

Traditional View: Logistics in the Manufacturing Firm

◆ Profit	4%
◆ Logistics Cost	21%
◆ Marketing Cost	27%
◆ Manufacturing Cost	48%

Profit
Logistics Cost
Marketing Cost
Manufacturing Cost

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Supply Chain Management: The Magnitude in the Traditional View

- ◆ Estimated that the grocery industry could save \$30 billion (10% of operating cost) by using effective logistics and supply chain strategies
 - A typical box of cereal spends 104 days from factory to sale
 - A typical car spends 15 days from factory to dealership

- ◆ Laura Ashley turns its inventory 10 times a year, five times faster than 3 years ago

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Supply Chain Management: The True Magnitude

- ◆ Compaq estimates it lost \$.5 billion to \$1 billion in sales in 1995 because laptops were not available when and where needed
- ◆ When the 1 gig processor was introduced by AMD, the price of the 800 mb processor dropped by 30%
- ◆ P&G estimates it saved retail customers \$65 million by collaboration resulting in a better match of supply and demand

Outline

- ◆ What is a Supply Chain?
- ◆ Decision Phases in a Supply Chain
- ◆ Process View of a Supply Chain
- ◆ The Importance of Supply Chain Flows
- ◆ Examples of Supply Chains

What is a Supply Chain?

- ◆ Introduction
- ◆ The objective of a supply chain

What is a Supply Chain?

- ◆ All stages involved, directly or indirectly, in fulfilling a customer request
- ◆ Includes manufacturers, suppliers, transporters, warehouses, retailers, and customers
- ◆ Within each company, the supply chain includes all functions involved in fulfilling a customer request (product development, marketing, operations, distribution, finance, customer service)
- ◆ Examples: Fig. 1.1 Detergent supply chain (Wal-Mart), Dell

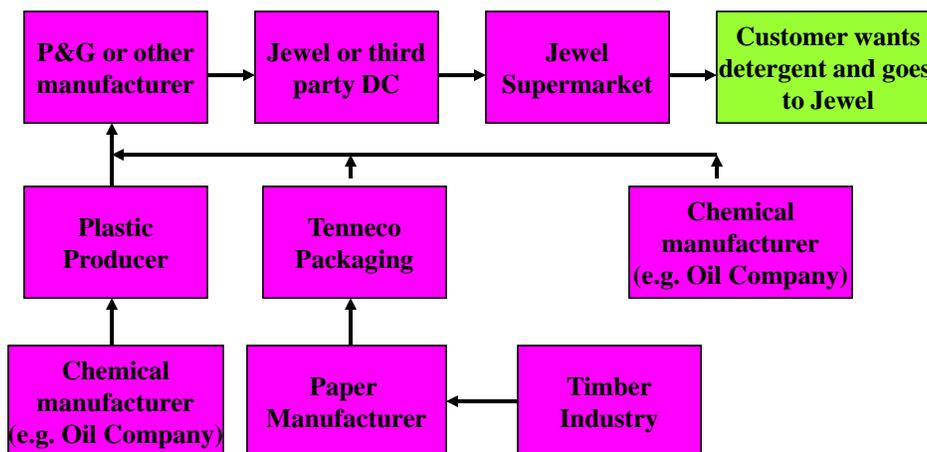
What is a Supply Chain?

- ◆ Customer is an integral part of the supply chain
- ◆ Includes movement of products from suppliers to manufacturers to distributors, but also includes movement of information, funds, and products in both directions
- ◆ Probably more accurate to use the term “supply network” or “supply web”
- ◆ Typical supply chain stages: customers, retailers, distributors, manufacturers, suppliers (Fig. 1.2)
- ◆ All stages may not be present in all supply chains (e.g., no retailer or distributor for Dell)

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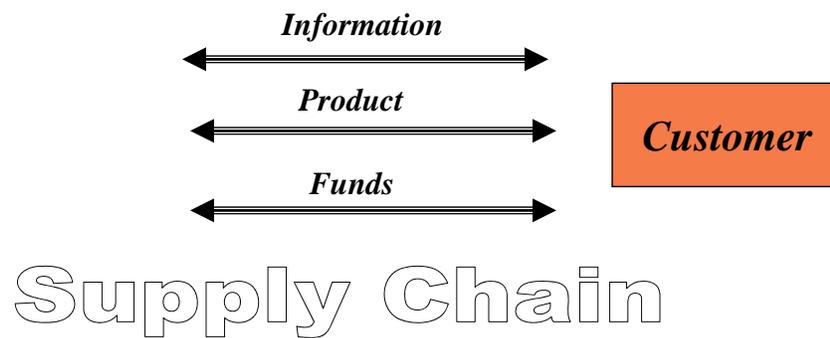
What is a Supply Chain?



