

# Supply Chain Management: Strategic Alliances

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# Outline of this lecture I

- We first provide a general framework for analyzing the pros and cons of Strategic Alliances
- Then we focus on some most important supply-chain related partnerships
  - Third-part logistics (3PL)
  - Retailer-supplier partnership (RSP)
  - Procurement and outsourcing

# Section 1

## Introduction

# Strategic Alliances: long-term partnership I

- There are four basic ways for a firm to ensure that a logistics-related business function is completed:
  - Internal activities: Do it by yourself if this is the core strength of your own firm.
  - Acquisitions: Acquire firm control other firms who has core strength on the products.
  - Arm's-length transactions: Short-term outsourcing .
  - Strategic Alliances: long-term partnership.

# A general framework for selection of the best Strategic Alliances by Jordan Lewis I

We should consider the following issues before we can even decide to form a partnership. Trade-off analysis must be conducted! The key point is **core complementary**.

- Adding value to products: Such as improve time-to-market, distribution times, repair times. Particularly complementary products can add value to both firms.
- Improving market access: Better advertising and increased access to new market channels: such as complementary consumer product manufacturers can cooperate to address the need of major retailers, increasing sales for everyone.

# A general framework for selection of the best Strategic Alliances by Jordan Lewis II

- Strengthening operations: Improve operations by lowering system costs and cycle time, and utilizing resources and facilities more effectively and efficiently. Such as, firms with complementary seasonal product can effectively use warehouses and trucks year-around.
- Adding technological strength: Technology sharing adds skills to both firms.
- Enhancing strategic growth: Pool expertise and resources to gain entry to new opportunities.
- Enhancing organizational skills: opportunities for new organizational culture.
- Building financial strength: Costs and risks can be shared or reduced.

# An example of strategic partnerships I

- IBM entered the PC market in 1981 without the infrastructure in place
- Outsourced microprocessor to Intel, and operating system to Microsoft.
- Release its first PC to market within 15 months and gain 40% market share within three years.
- However, by 1995, IBM's market share fallen to 8%, behind its competitors.
- The reason: Other competitors also have access to same technology; and Customers no longer needs proprietary products.

## Section 2

# Third-party logistics (3PL)

# Third-party logistics (3PL) I

- 3PL is simply the use of outside firms to perform materials management and logistics functions.
- Long term commitments and multiple functions—true strategic partnership compared with traditional logistics supplier relationships: they were *transaction based* and *single-function specific*.
- For example: Ryder Dedicated Logistics has a five-year agreement to design, manage and operate all of Whirlpool Co.'s inbound logistics.
- 3PL providers come in all sizes and shapes, from small ones to huge ones. Most of them can manage many stages of the SC.
- An interesting phenomenon is the prevalence of 3PL among large companies.

# Pros and cons of 3PL I

The framework discussed earlier can be applied here to analyze the pros and cons of 3PL.

- Advantages:
  - Focus on core strengths:
    - The partnership between Ryder Dedicated Logistics and General Motor's Saturn division
    - Saturn focuses on automobile manufacturing and Ryder manages most of Saturn's other logistics considerations.
    - Ryder deals with vendors, delivers parts to the Saturn factory in Spring Hill, Tennessee, and delivers finished vehicles to the dealers.
    - Saturn orders parts using electronic data interchange(EDI) and sends the same information to Ryder.

# Pros and cons of 3PL II

- Ryder makes all the necessary pickups from 300 different suppliers in US, Canada and Mexico, using special decision-support software to effectively plan routes to minimize transportation costs.
- Provides technological flexibility: particularly information technology and equipment
- Provides flexibility in
  - geography
  - workforce size
  - additional services
  - resource flexibility
- Disadvantages
  - Loss of control
  - Sharing of confidential information

# 3PL issues and requirements I

- A third-party logistics contract is a major and complex business decision. There are many considerations that are critical in deciding whether an agreement should be entered into with a particular 3PL provider.
  - Know your own cost: Cost is the first factor in selecting a 3PL provider.
  - Customer orientation of 3PL: flexibility and reliability are the next two factors to be considered in selecting a 3PL provider.
  - Specialization of 3PL: Choose the one whose roots lie in the required area in question. Such as Fedex and UPS have expertise in the timely handling of small packages.
  - Asset-owning versus non-asset-owning 3PL: this is the choice of big or small companies, which have both obvious pros and cons.

## 3PL implementation issues I

- Devote enough time to start-up considerations
- Effective communication is critical
- Respect of confidentiality of data
- Specific performance measures must be agreed upon
- Specific criteria regarding to subcontractors should be discussed
- Arbitration issues should be considered before entering into a contract
- Escape clauses should be negotiated into the contract
- Methods of ensuring that performance goals are being met should be discussed.

