

LECTURE 02: SUPPLY CHAIN PERSPECTIVE AND STRATEGY

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OUTLINE

- 1 PERSPECTIVES IN SUPPLY CHAIN MANAGEMENT
- 2 SUPPLY CHAIN OPERATION REFERENCE MODEL
- 3 SUPPLY CHAIN STRATEGY
- 4 STRATEGIC FIT AND SUPPLY CHAIN STRATEGY
- 5 SUPPLY CHAIN PERFORMANCE MATRIC
- 6 INFORMATION AND BULLWHIP EFFECT

General Reference: [?] [?] [?] [?]

SCM DEVELOPMENT TIME LINE



**Basic
Transportation**

- 1970s
- cost-service focus
- paper
- month
- leveraging



**Emerging
Logistics**

- 1980s
- cost@quality
- Barcode/LAN
- week
- partnering LSP, KPI, branding



**World-Class
SCM**

- 1990s-2000s
- core competency
- ERP/internet
- day
- global, mix mode relationship, agile

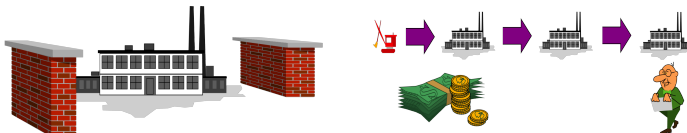


**Collaborative
Demand Network**

- 2000s-present
- platform/ on-live
- mobile/5G/ data
- hour
- meme/ lagile

source: Mamun Habib. "Supply Chain Management-Applications and Simulations"

CHANGING VIEW OF COMPANY



	Traditional	Value creation
Parties	one company	every companies
Concept	winner takes all	focus on my 'things'
Lv Decision	operation	strategic
Values	cost	revenue stream
		, engagement, equity
Tools	price & quality	speed & information

QUESTION 1

Do your customers care? If not, why bother?

Effect: cost-availability, reliability-flexibility, quality, convenience, fluctuation

FOR CUSTOMER, SUPPLY CHAIN IS

Goals of Supply Chain is to ensure that **customers** got

- the right **item** (national VS store brands)
- in the right **quantity** (EA VS DOZEN)
- at the right **price** (7Eleven VS Makro)
- at the right **place** (ENG canteen VS Airport)
- at the right **time** (iPhone Camping)
- in the right **condition** (edible gelatine VS photo gelatine)
- at the optimum cost to the **organization(s)**

source: CSCMP, "SCM Goals — The Seven Rights" 2011

OTHER PERSPECTIVE OF SCM

Flows: movement of 'things' along SC (traditional views)

	Upstream	Downstream
Materials:	return, repair, disposal	RM, WIP, FG
Information:	sales, promotion plan	capacity, delivery schedule
Funds/Values:	payment, consignment	credit, invoice, payment

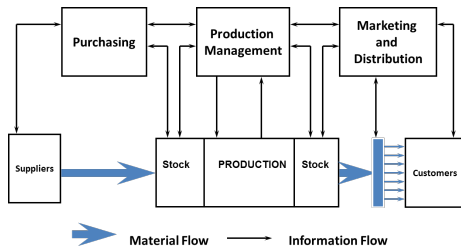
Process: supply chain activity repeats itself (system views)

- **Cycle order:** process in SC as series of cycles each performed by interfaced parties
- **Push/Pull:** processes in SC as responding (**pull**) or in anticipating (**push**) to order

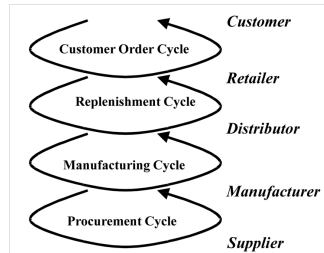
SCOR: supply chain activity can be grouped by business function

- standardizing & combining flow and process
- introducing KPIs
- allowing benchmark between companies

CYCLE OR PROCESS PERSPECTIVE



source: Martin Christopher, 2011 [?]



source: Chopra and Meindl 2010 [?]

