



Decision Phases In Supply Chain Management

Phase 1
Design

Phase 2
Planning

Phase 3
Execution

Strategic
Level

Tactical
Level

Operational
Level

Long Term
Decisions

Medium Term
Decisions

Daily / Hourly
Operations

Tools & Decisions in Supply Chain Introduction

Frédéric Gauthier

PART 1 – INTERNATIONAL LOGISTICS SCOPE



For ages

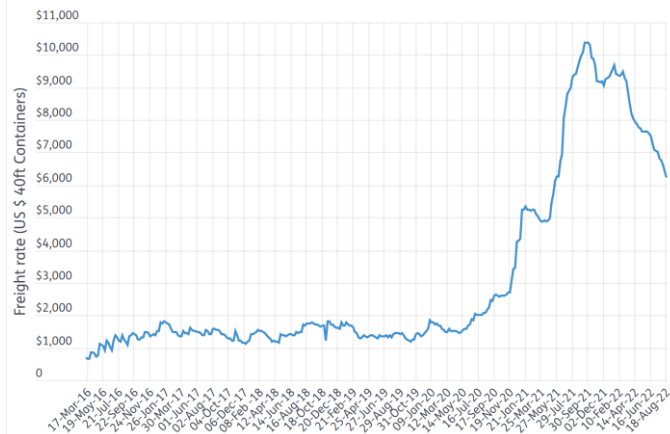
Physical flows

From order
information and
financial flows

Within the company

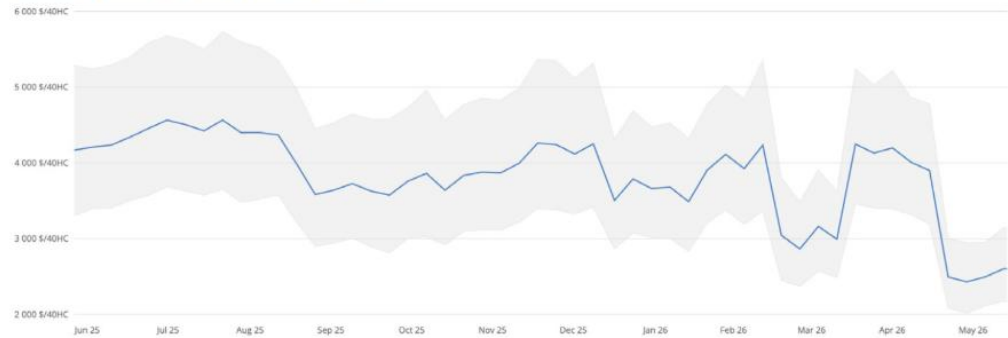
Supply chain

Worldwide



Shanghai - Le Havre

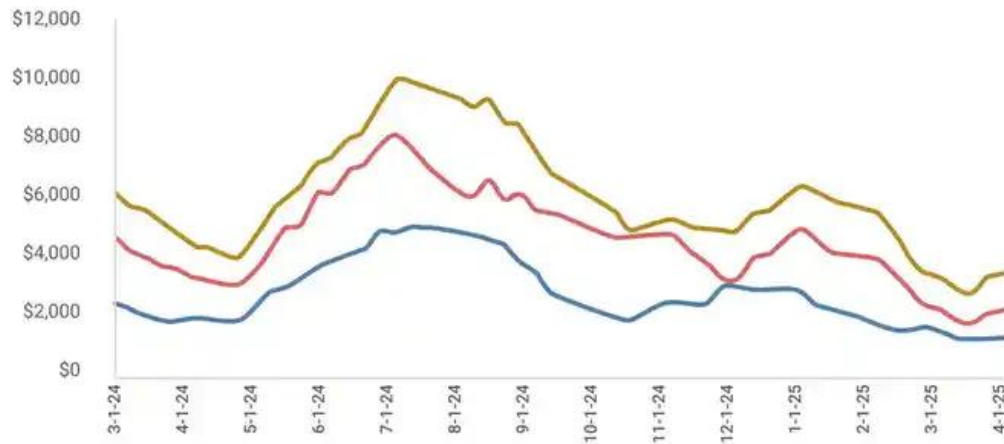
3M 6M 12M 24M YTD ALL Price \$/40HC Low - High Min - Max



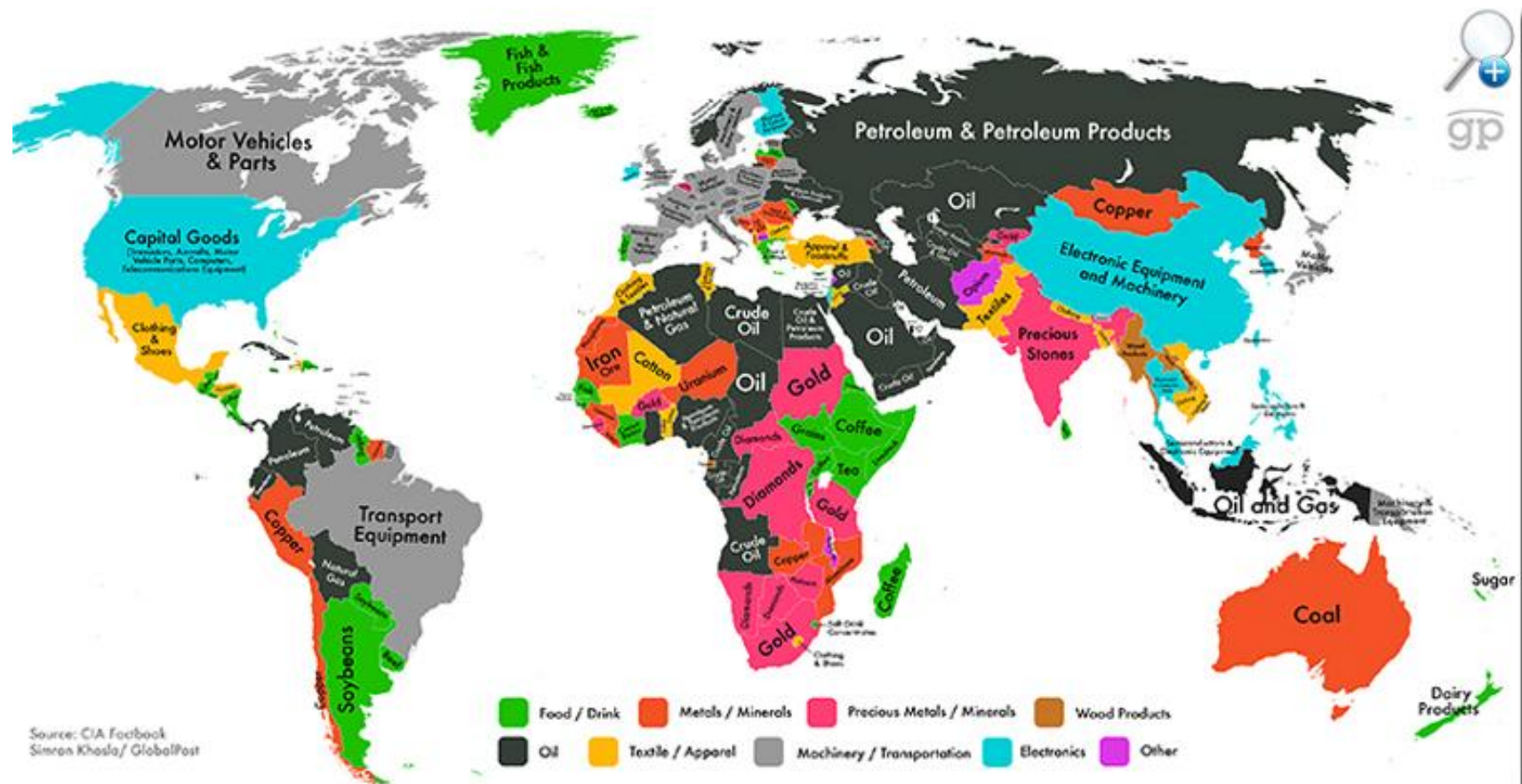
Ocean Freight \$/FEU Market Rates (Cost) 2024-2025

