation of resources, improper judgment of resources for particular activities etc. Microsoft Project is the modern tool of Project Management that aid to overcome the obstacles faced owing to traditional way of Planning and Management. It helps for the optimum and effective organization of activities which helps to give the vision to complete the project in planned duration and within the Economy.

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