Purchasing and Supply Chain Management

Purchasing and Supply Chain Analysis: Tools and Techniques

Chapter 12
Chapter Overview

- Having the right tools and applying the right techniques is an essential part of supply chain management.

- This chapter presents a set of tools and techniques that support effective purchasing and supply chain management.
Chapter Overview

The tools discussed in this chapter include:

- project management
- learning curve analysis
- value engineering/value analysis
- quantity discount analysis
- process mapping
Project Management

Project Phases:

Concept
- Initiate broad discussion of project

Project Definition
- Develop project description
- Describe how to accomplish work
- Determine tentative timing
- Identify broad budget, personnel, resources
Project Management

Project Phases:

Planning

- Develop detailed plans, identify tasks, timing, budgets, and resources
- Create organization to manage the project

Preliminary Studies

- Validate the assumptions made in the project plan through interviews, data collection, literature search, experience
Project Management

Project Phases:

Performance
- Execute the project plan and perform work
- Use project control tools and techniques here

Post completion
- Confirm project results
- Reassign personnel
- Restore equipment and facilities
- Document project files for future reference
Project Planning and Control Techniques

TASK
- Define supplier equipment and technology requirements
- Ready equipment for transfer
- Transport equipment to supplier
- Install and test equipment
- Train supplier personnel
- Ramp up to full production
Project Planning and Control Techniques

Diagram:

- A → B → E → F
- A → C → H → I
- C → D → E
- F → G
- G → J
- J → K

Diagram represents project planning and control techniques with nodes A, B, C, D, E, F, G, J, and K connected by arrows indicating the sequence of tasks.
Learning Curves

• Learning Curves establish the rate of improvement due to learning as producers realize direct-labor cost improvements as production volume increases.

• The learning rate represents the improvement as production doubles from a previous level.
Learning Curve

• The fundamental principle of the learning curve is that as production doubles, direct-labor requirements decline by an observed and predictable rate.

• For example: with an 85% learning rate, the direct labor required to produce a single unit declines by 15% each time production doubles.
Learning Curve

• Why should buyers be concerned with the learning curve?

• When should buyers use the learning curve?
Value Engineering/Value Analysis

• Involves examining all elements of a component, assembly, end product, or service to make sure it fulfills its intended function at the lowest total cost.

• The basic component of value analysis is value.
Value Engineering/Value Analysis

• The primary objective of VA is to increase the value of an item or service at the lowest cost without sacrificing quality.

• In equation form:
  
  Value = Function/Cost
Value Engineering/Value Analysis

• Who is Involved in Value Analysis?

• Organizations should form cross functional VA teams.

• Many functional groups can contribute to the value analysis team.
The Value Analysis Process

• Five stages in a systematic approach to value analysis:

1. Gather information
2. Speculate
3. Analyze
4. Recommend and execute
5. Summarize and follow up.
Quantity Discount Analysis

• A technique to examine the incremental costs between quantities in the supplier’s quote.

• With this tool, the buyer can verify that the quantity discounts are reasonable.

• The two primary types of quantity discount analyses involves prices at specific quantities and discounts over quantity ranges.
Process Mapping

• A tool that reduces process to their component parts or activities.

• Helps identify and then eliminate non-value-added activities (waste) or delays in the process.
Process Mapping

• Most processes cross more than one functional boundary.

• Some departments have conflicting goals.
  – I.e.: Transportation may have goals dealing with cost containment of transportation costs while customer service needs material available to the customer ASAP which implies speed. These goals could be conflicting.
Processing Mapping

• Two basic types of processes

  – Sequential – set of steps comprising the activity occur one after the other.
  – Concurrent – steps performed concurrently during the main flow of work.
Process Mapping

• Steps critical to process mapping:

  – Search for better ways to perform tasks

  – Replace sequential activities with concurrent activities wherever possible.

  – Identify activities that contribute to waste
Process Mapping

• Steps critical to process mapping:
  – Identify time associated with each part of process and determine value of time spent.
  – Involve functional groups impacting process
  – Represent process graphically so all can have a clear understanding of the process steps.