

# International Business & Multinational Operation

MGMT2101

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Program: 4765 International Studies / Law  
 Plan: IBUSA14765 International Business Major

## Session: Teaching Period One

Course		Title	Attempted	Passed	Mark	Grade
LAWS	1160	Administrative Law	6.00	6.00	73	CR
LAWS	2371	Resolving Civil Disputes	6.00	6.00	80	DN
MGMT	2101	Int Bus & Multinat Operations	6.00	6.00	93	HD

## WEEK 8: GLOBAL MANUFACTURING

Chapter 17 + moodle

Benetton

### CHAPTER 17: GLOBAL PRODUCTION, OUTSOURCING, AND LOGISTICS

#### Learning objectives

- Explain why production + logistics decisions r of central importance to MNC
- Explain how country differences, production technology + product features all affect choice of **where** to locate production activities
- Recognize how role of foreign subsidiaries in production can be enhanced over time as knowledge ↑
- Identify factors that influence a firm's decision of whether to source supplies from within the company or from foreign suppliers
- Describe what is required to efficiency coordinate a globally dispersed production system

#### Summary

- Efficient production + logistics function ↑ competitive position by ↓ costs of value creation
- by performing value creation activities in way that customer service is enhanced and value added is maximized
- 3 central issues to International production and logistics
  - 1. Where to produce
  - 2. What to make and what to buy
  - 3. How to coordinate a globally dispersed manufacturing and supply system

#### CASE STUDY: MAKING THE AMAZON KINDLE

Amazon.com's revolutionary e-book reader – the kindle

- Q of where do we make it?
- Guiding the decision was that it had to have magic combination of
  - Low prices
  - High functionality
  - High reliability

- Design elegance
- Competition with
  - Sony's readers
  - Barnes and Noble with its Nook
  - Apple iPad
- Amazon's goal was to aggressively reduce the price of the Kindle so it has an edge over competitors – can just leave them around the house – like a digital library
- Designed in Cali, key R&D
  - Most importantly, the ink was made by E Ink, company in Cambridge, Massachusetts
- Outsourced display manufacture to Taiwan
  - Who had substantial experience in manufacturing LCDs in efficient + reliable
- Wireless card, outsourced to Novatel Wireless
  - South Korean enterprise, considerable expertise in wireless chipsets
  - \$13 chip designed in San Diego
- \$8.64 microprocessor designed by Texas Freescale Semiconductor
  - Outsources its chip making to foundries in Taiwan/China
- Battery outsourced to China
- Of \$185 total value
  - \$40/50 of it is accounted by activates in US by E Ink, rest outsourced

## Introduction

As trade barriers ↓ + global markets ↑ many firms face set of interrelated issues

- (1) where in world should production activities be located
  - Concentrated or dispersed
- (2) what should be long-term strategic role of foreign **production sites**
- (3) should firm own foreign production activities or is it better to outsource those activities to independent vendors
- (4) how should globally dispersed supply chain be managed + what is role of internet info tech in mgmt of global logistics
  - JIT, TQM
- (5) should firm manage global logistics itself or outsource

## The BASICS: Strategy, Production and Logistics

- Production is the 'activities involved in creating a product'
- Both the service and manufacturing, since one can produce a service of physical product
- Applies to services too eg. US firms outsource production of certain services to developing nations – customer care services to India, where English widely spoken + cheap
- Production and logistics have important strategic objectives
  - (1) lower costs

- (2) increase product quality by eliminating defective products from the supply chain + manufacturing process
  - Quality means reliability
  - By ↑ quality control also reduces costs of value creation
- (3) must accommodate demands for local responsiveness
- (4) must respond quickly to shifts in consumer demand

## TQM

- Was used by Jap companies during 1980s and US ones in early 1990s
- Quality is the **first priority** of every employee
- Efforts focused on the **prevention** of errors (not detection and correction)
  - Six Sigma (3.4 defects ppm)
- Company wide **commitment** (every person)
- W Edwards Deming developed the concept
  - Identified steps
  - Mgmt should embrace philosophy that mistakes, defects, poor qual materials should be eliminated
  - ↑ supervision
  - Foster environment where u can report problems or recommend improves

To achieve superior quality (as per generations)

1. Conformance to customer specifications
2. Do it right first time/every time
3. Doing the right things
4. Lessen time taken/costs in bringing new products to customer

Eliminating costs of non-conformance

- Costs of not getting things right first time
- Can amount to 25% of turnover
- By ridding it ↑ profitability + competitiveness

Eliminating unnecessary activities

- Correcting their own mistakes
- Rectifying other ppl's errors
- Engaging in unnecessary steps