QUESTION 2

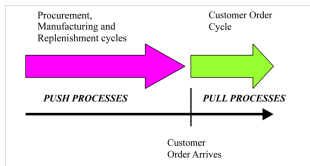
What are triggers/information of these processes?

PRODUCTION/INVENTORY SYSTEMS

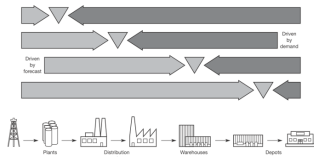
	Push	Pull
Shipment	large & infrequent	small & frequent
Suppliers	many & short term	few & long term
Information	minimal exchange	constant exchange
Geographic	unimportant	adjacent
Application	MRP	JIT

Assembly Line Simulation

PUSH/PULL PERSPECTIVE



source: Chopra and Meindl 2010 [?]

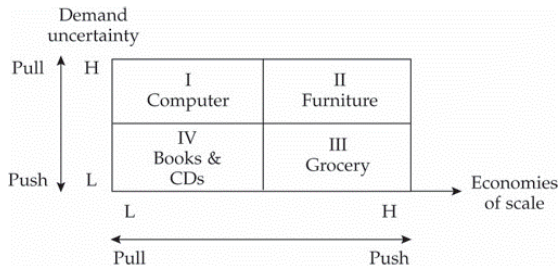


source: Martin Christopher, 2011 [?]

QUESTION 3: THINKING POINTS

What are good characteristics of push (pull) products? and How to leverage?

UNCERTAINTY AND SCALES



source: Martin Christopher, 2011 [?]

- **Pull Strategy (I):** high demand uncertainty without economy of scale
- **Push Strategy (III):** low demand uncertainty with economy of scale

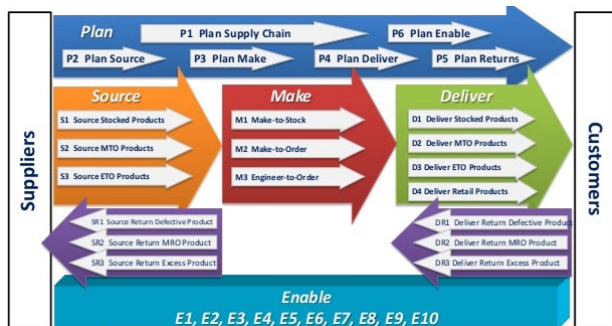
OVERVIEW OF SCOR MODEL



source: Cohen, S. and Roussel, J 2001. "Strategic Supply Chain Management"

- **What:** hierarchy business process framework
- **Scopes:** all customer's interaction, product transactions, market interactions
- **Benefit:** std process, best practice, matrices for benchmark,
- **Issues:** no details operation, ignored sale and markets, R&D

SCOR MODEL: SEMI-PERFECT CONCEPT



source: Cohen, S. and Roussel, J 2001. "Strategic Supply Chain Management"

- **Lv1: Model** set scope, content, performance, product-segment
- **Lv2: Strategy** decide configuration, i.e., strategy, capability
- **Lv3: Process** identify key business process, i.e., input, output, best practice
- **Lv4: Activity** improve activates using lean, TQM, benchmark

SCOR MODEL Lv 1 METRIC

Performance Attribute	Level-1 Strategic Metric
Reliability	<ul style="list-style-type: none">• Perfect Order Fulfillment (RL.1.1)
Responsiveness	<ul style="list-style-type: none">• Order Fulfillment Cycle Time (RS.1.1)
Agility	<ul style="list-style-type: none">• Upside Supply Chain Adaptability (AG.1.1)• Downside Supply Chain Adaptability (AG.1.2)• Overall Value at Risk (AG.1.3)
Cost	<ul style="list-style-type: none">• Total Supply Chain Management Costs (CO.1.1)• Cost of Goods Sold (COGS) (CO.1.2)
Asset Management Efficiency	<ul style="list-style-type: none">• Cash-to-Cash Cycle Time (AM.1.1)• Return on Supply Chain Fixed Assets (AM.1.2)• Return on Working Capital (AM.1.3)

