Chapter 12 Critical path analysis

Key terms

1. Critical path: the tasks involved in a project which, if delayed, could delay the project.
2. Critical path analysis(CPA)/network analysis: a method of calculating the minimum time required to complete a project, identifying delays which could be critical to its completion.
3. Earliest start time(EST): how soon a task in a project can begin. It is influenced by the length of time taken by tasks which must be completed before it can begin.
4. Free float: the time by which a task can be delayed without affecting the following task.
5. Latest finish time(LFT): the latest time that a task in a project can finish.
6. Network diagram: a chart showing the order of the tasks involved in completing a project , containing information about the times taken to complete the tasks.
7. Nodes: positions in a network diagram which indicate the start and finish times of task.
8. Total float: the time by which task can be delayed with out affecting the time needed to complete the project.

1. Critical path analysis (CPA) I Network analysis

- **Critical path;** the task involved in a project which, if delayed, could delay the project
- **Critical path analysis;** a method of calculating the minimum time required to complete a project, identifying delays which could be critical to its completion

Advantages of critical path

1. It improves efficiency in operation for business.
2. Network analysis is based on past information and an analysis of tasks involved should lead to deadlines being met more effectively. This is because the implications of delays can be assessed, identified and prevented.

2. Networks

Network diagram; a chart showing the order of the tasks involved in completing a project, containing information about the times taken to complete the tasks.

3 Network analysis

- It is useful to know the minimum length of time a project will take to complete
- To identify the sequence or path of tasks which are critical to the project, if delayed, will cause a delay in entire operation

4. Calculating the earliest start times (EST)

- **Earliest start time (EST)** how soon a task in a project can project. It is influenced by the length of time taken by tasks which must be completed before it can begin.

5. Calculating the fastest finish times (LFT)

↳ **Lastest finish time (LFI)**; the lastest time that a task in a project can finish.

6. Identifying the critical path

↳ The critical path shows the task which, if delayed, will lead to a delay in the project. It is where the earliest start times and the bestest start times in the nodes are the same. But it must also be the route through the nodes which takes the largest time.

7. Calculating the float

• **The float;** the amount of time by which a task can be delayed without causing the project to be delayed.

How much delay can there be in tasks which do not lie on the critical path?

total float 'g total float is the amount of time by which a task can be delayed without affecting the project.

Total float = LFT of activity - EST of activity - Duration

Free float; the free float is the amount of time by which a task can be delayed without affecting the following task

Tree float = EST start of next task - EST start of this task - Duration

Limitations of critical path

1. Information used to estimate times in the network may be inaccurate.
2. Changes sometimes occur during the life of the project.
3. Although critical path analysis identifies thus when resources might be used somewhere else in the business, these resources may be inflexible.