## Six Sigma

- Six Sigma methodology is descendent of total quality management (TQM)
- Six Sigma is modern successor to TQM
  - Statistically based philosophy that aims to reduce defects + ↑ productivity, eliminate waste, cut costs
- Adopted by several major corps such as Motorola, General Electric and Allied Signal



- Aim is to reach six sigma, where production process is 99.99966 percent accurate, creating just 3.4 defects per million units
- In reality hard to achieve, but it has importance symbolically
- Forces company to pay attention to quality
- Eg. EU does not allow firms to enter market unless manufacturing processes are certified under quality standard known as ISO 9000
  - Altho bureaucratic + costly, it refocuses attention on quality

### Systematic Causes of Decline of Competitiveness

- Treat employees with disrespect
- Leave out ideas and opinions in decision making
- Communication practices withholding information or presenting only one point of view
- Pay system based on hours worked
- Promotion/job security emphasising seniority/experience
- Work content and job design based solely on the mechanical aspect of the employees capacity and not in emotional dimensions

### For World Class manufacturing

- Flexibility for product change
- Flexibility for volume change
- Effects on quality and reliability
- Impact on spirit, morale, attitude, pride and employee relations
- Impact on ability to compete

## (1) WHERE TO PRODUCE?

To choose optimal production location

### Country factors

- Influence of factor costs
- Political economy + national culture
- Location externalities
  - Eg. Taiwan superconductors
- Trade barriers
- Location economies
  - Creation of global web of value creation activities
- Movements in exchange rate

### Technological factors

- Fixed costs of setting up facilities (investments)
  - Setting up a production plant costs

- Low level of fixed costs means can be economical to perform a particular activity in several locations at once
- Minimum efficient scale of production (volume)
  - Diminishing returns
  - Must hit a certain level of output, to maximize all major plant-level scale economies
- Availability of flexible manufacturing tech that allow for mass customization
  - Lean production – range of manufacturing tech designed to (quick and efficient)
    - (1) reduce setup times for complex equipment
    - (2) ↑ utilization of individual machines through better scheduling
    - (3) improve quality control at all stages of manufacturing process
      - In contrast to producing ONE standardized product in large volumes
    - LEADS TO MORE VARIETY of products at a unit cost
  - Mass customization – ability of companies to use flexible manufacturing tech to reconcile 2 goals – low cost + product customization
    - Eg. Toyota most efficient auto company in world
    - Ohno saw issues with mass production
      - 1. Created massive inventories that stored in large warehouse ↑ expense
      - 2. If initial machine settings were wrong, long production runs resulted in ↑ defects
      - 3. Cannot accommodate consumer preferences for diversity
    - Strategy – reduce setup time, using system of levers + pulleys
  - Small production ↓ warehouse costs

### **Flexible machine cells**

- Flexible machine cells to perform a variety of operations (local responsiveness)
  - Grouping of various types of machinery
  - Common materials handler + centralized cell controller (computer)
  - Each cell contains 4-6 machines capable of performing a variety of operations
  - The typical cell is dedicated to production of a family of parts/products
  - Settings of machine are computer controlled, which allows each cell to switch quickly btwn production of diff parts/products
- Improved capacity utilization
  - Reduction in setup times + computer-controlled coordination of production flow btwn machines, which eliminates bottlenecks
- Tight coordination btwn machines reduces work-in-progress inventory
- Waste is reduced due to ability of computers to identify ways to transform inputs into outputs efficiently w/ material
- While freestanding machines might be in use 50% of time, same machines when grouped into cell can be used 80% + and produce same end product with half the waste
- ↑ efficiency ↓ cost
- Eg.

- Ford produce multiple models from same line, switch production to another – take \$2bn out of its cost structure

### Ultimately

- Technology > consumer tastes and pref
  - Fixed costs ↑
  - Minimum efficient scale of production ↑
  - Flexible manufacturing tech avail
- Concentrate production at few choice locations
  - Flexible tech allow firm to customize products to national diffs at a single facility
- Vice versa for other hand
  - Manufacture in each major market, if local responsiveness offsets cost disadvantages of not concentrating manufacturing
  - But flexible manufacturing tech (FMT) making this less attractive
- Tech is making it feasible for firms to concentrate at optimal locations

### Product factors

These also affect location decisions

1. Value to weight ratio of the product
  - HIGH
    - High for electronic components, pharmaceuticals
    - Expensive and do not weigh much → low transportation
    - Thus produce in optimal location + serve world market from there
  - LOW
    - Refined sugar, bulk chemicals, paint, petroleum
    - Relatively inexpensive + weight a lot
    - Make products in multiple locations close to markets
2. Does product serve universal needs
  - a. Industrial products – electronics, steel, chemicals
  - b. Modern consumer products – calculators, computers, xBox
  - c. Less need for local responsiveness → concentrated production for investment & transportation benefits