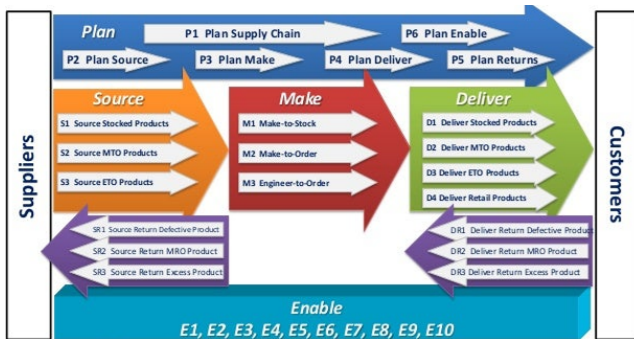
source: <http://supply-chain.org/scor>

SCOR MODEL Lv 1 SCOPE

- **Plan:** balance aggregate demand and supply → actions
 - assess & acquire **resources** within requirements
 - plan inventory and distribution and communicate plan
- **Source** procure components of goods for planned demands
 - **schedule** deliveries, transfer, contract, payment
 - certify, select & assess suppliers (except ETO)
- **Make:** transform product to a finished goods to meet demands
 - schedule production, resource, & infrastructure
 - cover assemble, repair, overhaul, recycle
- **Deliver:** react, maintenance, and fulfillment of orders
 - validation, consolidate, pick, pack, ship and invoice the ordered quantity
- **Return:** returning or receiving returned products
 - decide to return good & container
 - perform return, substitution, refund, restock
- **Enable:** managerial activities
 - business rules & procurement
 - mgt of performance, resources, data, contracts, network, compliance, risk

source: <http://supply-chain.org/scor>

SCOR MODEL: LEVEL 2 CONFIG



source: "A review and analysis of supply chain operations reference" [?]

SCOR LEVEL 3: EXAMPLE AND INSIGHTS

[**IE**]

sP - Plan					sS - Source		
sP1 Plan Supply Chain	sP2 Plan Source	sP3 Plan Make	sP4 Plan Deliver	sP5 Plan Return	sS1 Source Stocked Product	sS2 Source Make-to-Order Product	sS3 Source Engineer-to-Order Product
sP1.1: Identify, Prioritize and Aggregate Supply Chain Requirements sP1.2: Identify, Prioritize and Aggregate Supply Chain Resources sP1.3: Balance Supply Chain Resources with SC Requirements sP1.4: Establish and Communicate Supply Chain Plans	sP2.1: Identify, Prioritize and Aggregate Product Requirements sP2.2: Identify, Assess and Aggregate Delivery Resources sP2.3: Balance Product Resources with Product Requirements sP2.4: Establish Sourcing Plans	sP3.1: Identify, Prioritize and Aggregate Production Requirements sP3.2: Identify, Assess and Aggregate Production Resources sP3.3: Balance Production Resources with Production Requirements sP3.4: Establish Production Plans	sP4.1: Identify, Prioritize and Aggregate Delivery Requirements sP4.2: Identify, Assess and Aggregate Delivery Resources sP4.3: Balance Delivery Resources and Capabilities with Delivery Requirements sP4.4: Establish Delivery Plans	sP5.1: Assess and Aggregate Return Requirements sP5.2: Identify, Assess and Aggregate Return Resources sP5.3: Balance Return Resources with Return Requirements sP5.4: Establish and Communicate Return Plans	sS1.1: Schedule Product Deliveries sS1.2: Receive Product sS1.3: Verify Product sS1.4: Transfer Product sS1.5: Authorize Supplier Payment	sS2.1: Schedule Product Deliveries sS2.2: Receive Product sS2.3: Verify Product sS2.4: Transfer Product sS2.5: Authorize Supplier Payment	sS3.1: Identify Sources of Supply sS3.2: Select Final Supplier and Negotiate sS3.3: Schedule Product Deliveries sS3.4: Receive Product sS3.5: Verify Product sS3.6: Transfer Product sS3.7: Authorize Supplier Payment

- **Plan:** requirements $\pm \approx \pm$ resources \rightarrow plan
- **Source**_{ETO} = Source_{MTO} + identify + select supplier
- **Delivery**_{ETO} \approx Delivery_{MTO} w/ negotiation + sch. installation
- **Return**_{src} = Return_{dvy} + identify + disposition - transfer

HOW A COMPANY COMPETE WITH OTHERS?

