

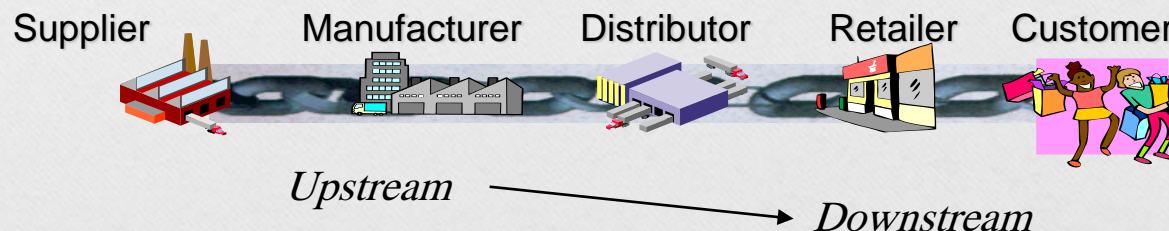
Supply Chain Management

Part 2

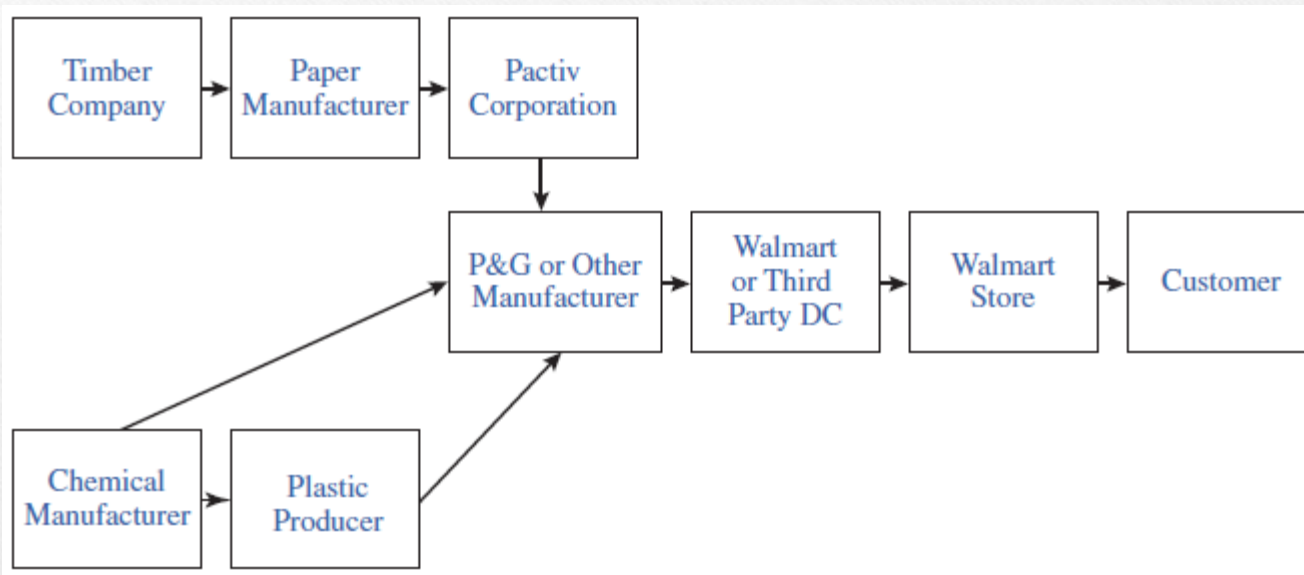
Understanding the Supply Chain

What is a Supply Chain?

- All parties 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).



What is a Supply Chain?