Monthly Index

● CN-USEC ● CN-EU ● CN-USWC



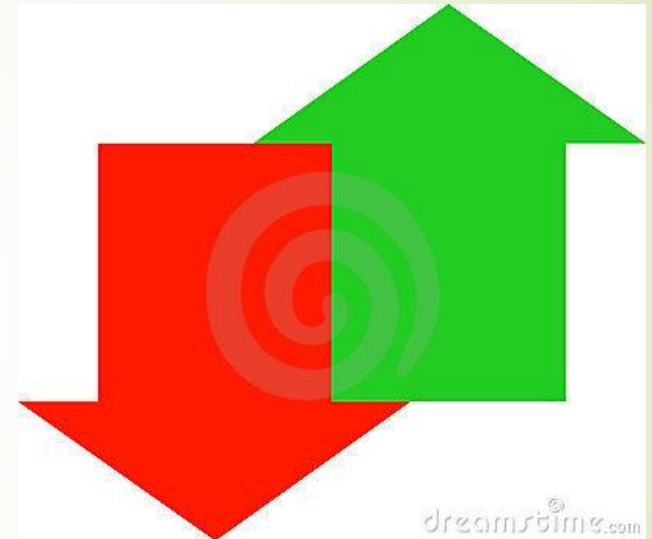
Sea freight rates variability

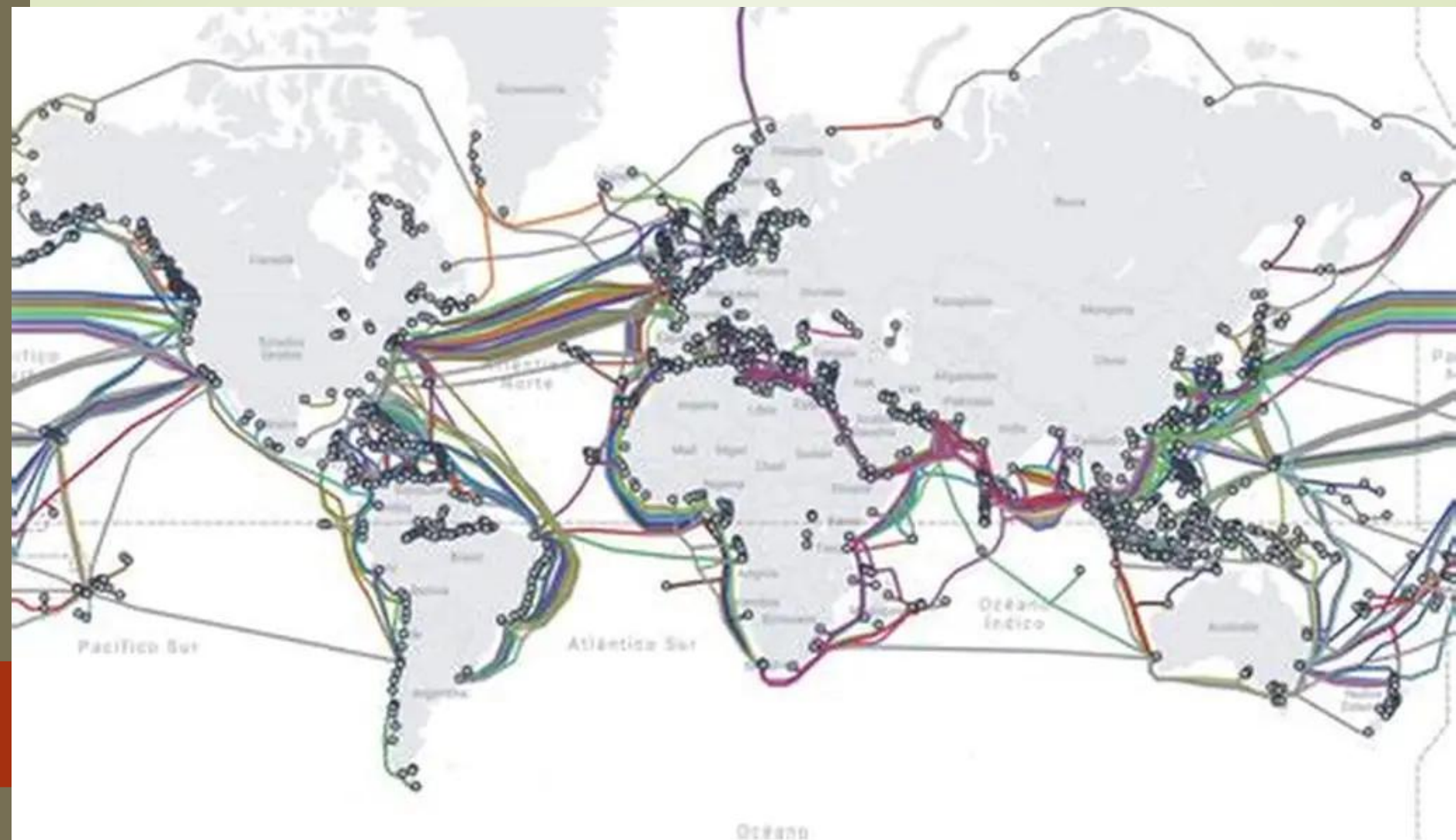


Source: CIA Factbook
Simon Khosla/GlobalPost

PART 1 – INTERNATIONAL LOGISTICS SCOPE AND MOVING

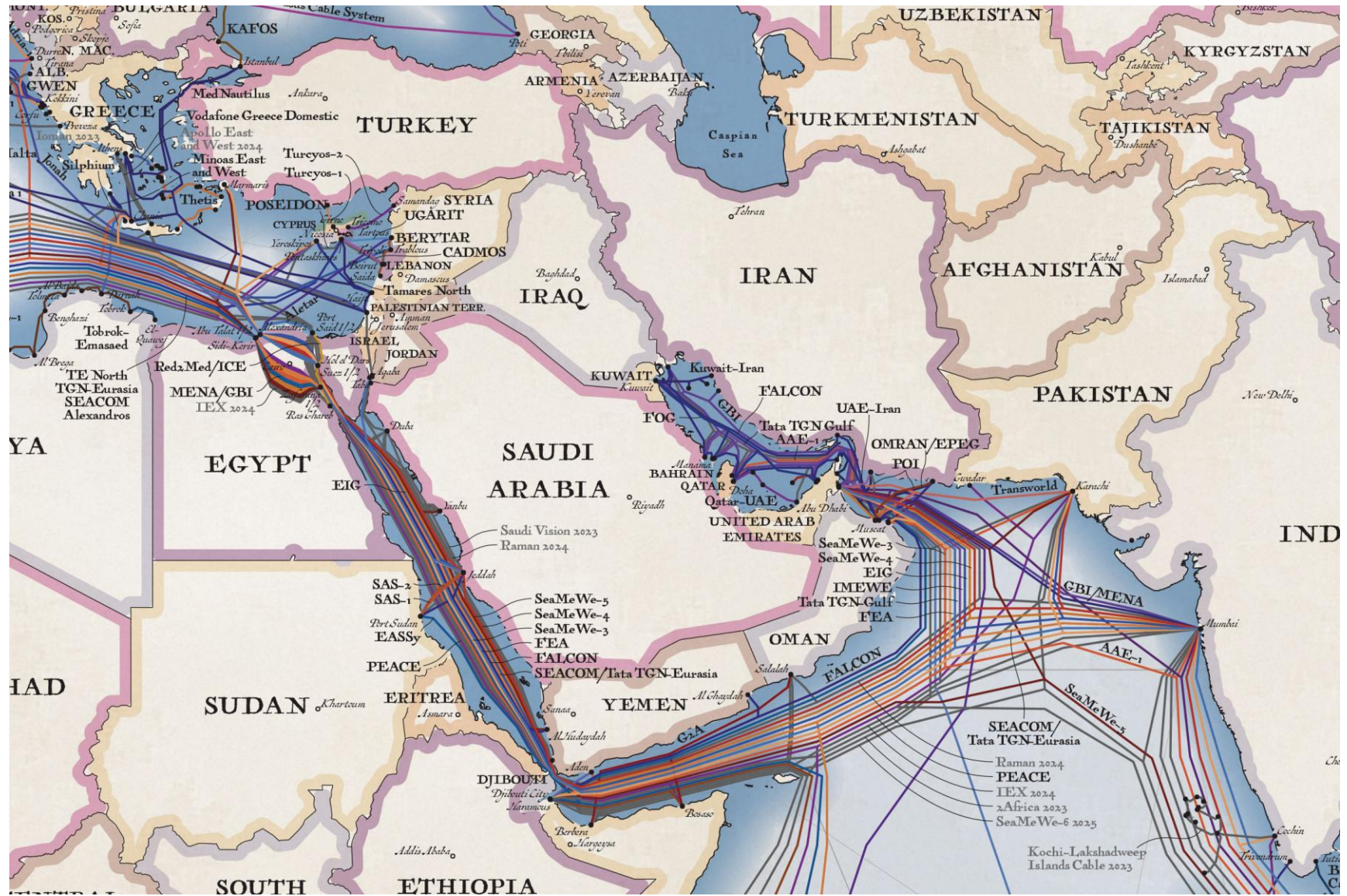
- **Economy, demand and fluctuation**
 - Depending on products
 - Population : age and culture
 - Freer trade or ... **not**
- **Market location is changing**
- **Competition throughout the world**
- The right what ????
 - Quantity, time, place, quality...
- **Transportation and worldwide communication make it possible**
 - Sea way cheapest cost
 - Communication cost
 - And poles





