



Problem 01

Beyond Geographical Boundary

SCHOOL OF
ENGINEERING
E222 – Logistics
Planning and
Control

E222 Logistics Planning and Control – Topic Tree

Logistics Strategies Fundamental (P01)

Demand Forecasting

Forecasting Techniques (P02)

Forecasting Accuracy (P03)

Manufacturing Planning and Control

S&OP and MPC (P04)

Manufacturing Processes (P05)

Aggregate Production Planning - APP (P06)

Master Production Schedule – MPS (P07)

Material and Distribution Planning

Material Requirements Planning- MRP (P08)

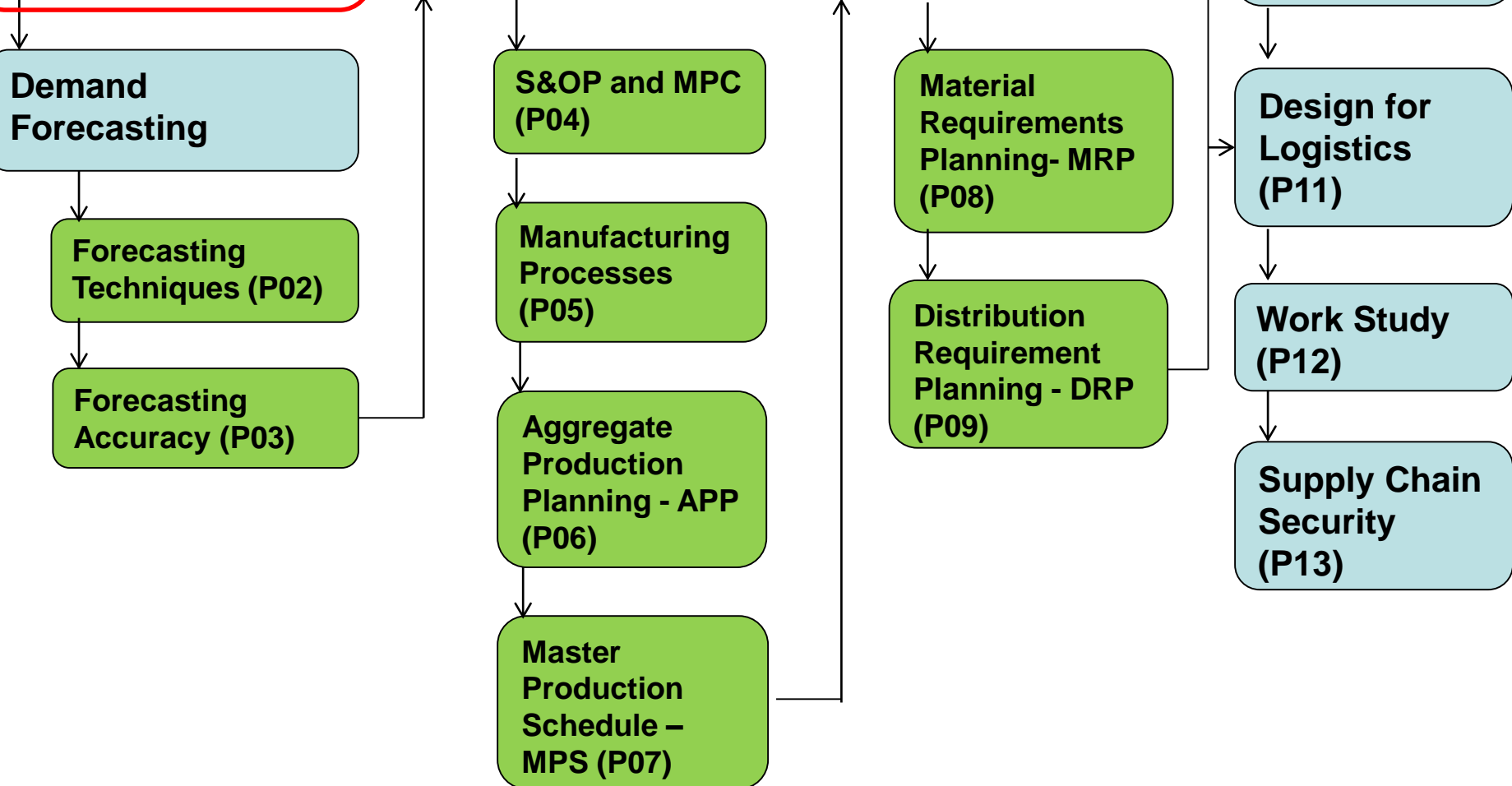
Distribution Requirement Planning - DRP (P09)