## Section 3

# Retailer-supplier partnership (RSP)

# Retailer-supplier partnership (RSP) I

<b>Criteria Types</b>	<b>Decision Maker</b>	<b>Inventory Ownership</b>	<b>New Skills Employed by vendors</b>
Quick Response	Retailer	Retailer	Forecasting Skills
Continuous Replenishment	Contractually Agreed to Levels	Either Party	Forecasting & Inventory Control
Advanced Continuous Replenishment	Contractually agreed to & Continuously Improved Levels	Either Party	Forecasting & Inventory Control
VMI	Vendor	Either Party	Retail Management

- Types of RSP
  - Quick Response
  - Continuous Replenishment
  - Continuous Replenishment

# Quick Response I

- Vendors receive POS data from retailers, and use this information to synchronize production and inventory activities at the supplier.
- The retailer still prepares individual orders, but the POS data is used by the supplier to improve forecasting and scheduling.
- Example: Milliken and Company: The lead time from order receipt at Milliken's textile plants to final clothing receipt at several of the department stores involved was reduced from eighteen weeks down to three weeks.

# Continuous Replenishment I

- Continuous Replenishment: Vendors receive POS data and use it to prepare shipments at previously agreed upon intervals to maintain agreed to levels of inventory.
  - Wal-Mart, Kmart
- Advanced Continuous Replenishment: Suppliers may gradually decrease inventory levels at the retailer's store or distribution center as long as service levels are met. Inventory levels are thus continuously improved in a structured way.
  - Kmart

# Vendor Managed Inventory (VMI) or Vendor Managed Replenishment (VMI) I

- The supplier decides on the appropriate inventory levels of each of the products (within previously agreed-up bounds) and appropriate inventory policies to maintain these levels.
- VMI Projects at Dillard Department Stores, J.C. Penney, and Wal-Mart have shown sales increases of 20 to 25 percent, and 30 percent inventory turnover improvements.

# Requirements for Effective RSP I

- Advanced information systems—often expensive
- Top management commitment
  - Information must be shared
  - Power and responsibility within an organization might change (for example, contact with customers switches from sales and marketing to logistics)
- Mutual trust
  - Information sharing
  - Management of the entire supply chain
  - Initial loss of revenues

# Important RSP Issues I

- Inventory ownership:
  - Retailer owns inventory
  - Supplier owns the goods until they are sold (consignment)
  - Why would a firm do this?—global optimization
- Performance measures: Fill rate, inventory level, inventory turns
- Confidentiality
- Communication and cooperation
  - When First Brands started partnering with Kmart, Kmart often claimed that its supplier was not living up to its agreement to keep two weeks of inventory at all times. It turned out that this was due to the fact that the two companies employed different forecasting methods.

# Steps in RSP Implementation I

- 1 Contractual negotiations
  - Ownership
  - Credit terms
  - Ordering decisions
  - Performance measures
- 2 Develop or integrate information systems
- 3 Develop effective forecasting techniques
- 4 Develop a tactical decision support tool to assist in coordinating inventory management and transportation policies

# Examples of RSP Successes and Failures I

- **Western Publishing-Golden Books:**

- Western Publishing is using VMI for its Golden Books line of children's books at several retailers.
- POS data automatically triggers re-orders when inventory falls below a reorder point.
- This inventory is delivered either to a distribution center, or in many cases, directly to the store.
- Ownership of the books shifts to the retailer once deliveries have been made.
- In the case of Toys R Us, the company has even managed the entire book section for the retailer, including inventory from suppliers other than Western Publishing.
- Extra sales, increased costs to Western due to additional inventory management duties.
- But overall the net benefit is positive.

# Examples of RSP Successes and Failures II

- **VF Corporation's Market Response System:**
  - The VF Corporation, which has many well known brand names (including Wrangler, Lee, Girbaud, and many others), began its VMI program in 1989.
  - Currently, about 40 percent of its production is handled using some type of automatic replenishment scheme.
  - This is particularly notable because the program encompasses 350 different retailers, 40,000 store locations, and more than 15 million replenishment levels.
  - Each division uses automatic software to manage the huge flux of data, and special techniques developed at VC to cluster the data so that they are more manageable.
  - VF's program is considered one of the most successful in the apparel industry.
- **Spartan Stores**

# Examples of RSP Successes and Failures III

- Spartan Stores, a grocery chain, shut down its VMI effort about one year after its inception.
- One problem was that buyers were not spending any less time on reorders than they did before.
- On the buyers' side: they did not trust the suppliers enough to be able to stop carefully monitoring the inventories and deliveries of the VMI items, and intervening at the slightest hint of trouble.
- On the suppliers' side:
  - ① they did not do much to allay these fears.
  - ② The problems were not with the suppliers' forecasts; instead, they were due to the suppliers' inability to deal with promotions, which are a key part of the grocery business.
  - ③ Since they were unable to appropriately account for promotions, delivery levels were often unacceptably low during these periods of peak demand.