CURRENT REVOLUTION

Ormuz ...





12,000 kms long

PART 1 – INTERNATIONAL LOGISTICS SCOPE

Customers, what they expect

- A fair price
- Quality looking for exceeding customer expectations
- Delivery lead time
- Better pre sale after sale service
- flexibility

Order qualifiers

- You need them

and order winners

- You select them
- Depending on
 - Life cycle
 - country

Supply Chain Focus	Agile Supply	• Quality • Reliability	• Lead time
	Lean Supply	• Quality • Reliability	• Price
		Market Qualifiers	Order Winners
Market Requirements			



The Apple Supply Chain



Design and Development



USA



Sourcing



USA



China



Asia



Manufacturing



China



Warehousing



USA



Distribution



USA

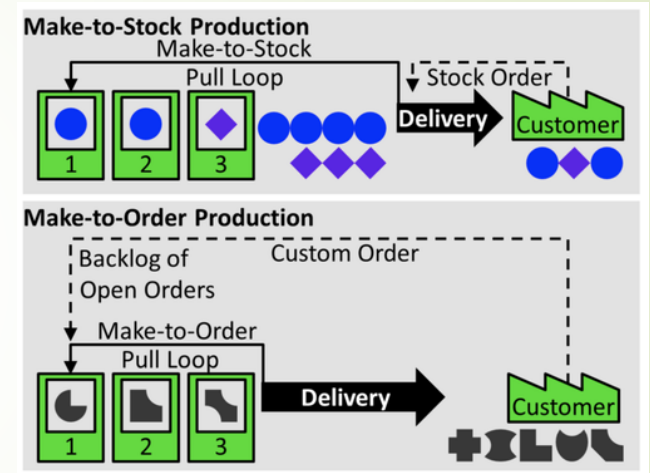


Global

PART I

► Manufacturing strategy

- Delivery lead time
- Engineer to order
 - At the product design stage
 - *Rittal GmbH* : industrial electrical enclosures (automation systems)
- Make to order
 - Raw material is available
 - *Custom commercial furniture manufacturer*
- Assemble to order
 - Parts are available
 - *Automotive industry, Dell Inc*
- Make to stock
 - From finished goods inventory
 - *Procter and Gamble*



PART I

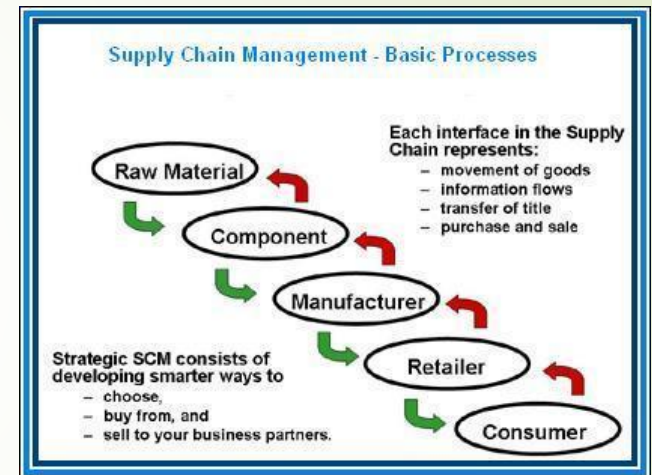
➤ The supply chain concept

- Raw materials, manufacturing, finished goods
- Several companies within the supply / demand relationship
- Several suppliers as well as several customers
- A number of intermediaries

➤ From the past to today

- Internal management
- Suppliers as business adversaries
- The supplier partnership within the Just in Time management
 - Mutual analysis for cost reduction
 - Mutual product design
 - The speed of accurate information flow

➤ Power of Demand & Power of supply



PART I

► Conflicts in traditional systems

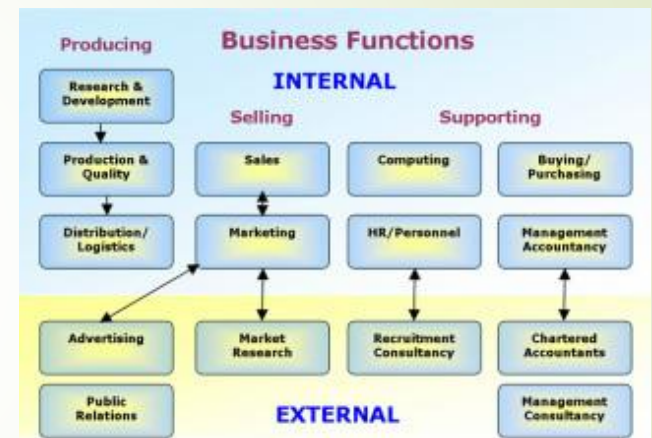
- Before separate functions
 - Best customer service
 - Lowest production cost
 - Lowest inventory investment
 - Lowest distribution costs

► To

- Marketing
- Finance
- Production...
- Against Finance

► Driven to conflicts

- Connections with goals
- To balance conflicting objectives



Sum up ...



WHAT ARE THE
LOGISTICS FLOWS



WHAT IS LOGISTICS
MAIN GOAL



WHAT IS THE MAIN
PROBLEM LOGISTICS
HAS TO SOLVE



► Supply chain metrics

- A performance measure qualitative or quantitative,
 - Control by superior
 - Reporting of data
 - Communication
 - Learning to ...
 - Improve

► Today major challenges

- Customers are never satisfied
- A supply chain might be easily large
- A vast amount of data
- Product life cycle is shorter and shorter
- Profit margin are more squeezed
- By the way an increasing number of alternatives

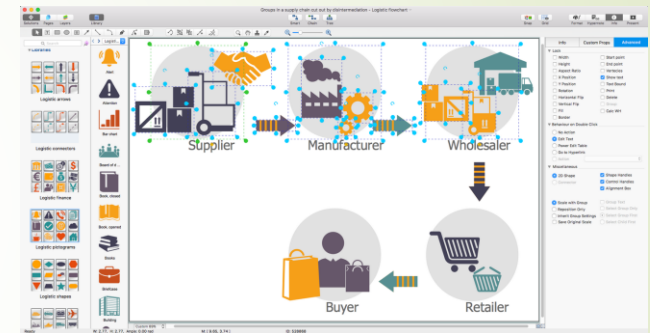
General Supply chain KPIs examples

- **Compliance Rate:** *Understand if suppliers fulfill your requirements*
- **Number of Suppliers:** *Track your level of dependency towards your suppliers*
- **Purchase Order Cycle Time:** *Know who to address your urgent orders to*
- **Supplier Quality Rating:** *Analyze the quality of your suppliers*
- **Supplier Availability:** *Measure suppliers' capacity to respond to demand*
- **Supplier Defect Rate:** *Evaluate your suppliers' individual quality*
- **Vendor Rejection Rate & Costs:** *Examine your quality management strategies*
- **Lead Time:** *Understand the total time to fulfill an order*
- **Emergency Purchase Ratio:** *Track the number of your emergency purchases*
- **Purchases In Time & Budget:** *Monitor purchasing time & budget*
- **Cost of Purchase Order:** *Control the internal costs incurred by each purchase*
- **Procurement Cost Reduction:** *Streamline the tangible costs savings*
- **Procurement Cost Avoidance:** *Avoid potential extra costs in the future*
- **Spend Under Management:** *Track and optimize your expenditures*
- **Procurement ROI:** *Determine the profitability of investments*