Reverse Logistics (P10)

Design for Logistics (P11)

Work Study (P12)

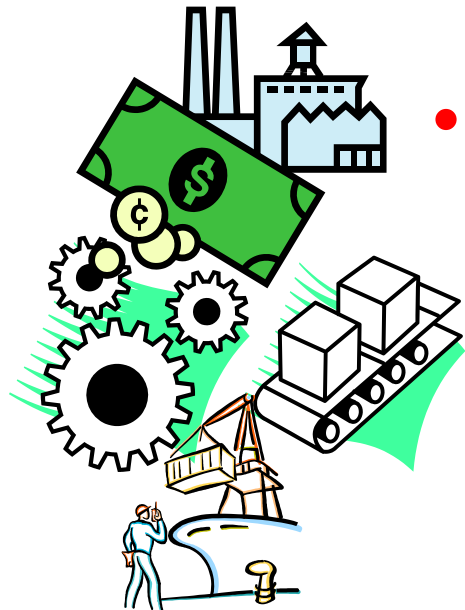
Supply Chain Security (P13)



P01 – Beyond Geographical Boundary



- Describe and explain International Logistics Functions
- Explain Global Logistics Issues, Goals & Strategies
- Identify the different types of Logistics Intermediaries
- Explain Outsourcing Logistics Operation

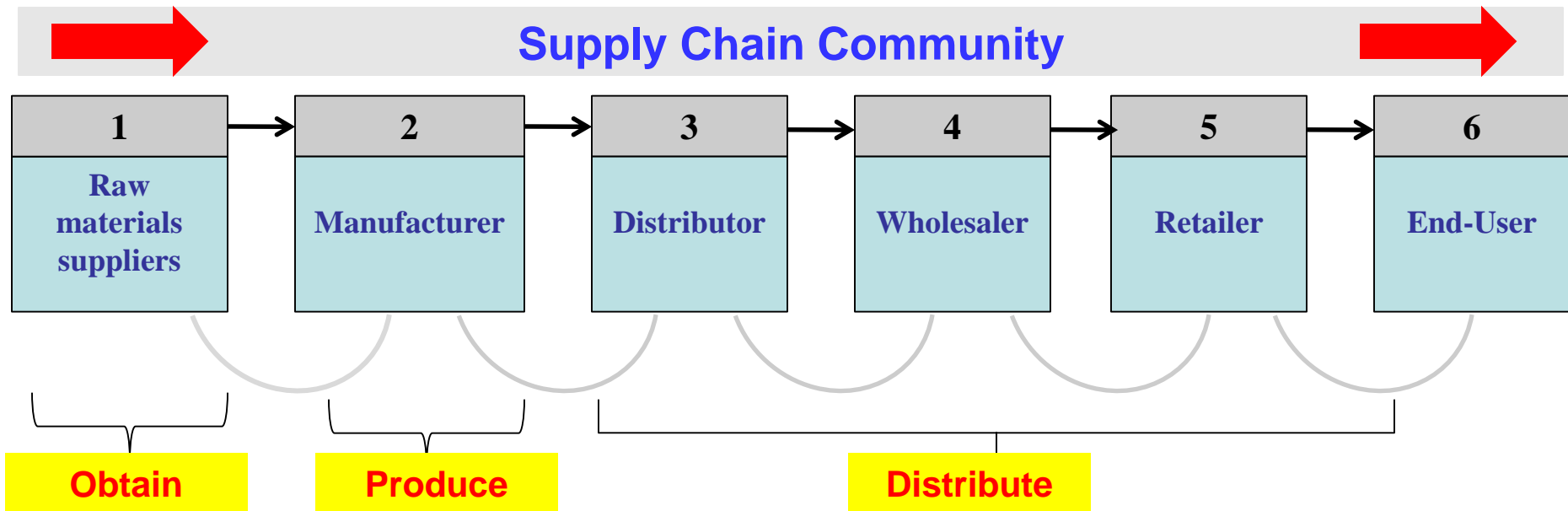


Definition of Logistics



“Logistics is the art and science of **obtaining**, **producing**, and **distributing** material and products so that the customer receives the **right product** in the **right quantity** at the **right time**.”

