Unit 34: Operations Management

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Learning Outcome 4

- LO4 **Be able to apply relevant techniques to the production of an operational plan for an organisation.**
  - Ac 4.1 Produce a set of clearly defined operational outcomes for a selected organisation
  - AC 4.2 Produce a network plan indicating the resultant critical path.
  - AC 4.3 Justify how quality management techniques are applied to improve operations in a selected organisation

In this Session

- LO4 **Be able to apply relevant techniques to the production of an operational plan for an organisation:**
- AC 4.2 Produce a network plan indicating the resultant critical path:
  - Outcome determination: the five performance objectives
  - Network Plan - Critical Path
- Further readings
- References

Outcome Determination

- Five the operational performance objectives:
  1. quality
  2. speed
  3. dependability
  4. flexibility
  5. costs.
- Refer to AC 2.3 for further details on these performance objectives.

Quality Performance Objectives

- The degree of excellence of something when measured against other things of a similar nature. The quality can be measured in terms of performance, desirability, durability and reliability of product's features.
- Quality management methods such as TQM can lead to increase quality, improved customer satisfaction, increased sales and improved company reputation.

Speed Performance Objectives

- Speed objectives refer to the rate at which a company can process sales quotes and how rapidly and often a company can deliver its products.
- Success of speed brings customers dependability, reduced costs due to the decreased necessity to manage transformed resources through the operational process.

Dependability Performance Objectives

- Dependability means that the company produces and delivers products to its customers on time and according to agreed to costs and prices.

- A company also measures dependability by the product's ability to function as designed and as expected and to perform consistently over a reasonable amount of time.

Flexibility Performance Objectives

- Operations are flexible, when the company is able to change the operation in some way - configure the product lines to deal with various product requirements and if operations can adjust to new requirements quickly.

- Flexibility requires that a company can produce a mix of products of quality standards and be able to adapt operations to meet new or changing delivery schedules and production volumes.

Cost Performance Objectives

- Costs performance objectives is influenced by the 4 V's: the **variation** in unit cost due to changes in the **volume** a manufacturer produces, the **variety** of products produced and the visibility of the products.

- In most cases, the higher the variety of products produced, the lower the volume produced and the higher the unit cost, and vice versa. Equally important, the cost of each product will vary, which affects the product prices, running costs and profits.

- http://smallbusiness.chron.com/objectives-operational-performance-77937.html

Network Plan

- According to Amdocs.com (2016) Building the right amount of network capacity in the right place at the right time is no simple task. You can't afford to overbuild, which wastes scarce investment resources that could be better used elsewhere. Neither can you delay expansion – bottlenecks result in poor service to customers and waste other network assets. A fine balance is called for in order to meet rapidly growing and changing traffic demands.

Network Plan

- Network Planning ensures that you utilize all your network resources affecting network capacity, including both physical and logical constraints, network configuration, IP addresses and all types of network elements (Amdocs.com, 2016).
- Network planning and design is an iterative process, encompassing topological design, network-synthesis, and network-realization, and is aimed at ensuring that a new telecommunications network or service meets the needs of the subscriber and operator (Wikipedia.ord, 2016). The process can be tailored according to each new network or service.
- Capacity Planning tools help you predict and avoid resource and capacity shortages.

Network planning process involves three main steps

- Topological design: This stage involves determining where to place the components and how to connect them. The (topological) optimisation methods that can be used in this stage come from an area of mathematics called Graph Theory. These methods involve determining the costs of transmission and the cost of switching, and thereby determining the optimum connection matrix and location of switches and concentrators.

- Network-synthesis: This stage involves determining the size of the components used, subject to performance criteria such as the Grade of Service (GOS). The method used is known as "Nonlinear Optimisation", and involves determining the topology, required GoS, cost of transmission, etc., and using this information to calculate a routing plan, and the size of the components.

