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Effective Scheduling using MS Project in M.I.T.S Region, Gwalior

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Abstract: ***The most essential part of any project is scheduling if executed effectively by judiciously managing the resources, time and be save especially in the civil engineering. MS Project's, special features help us to see the whole picture. As we can see how, when and where resources are allocated in one screen on the tap of a button. We can save time and money and preventing over-run by re-planning and by preventing over allocation of resources.***
Keywords: Scheduling, MS Project, Rresources.

I. INTRODUCTION

It is necessary to have an educated and skilled person of the required field to do effective management. It's a strategic gift to go and make sure of one task for accomplishment of organizations, enabling them to covine the assignment domino effect to managerial goals and thus, top complete in their market. It can also be 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 (Wale P M et al., 2015). A project is designed to produce a special product, service, or result with a defined starting and end (usually time and money constrainedd), undertaken to meet certain goals and objectives, typically to introduce beneficial change or added value. The temporary nature of projects stands alongside 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 (Mahajan R. Nikhil and Joshi Vaishali, 2017).

II. LITERATURE REVIEW

Young Hoon Kwak & Frank T. Anbari (2008) observed eight disciplines associated to project management disciplines over the last 50 years which are: - (1) Strategy/Portfolio Management; (2) Operations Research/Decision Sciences; (3) Organizational Behavior/ Human Resources Management; (4) Information Technology/Information Systems; (5) Technology Applications/Innovation; (6) Performance Management/Earned Value Management; (7) Engineering and Construction; and (8) Quality Management/Six Sigma. They also concluded that project management should be applied in every domain of practical work and not only be deal in academics. Vittal Anantatmula (2010) found out the similar conclusion in his project that managing an academic degree relates to the triple constraints of time, cost, and scope.

It is concluded that by applying project management concepts, tools, and techniques, undergraduate degree program advising and planning can be improved after comparing the planning aspects of a conventional business project with planning an academic degree. Author also helps to elaborate the application of project planning techniques to manage the multiple constraints and the complexity associated with academic advising and planning.

R. Prabhahar and G. Ravichandran (2014) analyzed that scheduling and Construction planning is an important part of the overall management process.

The planning and management includes organizing the work, executing the work, correlating plan and progress information and controlling the work, the three inter-related factors of time, money and quality need to be managed properly. Completion of many of the projects nowadays is not in estimated duration.

This will direct to an increase in overheads as well as various other factors. It will not only reduce the expected revenues but also will affect the reputation of the contractor. Scheduling is one of the vital functions in construction project to determine the sequence of activities necessary to complete a project Hoang, Nhat Minh Shrestha, Swostik (2014) hinted that the main function of a software is to offer help, and enhance the quality of output with less effort than manual ways. A project has disparate requirements and the aim of the adopted software is to fulfill those requirements effectively in terms of time and cost. In addition, the issues of scheduling, tracking and physical element must be considered while adopting the project management software. Aftab Hameed Memon and Ismail Abdul Rahman (2014) suggested that time is the biggest element that every contractor has to deal with while practicing the construction activities.

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Variety of approaches and tools has been introduced over the past decades to cherish the management of the projects. Author identified commonly used techniques and software of time management together with their effectiveness level in large construction projects. Data was collected from the construction organization that deals with huge projects.

Relative Importance Index calculation was employed to assess the level of effectiveness for time management techniques and software packages adopted in the construction project. The results depicts that most common and effective time management technique and software Package are CPM and Microsoft Project respectively. Although this techniques are brought into practice but practitioners did not accomplished the goals of respective organization. Piyush Pramod Bagde and Abhijit N. Bhirud on the other hand believes that the Oracle Primavera P6 is highly advanced in comparison with other traditional scheduling methods and software. It has much more advantages than other scheduling software. The web logic function of primavera makes it very advanced, one can operate project from any location of the world.

Also planning and scheduling helps in forecasting the project. The cost of any individual is known early along with its usage by using primavera. Thus, decision can be made properly in management work. In multiple project under same organization there is a chance of over allocation of resource, primavera reduce this with proper resource optimization.