- **Price** : Wal-mart, Big Cola, Daiso
- **Agility & Responsive**: Zara, Dell, JAL (on time)
- **Superb Quality**: Leica, Louis Vuitton
- **Innovation & Flexibility**: Apple, Intel
- **Convenience & Presence**: 7-Eleven, Starbucks, McDonald
- **Service & Coverage**: 3M, AIS, Facebook, CitiBank, IG

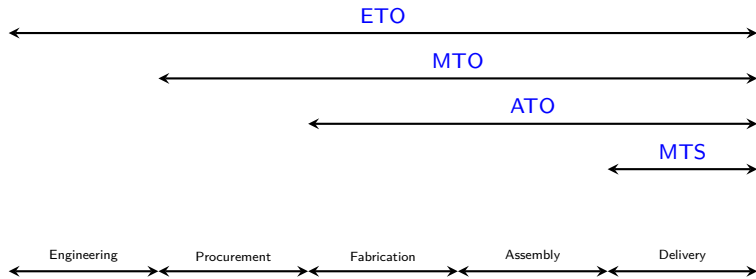
What are strategic components to compete?

UNDERSTANDING STRATEGIC COMPONENTS

- **Operation strategy:** how to produce goods and services?
- **Outsourcing strategy:** how to get products and services to buyers/
consumers? Pg:Outsourcing
- **Channel strategy:** what are in-house skills and expertise? Pg:Channel & Service
- **Customer service strategy:** what are customer's needs and how to turn
into profits ? Pg:Channel & Service
- **Asset network:** what are organization of resources? Pg:Asset

source: Cohen, S. and Roussel, J 2001. "Strategic Supply Chain Management"

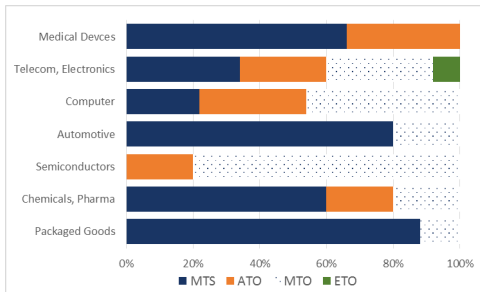
OPERATION STRATEGY



source: Jacob and Chase 2010 [?].

- **ETO:** work with the customer to design and then make the product
- **MTO:** make the customer's product from raw mat'
- **ATO:** combine a number of preassembled modules to meet customer's specifications
- **MTS:** serve customers from finished goods inventory

WHICH OPERATION STRATEGY?



source: Performance Measurement Group, 2004

Type	Condition	Key benefits
MTS	standard product w/ high volume	cost & response
ATO	product w/ high variation	reduce inventory
MTO	customized or infrequent demand product	low FG, many option
ETO	complex product w/ unique customer	response to requirement

OUTSOURCING STRATEGY

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benefit	concern
ramp-up/down (scope/scale)	balancing value & power
flexibility	culture & execute
focus on core	proprietary

Every company eventually needs profit

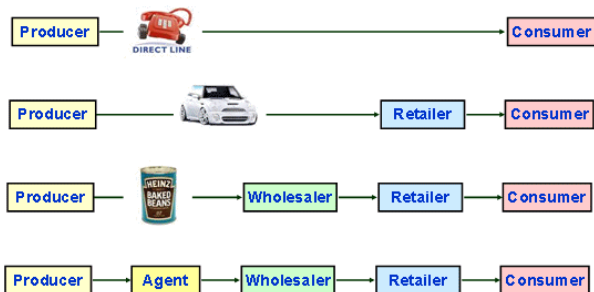
SHOULD YOU OUTSOURCE?

- What give you competitive advantage (rolex, cisco)?
- What is your capability when fluctuation?
- What is your internal uniqueness of business process (BTV)?
- What is your power to negotiate (blink)?

