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Digital Area for Networking
Teachers and Educators
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Supply chain management

Differences between goods and services (Heizer and Render, 2014)

Characteristics of services	Characteristics of goods
Intangible: ride in an airline seat	Tangible: the seat itself
Produced and consumed simultaneously: beauty salon producers a haircut that is consumed as it is produced	Products can usually be kept in inventory (beaty care products)
Unique: your investment and medical care are unique	Similar products produced (iPad)
High customer interaction: often what the customer is paying for (consulting, education)	Limited customer involvement in production

Differences between goods and services (Heizer and Render, 2014)

Characteristics of services	Characteristics of goods
Inconsistent product definition: car insurance changes with age and type of car	Product standardized (iPhone)
Often knowledge based: legal, education, and medical services are hard to automate	Standard tangible product tends to make automation feasible
Services dispersed: service may occur at retail store, local office, house call or via internet	Product typically produced at a fixed facility
Quality may be hard to evaluate: consulting, education and medical services	Many aspects of quality for tangible products are easy to evaluate
Reselling is unusual: musical concert or medical care	Product often has some residua value

What is a Supply Chain Process/ Business Process?

"Logically related sets of tasks or activities geared toward some business outcome"

(Bozarth & Handfield, 2008)

"organised groups of related activities that work together to create a result of value to customers"

(Hammer, 2002)

Supply chain management

- Describes the coordination of all supply chain activities, starting with raw materials and ending with a satisfied customer. Thus, a supply chain includes suppliers; manufacturers and/or service providers, and distributors, wholesalers, and/or retailers who deliver the product and/or service to the final customer.

Supply chain management

- The objective of supply chain management is to coordinate activities within the supply chain to maximize the supply chain's competitive advantage and benefits to the ultimate customer.

SCM – modern business management paradigm

- Individual businesses no longer compete as solely autonomous entities, but as a supply chains.
- Business management has entered the era of internetwork competition.
- The management of multiple relationships across the supply chain is being referred to as SCM.
- SC is not a chain of businesses with one-to-one, b2b relationships, but a network multiple businesses and relationships.

SCM – modern business management paradigm

- The term SCM was originally introduced by consultants in the early 80s
- Since the early 1990s, academics have attempted to give structure to SCM

Supply Chain Macro Processes: three main categories (Coyle et al. 2016)

Supplier ⟷ Company ⟷ Customer

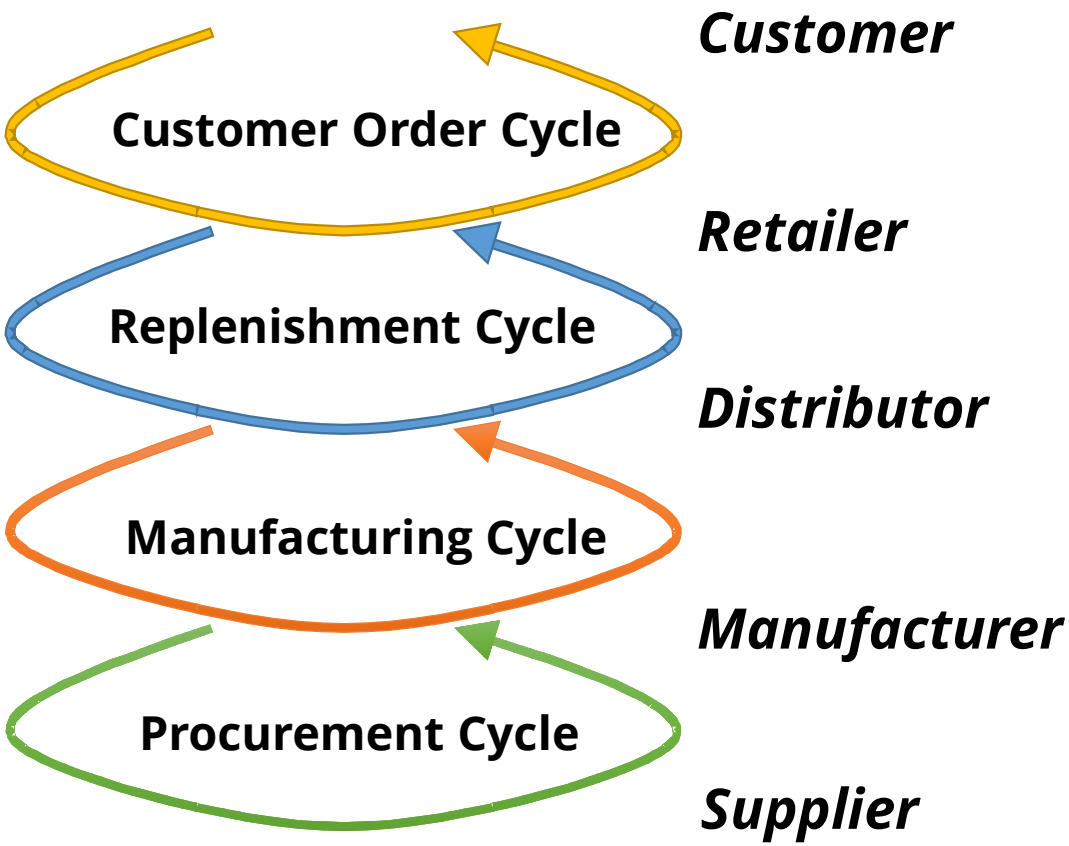
SRM Supplier Relationship Management	ISCM Internal Supply Chain Management	CRM Customer Relationship Management
• Source • Negotiate • Buy • Design Collaboration • Supply Collaboration	• Strategic Planning • Demand Planning • Supply Planning • Fulfillment • Field Service	• Market • Sell • Call Center • Order Management