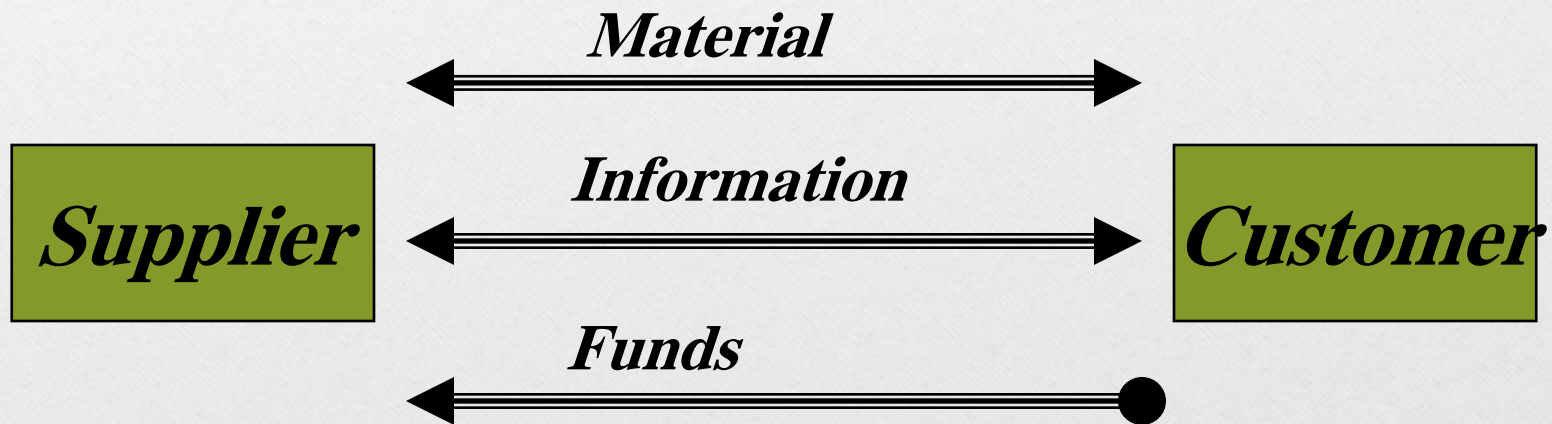
What is a Supply Chain?

- Some typical IE/ME activities at the companies:

Company	IE/ME functions
Manufacturer	Facility layout, scheduling
Wholesaler	Inventory management
Distribution center / warehouse	Material handling, inventory, transportation
Retailer	Inventory management

Flows in a Supply Chain

- A supply chain is dynamic and involves the constant flow of information, product, and funds among different stages.



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.

Supply Chain Surplus = Customer Value – Supply Chain Cost

The Objective of a Supply Chain

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- 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

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- 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).

THE IMPORTANCE OF SUPPLY CHAIN DECISIONS

- The design, planning, and operation of a supply chain have a strong impact on overall profitability and success.
- Walmart has been a leader at using supply chain design, planning, and operation to achieve success.
- In its 2013 annual report, the company reported a net income of about \$17 billion on revenues of about \$469 billion. These are dramatic results for a company that reached annual sales of only \$1 billion in 1980.

Cycle View of Supply Chains

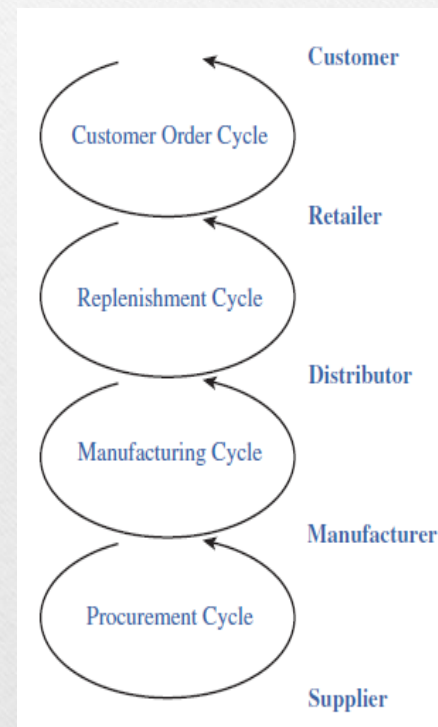
Each cycle occurs at the interface between two successive stages of the supply chain.

Customer order cycle (customer-retailer)

Replenishment cycle (retailer-distributor)

Manufacturing cycle (distributor-manufacturer)

Procurement cycle (manufacturer-supplier)