Pg:Strategic Components

CUSTOMER SERV. & CHANNEL STRATEGY

[**IE**]



WHAT ARE SUITABLE CHANNELS?

- Who is a targeted customer?
- What are costs and value of sale?
- What are channel partners should we have?

Pg:Strategic Components

ASSET NETWORK

[**IE**]

เกิดขึ้นในไทย และต่างประเทศ	เกิดขึ้นในไทย					เกิดขึ้นในไทย และต่างประเทศ	
	← อุตสาหกรรมต้นน้ำ →		← อุตสาหกรรมกลางน้ำ →			← อุตสาหกรรมปลายน้ำ →	
การวิจัยและพัฒนา การออกแบบผลิตภัณฑ์	การผลิตชิ้นส่วนขั้นพื้นฐาน	การผลิตชิ้นส่วนย่อยหรือระบบย่อย	การผลิตชิ้นส่วนระบบหลักเพื่อป้อนโรงงานประกอบรถยนต์	การประกอบรถยนต์	การกระจายสินค้าในประเทศและการส่งออก	การค้าปลีก	บริการหลังการขาย
บริษัทผู้ประกอบรถยนต์	ผู้ผลิตในระดับ Third-tier <u>กิจกรรมสนับสนุน</u> - วัสดุขั้นพื้นฐาน เช่น เหล็ก กระดาษ ยาง พลาสติก เครื่องมืออิเล็กทรอนิกส์ - เครื่องมือเครื่องจักร - ชิ้นส่วนอิเล็กทรอนิกส์	ผู้ผลิตในระดับ Second-tier <u>กิจกรรมสนับสนุน</u> - เครื่องมือเครื่องจักร - โลจิสติกส์	ผู้ผลิตในระดับ First-tier <u>กิจกรรมสนับสนุน</u> - เครื่องมือเครื่องจักร - โลจิสติกส์	บริษัทผู้ประกอบรถยนต์	บริษัทผู้ประกอบรถยนต์/ตัวแทนจำหน่าย <u>กิจกรรมสนับสนุน</u> - การส่งออก - การประกันภัย - โลจิสติกส์	บริษัทผู้ประกอบรถยนต์/ตัวแทนจำหน่าย <u>กิจกรรมสนับสนุน</u> - สถาบันการเงิน	ศูนย์บริการ/ผู้ซ่อม <u>กิจกรรมสนับสนุน</u> - ประกันภัย - สถาบันการเงิน - อุปกรณ์อะไหล่ - อะไหล่และชิ้นส่วน - ซ่อมบำรุง

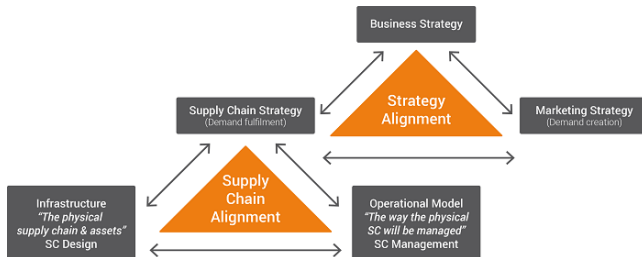
ที่มา: สถาบันระหว่างประเทศเพื่อการค้าและการพัฒนา (2553)

GEOGRAPHY OF ASSET NETWORK: why multiple locations?

- **Global model** collaborate components , capital investment (intel)
- **Regional model:** trade agreement (Asian Auto)
- **Country model:** language, local content (TH Auto)

Pg:Strategic Components

STRATEGIC ALIGNMENTS



- **Business strategy:** how to win customers & make money
- **Marketing strategy:** what is positioning of market and product
- **Supply chain strategy:** mean to fulfill customer's need

ALIGNMENT OF SC AND BUSINESS STRATEGY

Business Strategy	Source of Advantage	Basis of Competition	Key supply chain Contribution
COST	cost-eff. operation & mass	lowest cost & economy of scale	efficient, cost improv risk & global ⁿ
INNOVATION	brand, tech & niche	hype, desirable, & innovative	time2market, volume & manuf flex
SERVICE	superb service	fitted with need & after sale	designed for customer & network
QUALITY	safest & reliable	always work & durable	SC excellence, QC & source
AGILE	speed & flex	responsive	locations, mode & sync

source: Johnson, M. and Stevens, G. "Integrating the Supply Chain... 25 years on"

