

Network Analysis in Project Management

Network analysis in project management analyzes the different networks of activities. It is carried out to know the critical path and duration of the project. Determination of the critical path and critical activities is important because, with the help of critical activities, project controlling and rescheduling of the delayed activities can be possible.

There are many methods available for network analysis in project management. The critical Path Method and Programme Evaluation and Review Technique (PERT) are the most commonly used method for network analysis in project management. The CPM method is generally used for repetitive types of projects, and PERT is generally used for research-oriented projects.

Applications of Network Analysis

Network analysis has various applications in project management. With the help of network analysis of the activities, project planning, controlling, and scheduling can be carried out easily. Here a few applications of network analysis are listed below.

- Network analysis helps the contractor understand the project activities and their interrelationships.
- Network analysis visually represents the activity's duration and prerequisite activities.
- Network analysis helps to understand the project's critical activities.
- With the help of network analysis, project managers can control and reschedule the different activities of the project.

Importance of Network Analysis in Project Management

Network analysis in project management is crucial for understanding the task's critical duration, critical path, and supercritical and subcritical activities. Network analysis in project management is also carried out to minimize the project's total cost. Total cost is minimized based on the process of engineering economy. Here a few importance of the network analysis is listed below.

- With the help of network analysis, project duration can be calculated easily.
- Network analysis helps understand the project duration and the different activities.
- With the help of network analysis, controlling and scheduling the project can be done easily.
- With the help of proper network analysis, complex networks can be understood easily.

Rules for the Network Analysis in Project Management

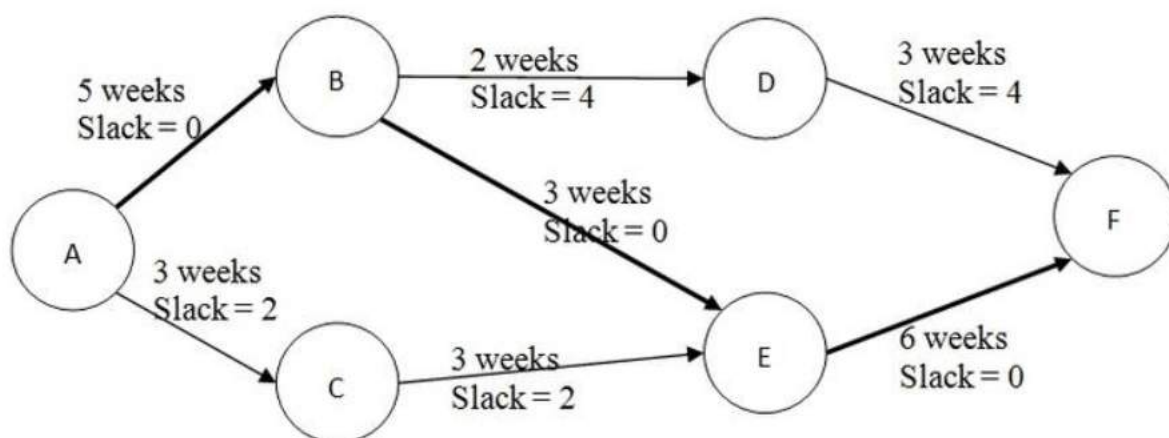
Network analysis in project management is carried out based on some rules. These rules collect the parameters on which the definition of a network depends. These rules are explained below.

- In a project network, each activity is defined as an arrow.
- Before the start of any activity, its preceding activity must be completed.
- In a project network, events are depicted with the node of an activity. The occurrence of an event does not take any time or resources.
- The occurrence of activity takes time and resources.
- A network should have only one starting and ending activity.
- A loop in the project network should not be formed.
- For the network analysis and finding the critical path in the network, calculate the duration of the activities along each path between the start end and the last end of the network.
- Path for the maximum duration is considered the critical path of the network.

Network Analysis in Project Management Examples

Network analysis in project management is one of the most important topics of construction planning and management. The concept of the network analysis will be clear by solving examples. Here such an example is shown that strengthens your concept related to the network analysis.

Activity	ES	EF	LS	LF	Slack LS - ES
A-B	0	$0+5=5$	$5-5=0$	5	$0-0=0$
A-C	0	$0+3=3$	$5-3=2$	5	$2-0=2$
B-D	5	$5+2=7$	$11-2=9$	11	$9-5=4$
B-E	5	$5+3=8$	$8-3=5$	8	$5-5=0$
C-E	3	$3+3=6$	$8-3=5$	8	$5-3=2$
D-F	7	$7+3=10$	$14-3=11$	14	$11-7=4$
E-F	8	$8+6=14$	$14-6=8$	14	$8-8=0$



In the above-mentioned example, the critical path will consider the A-B-E-F activity.