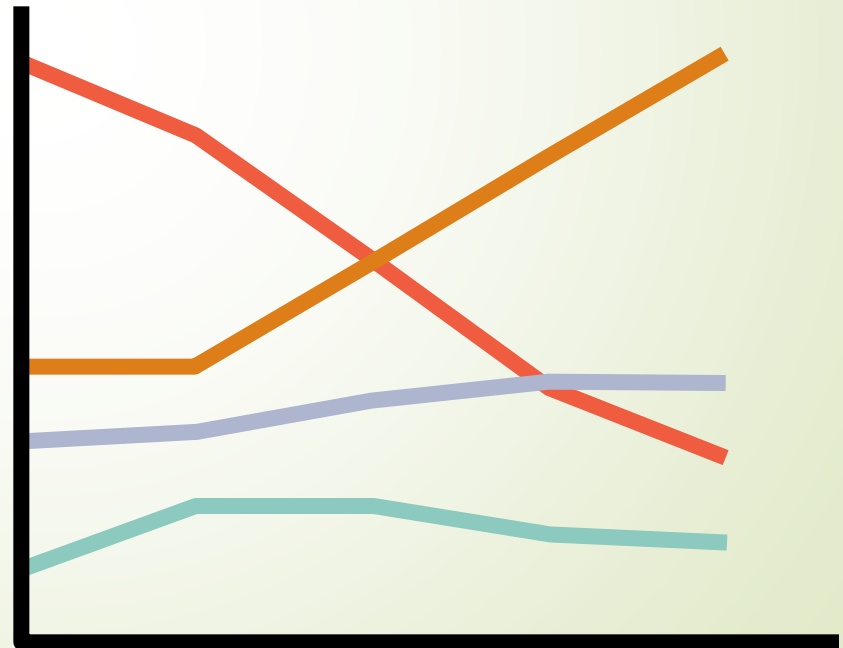
And

Indicator of performance in service as well as in manufacturing

- **Designing the flow management**
 - **Product design**
 - Use, maintenance, analysis, plan, packaging till reverse
 - **Setting the objectives**
 - Assessment of service level, logistics categories
 - **Designing the information system**
 - Databases, software choice, telecommunication, EDI, codification
 - **Design of physical system**
 - Network, inventory level, transport alternatives
 - **Designing the management system**
 - Forecast, ressource allocation, priority rules
 - **Intensification of trade, new breakdown**
 - **And geopolitics ...**
- means concentration



Part II – Competing with Operations (materials management)



COMPETING WITH OPERATIONS

Introduction

Operations management **deals with processes**

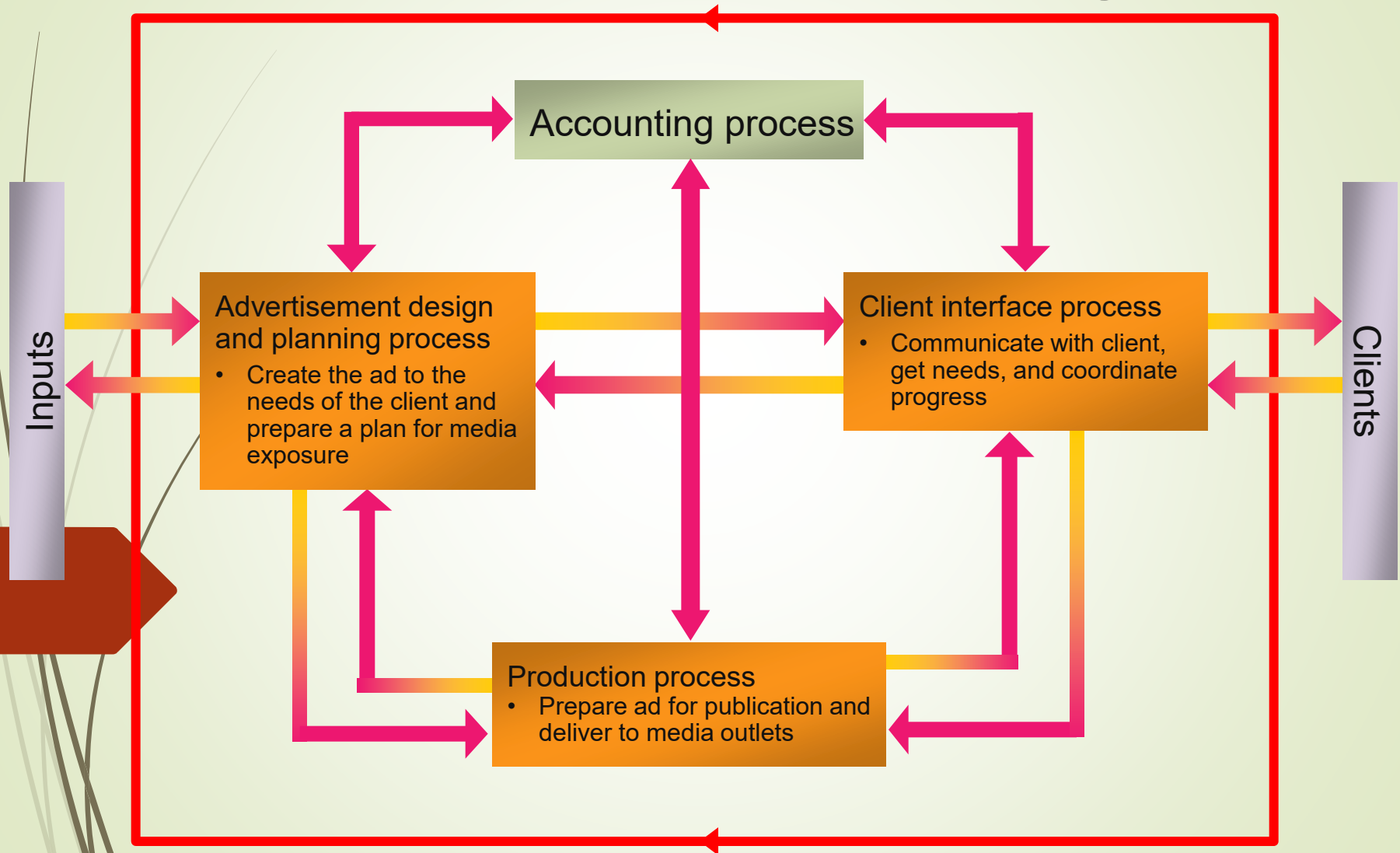
Creates departments **connection with Operations**

Accounting, finance, human resources,
management information system, marketing,
operations...