Supply Chain Processes (Coyle et al. 2016)

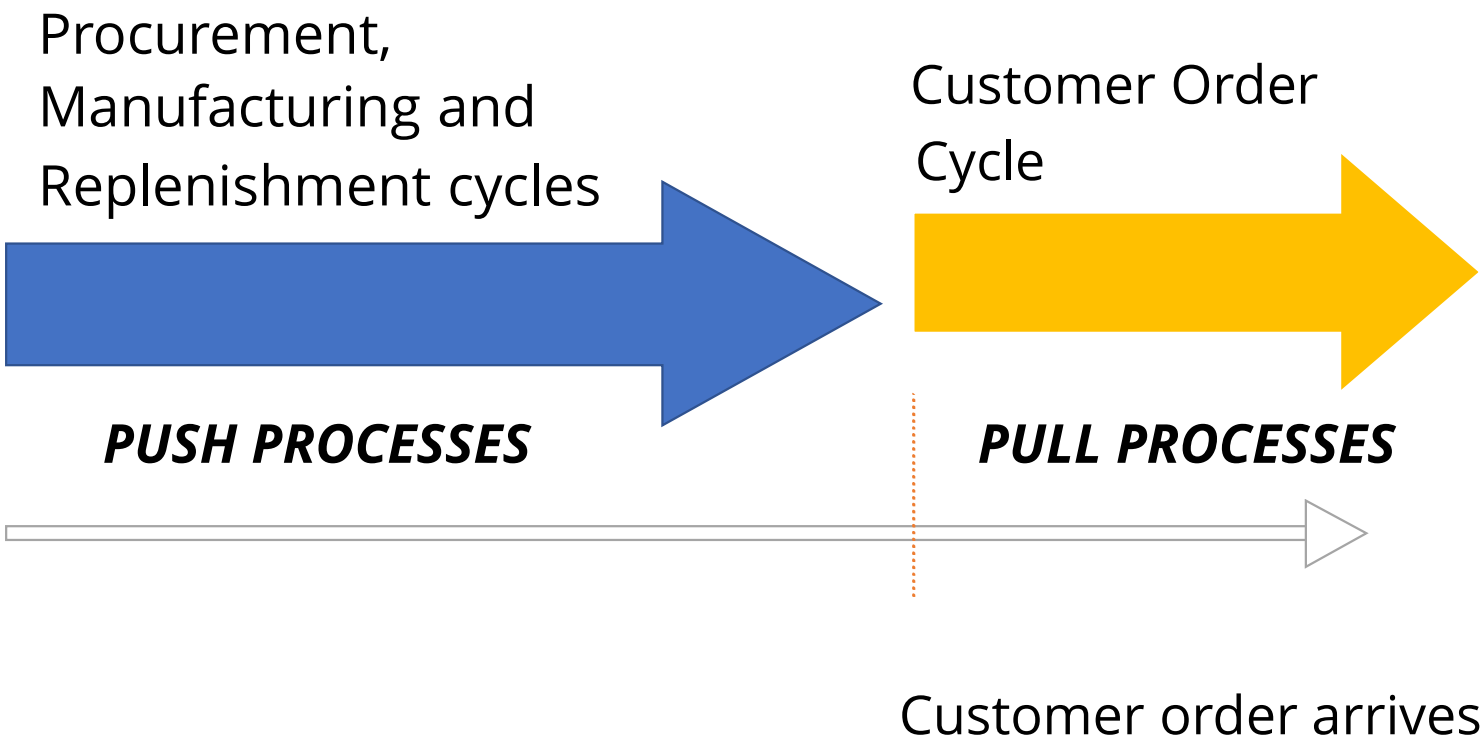
- **Cycle view:** processes in a supply chain are divided into a series of cycles, each performed at the interfaces between two successive supply chain stages

