Problem Set

- Problems 7.1, 7.2, and 7.3
  - Due Thursday, April 3

Purchasing/Supply Function in an Industrial Organization

- Two common alternatives
  - Purchasing & Supply Manager reporting to General Manager
  - Purchasing & Supply Manager reporting to Manufacturing Manager

- Some relevant questions
  - How important is purchasing/supply management to total company operations?
  - Is it crucial that material costs be tightly controlled?
  - Should purchasing activities be closely coordinated with engineering and finance activities?

Purchasing/Supply Management in a Single-Plant Company

- Common Work Classifications
  - Management
    - Emphasis on development of policies, procedures, controls
  - Buying
  - Follow-up and expediting
  - Strategic planning and research
  - Clerical

- Typical Positions
  - Purchasing/Supply Manager
  - Buyers
  - Buying Supervisors
  - Expediters
  - Staff Specialists—Strategic Planning & Research
  - Clerks

Purchasing/Supply Function in a Multi-Plant Firm: Advantages of Centralization

- Greater buying specialization
- Consolidation of requirements
  - “joint ordering effect”
  - “depot effect”
- Easier purchasing coordination and control
- Effective planning and research work
Purchasing/Supply Function in a Multi-Plant Firm:
Advantages of Decentralization

- Easier coordination with operating departments
- Speed of operation
  - Leadtimes: external / internal
- Effective use of local resources
- Plant autonomy

Major Factors Affecting Feasibility/Desirability of Centralization in a Multi-Plant Firm

- Common materials usage
  - not necessarily based on same items
- same material classifications
- same supply markets
- Plant purchasing/supply department size
  - consolidation of small plant departments
- Geographic dispersion of plants
  - easier when geographically closer together

Industry Trends

- Centralization vs. decentralization [NAPM (ISM) study of Fortune 1000]
  - 26% centralized
  - 14% decentralized
  - 60% combination
- Long-range materials planning
  - centralized strategic activities
  - decentralized tactical/operating activities

Characteristics Affecting Success of Cross-Functional Teams [Michigan State Univ. study, 1994]

- Higher levels of internal/external decision making authority
- Supplier participation, when required
- Effective team leadership
- Availability of key organizational resources
- Higher levels of effort put forth on team assignments
- Need for knowledgeable purchasing professionals
  - solid leadership
  - effective interpersonal skills
“Classical” Materials Management Model

- Purchasing and supply
- Inbound traffic
- Production scheduling
- Inventory control
- Stores and receiving

Supplier Management Concept

- Supplier Management
  - Bring suppliers up to a certified level of performance
  - Provide closer, more intensive working relationship between buyer and relevant individuals in supplier’s organization
    - buyer as a supplier relationship manager

Supplier Partnerships

- **SRM** – supplier relationship management
  - Very critical in JIT

- Partnering – 3 key factors
  - Long-term commitment
  - Trust
  - Shared vision

- Supplier selection

- Supplier certification
  - ISO 9000
  - QS 9000
  - TS 16949

Buyer-Planner Concept

- **Buyer-planner** responsibilities
  - determining materials requirements
  - developing materials schedules
  - determining order quantities
  - handling activities associated with buying function

- Benefits reported by firms using concept
  - smoother materials flow
  - improved coordination with key suppliers
  - increased productivity

- Particularly applicable in MRP-type system
Four Key Components of the Purchasing Process

- Requirements determination
  - What to buy
    - Most critical among 4 components
      - Some 80% of total cost designed in or excluded in this phase

- Source selection
  - From whom to buy

- Pricing
  - What price to pay

- Contract management
  - Ensuring that supplier performs according to contract terms

Typical Phases of Product Design Development

- Concept Development
- Product Planning
- Product/Process Engineering
- Pilot Production/Ramp-Up

Concurrent Engineering

- The simultaneous development of project design functions, with open and interactive communication existing among all team members for the purposes of reducing time to market, decreasing cost, and improving quality and reliability.

Design for Manufacturability

- Traditional Approach
  - “We design it, you build it.”

- Concurrent Engineering
  - “Let’s work together simultaneously.”

Design for Manufacturing and Assembly [DFMA]

- Greatest improvements related to DFMA arise from simplification of the product by reducing the number of separate parts:
  - 1. During the operation of the product, does the part move relative to all other parts already assembled?
  - 2. Must the part be of a different material or be isolated from other parts already assembled?
  - 3. Must the part be separate from all other parts to allow the disassembly of the product for adjustment or maintenance?
Early Purchasing Involvement \textit{[EPI]}

- Need to consider supply implications during design
  - Quality
  - Cost
  - Timely availability
- Reducing “time to market”

Design for Manufacturability

- Traditional focus
  - Internal manufacturing process
- Need to also consider suppliers
  - Manufacturing processes
  - Technological capabilities

Early Supplier Involvement \textit{[ESI]}

- Sometimes as early as product/process engineering: “envelope” of performance specifications
  - Toyota, Kawasaki
  - Suppliers design selected, non-strategic components
    - Kawasaki motorcycle: seat
  - Firm’s engineering resources focus on higher value activities
    - core technologies
    - proprietary systems
  - Supplier’s engineers welcomed into firm’s engineering department

Engineering Change Management

- Implications of changes in components
  - Cost, performance, appearance, market acceptability
  - Potential inventories of unusable materials
  - Expensive rework on/adaptation of materials
  - Quality/reliability may be compromised without retesting
- Engineering change management
  - Controls engineering changes
  - Changes controlled and recorded
  - Engineering change management group/board
    - When materials management organization exists in company, group/board usually headed by senior production planning/inventory control representative
- Role of purchasing/materials management
  - Provide inputs on purchased materials implications
  - Discuss timing of proposed changes: minimize costs arising from unusable incoming materials
  - Be aware of forthcoming changes
    - Take appropriate action with affected suppliers