## Section 4

# Procurement and Outsourcing

# Procurement and Outsourcing I

- In the 90s, strategic outsourcing is the main focus of many industrial manufacturers.
- It is an easy way to increase profits by reducing costs.
- For example, Nike, Cisco, Apple outsource most of their manufacturing
- However, the landscape has changed for Nike, Cisco, Apple who rely heavily on outsourcing. All of these companies reported profit shortfalls around 2000.
  - 2001 ? Nike reported unexpected profit shortfalls due to inventory problems
  - 2000 ? Cisco had to write down billions in obsolete inventory
  - 1999 ? Apple was unable to meet customer demand for new products
- What has caused these changes?

# Benefits and Risks of outsourcing I

- Pros:

- Economies of scale (EOS): Orders are aggregated from many different buyers and allow suppliers to take advantage of EOS and hence reduce manufacturing costs.
- Risk pooling: demand uncertainties are transferred to the suppliers who can aggregate the demand from different buyers and thus reduce uncertainty
- Reduced capital investment:
- Focus on core competencies:
- Increased flexibility:

- Cons:

- Loss of competitive knowledge (such as the IMB example):
- Conflicting objectives: Flexibility vs long-term, stable commitments, etc

# A Framework for Outsourcing (Fine and Whitney): buy/make decision I

The key point is core strength. How to identify the core? The framework is based on classifying the reasons for outsourcing and the product architecture:

- Step 1. classifying reasons for outsourcing
  - Dependency on capacity: The firm has the knowledge required to produce the component but for various reasons decides to outsource
  - Dependency on knowledge: The firm does not have the knowledge required to produce the component and outsources to have access to these capabilities.
  - An example: Toyota
    - Toyota has both the knowledge and the capacity to produce its engines and indeed 100% of the engines are produced internally.

# A Framework for Outsourcing (Fine and Whitney): buy/make decision II

- For transmissions, the company has the knowledge and indeed designs all the components but depends on its suppliers' capacities, since 70% of the components are outsourced.
- Electronic systems are designed and produced by Toyota's suppliers—the firm has a dependency on both capacity and knowledge.
- Step 2. Classifying the product architecture:
  - Integral products ?— components are tightly related, such as airplanes
    - Designed as a system
    - Not off-the-shelf components
    - Evaluated based on system performance
  - Modular products —?independent components, such as computers
    - Components are independent of each other

# A Framework for Outsourcing (Fine and Whitney): buy/make decision III

- Components are interchangeable
- Standard interfaces are used
- A component can be designed or updated with little or no regard to other components
- Customer preference determines the product configuration.

# A Framework for Outsourcing (Fine and Whitney): buy/make decision IV

- Step 3. Apply the framework in the table below

Product	Dependency on Knowledge and capacity	Independent for knowledge, Dependent for capacity	Independent for knowledge and capacity
Modular	outsourcing is risk	outsourcing is an opportunity	opportunity to reduce cost through outsourcing
Integral	outsourcing is very risk	outsourcing is an option	keep production internal

# A Framework for Outsourcing (Fine and Whitney): buy/make decision V

- For modular products: capturing knowledge is important, while having the production capacity in-house is less important. Thus
  - if the firm has the knowledge, outsourcing the manufacturing process is an opportunity to reduce cost.
  - if the firm has neither knowledge nor capacity, outsourcing may be risky because the knowledge developed by the supplier may be transferred to your competitors.
- For integral products: capturing both knowledge and capacity is important as long as it is possible to have both. Thus
  - if the firm has both knowledge and capacity, then in-house is appropriate.
  - if the firm does not have both then you are in the wrong business.

## Section 5

# E-procurement: Internet-procurement

# E-procurement: Internet-procurement I

- In 1990s, the focus is on reducing procurement costs, e-market is a promising format with proposed vales:
  - Serving as intermediary between buyers and suppliers
  - Identifying saving opportunities
  - Increasing the number of suppliers involved in the bidding event
  - Identifying, qualifying, and supporting suppliers
  - Conducting the bidding event.
- This model has a serious challenge in generating revenue for the e-markets themselves. Usually the markets charge a transaction fee by either party, however,
  - Seller resist paying a fee to a company whose main objective is to reduce the purchase price.
  - The revenue model must be flexible enough so that traction fee are charged to the party that is more motivated to secure the engagement.