- **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 Chain Processes (Coyle et al. 2016)



Push/Pull View of Supply Chain Processes (Coyle et al. 2016)



Activities in the Logistical Channel (Murphy and Wood, 2011)

- **Customer service**

„keeping existing customers happy”

Making sure right customer receives the right product at the right place, at the right time at a right condition, at the right cost.

- **Demand forecasting**

refers to efforts to estimate product demand in a future time period

Activities in the Logistical Channel (Murphy and Wood, 2011)

- **Facility location decisions**

The success of a particular Logistics system is dependent on the location of the relevant warehousing and production facilities.

- **International logistics**

Refers to the logistics activities associated with goods that are sold across national boundaries, is much more costly and challenging than domestic Logistics.

Activities in the Logistical Channel (Murphy and Wood, 2011)

- **Inventory management**

When managing inventory there is a need to simultaneously consider three relevant costs: the costs of carrying (holding) product, the cost of ordering product, and the cost of being out of stock.

- **Materials handling**

Refers to the short-distance movement of products within the confines of a facility (plant, warehaouse).

Activities in the Logistical Channel (Murphy and Wood, 2011)

- **Order management**

Refers to management of the activities that take place between the time a customer places an order and the time it is received by the customer.

- **Packaging**

Can have both a marketing (consumer packaging) and a logistical (industrial packaging) dimension. Industrial (protective) packaging refers to packaging that prepares a product for storage and transit and packaging has important interfaces with the materials handling and warehousing activities.

Activities in the Logistical Channel (Murphy and Wood, 2011)

- **Procurement**

Refers to raw materials, component parts, and suppliers bought from outside organisations to suport a company's operations.

- **Reverse logistics**

Products can be returned for various reasons, such as product recalls, product damage, lack of demand and customer dissatisfaction. The challenges associated with reverse logistics can be complicated by the fact that returned products often move in small quantities and may move outside forward distribution channels.

Activities in the Logistical Channel (Murphy and Wood, 2011)

- **Transportation management**

Management of transportation activities by a particular organization. Transportation can account for up to 50 percent of a firm's total logistics costs and thus represents the most costly logistics activity in many organizations.

- **Warehousing Management**

Warehousing refers to places where inventory can be stored for a particular period of time.

Just-in-Time (JIT) (Heizer and Render, 2014)

- An approach of continuous and forced problem solving via a focus on throughput and reduced inventory.
- Lean operations supplies the customer with exactly what the customer wants when the customer wants it, without a waste, through continuous improvement.
- Lean operations are driven by workflow initiated by the „pull" of the customer's order.

Main cost categories of a logistics system (based on Ghiani et al. 2013)

Main cost categories	Fixed costs	Variable costs
Storage costs	Administrative costs Running costs of storage centres	Insurance policies Financial burdens and opportunities costs Deterioration costs Obsolescence costs
Operational management costs	Administrative costs of issuing and computing orders	Loading and unloading goods costs Movement costs Stock control and management costs Packaging costs Deferment of takings Forfeits
Stockout costs		Lost sale Loss of customer Loss of image

Main cost categories of a Logistics system (based on Ghiani et al. 2013)

Main cost categories	Fixed costs	Variable costs
Transport costs	Devaluation of means of transport Rental of means of transport	Insurance costs Variable transport costs Transport service costs (external)
Plant and equipment costs	Rates of plant devaluation	Rental fees (variable according to volume)

Just-in-Time (JIT) (Heizer and Render, 2014)

- Eliminate waste
- Remove variability
- Improve throughput

Eliminate waste

no bad parts, no inventory, only vallue-added activities and no waste

Taiichi Ohno (Toyota Production System)

Source: https://www.qad.com/blog/2018/03/taiichi-ohno-toyota-production-system

Taiichi Ohno’s seven wastes are:

1. Overproduction
2. Queues
3. Transportation
4. Inventory
5. Motion
6. Overprocessing
7. Defective product

A broader perspective

- Other resources, such as energy, water, and air, are often wasted but should not be. Efficient, sustainable production minimizes inputs and maximizes outputs, wasting nothing.

