International Journal of Innovation Scientific Research and Review
Vol. 04, Issue, 08, pp.3175-3177, August 2022
Available online at http://www.journalijisr.com
SJIF Impact Factor 4.95

ISSN: 2582-6131

Research Article

PLANNING AND SCHEDULING IMPACT ON CONSTRUCTION PROJECT MANAGEMENT

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Received 15th June 2022; Accepted 16th July 2022; Published online 20th August 2022

ABSTRACT

The goal of this study is to highlight the importance of scheduling methodologies in the success of construction project management. Delays and increases in both costs and timelines are the result of inefficient allocation of project resources. In this study, the researchers hope to highlight the importance of scheduling approaches in the success of construction project management. Inefficient allocation of project resources frequently results in cost and schedule overruns. As a result, projects are commonly delayed or over budget if no plans are made for project scheduling. Project planning can be as simple as complex as necessary. Scheduling projects, even if it's just to keep track of them and send out emails, is a common practice among organizations. Instead of using spreadsheets, many companies are now using cloud-based project management platforms and other scheduling software that makes use of visual planning tools to help with project management. Planning and scheduling in construction project management are examined in this study, with the goal of answering questions about the benefits of incorporating these techniques and processes into project management.

Keywords: Planning, Scheduling, Planning techniques, Critical Path Method, Project Planning.

INTRODUCTION

Stakeholder requirements must be taken into consideration when determining how best to organize, coordinate, and supervise an organization's project goals. For more information, see Singh (2017). Planning, controlling, and optimizing work and workloads in manufacturing and industrial processes are all part of the scheduling process. Resource allocation, budgeting, personnel planning, and supplier buying are just a few of its many uses. Schedule tasks in advance of the availability of necessary resources. The start date and/or capacity modification of a work can be scheduled using backward scheduling, which is dependent on the deadline (Yu *et al.,* 2018). Despite their differences, project planning and scheduling are two sides of the same coin. A project's objectives must be realized through the selection and design of relevant policies and techniques. To determine how many resources and how long it will take to finish a project, 'project scheduling' is the process of assigning work. The foundation of a project's planning is the project itself. Project scheduling, on the other hand, focuses on the activities, deadlines, and interdependencies specific to a given project. In other words, a "project plan" is a comprehensive document that outlines all aspects of a project's scope as well as its budget, risks, and timetable. In addition to the dates and tasks listed in a project schedule, there may be others. The purpose of this study is to illustrate the relevance of planning and scheduling in building project management. Despite the fact that several studies and researches have been done on the subject by scholars from across the world, more research is needed into the importance of planning and scheduling in construction project management. Construction project management planning and scheduling must consequently be thoroughly examined. The following are some of the key questions that emerged from this research:

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In construction project management, what does it mean to plan and schedule? Construction project management planning and scheduling includes a number of steps. How do managers of construction projects organize and arrange their work? What are the advantages of scheduling and planning in building project management?

LITERATURE REVIEW

PLANNING AND SCHEDULING

Scheduling is a simple time management tool that includes a list of probable tasks, events, or actions that are scheduled to occur at a specific time, or a series of events in the order in which they are to occur. Scheduling is the act of selecting how to organize these tasks and how to allocate resources among the various available tasks. A person who is in charge of generating a schedule is sometimes referred to as a scheduler. Making and adhering to timetables is a long-standing human tradition Managing the project's planned timetable is an important aspect of the overall project management approach (Haaskjold *et al.,* 2021). An effective project schedule provides a visual depiction of how long a project is anticipated to run by summarizing the start and end dates for each individual task that is a component of the project (Kim *et al.,* 2021). A project management schedule is complex to create since it needs task identification, activity sequencing, activity milestone selection, and plan implementation. Work breakdown structure, interdependencies among activities, job sequencing, predicting task duration, and detecting risks are all components of a project schedule management strategy that is successful. Schedule management planners rely heavily on Gantt charts, a type of bar chart that shows a project's timetable. When working on large projects, it is possible to create separate Gantt charts for each of the most important phases. According to Hady *et al.,* (2020),

STAGES OF CONSTRUCTION PROJECT MANAGEMENT PLANNING

There are various stages or steps involved in the planning and scheduling in project management they are as follows

Scope statement: Document that clearly explains the project, including the business requirement, the benefits, objectives, deliverables, and important milestones. Project managers and sponsors should only agree to make changes to the scope statement if they are absolutely essential.

Work Breakdown Schedule (WBS): Project scope is broken down into manageable parts by the WBS (Work Breakdown Schedule).

Milestones: Set high-level objectives for the project and include them on the Gantt chart.

Gantt Charts: A graphic timeline that you may use to plan out tasks and visualize your project's timetable.

Communication Plan: If you're working on a project with outside parties, you'll need a strategy for communicating with them. Depending on the project's deliverables and milestones, devise a strategy for communicating with the team and developing the relevant messaging.