### Manufacturing Location Strategy

#### 2 BASIC STRATEGIES FOR LOCATING PRODUCTION FACILITIES

- Location strategy either
- (1) centralized (concentrate)
- (2) decentralize manufacturing in various regional + national locations close to markets
  - Choice should be made in light of country, tech, product factors. All locations have trade-offs

- Foreign factories can improve their capabilities over time, immense strategic benefit to the firm
- Managers need to view foreign factories as potential centres of growth + encourage attempts by local managers to upgrade factory capabilities

#### **CONCENTRATE ON FEW LOCATIONS WHEN:**

[sample omitted]

#### **Hidden costs of foreign locations**

- Employee turnover
- Shoddy workmanship
- Poor product quality
- Lower productivity
- Microsoft in Hyderabad, India
  - 1. Wage rate of software programmers 1/3<sup>rd</sup> of US
  - 2. Higher education systems w/ lots of majors
  - 3. High concentration of info tech companies and workers
  - 4. Can send US employees back home
- Some leave, bcoz want higher pay, despite incentives
- High employee turnover = ↓ low productivity
- 40% core team left in past 12 months
- Same applies in China – productivity + workmanship

## **(2) STRATEGIC ROLE OF A FOREIGN PRODUCTION SITE**

[sample omitted]

## **(3) MAKE OR BUY DECISIONS**

Whether components manufactured in house or outsourced to independent suppliers

#### **IN HOUSE (vertical integration)**

- Works if firm efficient, low-cost producer (more than others)
- Lower costs (if firm is efficient producer + middle margin save)
- Investment in specialization
- Protect proprietary technology
- Invest in specialized assets – asset whose value is contingent upon a relationship persisting
  - Mutual dependency on other firm
  - Eg. Ford to contract out uniquely designed fuel injection system
  - Where investment required, better to make it itself
- Integrate production scheduling (forward and backward)
  - Improve scheduling btwn adjacent stages in value chain

- Makes planning, coordination easier
- Accumulate dynamic capabilities
  - Learn through experience, skills are dynamic, more value over time
  - Eg. Steve Jobs gave industrial designers major say in product development. This instead of hiring out to independent design firms. Not have acquired capabilities that enabled it to design elegant products like iPhone + iPad, these would have resided in design firm. Missed competitive advantage
  - Eg. Boeing fked up outsourcing its production of wings for 787 aircraft, missing out on accumulating capabilities. Outsource company gets it

#### OUTSOURCED (from independent suppliers)

- Facilitates strategic flexibility
  - Flexibility in sourcing (global sourcing, change source to lowest in world, political revolution, war)
- Helps firm avoid organisation problems associated with vertical integration
- Lowers firm's cost structure
  - Don't need top management for sub-units, hard for Int Business
  - Vertical integrate firms may find internal suppliers wont reduce prices, as don't have to compete with orders
  - Transferring to subunits – tax regimes e/r movements
- Frees time for developmental tasks
- Offsets
  - Outsourcing used as part of 'offset' policy – designed to win more orders for the firm from a country by pushing some sub-contracting work to that country
  - Eg. Before Air India places a large order with Boeing, Indian gov might ask Boeing to push some subcontracting work toward Indian manufacturers
- Examples of outsourcing companies
  - Toyota produces < 30% of value of cars, 70% accounted for by component parts and complex subassemblies from independent suppliers
  - Nike has no involvement in manufacturing, all production outsourced

#### TRADE-OFFS

Int business should be wary of vertical integration into component part manufacturer

- Can avoid organizational problems of vertical integration by entering **long-term strategic alliances** with essential suppliers
  - Reduces internal mgmt problems
  - IR, long term production commitments, mandatory salary hikes
  - HOWEVER alliances have drawbacks. Limited by commitments to partner
- E. Kodak + Canon,
- Microsoft and Flextronics, who built the Xbox
- Boeing with Japanese companies to build its jet aircraft

- Build trust + long term supplier relationship
  - JIT
  - Computer aided design (CAD)
  - Computer aided manufacturing (CAM)
  - All rely on close links btwn firms and suppliers

