Logistics/Supply Chain Strategy and Planning

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Corporate Strategy

- **Strategy** is the process whereby plans are formulated for positioning the firm to meet its objectives.

- **Strategy formulation** begins with defining a corporate strategy
  - This involves:
    - a) **Assessing needs, strengths, and weaknesses of the 4 major components:**
      - customers
      - suppliers
      - competitors
      - the company itself
    - b) "**Visioning**" where counter-intuitive, unheard of, and unconventional strategies are considered.

- **Corporate strategies** are converted to more specific strategies for the various functional areas of the firm such as logistics.
Corporate to Functional Strategic Planning

- External factors
  - Economic
  - Regulatory
  - Technological
  - Competitive

- Corporate strategic plan

- Functional strategic plans
  - Manufacturing
  - Logistics
  - Marketing
  - Finance
Logistics’ Objective

• Maximize return on logistics assets (ROLA)

\[
\text{ROLA} = \frac{\text{Revenue} - \text{Costs}}{\text{Assets}}
\]

- Logistics’ contribution to sales
- Costs of logistics operations
- Investment in logistics assets
Objectives of logistics strategy

- Minimize cost (cost reduction)
- Minimize investment (capital reduction)
- Maximize customer service (service improvement)
Flow of Logistics Planning

**Individual Link of Logistics System**
- Facility location
- Operations strategy
- Inventory management
- Information systems
- Material handling
- Traffic and transportation
- Planning and control methods
- Organization

**Flowchart**
- Business goals and strategies
  - Customer service requirements
    - Integrated logistics planning
      - Design of integrated logistics management system
        - Overall performance measures
Areas of Logistics Planning

- Customer service levels
- Facility location
- Inventory decisions
- Transportation decisions
Triangle of Logistics Decision Making

- **Inventory Strategy**
  - Inventory levels
  - Deployment of inventories
  - Control methods

- **Transport Strategy**
  - Modes of transport
  - Carrier routing/scheduling
  - Shipment size/consolidation

- **Location Strategy**
  - Number, size, location of facilities
  - Assignment of stocking points
  - Assignment of demand to stocking points or souring points
  - Private/public warehousing

- **Customer service goals**
Logistics Planning: Levels of logistical planning

- **Strategic planning**: long term decision making, > 1 years
- **Tactical planning**: mid term decision making, < 1 years
- **Operational planning**: short term decision making, everyday
<table>
<thead>
<tr>
<th>Decision area</th>
<th>Strategic</th>
<th>Tactical</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Mode selection</td>
<td>Seasonal equipment leasing</td>
<td>Dispatching</td>
</tr>
<tr>
<td>Inventories</td>
<td>Location, Control policies</td>
<td>Safety stock levels</td>
<td>Order filling</td>
</tr>
<tr>
<td>Order processing</td>
<td>Order entry, transmittal, and processing system design</td>
<td></td>
<td>Processing orders, Filling back orders</td>
</tr>
<tr>
<td>Purchasing</td>
<td>Development of supplier-buyer relations</td>
<td>Contracting, Forward buying</td>
<td>Expediting</td>
</tr>
<tr>
<td>Warehousing</td>
<td>Handling equipment selection, Layout design</td>
<td>Space utilization</td>
<td>Order picking and restocking</td>
</tr>
<tr>
<td>Facility location</td>
<td>Number, size, and location of warehouses</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Network Diagram for a Logistics System

Origin nodes
Raw material sources

Intermediate nodes
Plants
Warehouses

Retail outlets

Destination nodes
Customers

Supply

Electronic data interchange

Electronic data interchange

Interfacility transfers

Telephone orders

Customer shopping

Demand

Water
Rail

Rail Piggyback

UPS
Truck

Local delivery
Customer pick-up

General direction of information flow
When to logistics planning?

- No distribution network currently exists.
- There has been no re-evaluation in 5 years.
- When costs are changing rapidly, especially transport & inventory
- When markets have shifted
- When current distribution economics encourage shifts
- When there has been a major policy shift in logistics such as in price, customer service, or investment level
Key areas for logistics network appraisal

- Demand
- Customer Service
- Product Characteristics
- Logistics Costs
- Pricing Policy
Six Principles for Logistics Planning

- **Total cost concept**
  - Tradeoff conflicting costs at optimum
- **Differentiated distribution**
  - Not all products should be provided the same level of customer service
- **Mixed strategy**
  - A pure strategy has higher costs than a mixed strategy
- **Postponement**
  - Delay formation of the final product as long as possible
- **Shipment consolidation**
  - Smaller shipment sizes have disproportionately higher transportation costs than larger ones
- **Product standardization**
  - Avoid product variety since it adds to inventory
A Cost Conflict in Logistics

![Graph showing cost conflict in logistics between rail, truck, and air transportation services.