CATEGORY AND EXAMPLES OF SC STRATEGY

- **Structure:** vertical integrⁿ, horizontal integrⁿ, virtual integrⁿ, collaborative,
- **Competitive Advantage:** low cost, differentiation
- **Market:** board, focus, best-value, platform, collaborative
- **Technology:** ecosystem, data centric, cyber-security, synchronization
- **Resilience:** multi-sourcing, near-shoring, harmonization, sustainability, buffer
- **Manufacturing:** diversification, globalization, localization, standard process

● How to select to achieve **Strategic Fit**? Examples

Pg:SC-Fit

● Is there any simplify or generic supply chain strategy?

Pg:SC-Strategy

ACHIEVING STRATEGIC FIT

[**IE**]

Alignment between **business strategy** and **supply chain**

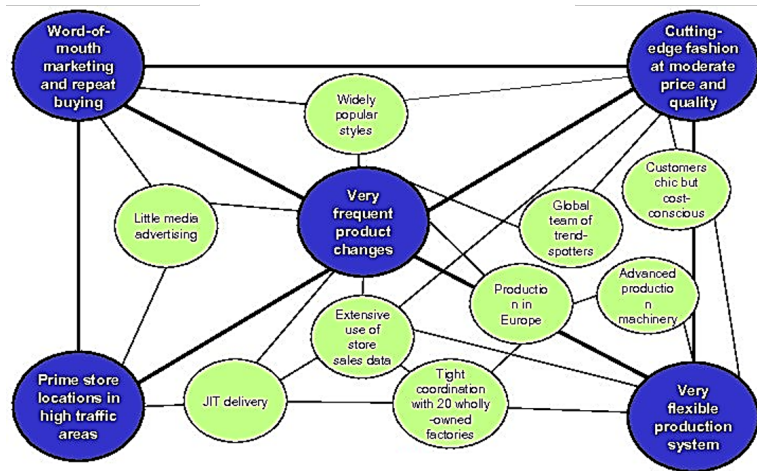
- Understand **nature of business**, i.e., customer, uncertainty, capacity
- Build **sufficient capabilities**,
- Deliver **what customers value**

EXAMPLES

- **Airline industry:** perishable capacity → dynamic price & channels
- **Automotive industry:** variation, regulation, → JIT, module
- **Consumer electronic industry:** innovation, short life cycle → roll-out, leased capacity
- **Retail industry:** price & availability → single DCs & online, house brand

MORE EXAMPLES OF STRATEGIC FIT

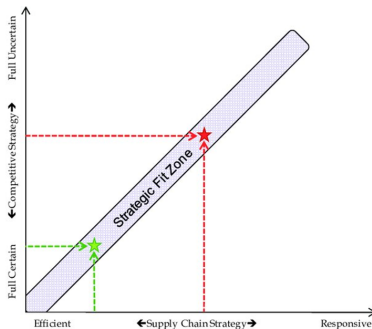
[**IE**]



source: Porter, M.

OBSTACLES TO STRATEGIC FIT

[**IE**]



source: Chopra and Meindl 2010 [?]

- **Business Nature:** variability (GM, FMCG), new feature (phone)
- **Fragmentation:** many ownership, too much outsourcing e.g., K-Mart
- **Globalization:** price, regulation, e.g., clothes
- **Business environment:** tech, e.g., internet, EV

UNDERSTANDING DEMAND AND SUPPLY

Demand

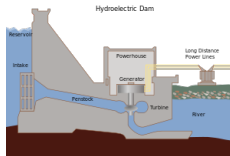


functional products

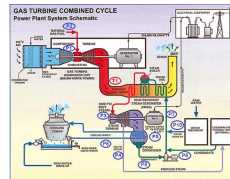


innovative products

Supply



stable processes



evolving processes

QUESTION 4

- What are characteristics of **functional products** and **innovative products**
- What are characteristics of **stable processes** and **evolving processes**

