Strategy, Manufacturing, and Logistics

Focus

To lower costs of value creation
Add value by better serving customer needs

Manufacturing and Materials Management - Strategic Objectives -

- Lower costs.
- Increase product quality.
  - Total Quality Management.
    - Increases productivity.
    - Lowers rework and scrap costs.
    - Lowers warranty costs.
- Accommodate demands for local responsiveness.
- Respond quickly to shifts in customer demand.

Total Quality Management (TQM)

- The leaders: W. Edwards Deming, Joseph Juran, and A.V. Feigenbaum

We have learned to live in a world of mistakes and defective products as if they were necessary to life. It is time to adopt a new philosophy in America.”

W. Edwards Deming
The relationship between quality and cost

Global Manufacturing Activities
- Location and scale
- Choice of process
- Control of the system
- Degree of vertical integration relative to outsourcing
- Coordination of R&D

Make or buy decisions
- Should a firm make or buy the component parts that go into their final product?
- Advantages of making own components:
  - Lower costs if most efficient producer
  - Facilitating specialized investments
  - Proprietary product technology protection
  - Improved scheduling
Risks in Global Sourcing
- loss of critical skills or developing the wrong skills
- loss of cross-functional skills
- loss of control over supplier
- need to compete for supplies
- maintain high inventory levels
- length of supply line
- costs (freight, insurance, duties, brokerage fees)

Benefits of Global Sourcing
- choice among suppliers
- avoid their business risks
- no additional investments
- no need to learn about a new business
- greater flexibility
- lower price from foreign sources
- suppliers worldwide reputation & quality
- supplier is a global firm

Advantages of Make
- control over costs
- control over quality
- control over delivery
- not competing for supply
- develop new expertise
Disadvantages of Make

- increased investment
- need for expertise
- need for management
- may be inefficient
- overspecialization

Where to manufacture?

Country-related Factors

- Resource availability, infrastructure, costs
- Labor costs, unions, productivity
- Country-of-origin effects
- National Culture
- Political risk
- Government FDI policies
Country Factors

- Political economy.
- Culture.
- Relative factor costs.
- Global concentrations of activity.
  - Skilled labor pools.
  - Supporting industries.
- Formal and informal trade barriers.
- Transportation costs.
- Rules regarding FDI.
- Exchange rate movements.

Product-related Factors

- Value-to-weight ratio affects transportation costs
- Production technology - efficiency
- Is customer feedback important?
- Does product serve universal needs?

Centralized location

- Factor costs have substantial impact
- Low trade barriers
- Externalities favor certain location
- Stable exchange rates
- High fixed costs, high minimum efficient scale relative to global demand or flexible manufacturing technology
- Product’s value-to-weight ratio is high
- Product serves universal needs
Decentralized location

- Factor costs do not have substantial impact
- High trade barriers
- Location externalities not important
- Exchange rates volatile
- Low fixed costs, low minimum efficient scale
- Flexible manufacturing technology unavailable
- Product’s value-to-weight ratio is low
- Significant differences in consumer tastes and preferences exist between nations.

Location strategy and manufacturing

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<th>Country Factors</th>
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<td>Value-to-weight ratio</td>
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<td>Service universal needs</td>
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Strategic Role of Foreign Factories

- Initially, established where labor costs low.
- Later, important centers for design and final assembly.
- Upward migration caused by:
  - Pressure to improve cost structure.
  - Pressure to customize product to meet customer demand.
  - Increasing abundance of advanced factors of production.
Technological Factors

- Fixed costs.
- Minimum efficient scale.
- Flexible manufacturing (Lean Production).
  - Reduce setup times.
  - Increase machine utilization.
  - Improve quality control.
- Flexible machine cells.

Manufacturing location

- Fixed costs are substantial
- Minimum efficient scale is high
- Flexible manufacturing technologies available
- Fixed costs are low
- Minimum efficient scale is low
- Flexible manufacturing technologies unavailable

Trade barriers and transportation costs remain major impediments

A Typical Unit Cost Curve

Figure 16.2

Unit Costs

Minimum Efficient Scale

Volume
Organizational Factors

- Business strategy
- Organizational structure
- Inventory management policies
- Impact of distance and time

Global Manufacturing Configurations

- Home country production with exporting
- Autonomous regional plants
- Combination of regional and global focus
- Coordinated global focus
- Centers of excellence

International Logistics

- Materials management- all activities that move materials to a mfg. facility, through the mfg. process, and to the users finally
- Intl. logistics complicated by
  - distance (number of modes)
  - culture and customs
  - exchange rates
  - time
  - regulations (customs, tariffs etc.)
### Coordinating a Global Manufacturing System

**Materials management (includes logistics):**
- Activities necessary to get materials from suppliers to manufacturer, to distribution system, to end user.
- Achieve lowest possible cost that customer’s needs.

**Power of ‘Just-in-Time’:**
- Economize on inventory holding costs.
- Drawback: no buffer inventory.

### Role of Information Technology and the Internet

- **Track component parts to assembly plant.**
  - Optimize production scheduling.
    - Ability to accelerate (or slow) production.
- **Electronic data interchange coordinates flow through into/through manufacturing to customers.**
  - Suppliers, shippers, and purchasing firms can communicate with each other without delay.
    - Flexibility and responsiveness.
  - Paperwork is decreased.