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Flows in a Supply Chain



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The Objective of a Supply Chain

- ◆ Maximize overall value created
- ◆ Supply chain value: difference between what the final product is worth to the customer and the effort the supply chain expends in filling the customer's request
- ◆ Value is correlated to supply chain profitability (difference between revenue generated from the customer and the overall cost across the supply chain)

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The Objective of a Supply Chain

- ◆ Example: Dell receives \$2000 from a customer for a computer (revenue)
- ◆ Supply chain incurs costs (information, storage, transportation, components, assembly, etc.)
- ◆ Difference between \$2000 and the sum of all of these costs is the supply chain profit
- ◆ Supply chain profitability is total profit to be shared across all stages of the supply chain
- ◆ Supply chain success should be measured by total supply chain profitability, not profits at an individual stage

The Objective of a Supply Chain

- ◆ Sources of supply chain revenue: the customer
- ◆ Sources of supply chain cost: flows of information, products, or funds between stages of the supply chain
- ◆ ***Supply chain management is the management of flows between and among supply chain stages to maximize total supply chain profitability***

Decision Phases of a Supply Chain

- ◆ Supply chain strategy or design
- ◆ Supply chain planning
- ◆ Supply chain operation

Supply Chain Strategy or Design

- ◆ Decisions about the structure of the supply chain and what processes each stage will perform
- ◆ Strategic supply chain decisions
 - Locations and capacities of facilities
 - Products to be made or stored at various locations
 - Modes of transportation
 - Information systems
- ◆ Supply chain design must support strategic objectives
- ◆ Supply chain design decisions are long-term and expensive to reverse – must take into account market uncertainty

Supply Chain Planning

- ◆ Definition of a set of policies that govern short-term operations
- ◆ Fixed by the supply configuration from previous phase
- ◆ Starts with a forecast of demand in the coming year

Supply Chain Planning

- ◆ Planning decisions:
 - Which markets will be supplied from which locations
 - Planned buildup of inventories
 - Subcontracting, backup locations
 - Inventory policies
 - Timing and size of market promotions
- ◆ Must consider in planning decisions demand uncertainty, exchange rates, competition over the time horizon

Supply Chain Operation

- ◆ Time horizon is weekly or daily
- ◆ Decisions regarding individual customer orders
- ◆ Supply chain configuration is fixed and operating policies are determined
- ◆ Goal is to implement the operating policies as effectively as possible
- ◆ Allocate orders to inventory or production, set order due dates, generate pick lists at a warehouse, allocate an order to a particular shipment, set delivery schedules, place replenishment orders
- ◆ Much less uncertainty (short time horizon)

Process View of a Supply Chain

- ◆ Cycle view: processes in a supply chain are divided into a series of cycles, each performed at the interfaces between two successive supply chain stages
- ◆ Push/pull view: processes in a supply chain are divided into two categories depending on whether they are executed in response to a customer order (pull) or in anticipation of a customer order (push)

Cycle View of Supply Chains

◆ Each cycle occurs at the interface between two successive stages

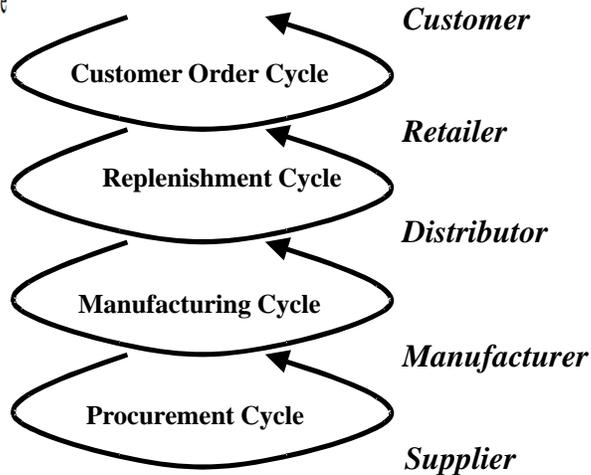
◆ Customer order cycle (customer-retailer)

◆ Replenishment cycle (retailer-distributor)

◆ Manufacturing cycle (distributor-manufacturer)

◆ Procurement cycle (manufacturer-supplier)

◆ Cycle view clearly defines processes involved and the owners of each process. Specifies the roles and responsibilities of each member and the desired outcome of each process.