Develop a risk management strategy that includes: Make a list of all the possible dangers. There are many frequent difficulties, including unrealistic time and cost estimates, budget cuts, shifting needs, and a lack of committed personnel (Pellerin & Perrier, 2018).

PROJECT PLANNING AND SCHEDULING TECHNIQUES

Project managers employ a variety of project scheduling tools and strategies used or employed in project management, highlighted below are some of the techniques used in project planning:

Critical Path Method (CPM)

Using the CPM method, managers can forecast project schedules based on the number of tasks that must be completed. As a result, you'll have to do the following:

- In a Work Breakdown Structure, include all of the tasks needed to finish your project.
- Estimate the time required for each task.
- Identify the tasks and deliverables required to complete your project.

When you've laid out your project, the next step is to identify the project's longest stretch of dependent tasks. The "critical path" is the term used to describe this area. You'll almost certainly have other activities outside of the critical route that can be delayed without halting the project (these are known as "float tasks"). Actions that must be taken in order to accomplish the project are known as crucial routes. It's possible to create a CPM schedule based on this data and calculate the quickest way to accomplish the job. All-important route items must be completed in a predetermined time frame (NabipoorAfruzi *et al.,* 2018).

Program Evaluation and Review Technique (PERT)

In order to use this technique, you'll need to first create a Work Breakdown Structure and then a Gantt chart to plan out your project and all of its dependencies (more on this later.) By multiplying the time it will take you to complete the project, you may figure out how long it will take.

- An optimistic time (O) is the time you expect to complete a project in the most efficient manner possible.
- Negative time(P): the amount of time you estimate it will take to complete your project.
- A reasonable estimate of how long it will take to complete your project if there are no unexpected delays.

What do you have to do after you get the information?
(O + 4M + P)/6

In this way, you'll be able to get an idea of how long your project will take, even when setbacks are taken into account.

Fast-tracking and crashing

Fast-tracking is simply multitasking. It requires you to determine the critical path for your project and work on crucial tasks while also finishing your float obligations. The drawback of this approach is that teams frequently rush through tasks, which increases the likelihood of human error and necessitates more time spent fixing errors after the fact. The act of "crashing" involves adding more resources to a project in order to finish it more quickly. When a project is on the verge of missing a deadline, this is routinely done. Crashing could imply expanding your team or having your existing members put in more effort to reach their goals. This tactic raises the project's expense, raises the possibility of team member burnout, and could result in lower-quality than anticipated results (Abuwarda & Hegazy, 2019).

Gantt charts

All sectors employ Gantt charts, which offer a graphical representation of your project's timeline from beginning to end. By enabling you to see who is working on what and where everyone stands in relation to the project timeline, using a Gantt chart improves process transparency (Shibuya & Chen, 2021).

IMPORTANCE OF PLANNING AND SCHEDULING IN CONSTRUCTION MANAGEMENT

Planning and scheduling in project management is a necessity in project management due to the reasons highlighted below:

Road Map: The project plan offers a route that directs the project from beginning to end.

Client Needs Documentation: A clearly written project plan enables the recording of client needs. This gives a clear direction rather than relying on assumptions, which may be incorrect and cause project problems.

Task Autonomy: Planning enables task allocation while maintaining autonomy for particular team members. The group takes ownership and accountability for the accomplishment or failure of a project. As a result, it either spurs people to put forth more effort or pushes them to create variable results.
Planning is essential since it enables us to estimate resources, expenditures, and time. It evaluates potential delays that might occur if several team members are working on several projects at once.

Mitigation Arrange: The design of the project allows you to anticipate potential dangers and to plan mitigation measures accordingly.

Employee Competencies Identification: Employees with certain skill sets or expertise can be found during the planning process. As tasks are assigned, team members receive training in areas where they need to improve or learn new abilities.

The Strengths and Weaknesses of Prior Projects: Project plans also assist in the improvement and analysis of previous project records, improving decision-making (Larsson *et al.,* 2018).

METHODOLOGY

In the course of this study qualitative method of research was implemented, primary data was gathered through existing journals, articles, books and websites that relate to the topic, giving a better understanding of the research topic.

CONCLUSION

In the context of project management, 'project planning and scheduling' are inextricably linked. In a word, "project planning" is an iterative process that takes into account every element of the project, from conception to completion. Additionally, the "Project schedule" tracker records the timing and duration of project-related tasks. A project schedule informs/warns the project team of any delays or when the project is going the wrong way. It is a live document that needs to be updated and documented frequently. The terms "Task Breakdown Structure," "Scope of Work," and "Critical Path Method"—abbreviated as "TBS," "SOP," and "CPM," respectively—denote the tools and procedures used for project planning. While 'PERT' (Program Evaluation Review Technique), Gantt charts, Pareto charts, and other networking visualizations are used in the project schedule. Without a solid project strategy and an explicit project schedule, a project is unfinished and unable to succeed.

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