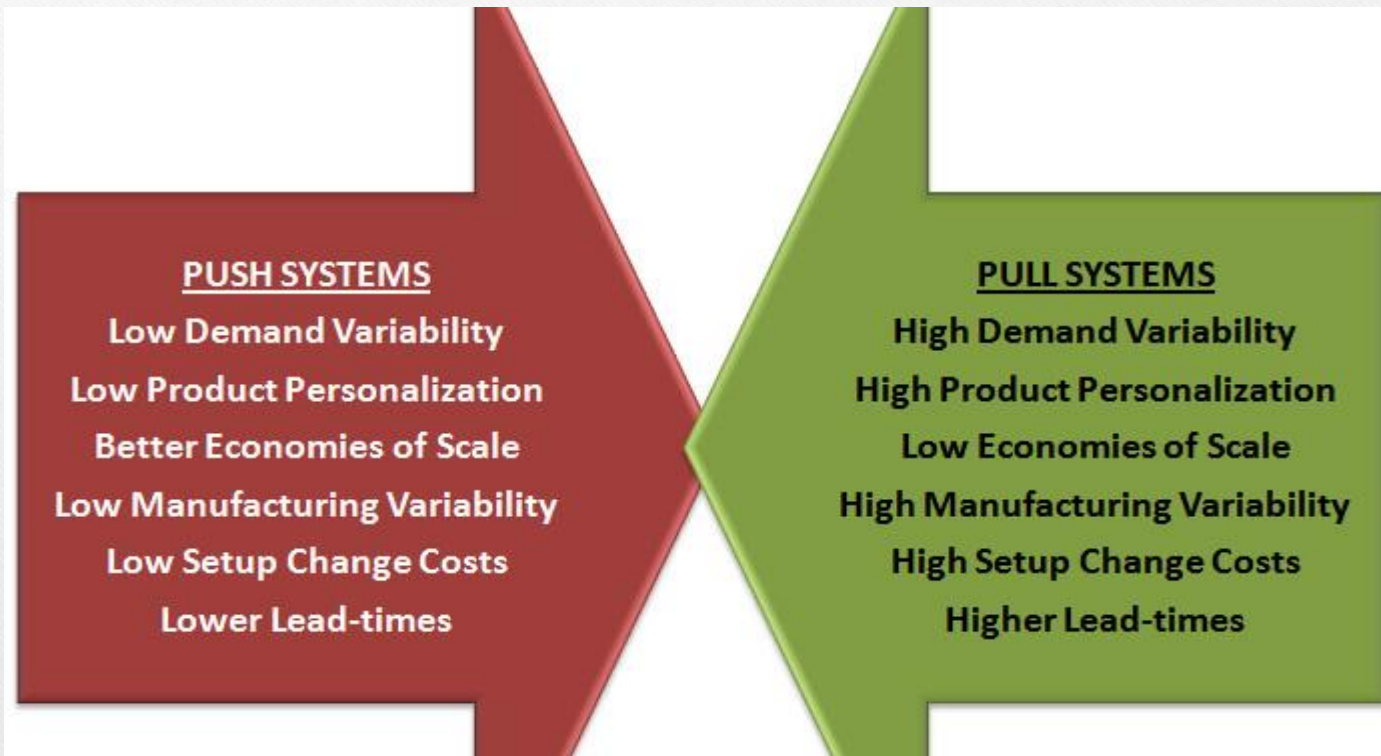
Cycle View of Supply Chains

- A cycle view of the supply chain clearly defines the processes involved and the owners of each process.
- This view is useful when considering operational decisions because it specifies the roles and responsibilities of each member of the supply chain and the desired outcome for each process.
- The cycle view is used by enterprise resource planning (ERP) systems to support supply chain operations.