Ch. Chowdeswari, D. Satish Chandra and SS.Asadi suggests that Labor productivity must be given extreme Importance in calculating the activity duration and reliable plan, and knowing the well-founded methods in the computation of various labor productivities and for its improvement.

The relationship between the tasks and their interdependencies should be known. Identification of various drawings required for the execution of works, and listing out various activities involved in a project and their sequential order should be prioritized. Creating a Plan and the key elements of a plan like WBS, activity duration, and their dependencies etc. should be implemented from the basic idea of planning.

Critical path and critical activities of the project should be identified and Scheduled based on Project start date and Project end date. WBS should be created based on the project deliverables and the advantages of creating a WBS using deliverable over WBS created on the basis of trade. It is important to crosscheck the drafted plan with the drawings. Activity durations, their allotment should be assessed correctly.

Defining the predecessor/successors relationship between activities and their constraints and understanding the techniques involved in Scheduling. And the last is to identify the risks involved while planning by following certain analysis or techniques like SWOT analysis. J.LIU & B.L.MacCARTHY in 'The classification of FMS scheduling problems 'proposes a classification scheme for scheduling problems in flexible manufacturing systems (FMSs) based on an analysis and discussion of scheduling decisions in an FMS. The classification scheme attempts for the first time to identify and describe all the major factors which affect the modelling of, and the solution to, FMS scheduling problems.

It provides a systematic framework for the description and the analysis of FMS scheduling problems and for the development, evaluation and comparison of FMS scheduling approaches. Examples are given to demonstrate the usefulness of the proposed scheme. Victor Portougal and David J. Robb in 'Production Scheduling Theory: Just Where Is It Applicable?' mentions A proliferation of scheduling research has done little to improve production planning practice, despite calls for more comprehensive models. Using a four-factor classification of planning environments (planning level, production type, production strategy, and production cycle time) we show scheduling theory is relevant in few settings.

For example, in increasingly common short-cycle environments, where production cycle times are shorter than the planning period, the order in which one processes jobs is seldom important. Moreover, even in long-cycle environments, capacity is seldom fixed, with managers often negotiating for enough capacity to make scheduling fairly easy. Based on extensive consulting experience in Australasia, we call for caution in applying scheduling theory. While complex models are pertinent in some cases, more benefit often arises from establishing appropriate performance measures, planning periods, capacity negotiation processes, and uncertainty reduction measures..

III. METHODOLOGY

My goal was to find out different stages in the construction of G + 1 residential building in Gwalior. Also to make a case study and getting data of days and labour allotted to each stage. We did scheduling using MS Project to find to shorten time of completion and hence cost of the project.

First we made a study to find out different stages in the construction of G + 1 residential building in Gwalior. We came up with the following stages with following resources allotted to each stage.

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Table 1: Case study on Stages in construction of two floor residential building in Gwalior

Sr. No.	Stages	Duration in Days	No.of Skilled labour	No. Of Un skilled labour
1	Cleaning of ground	1	0	2
2	Layout of column pits	1	2	2
3	Excavation	3	0	4
4	P.C.C. in pits	1	1	2
5	Steel binding for column & flooring	3	2	3
6	Casting of concrete in foundation	1	2	10
7	Casting of concrete for pedestals	2	2	3
8	Shuttering of plinth beams	2	2	2
9	Steel binding of plinth beams	2	2	2
10	Concreting for plinth beam	1	2	6
11	Soil filling between plinth beams	2	0	4
12	P.C.C. for floors	1	1	4
13	Steel binding of columns	3	3	2
14	Casting of column for ground floor	1	1	5
15	Centering and shuttering for slabs for ground floor	7	4	2
16	Steel binding for roof beams and slabs for Ground floor	7	4	2
17	Casting of concrete for roof beams and slabs for Ground floor	1	2	15
18	Gap of 14 days	14	0	0
19	Brick masonry for Ground floor	10	3	4
20	Sewer for ground floor	5	2	2
21	Water pipe lines for ground floor	5	2	2
22	Electrical pipe laying for ground floor	5	1	3
23	Inside plastering for ground floor	10	2	4
24	Steel binding & Casting of column for first floor	4	4	7
25	Centering and shuttering for slabs for first floor	7	4	2
26	Steel binding for roof beams and slabs for first floor	7	4	2
27	Casting of concrete for rope beams and slabs for first floor	1	2	15
28	Gap of 14 days	14	0	0
29	Brick masonry for roof beams and slabs for first floor	10	3	4
30	Water pipe line for first floor	5	2	2
31	Electrical pipe layout for first floor	5	1	3
32	Inside plaster for first floor	10	2	4
33	Floor laying (floor tiles) for first floor	7	2	3
34	floor tiles for ground floor	7	2	3
35	Brick masonry for parapet walls	2	2	3
36	Plastering for parapet walls	3	2	3
37	Terracing (12mm concrete flooring)	2	2	3
38	Wood work (Doors)	7	2	3
39	Windows (Alumunium)	2	2	0
40	Painting and polishing	15	4	4

