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BUS412: Project Management: NO

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Assignment 5

Short Answer (4 to 5 sentences)

1. Describe three advantages of using activity networks for project scheduling.

There are many advantages to using activity nets in project planning that can help ensure project success.

One benefit is that activity nets provide a graphical representation of the dependencies between tasks and activities. This makes it easier to identify complex relationships and dependencies between tasks. Using task networks makes it easier to visualize relationships, which in turn improves communication and understanding between team members.

Another advantage of task nets is that they enable accurate planning and monitoring of projects. The time dependencies between tasks can be precisely defined, which enables accurate planning of project duration and required resources. By using task networks, project managers can monitor the progress of the project in real time and make adjustments as needed.

A third advantage is the ability to identify critical paths. The critical paths of a project are the tasks where any delay will affect the overall project schedule. By identifying the critical paths, project managers can prioritize the most important tasks and ensure that they are completed on time to meet the project goal.

2. Define the critical path in a project. Why is it important to understand what it is and what affects it?

In a project plan, a critical path is the longest chain of activities and milestones where there is no buffer. The term comes from network planning, where a project plan is understood as a logical and temporal chain of activities. It is important to understand what the critical path is in a project and what affects it, as it has a significant impact on the success of the project. If a project manager does not properly understand the critical path, it can result in the project not being completed on time or an unnecessary increase in the cost of the project.

By understanding the critical path, project managers can prioritize and ensure that the most important tasks are completed on time to meet the project goal. They can also ensure that resources are used effectively to avoid delays along the critical path.

In addition, understanding the critical path can help identify and mitigate project management risks. Project managers can assess the impact of critical path delays on other tasks and the project as a whole and take appropriate action to reduce risks and keep the project on track.

All in all, understanding the critical path in a project is an important aspect of project management because it plays a fundamental role in the successful implementation of projects. By understanding the critical path and its implications, project managers can prioritize, mitigate risks, and ensure that the project is completed successfully.

3. Define the Critical Path Method (CPM). Both chapters might assist with this question.

In project management, the critical path method is a network planning technique in which the path through all activities and subprojects is listed and used to determine the total duration of the project.

Typically, the critical path represents the longest path through the project plan. The critical path is made up of individual activities from the earliest start date, where project implementation begins, to completion. This is the latest completion date. In some cases, the critical path may also end at a specific intermediate target without the need to complete the overall project.

As in other network techniques, the critical path method uses simple graphical symbols for representation: Circles, lines, and arrows. Circles are nodes and indicate events and activities. They are numbered consecutively and also contain the earliest and latest event dates. The lines with arrows show the sequence of events.

The Critical Path Method (CPM) is used to better estimate the minimum project duration and the Early Finish Date and to determine a planning reserve for the planning model. The Critical Path Method was developed into the Critical Chain Method.

4. Define Program Evaluation and Review Technique (PERT). Both chapters might assist with this question.

Program evaluation and review (PERT) is a project planning and control method developed by the U.S. Navy in the 1950s. PERT is based on a network technique that visualizes the interdependencies of tasks and activities in a project and estimates the duration of the tasks and activities to determine the expected completion date of the project.

The PERT technique uses a network diagram representation of the project, where the individual tasks and activities are represented as nodes in the diagram. Dependencies between tasks and activities are represented by arrows. Each node in the diagram represents a specific task or activity, and each arrow represents a dependency between tasks and activities.

In the PERT procedure, the duration of each task and activity is divided into three estimates. The optimistic estimate, the pessimistic estimate, and the probable estimate. Based on these estimates, the probable duration of each task and activity is calculated by taking a weighted average of the estimates. Based on these estimates, PERT can calculate a probability distribution of project duration and estimate a project completion date. It can also identify critical paths where delays would impact the overall project schedule.

The PERT technique provides project managers with a method for planning and monitoring projects that takes into account complex interdependencies and provides a more accurate estimate of project duration. It can also help identify project management risks and bottlenecks.