- Total cost
- Inventory cost (includes storage and intransit)
- Cost of transportation service
- Transportation service (greater speed and dependability)
More Cost Conflicts

(a) Setting the customer service level

(b) Determining the number of warehouses in a logistics system
More Cost Conflicts

(c) Setting safety stock levels

(d) Setting the sequence of production runs for multiple products
Pure vs. Mixed Strategy

Cost

Warehouse alternatives

All private → Combined private-public → All public

Suggested strategy

Current strategy
• Keeping all the car panels a base color (white or gray) until the order is received, then painting to the color ordered
Postponement

- Traditional Apparel supply chain
  - yarn → dye → make → sell
  - Color commitment made at this point

- Benetton’s supply chain
  - yarn → make → dye
  - Color commitment made at this point (based on up to dated demand information)
Types of Supply Chains

- **Efficient Supply Chains:**
  - To coordinate the flow of the materials & services to min. inv. & max. the efficiency of manufacturers & service providers.

- **Responsive Supply Chains:**
  - To react quickly to market demands by positioning inv. & capacities in order to hedge against uncertainties in demand.
Choosing the Right Supply Chain Strategy

- Efficient supply chain (Low margin)
  - Functional Products - Predictable demand
  - Staple food products

- Responsive supply chain (High margin)
  - Innovative Products - Unpredictable demand
  - Electronic equipment
# Choosing the Right Supply Chain Strategy

<table>
<thead>
<tr>
<th>Efficient supply chain</th>
<th>Responsive supply chain</th>
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<tbody>
<tr>
<td><strong>Supply-to-stock</strong></td>
<td><strong>Supply-to-order</strong></td>
</tr>
<tr>
<td>Economical production runs</td>
<td>Excess capacity</td>
</tr>
<tr>
<td>Finished goods inventories</td>
<td>Quick changeovers</td>
</tr>
<tr>
<td>Economical buy quantities</td>
<td>Short lead times</td>
</tr>
<tr>
<td>Large shipment sizes</td>
<td>Flexible processing</td>
</tr>
<tr>
<td>Batch order processing</td>
<td>Premium transportation</td>
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<tr>
<td></td>
<td>Single order processing</td>
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</table>
## Environments Best Suited for Efficient and Responsive Supply Chains

<table>
<thead>
<tr>
<th>Factor</th>
<th>Efficient Supply Chains</th>
<th>Responsive Supply Chains</th>
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<tbody>
<tr>
<td>Demand</td>
<td>Predictable; low forecast errors</td>
<td>Unpredictable; high forecast errors</td>
</tr>
<tr>
<td>Competitive priorities</td>
<td>Low cost; consistent quality; on-time delivery</td>
<td>Development speed; fast delivery times; fast delivery times; customization; volume flexibility; high-performance design quality</td>
</tr>
<tr>
<td>New-product introduction</td>
<td>Infrequent</td>
<td>Frequent</td>
</tr>
<tr>
<td>Contribution margins</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Product variety</td>
<td>Low</td>
<td>High</td>
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<tr>
<td>Operations strategy</td>
<td>Make-to-stock or standardized services; emphasize high volume, standardized products, or services</td>
<td>Assemble-to-order, make-to-order, or customized services; emphasize product or service variety</td>
</tr>
<tr>
<td>Capacity cushion</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Inventory investment</td>
<td>Low; enable high inventory turns</td>
<td>As needed to enable fast delivery time</td>
</tr>
<tr>
<td>Lead time</td>
<td>Shorten, but do not increase costs</td>
<td>Shorten aggressively</td>
</tr>
<tr>
<td>Supplier selection</td>
<td>Emphasize low prices; consistent quality; on-time delivery</td>
<td>Emphasize fast delivery time; customization; volume flexibility; high-performance design quality</td>
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Seven Principles of Supply Chain Management

- Segment customers based on service needs
- Listen to signals of market demand and plan accordingly
- Develop a supply-chain-wide technology strategy
- Customize the logistics network
- Differentiate product closer to the customer
- Source strategically
- Adopt appropriate performance measures
Measuring Strategy Performance

- Cash flow
- Savings
- ROI