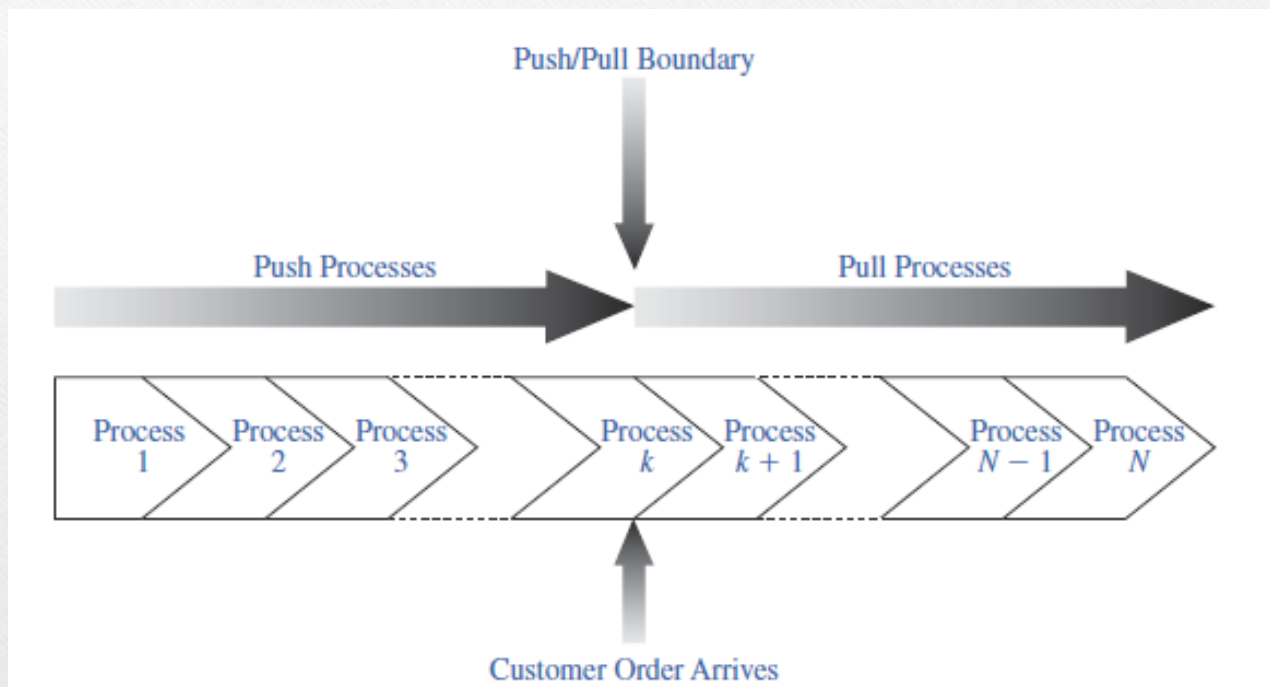
Push vs Pull System

- In a push system, products are pushed through the channel from workshops up to the assembly line and warehouse. This means that production happens based on demand forecast (high inventory and uncertain environment) .
- In a pull system, procurement, production, and distribution are demand-driven rather than based on predictions. Goods are produced in the amount and time needed.

Push vs Pull System



Push/Pull View of Supply Chain Processes

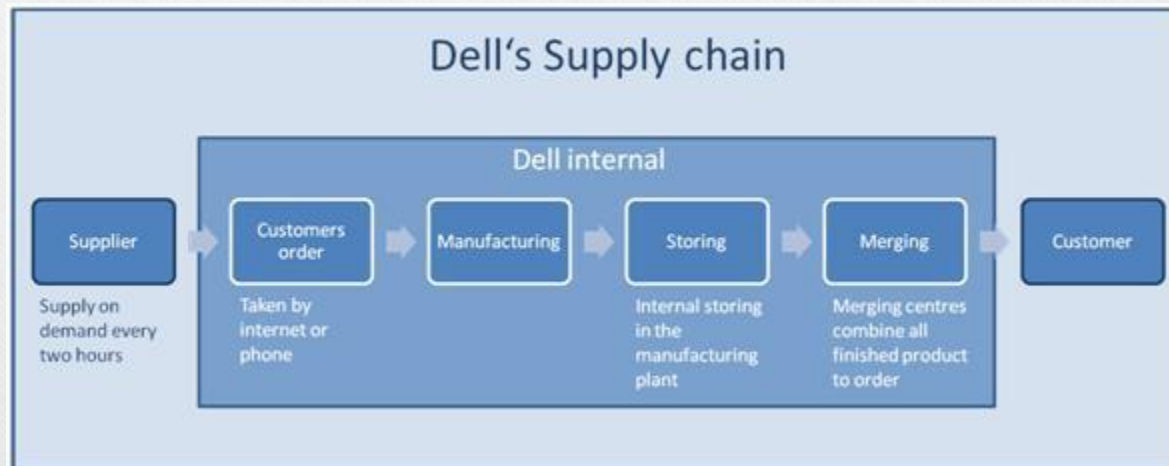


Push/Pull View of Supply Chain Processes

- 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 (proactive).
- Push/pull boundary separates push processes from pull processes.

Example of a good supply chain

- Dell is an example of a company that has used excellent supply chain design, planning, and operation to drive growth and profitability.



Example of a good supply chain

Market: Personal computers.

Market segment: Sophisticated customers.

Product-Market Environment: ATO.

Special properties: Low inventory (5 days) of semifinished products.

Suppliers: in Mexico and China.

Transportation from suppliers: Air – fast and expensive.