The following data was copied in MS Project software and scheduling was done. The tasks which can run parallel was found and linked separately.
The number of days saved compared to traditional method was found.

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IV. CONCLUSION

Effective Scheduling using MS Project in M.I.T.S Region, Gwalior was validated with actual field conditions and on the basis of validation, it can be said MS project is a reasonably accurate representation of scheduling to within acceptable limits. All types of scheduling primarily be judged by a criterion that is based on whether we can make better decisions in field or not.
Some of the ideas for using Project to make your lives easier and more productive are:

A. Using Templates

Not every project is the same. In fact, most of them are very different. But they all have the common components of Inception, Elaboration, Construction, and Transition (depending on the methodology used by your company, the names vary but the purposes are the same).
By spending some of your time creating a few basic templates, you can decrease the time needed to set up the fundamentals over and over. This lets you focus on outlining what you need to get done.

B. Quickly Estimating Project Timelines

We've all been in those meetings when a business partner requests a timeline on a project they came up with only a few minutes beforehand.
I know one manager who sits in meetings with his laptop open while Project is running trying to do a high-level estimate of what the user is asking for. By focusing on the creation of tasks with either a low, medium, or high level of effort, he can quickly provide his estimate based on what he feels is the work required for the particular project.

C. What If Scenarios

Microsoft Project also helps in those situations where you tell your boss that a project will take X weeks, only to hear him tell you that's too long. Project allows you to easily go back and modify your criteria to see if you can come up with something more appealing.
You can do this rather quickly by modifying the number of potential resources or evaluating the parallel-pathing of some of your tasks. The list of things you can try goes on and on but the benefit to you is that you can quickly try different scenarios and see how it affects the outcome.

1) Watchouts: I've told you some ways that Project can make your life easier. Here are some pitfalls to watch out for as well.

D. Watch Out #1: Not Updating the Project Plan

Many project managers spend hours doing a project plan and then handing it over to the other shareholders. Unfortunately, many PMs then store that project plan on their hard drive and never look at it again. In the heat of running a project, one of the biggest mistakes you make is to abandon all that hard work. Make sure you spend at least some time each day reviewing your tasks and milestones as well as updating you plan. You spent all that time working on it - don't you want get the benefits as well?

E. Watch Out #2: Over Committing Resources

This is one that I see far too often when I look at a project plan. Managers take the time to fill in all the detail, determining task durations, and assign predecessors and successors all in an effort to come up with a timeline. They then merrily go down the task list assigning the appropriate resources to each task with complete disregard to how much of each resource time is allocated.
When you have filled out your project plan, make sure that you check out the Resource Graph (View -> Resource Graph) on your project and look for the areas that are shaded in Red. This is Project showing you where somebody has been allocated more than their available time, which in turn puts some unnecessary risk into your timeline.
There are many other ways to make Microsoft Project a productive tool for you and your organization. By breaking down your tasks into subtasks and keeping realistic timelines in mind, you can see issues early on before they become major issues. And with its ability to track, change, and report on just about every key metric, you'll always have the information you need at your fingertips to keep your end users up to date.
Even if you choose not to use Microsoft Project as your project management tool, it's important that you find something to help you manage all of the pieces of your project. Once you get used to using it you'll wonder how you ever managed without one.