Source: APICS Dictionary



Activities include:

- Transportation
- Forecasting
- Warehousing
- Materials handling
- Packaging
- Information processing
- Finance etc...

Factors Affecting Global Logistics Strategies

- Rapid Product Introduction - Bringing products in a short time across numerous regions
- Focused Market Needs - Customization, packaging, service offering to meet varying customer requirements
- Quick Response Delivery – Distribute the right product at right quantity and shortest time
- Expanded Services – Linking innovative, value-added services (E.g. Installation, 24 hrs hotlines, asset tagging)
- Innovative Channels – Using minimal echelon, direct delivery to reach customers rapidly at the lowest cost

Global Logistics Issues to Overcome



- Longer & less consistent response time
 - Longer distance involved
 - Ocean shipment at slower speed with less consistency than land/air transportation
 - Additional documentation & arrangement. (E.g. Letter of credit and custom clearance)
- Order completeness & shipping accuracy
 - Higher costs of back orders and expedited shipment
 - Shipping errors could result in expensive routing and replacement
- Higher shipping damages
 - Harsh and variable global environment. (E.g. Road condition and type of transport used)
 - Cost & time to replace damaged items can be significant

Key Logistics Goals



- Rapid responses to changes
 - ✓ New development in the market or a particular customers' needs
- Minimum variance
 - ✓ E.g. Delivery time
- Minimum inventory to keep expenses down
- Movement consolidation
 - ✓ By aggregating smaller shipments into larger ones
- High quality in logistics services as well as in products
- Life cycle support
 - ✓ Ability to handle repairs, reuse, recycling or disposal as well as product delivery

Global Logistics Strategy Guidelines



From a **long term** strategic perspective

- Logistics planning should be integrated into the **company's strategic planning process**
- Logistics department need to be **guided by a clear vision** and must measure output regularly
- Import/ export management should try to ensure integrated management of all elements of the logistics supply chain, from origin to destination
- Opportunities to integrate domestic and international operations should be pursued to leverage total company volumes with globally oriented carriers

Tactical Logistics Strategies



- Coordinating functions to create maximum value for the customers
 - Logistics system is made up of interlocking, interdependent parts
 - E.g. Transportation management, warehousing, packaging
- Integrating the supply chain
 - Step 1: Locate in the right countries
 - Step 2: Develop an effective export-import strategy
 - Step 3: Select warehouse locations
 - Step 4: Select transportation modes & carriers
 - Step 5: Select the right number of partners
 - Step 6: Develop state-of-art information system

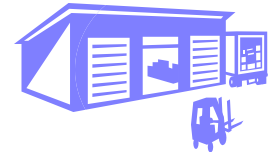


Tactical Logistics Strategies



■ Substituting information for inventory

- Use postponement centers
 - Delay product assemble until actual order receipt (E.g. Dell- Build-to-order)
- Track inventory precisely
 - Using barcodes, RFID (radio frequency identification), GPS (global positioning systems)
- Keep inventory in transit
- Don't wait in line at customs
- Mix shipments to match customer needs



■ Pooling Risks

- Reducing stock-outs by consolidating stock in centralized warehouse
 - Reduces both safety stock & average inventory by centralizing inventory