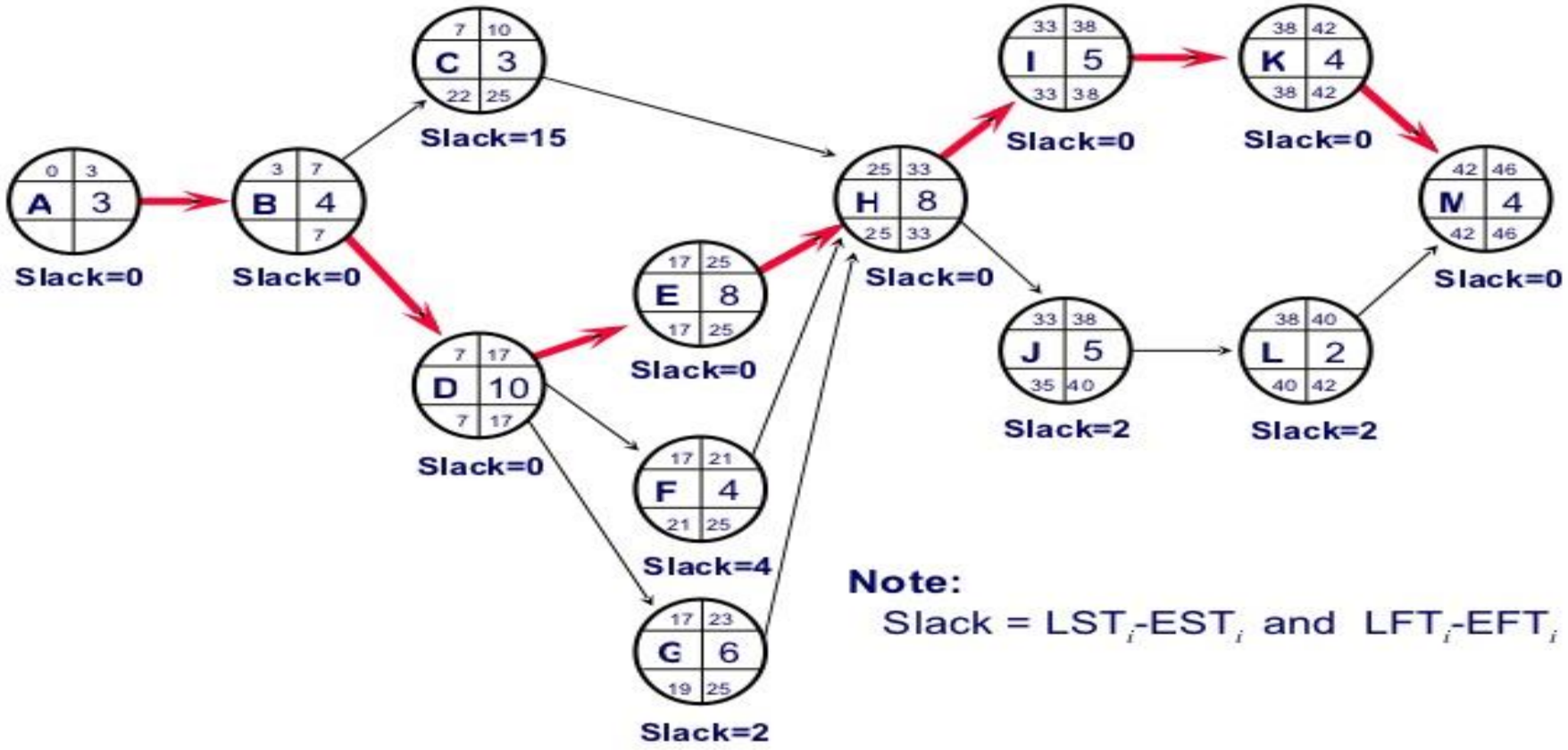
Network planning process involves three main steps

- Network realization: This stage involves determining how to meet capacity requirements, and ensure reliability within the network. The method used is known as "Multicommodity Flow Optimisation", and involves determining all information relating to demand, costs and reliability, and then using this information to calculate an actual physical circuit plan.

Determining The Critical Path

- Critical activities have zero slack and cannot be delayed without delaying the completion of the project (slideshares.net, 2008);
- The slack for non-critical activities represents the amount of time by which the start of these activities can be delayed without delaying the completion of the entire project (assuming that all predecessor activities start at their earliest start times);
- The longest path on the network;
- Could also be those activities with the least slack.

The Critical Path



Note:

Slack = LST_i-EST_i and LFT_i-EFT_i

Further Reading

- http://smallbusiness.chron.com/objectives-operational-performance-77937.html
- https://prezi.com/e9boy6oyvgvs/5-performance-objectives/
- http://www.amdocs.com/products/oss/network-planning/pages/network-planning.aspx

References

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- Amdocos.com (2016) Network Planning - Orchestration of network rollout and change retrieved from http://www.amdocs.com/products/oss/network-planning/pages/network-planning.aspx
- Slideshares.net (2008) The Network Diagram and Critical Path retrieved from http://www.slideshare.net/dmdk12/the-network-diagram-and-critical-path
- Wikipedia.org (2016) retrieved Network Planning and Design from https://en.wikipedia.org/wiki/Network_planning_and_design