Inputs, adding value, provide outputs

Cuts across boundaries

Process View of an Ad Agency



Nested Processes

Advertisement Design and Planning Process

Creative design process

- Receive work request
- Create team
- Prepare several designs
- Receive inputs from Account Executive
- Prepare final concept
- Revise concept per client's inputs

Media planning process

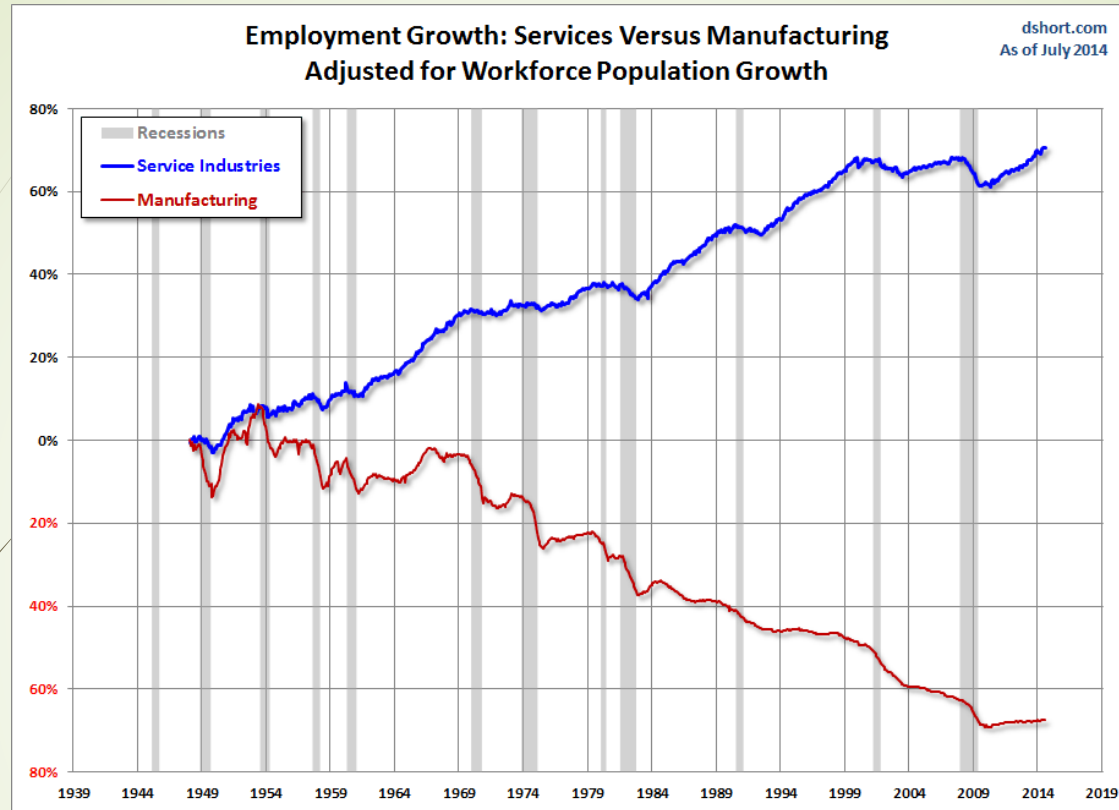
- Receive work request
- Prepare several media plans
- Receive inputs from Account Executive
- Prepare final plan
- Revise plan per client's inputs

- Customer supplier relationships
 - End users and internal customers
 - External suppliers and internal suppliers
- Service and manufacturing processes
 - **Services**
 - Intangible perishable outputs
 - Finished goods inventory



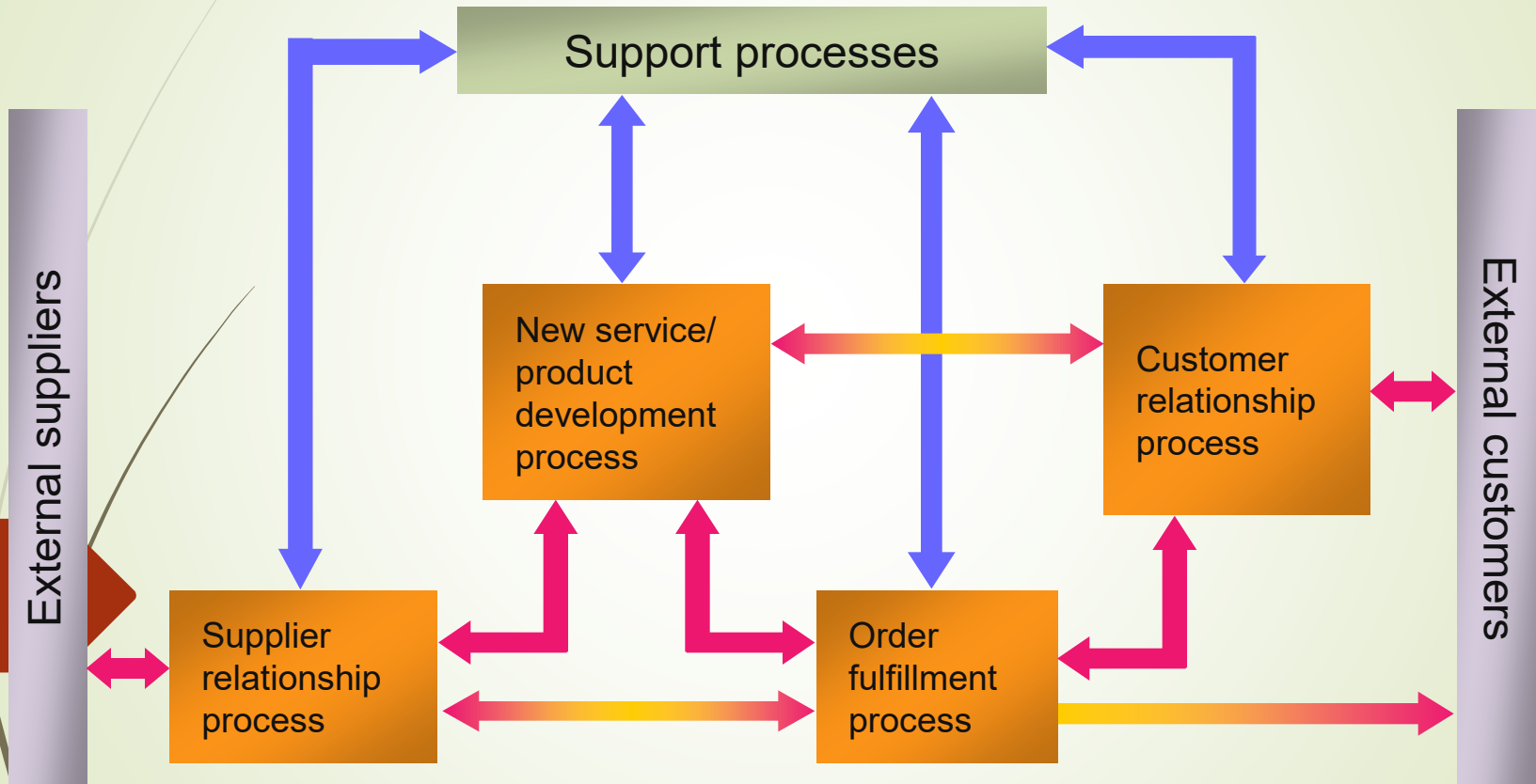


Degree of customer
contact
High or low
Management in service



Manufacturing and service comparison in the U.S.