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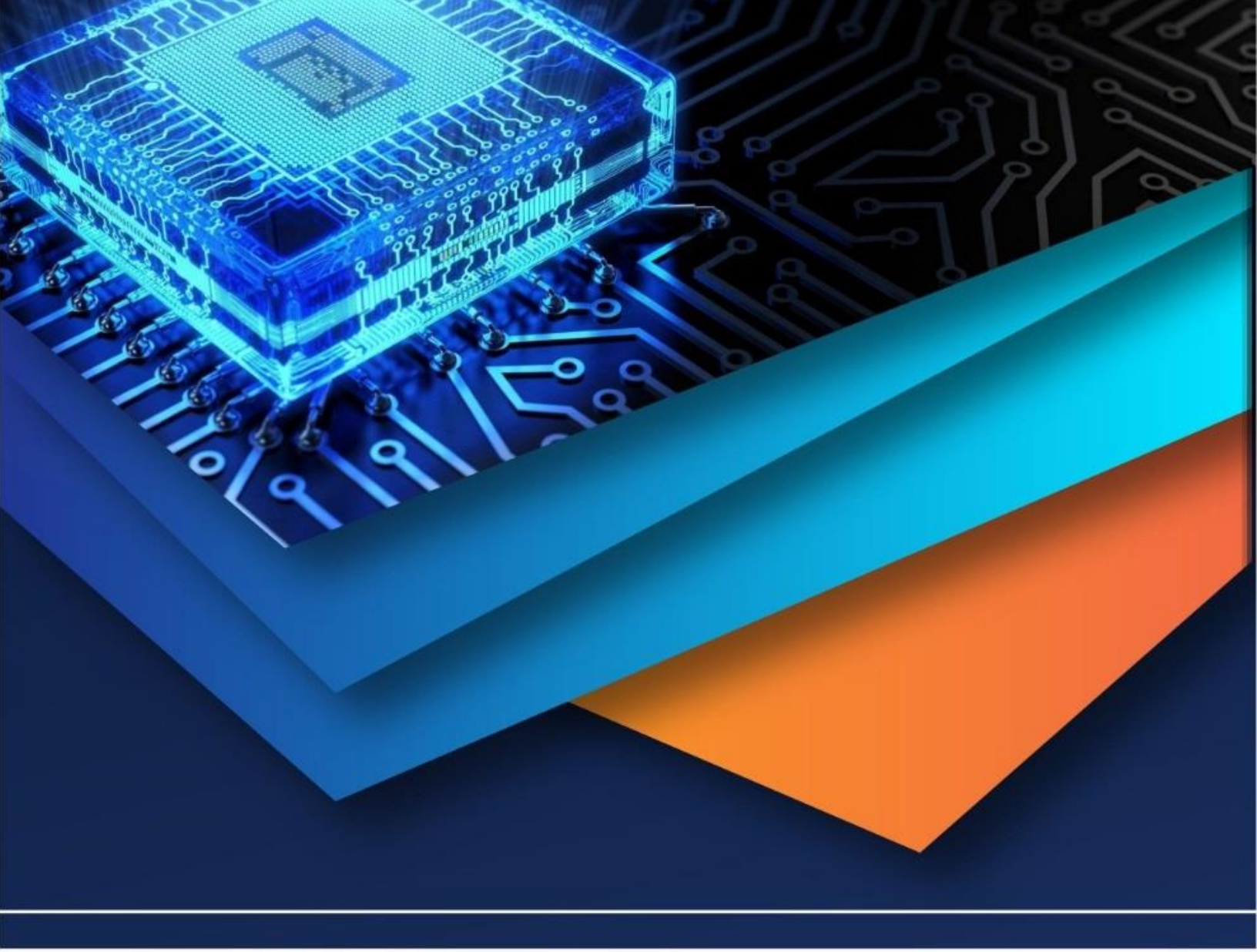

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