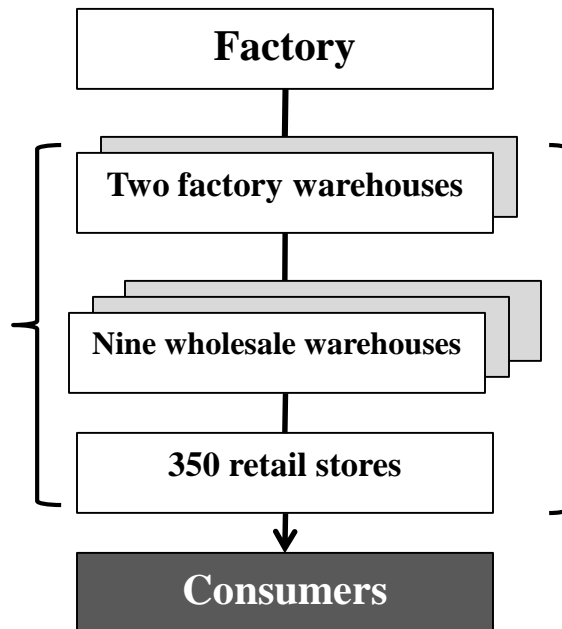
Tactical Logistics Strategies



- Reducing supply chain partners to an effective number
 - Reduce number of partners to reduce **operating costs**, **cycle time**, and **inventory holding costs**

This is a supply chain with three echelons between the factory & the consumers

- Two factory warehouses
- Nine wholesale warehouses
- 350 retail stores



Nodes- Each of these nodes represents an echelon in the supply chain network

Echelons:

- Add to operating expenses
- Hold inventory
- Add to cycle time
- Expect to make a profit

International Logistics Function



- Demand forecasting
- Order Management
- Packaging
- Labeling
- Documentation
- Customer service
- Parts & service support

Outbound Logistics Functions

- Production Scheduling
- Procurement
- Returned Products

Inbound Logistics Functions

- Inventory Management
- Transportation Management
- Materials Handling
- Warehouse & Distribution Center Management (Hub Management)
- Salvage & Scrap Disposal etc...

Overall Logistics Activities



Logistics Intermediaries



(Export – Import Participants)

Intermediaries	Roles & Responsibilities
Freight Forwarder	<ul style="list-style-type: none">• Most common intermediary in international logistics• May assume responsibilities for the firm's international distribution and supply channel• Offers services such as daily pickup, distribution, global shipping capacity with multi-carriers, advice and preparing documents, consolidation of freight from multiple shippers to a single destination, bulk booking of freight space etc
Non Vessel Operating Common Carrier (NVOCC)	<ul style="list-style-type: none">• (Also called Consolidators or NVOs)- Provide scheduled ocean shipping service without operating ships- Leasing containers and selling space for Less-Than-Container-Load (LCL) shipment
Export Management Companies (EMC)	<ul style="list-style-type: none">• Find and service markets overseas on behalf of domestic manufacturers (i.e. prepare documentations, appointing forwarders, arranging for special packing, procuring insurance)

Logistics Intermediaries



(Export – Import Participants)

Intermediaries	Roles & Responsibilities
Export Packers	<ul style="list-style-type: none">• Assist exporter with special packaging requirements needed to reach export markets.
Publication Distributors	<ul style="list-style-type: none">• Includes wrapping, destination sorting, addressing, handling business reply mail, collection of subscription, data management.
Goods Surveyors	<ul style="list-style-type: none">• To inspect quality of goods , measure the weight, or determine the extent of damage that have occurred while goods were in transit.
Parts Banks	<ul style="list-style-type: none">• Assist the manufacturer to store important parts for repair throughout the world
Container Leasing Companies	<ul style="list-style-type: none">• Lease containers to companies or individual carrier for intermodal movements;
Export Trading Companies (ETC)	<ul style="list-style-type: none">• Buy manufacturer's goods , take title, and then sell these goods in the export market

(Note: Most of these roles can be taken on by major integrated logistics service providers)

3rd & 4th Party Logistics Providers aka LLP

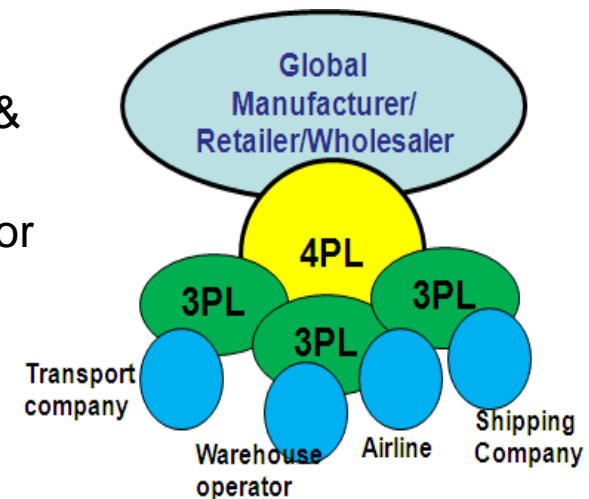


■ Third-party logistics (3PL)