Internal Value-Chain Linkages Showing Work and Information Flows

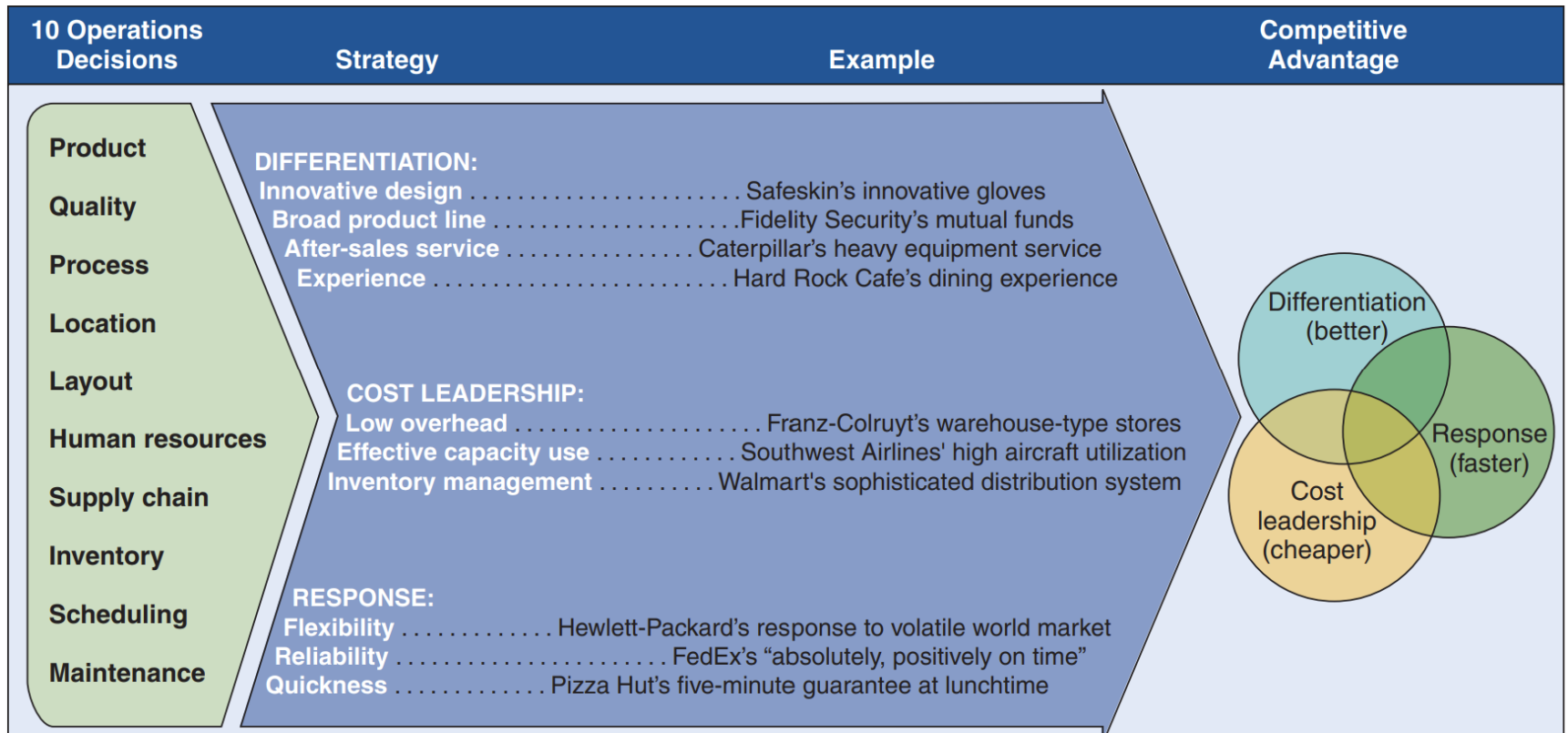


- **Added value** : a core process
- A **support process** : provides vital resources
- *Preventing from non added value*

Support Processes

Table 1.1 Examples of Support Processes

<i>Capital Acquisition</i>	<i>The provision of financial resources for the organization to do its work and to execute its strategy</i>
<i>Budgeting</i>	<i>The process of deciding how funds will be allocated over a period of time</i>
<i>Recruitment and Hiring</i>	<i>The acquisition of people to do the work of the organization</i>
<i>Evaluation and Compensation</i>	<i>The assessment and payment of the people for the work and value they provide to the company</i>
<i>Human Resource Support and Development</i>	<i>The preparation of the people for their current jobs and future skill and knowledge needs</i>
<i>Regulatory Compliance</i>	<i>The process that insure the company if meeting all laws and legal obligations</i>
<i>Information Systems</i>	<i>The movement and processing of data and information to expedite business operations and decisions</i>
<i>Enterprise and Functional Management</i>	<i>The systems and activities that provide strategic direction and ensure effective execution of the work of the business</i>



► *Operations Management*
Pearson book

Sample Company Mission

To manufacture and service an innovative, growing, and profitable worldwide microwave communications business that exceeds our customers' expectations.

Sample Operations Management Mission

To produce products consistent with the company's mission as the worldwide low-cost manufacturer.

Sample OM Department Missions

Product design	To design and produce products and services with outstanding quality and inherent customer value.
Quality management	To attain the exceptional value that is consistent with our company mission and marketing objectives by close attention to design, supply chain, production, and field service opportunities.
Process design	To determine, design, and develop the production process and equipment that will be compatible with low-cost product, high quality, and a good quality of work life.
Location	To locate, design, and build efficient and economical facilities that will yield high value to the company, its employees, and the community.
Layout design	To achieve, through skill, imagination, and resourcefulness in layout and work methods, production effectiveness and efficiency while supporting a high quality of work life.
Human resources	To provide a good quality of work life, with well-designed, safe, rewarding jobs, stable employment, and equitable pay, in exchange for outstanding individual contribution from employees at all levels.
Supply-chain management	To collaborate with suppliers to develop innovative products from stable, effective, and efficient sources of supply.
Inventory	To achieve low investment in inventory consistent with high customer service levels and high facility utilization.
Scheduling	To achieve high levels of throughput and timely customer delivery through effective scheduling.
Maintenance	To achieve high utilization of facilities and equipment by effective preventive maintenance and prompt repair of facilities and equipment.

Multi poles world

➤ World Trade Organization (WTO)

- An international organization that promotes world trade by lowering barriers to **the free flow of goods** across borders.

➤ North American Free Trade Agreement (**USMCA**)

- A free trade agreement between Canada, Mexico, and the United States.

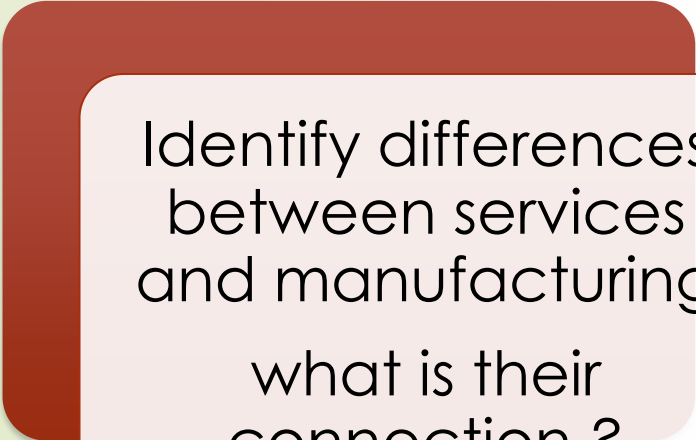
➤ European Union (**EU**)

- A European trade group that has 27 member states...

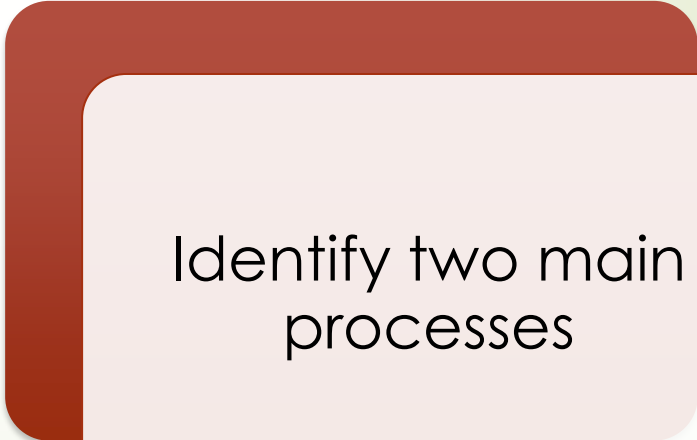
➤ Enhanced economic partnership agreement **E.E.P.A.** with China ...