5. The two most common methods for constructing activity networks are Activity-on-Arrow (AOA) and Activity-on-Node (AON). Briefly compare and contrast the two. Both chapters might assist with this question.

Activity-on-Arrow (AOA) and Activity-on-Node (AON) are the two most common methods for representing activity networks in the context of network planning. In AOA, activities are

represented as arrows, while nodes or events are represented as circles. Here, the arrow indicates the activity, and its length indicates the duration of the activity. A node in AOA represents an event associated with one or more activities.

In contrast, in AON, activities are represented as nodes, while events are represented as arrows. The node in AON represents the activity itself, while the arrow indicates the relationship between activities. An event in AON is a milestone or stage reached by the completion of one or more activities.

Both methods have their advantages and disadvantages. AOA is well suited for complex projects with many dependencies because it provides a visually clear representation of the dependencies between activities. However, for me, AON seems simpler and clearer than AOA and is often used for smaller projects. All in all, the choice of method depends on the specific requirements of the project. However, both methods can be used effectively to visualize and manage the dependencies between activities in a project.

6. The text describes four methods for reducing the critical path. Describe two of these.

As I defined earlier, the critical path is the longest chain of sequential activities that determine the completion date of a project. When the critical path becomes longer, it can cause a delay in project completion. However, there are methods to reduce the critical path and thus complete the project faster. One of these methods is the fast-tracking method. In this method, activities that normally need to be done sequentially are done at the same time. This can help speed up the schedule because some activities can be executed in parallel instead of sequentially. However, the risks must be carefully weighed, as fast-tracking can also conflict with resources and increase the risk of errors.

Another method to reduce the critical path and thus complete the project faster is the crashing method. This method refers to reducing the duration of critical activities by increasing the use of resources or by making changes in planning. For example, the duration of an activity can be reduced by increasing the number of workers working on the activity. However, the method can also be costly and increase risk by requiring activities to be completed more quickly.

It is important to note that these methods are not always applicable and must be carefully considered. It may also be necessary to consider alternative approaches such as adding buffers or changing activity priorities to reduce the critical path.

7. What is a Gantt chart? Describe two benefits of using them for project management.

A Gantt chart is a type of bar chart commonly used in project management applications to track the progress of projects. It presents a timeline for the project in the form of horizontal bars that show the duration and dependencies between different tasks in the project. There are several advantages of using Gantt charts in project management. First, a Gantt chart can give the project manager and team a clear view of what needs to be accomplished within the project and when. By visually depicting the project's timeline, they can prioritize tasks, identify the critical milestones in the project, and ensure that all dependencies between tasks are accounted for. Second, Gantt charts can help track project progress and ensure that the project stays within the planned timeframe. By identifying delays and critical paths, project managers can find faster solutions to get the project back on track and ensure it is completed on time.

8. What do we mean by 'crashing a project'? What are two reasons for crashing a project?

A project abandonment is the premature termination of a project before it is complete. One major reason for project failure can be inadequate planning and preparation. If the project team does not have clear goals, milestones and plans, it can be difficult to successfully complete the project. Another cause can be poor communication between project stakeholders, which can lead to misunderstandings and misinterpretations.

9. The text describes six techniques for crashing a project/accelerating it. Describe two of them.

In the following, I will explain two techniques to speed up a project. Fast-tracking is a technique in which the project manager rearranges tasks in the project schedule to allow overlapping of tasks that were originally intended to be done sequentially. This helps shorten the overall duration of the project. For example, instead of waiting for one task to be completed before starting the next, fast-tracking allows the next task to begin as early as possible, even if the first task has not yet been completed. This technique can be risky because it increases the likelihood of rework and requires close monitoring to ensure that the quality of the work is not compromised.

Resource optimization is a technique of adding additional resources to the critical activities of the project to shorten the overall duration of the project. For example, the number of man-hours dedicated to a specific part of the project can be increased, or additional staff can be added to the project team to complete certain tasks faster. This technique can help speed up the project schedule, but it requires careful planning and coordination to ensure that the additional resources actually help complete the project faster and do not result in more effort that increases the overall cost of the project.