The Japananese developed the initial 5Ss

- Sort/segregate
- Simplify/straighten
- Shine/sweep
- Standarize
- Sustain/self-discipline

Added by U.S. managers:

- Safety
- Support/maintanance

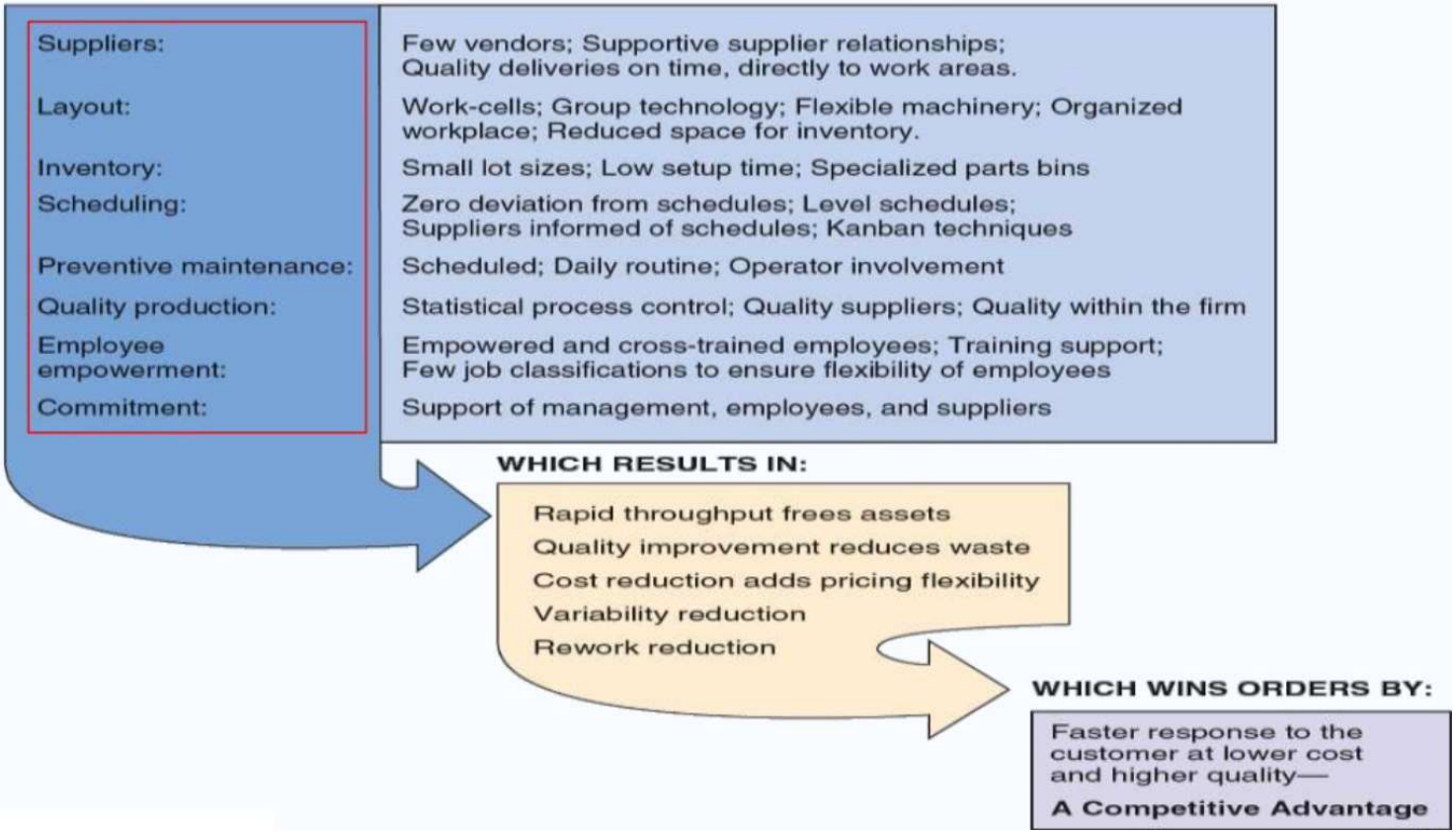
Remove Variability

- Coused by both internal and extrnal factors
- Is any deviation from the optimum proces that delivers perfect product on time, every time.
- Variability=problems
- The less variability in a system, the less waste in the system.