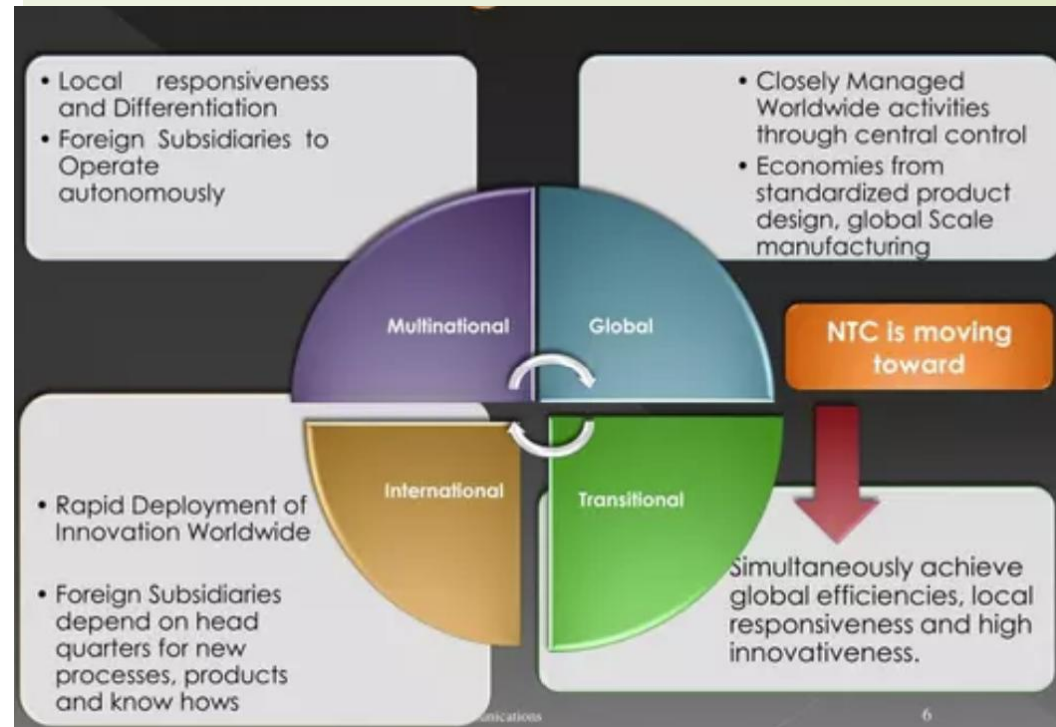
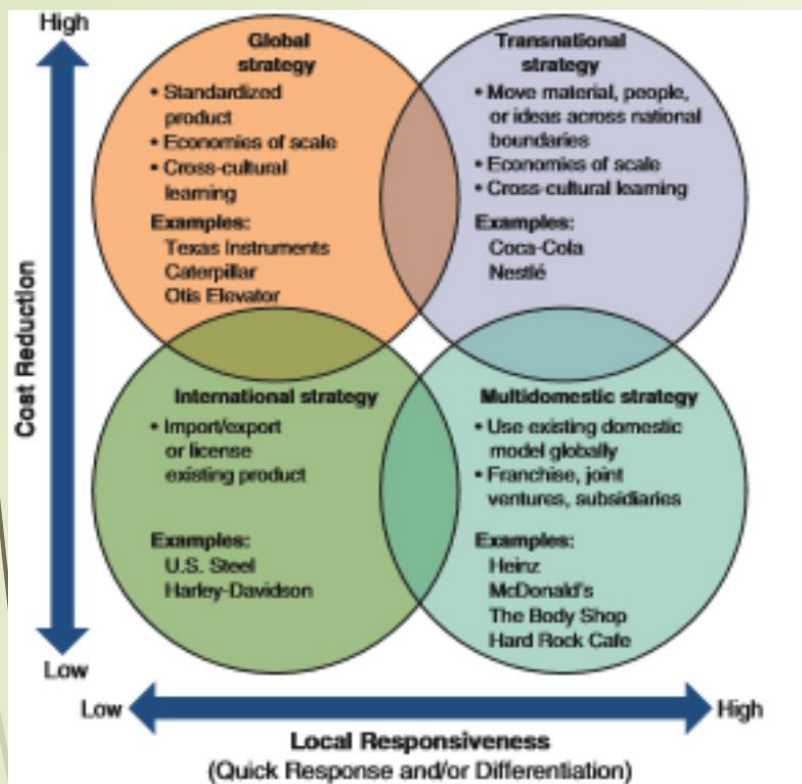
Sum up



Identify differences
between services
and manufacturing
what is their
connection ?



Identify two main
processes



Four global strategies

Multidomestic
Global
Transnational
International

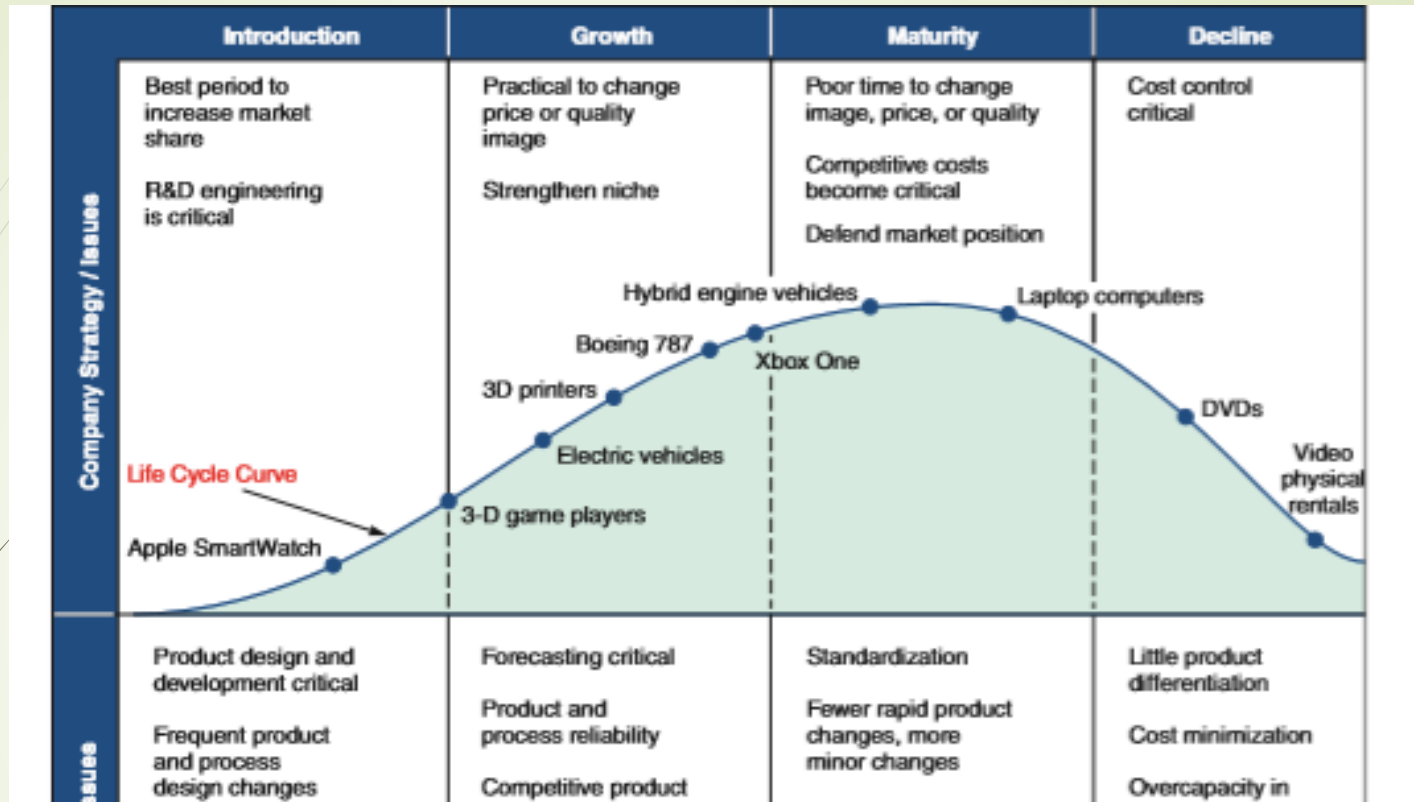
COMPETITIVE ADVANTAGE	BRAND NAME DRUGS, INC.	GENERIC DRUG CORP.
	PRODUCT DIFFERENTIATION STRATEGY	LOW-COST STRATEGY
Product selection and design	Heavy R&D investment; extensive labs; focus on development in a broad range of drug categories	Low R&D investment; focus on development of generic drugs
Quality	Quality is major priority, standards exceed regulatory requirements	Meets regulatory requirements on a country-by-country basis, as necessary
Process	Product and modular production process; tries to have long product runs in specialized facilities; builds capacity ahead of demand	Process focused; general production processes; “job shop” approach, short-run production; focus on high utilization
Location	Still located in city where it was founded	Recently moved to low-tax, low-labor-cost environment
Layout	Layout supports automated product-focused production	Layout supports process-focused “job shop” practices
Human resources	Hire the best; nationwide searches	Very experienced top executives hired to provide direction; other personnel paid below industry average
Supply chain	Long-term supplier relationships	Tends to purchase competitively to find bargains
Inventory	Maintains high finished goods inventory primarily to ensure all demands are met	Process focus drives up work-in-process inventory; finished goods inventory tends to be low
Scheduling	Centralized production planning	Many short-run products complicate scheduling
Maintenance	Highly trained staff; extensive parts inventory	Highly trained staff to meet changing demands