- 3PL takes over some or all logistics functions & performs them itself
 - May be a specialized provider that focuses on airmail, or over-the-road transport or warehouse
 - May also be a multipurpose logistics provider capable of taking over the entire logistics function

■ Fourth-party logistics (4PL)

- Logistics specialist takes over entire logistics operation & subcontract some or all particular functions
- Sometimes still called 3PL, but presence of subcontractor makes it a 4PL setup
- Coordinates efforts of sub-contractors on client's behalf; typically charge a fee for its service, not a markup
- Also known as **Lead Logistics Provider (LLP)**
- Key role of IT in managing the process (e.g. SAP, Oracle)



Importance of 4PL



- Integrate & Manage Logistics Network
- Work across regions
- Globally integrated Information Network
- Business Process Redesign
- Manage customer service level
- Emphasize their unique values to differentiate themselves from traditional 3PLs



Contract Manufacturer (CM)



- Firm that manufactures components or products for another “hiring” firm
 - Also known as Electronic Manufacturing Services (EMS)
- A form of outsourcing
- Contract manufacturers (CM) drive down the cost of production through economies of scale (EOS)
- It allows the hiring company to obtain the components or products without needing to own and operate a factory



Global Logistics Outsourcing



- Globalization of marketplace has fueled growth in global logistics
- As firms become more global in their operations, they tend to turn to one or more global logistics service firms to provide logistics services globally
- Firm and logistics providers form close relationships through IT integration, co-location of logistics service providers at the shipping firms, capital and infrastructure investment

Logistics Outsourcing (Case Study)



“The company designs all its products, “Designed by Apple in California,” but in the U.S., design is as far as Apple is willing to go. The tech giant outsources hundreds of thousands of manufacturing jobs to countries like Mongolia, China, Korea and Taiwan. But Apple apparently doesn't outsource these jobs to save money. Instead, it does so to save time.”

<https://www.entrepreneur.com/article/228315>

Benefit of Logistics Outsourcing



Improved business focus

- Allows both firm and its contractor to focus on what they do best — “core competence”

E.g. Dell (PC assembly) & YCH Logistics (other logistics functions), Nokia and Exel in Xing Wan Industrial Park, Beijing.

More current logistics technology

- Contract logistics providers generally better able to stay current with technology than firms that hires them
- Contractors generally quicker to incorporate new software and better able to upgrade hardware necessary to run it well

Greater technological flexibility

- Contract logistics providers are better positioned to adapt to different technologies used for the firm's clients

Benefit of Logistics Outsourcing



More efficient warehousing for rapid replenishment

- Rapid replenishment requires warehouse close to clients
- Using contract logistics provider's warehouse is cheaper than building or acquiring firm's own warehouse

Improved service to customers

- Contract logistics providers may be able to offer a variety of services to firm's customers

More workforces and resources flexibility

- Quicker and simpler to hire a contract specialist for a new function; than to hire and fire workers to reflect market changes

Potential Risks & Challenges for Logistics Outsourcing



Loss of control

- Contracting logistics means giving up control over some or all aspects of that function
- May be difficult to develop a comprehensive logistics strategy for firm
- Becomes problematic if contractor establishes direct connection with firm's customers

Potential for inefficiency

- Firm may already be doing a good job for its logistics function; contract logistics provider may actually perform with reduced efficiency
- Language, time zone and cultural barriers
- Legal & Political differences



High level of trust required

- Since the information is shared now, the parties must adhere to non-disclosure agreement
- With the direct connection with the firm's customers, there is a risk of losing it to the outsourced party.

Today's Problem



- Understand about global logistics issues
- Be familiar with international logistics functions
- Identify the key logistics goals
 - ✓ Define logistics strategy guidelines (For long term, strategic purpose)
 - ✓ Develop short-term tactical logistics strategies
- Select suitable intermediaries including third party logistics (3PL) or fourth party logistics (4PL)
- Outsource non-core logistics functions, such as distribution, transportation and export management

Learning Outcomes



- Describe and explain International Logistics Functions
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- Identify the different types of Logistics Intermediaries
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