Improve Throughput

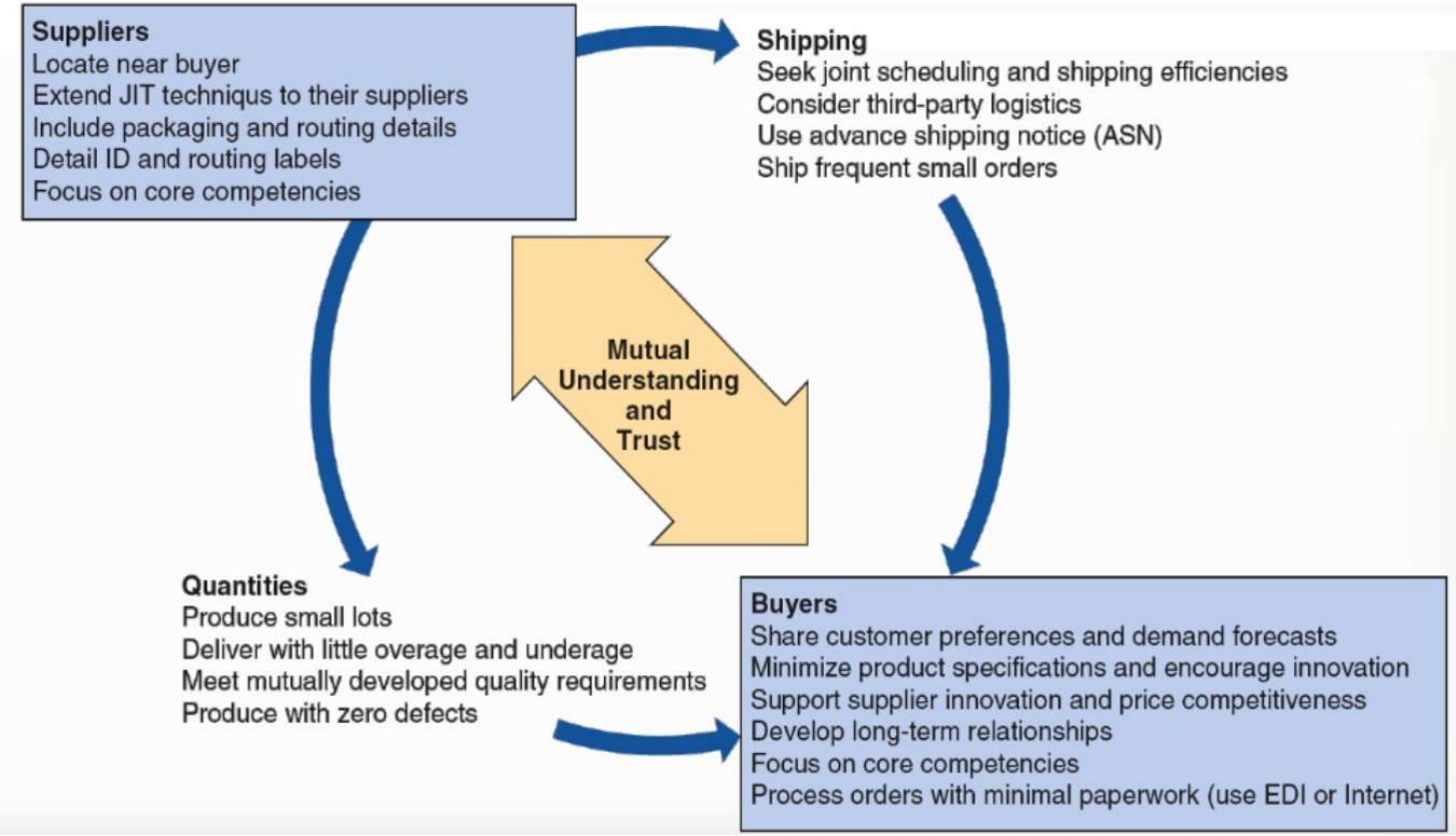
- Throughput is the rate at which units move through a production process.
- Each minute products remain on the books, costs accumulate, and competitive advantage is lost.
- Time is money.

JIT techniques



Source: Heizer J., Render B., Principles of Operations Management. Sustainability and Supply Chain Management, Pearson 2014.

Characteristics of JIT Partnerships



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