UNCERTAINTY MATRIX

		Demand Fluctuation	
		<i>Functional</i>	<i>Innovative</i>
Supply Processes	<i>Stable</i>	oil, gas, food basic clothes	fashion apparel, computer, music
	<i>Evolve</i>	hydro electric, some food	telecommunication iPhone, iPad, CPU

source: "Aligning Supply Chain Strategies with Product Uncertainties". Lee, H.L. 2002 [?]
 "Introduction to Supply Chain Management". Raz, Gal 2009

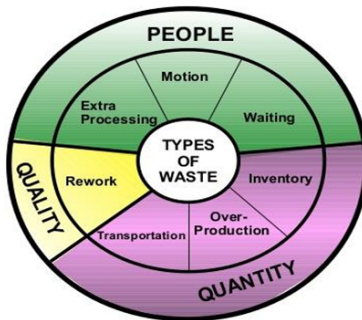
LEAN SC VS AGILE SC



source: Chopra and Meindl 2010 [?]

	Lean SC	Agile SC
product	community	fashion
cust.driver	cost	other
profit margin	low	high
main cost	operation	marketing

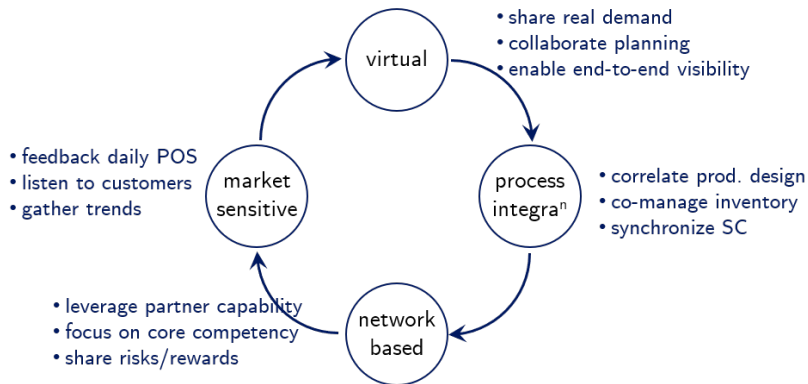
PRINCIPLES OF LEAN SUPPLY CHAIN



source: Chopra and Meindl 2010 [?]

- **Principle:** eliminating wastes by marginal gain, bottom up, training
- **7Wastes:** TIM WOOD B.
- **Basic:** 5S, layout, work procedure with visual,
- **Adv.** value stream mapping, reducing batch size & # suppliers
- **Logistics:** crossdock, back haul, postponement

PRINCIPLES OF AGILE SUPPLY CHAIN



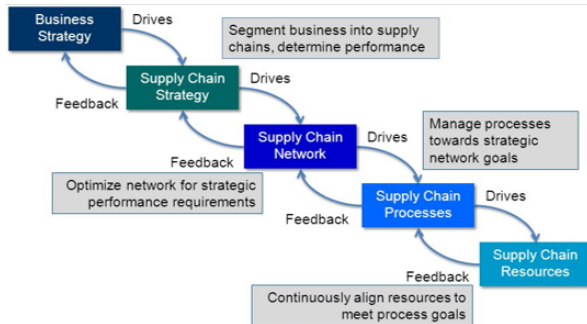
source: Chopra and Meindl 2010 [?]