# E-procurement: Internet-procurement II

- Buyers also resist paying a fee in addition to the purchase price.
- Finally low barriers to entry created a fragmented industry flooded with participants.
- These challenges have motivated a continuous evolution of the e-markets' business model. For example instead of traction fee, some charge licensing fee or subscription fee.

# Types of E-procurement I

- **Value-added independent (public) e-markets:** They are expanding their offering to include inventory management and financial services; supply chain planning. For example, **instill.com** focuses on food service industry and provides an infrastructure that links together operators, including restaurants, distributors, and manufacturers. This e-marketplace provides value to its customers by offering not only procurement services but also forecasting, collaboration, and replenishment tools.
- **Private e-Markets:**
  - Value chain: Dell.com (Dell), eHub (Cisco), IBM, Sun Microsystems and Wal-Mart

# Types of E-procurement II

- These companies use the marketplace to improve supply chain collaboration—Providing suppliers with demand information and production data, instead of using it to force the suppliers to compete on price.
- **Consortia-based e-market:**
  - Similar to public e-markets except that they are established by a number of companies within the same industry
  - Objective of the consortia is
    - Aggregate activities and use the buying power of consortia members
    - Provide suppliers with standard systems that support all buyers and allows suppliers to reduce cost
- **Content based e-market:**
  - Focus on Maintenance, Repair and Operations (MRO) goods and industry-specific products.

# Types of E-procurement III

- These are components that are not part of the finished product or the manufacturing process but are essential for the business. Examples include lighting, office supply, fasteners.
- The focus is on content, which is achieved by integrating catalogs from many industrial suppliers and provide effective tools for searching and comparing suppliers' products.

## Section 6

A framework for selecting an e-market for  
e-procurement

# A framework for selecting an e-market for e-procurement I

The framework starts from identifying different types of goods purchased by the firm, and different risks the firm is willing to take. For different products we should adopt different strategy.

# Step 1. Identifying type of components purchased by the firm I

- Strategic Components:
  - Part of the finished product
  - Not only industry specific, but company specific
  - Typically integral products
  - Examples: PC motherboard and chassis
- Commodity Products
  - Can be purchased from a large number of suppliers
  - Price is determined by market forces
  - Typically modular products
  - Examples: Memory unit in a PC, electricity

## Step 1. Identifying type of components purchased by the firm II

- Indirect Material are often referred to as maintenance, repair, and operations (MRO) and include components that are not part of the finished product or the manufacturing process but are essential for the business.
  - lighting, janitorial supplies, office supplies, fasteners and generators etc.

## Step 2. Identifying the level of Risk the firm is willing to take I

- Inventory risk due to Uncertain Demand
- Price Risk due to Volatile market price
- Shortage Risk due to Component availability.

## Step 3. Choose different strategy for different products while addressing risks I

- Indirect material:
  - risk is low.
  - focus is on using content-based hubs that specialize in unifying catalog from many suppliers.
- Strategic Components:
  - risk is high.
  - focus on collaboration with the suppliers.
  - So private or consortia-based e-marketplace is appropriate.
- Commodity Products
  - high risk
  - focus on price and risk management
  - A portfolio approach for price and risk management in commodity products uses a combination of

## Step 3. Choose different strategy for different products while addressing risks II

- Long Term Contracts: (1) Buyer and supplier commit to certain volume (called the commitment level); (2) Supplier guarantees a level of supply for a committed price.
- Flexible, or Option Contracts: (1) Buyer pre-pay a relatively small fraction of the product price up-front, in return for a commitment from the supplier to satisfy demand up to a certain level (called the option level); (2) The buyer can purchase any amount up to the option level by paying additional price for each unit purchased.
- Spot Purchasing: (1) The buyers look for additional supply in the open market; (2) The firm should use an independent e-market to select a supplier and force competition between suppliers to reduce price.

# The risk trade-off in portfolio contracts I

option level	High ↑	Inventory risk (supplier)	N/A
	Low	Price and short- age risks (buyer) (buyer)	Inventory risk (buyer)
		Low →	High
		Base Commit- ment level	

# How does this portfolio approach address risk? I

- If the demand is much higher than anticipated and the base commitment plus the option level do not provide enough protection, the firm use the spot market for additional supply.
- However this is typically the worst time to buy in the spot market, since prices are high due to shortages.
- Thus, the buyer can select a trade-off level between different risks by selecting the level of the long-term commitment and option level.
- For example, for the same option level, the higher the initial contract commitment, the smaller the price risk but the higher the inventory risk taken by the buyer.
- On the other hand, the smaller the initial contract commitment, the higher the price/shortage risk due to the likelihood of using the spot market.