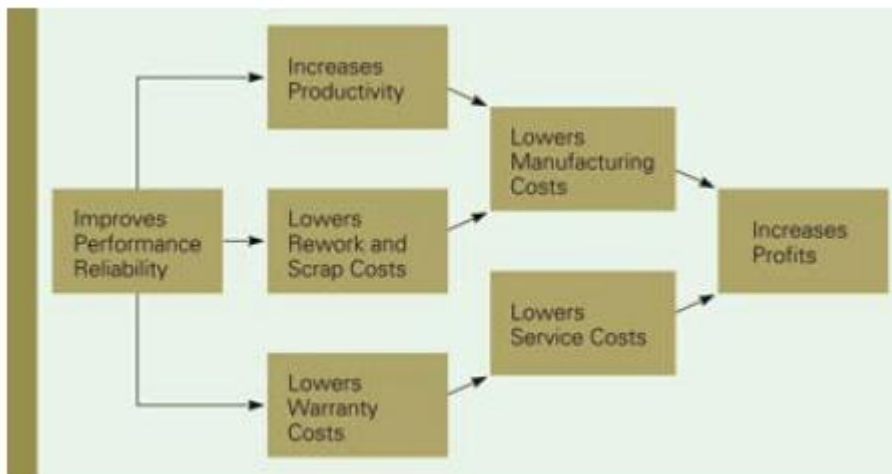
Mixing both

- Computer code written in US, outsourced to testers in India

## (4) MANAGING A GLOBAL SUPPLY CHAIN: OPERATIONS AND LOGISTICS

Logistics functions manages global supply chain

- Production and logistics have important strategic objectives
  - (1) lower costs
  - (2) increase product quality by eliminating defective products from the supply chain + manufacturing process
    - Quality means reliability
    - By ↑ quality control also reduces costs of value creation



Logistics

- Logistics encompasses all the activities that move materials to a production facility, through the production process, and out through a distribution system to the end user
- Logistics function is complicated in an Int business by distance, time, exchange rates, custom barriers and other things

### Just in Time Systems

- Pioneered by Jap firms during country's eco transformation during 1960/70s

REDUCE COST

- reduce working capital it needs to finance inventory, free capital for elsewhere
- Just-in-time systems generate major cost savings from reducing warehousing and inventory holding costs and from reducing the need to write off excess inventory

#### IMPROVE PRODUCT QUALITY

- Parts enter manufacturing immediately → spot defective inputs right away. Trace back to supplier
  - Help firm spot defective parts + remove them from manufacturing process quickly to ↑ product quality

#### DRAWBACKS

- Leaves firm without buffer stock of inventory
  - Occurred during 9/11 + SARS April 2003 outbreak in China disrupted global supply chains
  - Late 2004, US several shipping ports clogged and disrupted supply chain of enterprises
- TO RESOLVE → get lots of suppliers

### **(5) INFORMATION TECHNOLOGY AND THE INTERNET**

[sample omitted]

## II. LEVERAGE, LINKAGE AND LEARNING

However, despite such material disadvantages such as scarcity of resources and international experience, it is argued that under the LLL strategy Samsung was able to succeed. In contrast to transaction cost economies (OLI) the driving paradigm of LLL is to use its position as a latecomer to capture its correlative advantages.

1. Linkage as the initial step that generates opportunities for the latecomer
2. Resource leverage as the means by which to exploit the linkages
3. Learning from linking and leverage, resulting in innovation and dynamic capabilities (Matthews, 2006)

Under this over-arching strategy Samsung gathered resources and internalised them into dynamic capabilities to compete in the world market.

### Linkage

Linkage refers to when a firm acquires resources externally – that is outside of itself (Matthews, 2006). This involves the firm making connections through ‘strategic networking’ to enhance the firm’s resource base in an era of globalisation (Matthews, 2002). Samsung employed linkage to great effect, seen in the company’s earliest stage when founder of Samsung Lee Byung Chull relied on his time of education in Japan to establish informal contacts for Samsung (Kim, 1997). This naturally led to a closer relationship with Japanese electronics firms and the establishment of joint ventures with firms such as Sanyo and NEC. As Matthews (2006) puts it, these joint ventures acted as ‘vehicles’ for the risk of entering an otherwise difficult market (Matthews, 2006).

Samsung adopted a strategy of being a ‘fast follower’ and was able to capitalise on the benefits of imitation and followership. Samsung embarked on original equipment manufacturer (OEM) contracting for these companies (Yu, 2006) who in return for low-cost production gave Samsung support and knowledge in the market. For example the the 1969 Sanyo joint venture agreement, paved the way for Samsung’s own entry into the TV market, as Low points out ‘Sanyo offered licences, technology assistance, production equipment, raw materials and know-how to Samsung’. This assistance allowed Samsung to achieve a high level of vertical integration in the production of TVs in a remarkably short time (Kim 1997).

Consequently, Samsung was able to use its position as a latecomer as an advantage establishing joint ventures and strategic alliances so that it could insert itself into the global value chain at low initial costs. These initial linkages in turn led to leverage possibilities.