- **What:** rapidly response to **unpredictable market demand** driven by innovation
- **Scope:** extend **end-to-end** of supply chain

SCM: STRATEGIC COST MANAGEMENT

If you can not measure it, you can not improve it.

source: William Thomson (Lord Kelvin)



PERFORMANCE MATRIX

PERSPECTIVE

- **Customer Service:** indicator of ability to meet **customers** timely needs and create values
- **Operational:** indicator of **processes** and **decisions** to meet customer expectations
- **Financial:** indicator of value creation for **shareholders**

DIMENSIONS

- **Cost:** **capital** required to meet expected process and operation
- **Responsiveness /Time:** speed in which expectations is met
- **Reliability:** trust/**quality** of service and accuracy of information
- **Agility:** ability and flexibility to **respond to external** influences
- **Asset Management Efficiency:** ability to efficiently utilize **assets**

IMPORTANCE PERFORMANCE MEASURE

Discuss the following popular SCM indicators in terms of perspective and dimension

- inventory day
- cash-to-cash cycle time
- on-time delivery
- return of equity (ROE)
- perfect order fulfillment
- forecasting accuracy
- overall value at risk
- order fulfillment lead time
- rate of good return
- $\frac{\text{logistic cost}}{\text{cost of good sold}}$

Elaborate activities or department effected by these indicators

QUESTION 5

- Elaborate activities or department effected by these indicators
- How should we improve SC of our company?

Pg:Design Improve

BENEFITS OF PERFORMANCE MEASURE

- **Learning:** comparing and evaluating an organization **internally**
- **Coordination:** indicating 'weak' points and **re-allocate resources**
- **Motivation & Goal:** communicating business strategy to operational **goal**
- **Benchmark:** comparing 'our' performance and adopting **best practice**

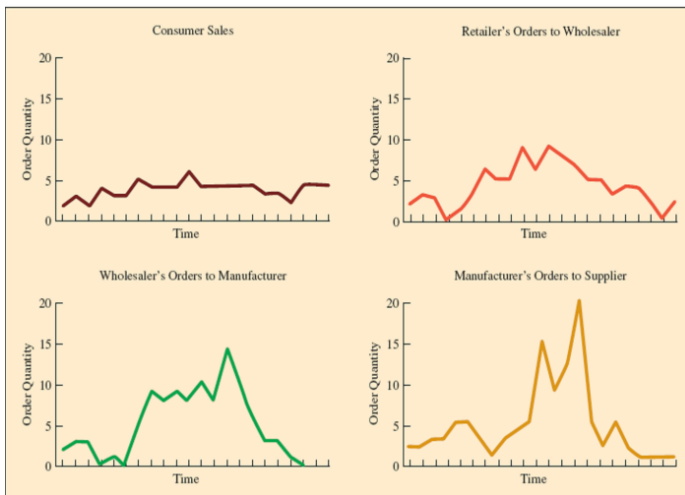
OKC'S NOTE ON MEASUREMENT

- **Measuring = Non-Value Added:** require **time**, effort, **tool**, revision
- **Measuring → Action:** aware of top-down (econ_{K9}, art), find **conflicts**
- **RE-Method in Business:** KPI VS Balance Scorecard VS OKR

BULLWHIP EFFECT

- **What:** **distortion** of **demand information** within SC
- **Nature:** distortion **increases in** higher **upstream** of SC
- **Causes:**
 - Information delay: **uncertainty** in quantities and pattern of demand
 - Length of chain: **aggregated demands** of each party
- **Effects:** inventory (dead stock, backlog), production smoothness, expedition
- **Examples:** Proctor & Gamble (Pampers); HP (printers); Barilla (pasta)
- **Remedy:** coordination (POS, forecasting), shorten SC, volume discount in fixed period

DEMAND FLUCTUATION



source: Chase and Jacob. 2011.

ART OF SUPPLY CHAIN IMPROVEMENT

SUPPLY CHAIN BASIC STEPS

- **[D] Begin with customers:** need of **every customers** (Amazon.com, Zippo.com)
- **[D] Keep SCM simple:** focus on process (i.e., purchase, analyze, transport), not function
- **[I] Measure what important, and improve them:**
- **[I] Build bridge, eliminate wall:** Realtime communication (UF), quantify investment, focus on people

SUPPLY CHAIN ADVANCE

- **[D] Focus on core, outsource others:**
- **[D] Aware roles change:** technology, opportunity, new comer
- **[D] Catch the vision, map it out:** know critical weak spot/ people, what value created
- **[I] Use Tech. as enabler:**
- **[I] Remind Fair \neq equal relationship:**

source: Fawcett, S. and Magnan, G. 2004.

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