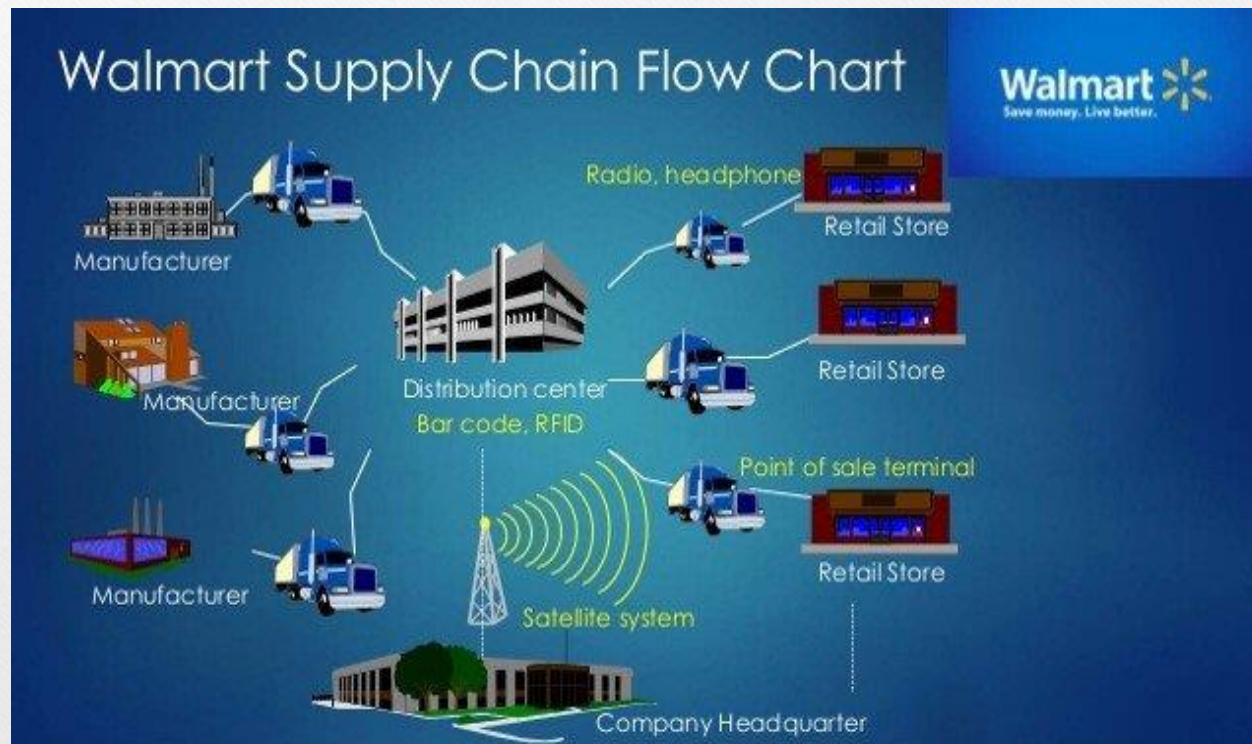
The process: (a) the customer orders and PAYS, (b) the assembly line produces the ordered item, (c) delivery with package service (expensive), (d) Dell pays to the suppliers 36 days later.

Dell runs its business on other people's money.

Example of a good supply chain

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- Walmart's supply chain is often touted as one of the most effective in the world.
 - It has over 11,000 stores in 27 countries, under a total 55 different names.
 - In 2014, the biggest private employer in the world with over two million employees, and the largest retailer in the world.
 - In the past two years (2019 and 2020) alone, Walmart has invested \$11 billion in e-commerce, supply chain, and technology.
 - Every Day Low Price (EDLP) is the cornerstone strategy of Walmart.

Example of a good supply chain



Competitive strategies

- Competitive Strategy is defined as the long term plan of a particular company in order to gain competitive advantage over its competitors in the industry.
- A company needs to evaluate all strengths, weaknesses, opportunities, threats in the industry and then go ahead which would give one a competitive advantage.

Types of competitive strategies

- Cost Leadership: become the lowest cost producer in the industry. E.g. Walmart
- Differentiation Leadership: develop a unique product or service. E.g. BMW, Apple
- Cost Focus: firm concentrates on specific market segments and keeps its products low priced in those segments. E.g. Sonata watches
- Differentiation Focus: firm aims to differentiate itself from one or two competitors, again in specific segments only. E.g. Titan watches

Supply chain strategies

- Determines the nature of material procurement, transportation of materials, manufacture of product or creation of service, distribution of product.

Dell's initial decision to sell direct.

Amazon's decisions to build warehouses to stock some products.

Toyota's decision to have production facilities in each of its major markets.

Competitive and supply chain strategies

- For a firm to succeed, both the competitive and supply chain strategies of a company should have aligned goals.
- To achieve strategic fit, a company must ensure that its supply chain capabilities support its ability to satisfy the needs of the targeted customer segments.

Competitive and supply chain strategies

- To achieving this strategic fit a company should:
- Step 1: Understanding the customer and supply chain uncertainty
- Step 2: Understanding the supply chain
- Step 3: Achieving strategic fit