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Cycle View of a Supply Chain

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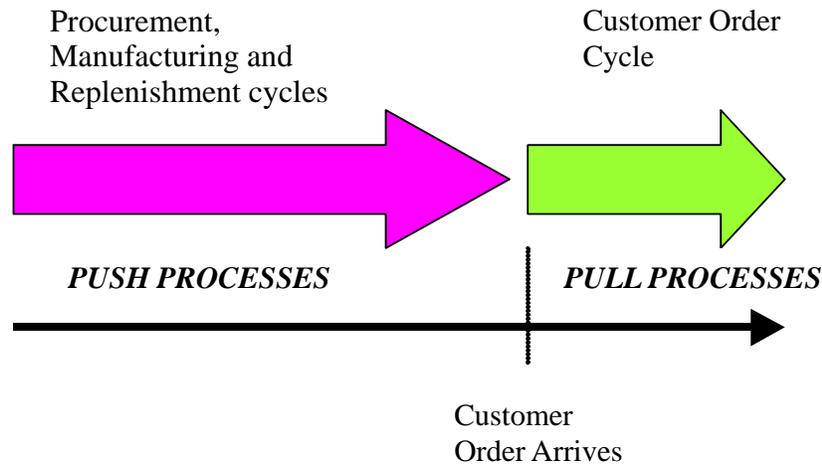
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Push/Pull View of Supply Chains



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Push/Pull View of Supply Chain Processes

- ◆ Supply chain processes fall into one of two categories depending on the timing of their execution relative to customer demand
- ◆ Pull: execution is initiated in response to a customer order (reactive)
- ◆ Push: execution is initiated in anticipation of customer orders (speculative)
- ◆ Push/pull boundary separates push processes from pull processes

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Push/Pull View of Supply Chain Processes

- ◆ Useful in considering strategic decisions relating to supply chain design – more global view of how supply chain processes relate to customer orders
- ◆ Can combine the push/pull and cycle views
 - L.L. Bean (Figure 1.6)
 - Dell (Figure 1.7)
- ◆ The relative proportion of push and pull processes can have an impact on supply chain performance

Supply Chain Macro Processes in a Firm

- ◆ Supply chain processes discussed in the two views can be classified into (Figure 1.8):
 - Customer Relationship Management (CRM)
 - Internal Supply Chain Management (ISCM)
 - Supplier Relationship Management (SRM)
- ◆ Integration among the above three macro processes is critical for effective and successful supply chain management

Examples of Supply Chains

- ◆ Gateway
- ◆ Zara
- ◆ McMaster Carr / W.W. Grainger
- ◆ Toyota
- ◆ Amazon / Borders / Barnes and Noble
- ◆ Webvan / Peapod / Jewel

What are some key issues in these supply chains?

Gateway: A Direct Sales Manufacturer

- ◆ Why did Gateway have multiple production facilities in the US? What advantages or disadvantages does this strategy offer relative to Dell, which has one facility?
- ◆ What factors did Gateway consider when deciding which plants to close?
- ◆ Why does Gateway not carry any finished goods inventory at its retail stores?
- ◆ Should a firm with an investment in retail stores carry any finished goods inventory?
- ◆ Is the Dell model of selling directly without any retail stores always less expensive than a supply chain with retail stores?
- ◆ What are the supply chain implications of Gateway's decision to offer fewer configurations?

7-Eleven

- ◆ What factors influence decisions of opening and closing stores?
Location of stores?
- ◆ Why has 7-Eleven chosen off-site preparation of fresh food?
- ◆ Why does 7-Eleven discourage direct store delivery from vendors?
- ◆ Where are distribution centers located and how many stores does each center serve? How are stores assigned to distribution centers?
- ◆ Why does 7-Eleven combine fresh food shipments by temperature?
- ◆ What point of sale data does 7-Eleven gather and what information is made available to store managers? How should information systems be structured?

W.W. Grainger and McMaster Carr

- ◆ How many DCs should there be and where should they be located?
- ◆ How should product stocking be managed at the DCs? Should all DCs carry all products?
- ◆ What products should be carried in inventory and what products should be left at the supplier?
- ◆ What products should Grainger carry at a store?
- ◆ How should markets be allocated to DCs?
- ◆ How should replenishment of inventory be managed at various stocking locations?
- ◆ How should Web orders be handled?
- ◆ What transportation modes should be used?

Toyota

- ◆ Where should plants be located, what degree of flexibility should each have, and what capacity should each have?
- ◆ Should plants be able to produce for all markets?
- ◆ How should markets be allocated to plants?
- ◆ What kind of flexibility should be built into the distribution system?
- ◆ How should this flexible investment be valued?
- ◆ What actions may be taken during product design to facilitate this flexibility?

Amazon.com

- ◆ Why is Amazon building more warehouses as it grows? How many warehouses should it have and where should they be located?
- ◆ What advantages does selling books via the Internet provide? Are there disadvantages?
- ◆ Why does Amazon stock bestsellers while buying other titles from distributors?
- ◆ Does an Internet channel provide greater value to a bookseller like Borders or to an Internet-only company like Amazon?
- ◆ Should traditional booksellers like Borders integrate e-commerce into their current supply?
- ◆ For what products does the e-commerce channel offer the greatest benefits? What characterizes these products?

Summary of Learning Objectives

- ◆ What are the cycle and push/pull views of a supply chain?
- ◆ How can supply chain macro processes be classified?
- ◆ What are the three key supply chain decision phases and what is the significance of each?
- ◆ What is the goal of a supply chain and what is the impact of supply chain decisions on the success of the firm?