

Project Planning

In the process of planning, alternatives are examined and the best alternative is chosen. The goal of planning is to minimize resource use (cost) while satisfactorily completing the task. Efficient use of equipments, material, labor and ensuring coordinated effort are the basic aim. The outcome of planning is predetermined course of action. Thus, the planning creates an orderly sequence of events, defines strategies to be followed in carrying forth the plan and describes ultimate disposition of the result. Putting the various activity of the project in the sequence on the time frame is the process of scheduling. Scheduling is required for continuous checking of the project (control), for resource mobilization, to minimize the cost and use of resources optimally.

Various scheduling techniques have been employed to plan the activity in sequence in project management. In construction project, bar chart and critical path method (CPM) have been widely used. During the planning process, a manager builds the facilities on paper, thus identifies each of the various tasks and time .During construction, these predetermined course of action form the basis for monitoring and the checking the progress of the work. Following steps are followed during planning, scheduling and control .

- a. Identifying and defining activity,
 - b. Defining activity interdependence
 - c. Estimate time and resources for each activity

 - d. Constructing the network,
 - e. Calculations on network for project time , earliest start and finish of activity, resource requirement, etc,
 - f. Project control and project review.
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- a. **Identifying the activity:** Activity is well defined task which consumes time and resources. The identification of activity depends upon the level of details and the requirement of management .Different levels of leaders requires different detail in the project planning. For example, the cost of beam can be an activity in building construction or it can be further split into different activities such as bar scheduling, making form work, concrete mixing and casting, curing the beam etc. Generally tasks to be performed in break down using ‘Top-Bottom Design’. The work break down structure (WBS) forms the useful tool to identify the activity. The outcome of this phase is the complete list of activity to perform the project.

- b. **Defining activity interdependence:** In this step , each of the activity is considered . It is argued which activity will succeed the activity under consideration. Thus, we obtain the immediate succeeding activity or immediate successor. This way of thinking is called forward planning. We can also think which activity will precede the activity under consideration and similar manner we can prepare immediate precedence list. This way of thinking is called **Backward Planning** Outcome of this step is list of activity together with immediate preceding or succeeding activity. This step is carried out by most knowledgeable persons of the team. Generally these steps are carried at the senior/experience persons in the department or contractor's company

Estimation of time and resources for activity: The estimation of activity duration without bias is very important. To avoid bias in the estimate, we can follow some guidelines which are described as follows -

- i. A group of experts should estimate the time and resource of the activity.
- ii. The estimate of activity duration should be done activity by activity and time estimate of one activity should not affect that of the other.
- iii. The estimate should be based on normal level of work for labor and equipment.
- iv. In the schedule, normal days should be considered; weekends and holidays should be specified in the project.

Methods of time estimate: Depending on the type of calculation on the schedule/network, different methods of time estimates have been in practice. The most popular methods are given below -

- i. *Definite time estimation:* In this method, each activity is specified only one time. This time is used normally to calculate project durations, finding critical path, earliest start and finish of activity, etc.
- ii. *Two time estimate method:* We specify two activity duration to each of the activity. These activity durations are
 - a. Normal activity duration
 - b. Crash activity duration

Normal activity duration is the time of carrying out activity considering normal level of resource such as labor and equipment. Sometimes, we require knowing the shortest possible activity duration, if we supply enough resources.