➡ **TO COMPARE Brand vs Generic**

➡ *Operations Management Pearson book*



Competitive advantage pattern application



Product life cycle

OUTSOURCING

ADVANTAGES	DISADVANTAGES
Cost savings	Increased logistics and inventory costs
Gaining outside expertise that comes with specialization	Loss of control (quality, delivery, etc.)
Improving operations and service	Potential creation of future competition
Maintaining a focus on core competencies	Negative impact on employees
Accessing outside technology	Risks may not manifest themselves for years



➡ Operations Management Pearson book



Measuring performance focus

Productivity

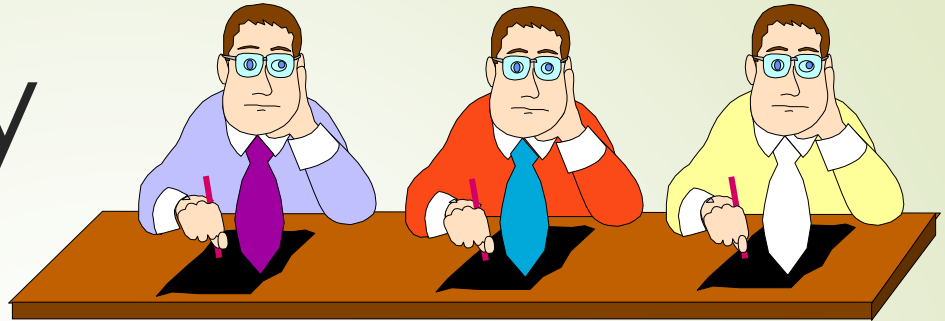
The ratio of outputs (goods and services) divided by one or more inputs (such as labor, capital, or management).



$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

The operations manager's job is to enhance (improve) this ratio of outputs to inputs. Improving productivity means improving efficiency

Productivity



$$\text{Labor productivity} = \frac{\text{Policies processed}}{\text{Employee hours}}$$

Productivity



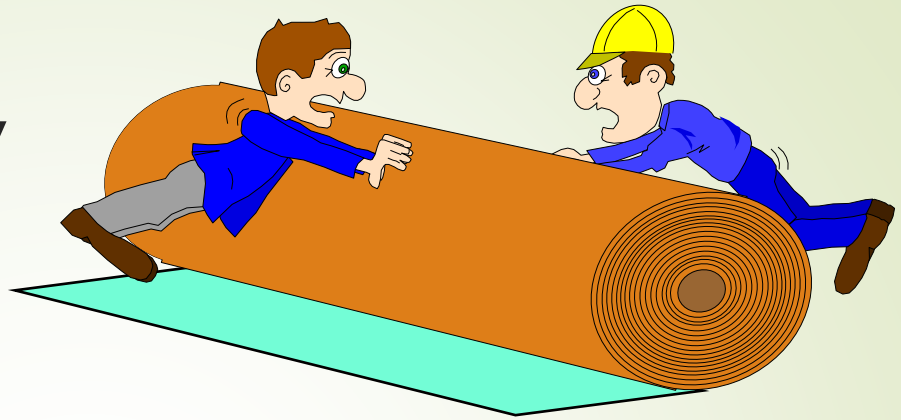
$$\text{Labor productivity} = \frac{600 \text{ policies}}{(3 \text{ employees})(40 \text{ hours/employee})}$$

Productivity



Labor productivity = 5 policies/hour

Productivity



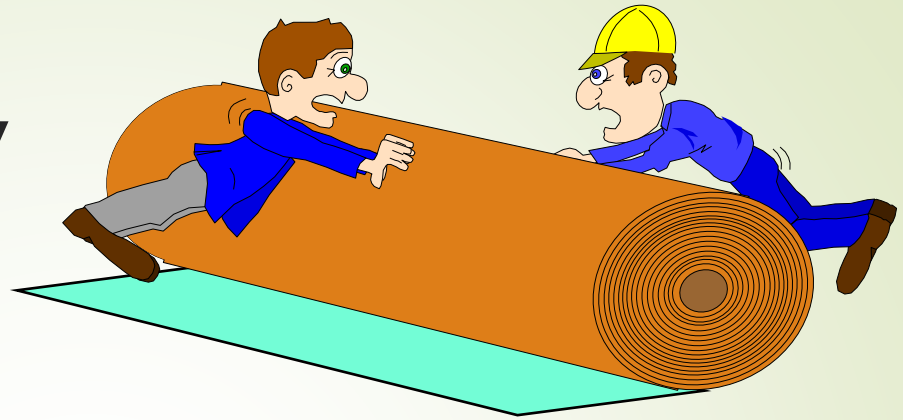
Labor productivity = 5 policies/hour

Multifactor productivity =

Quantity at standard cost

Labor cost + Materials cost + Overhead cost

Productivity



Labor productivity = 5 policies/hour

Multifactor productivity =

$$\frac{(400 \text{ units})(\$10/\text{unit})}{\$400 + \$1000 + \$300} = \frac{\$4000}{\$1700} = 2.35$$

Productivity Measures

- ▶ Labor, which contributes about 10% of the annual increase.
- ▶ Capital, which contributes about 38% of the annual increase.
- ▶ Management, which contributes about 52% of the annual increase.

Productivity and service



Productivity of the service sector has proven difficult to improve because service-sector work is...



1. Typically **labor intensive** (e.g., counseling, teaching).



2. Frequently focused on **unique individual attributes or desires** (e.g., investment advice).



3. Often an intellectual task performed by professionals (e.g., medical diagnosis).

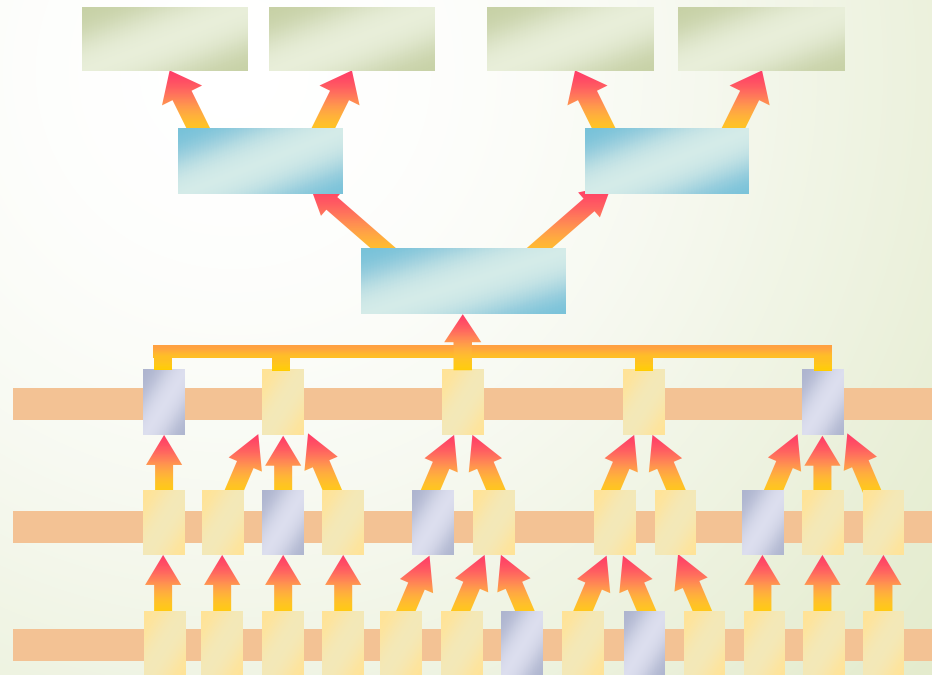


4. Often difficult to mechanize and automate (e.g., a haircut)....

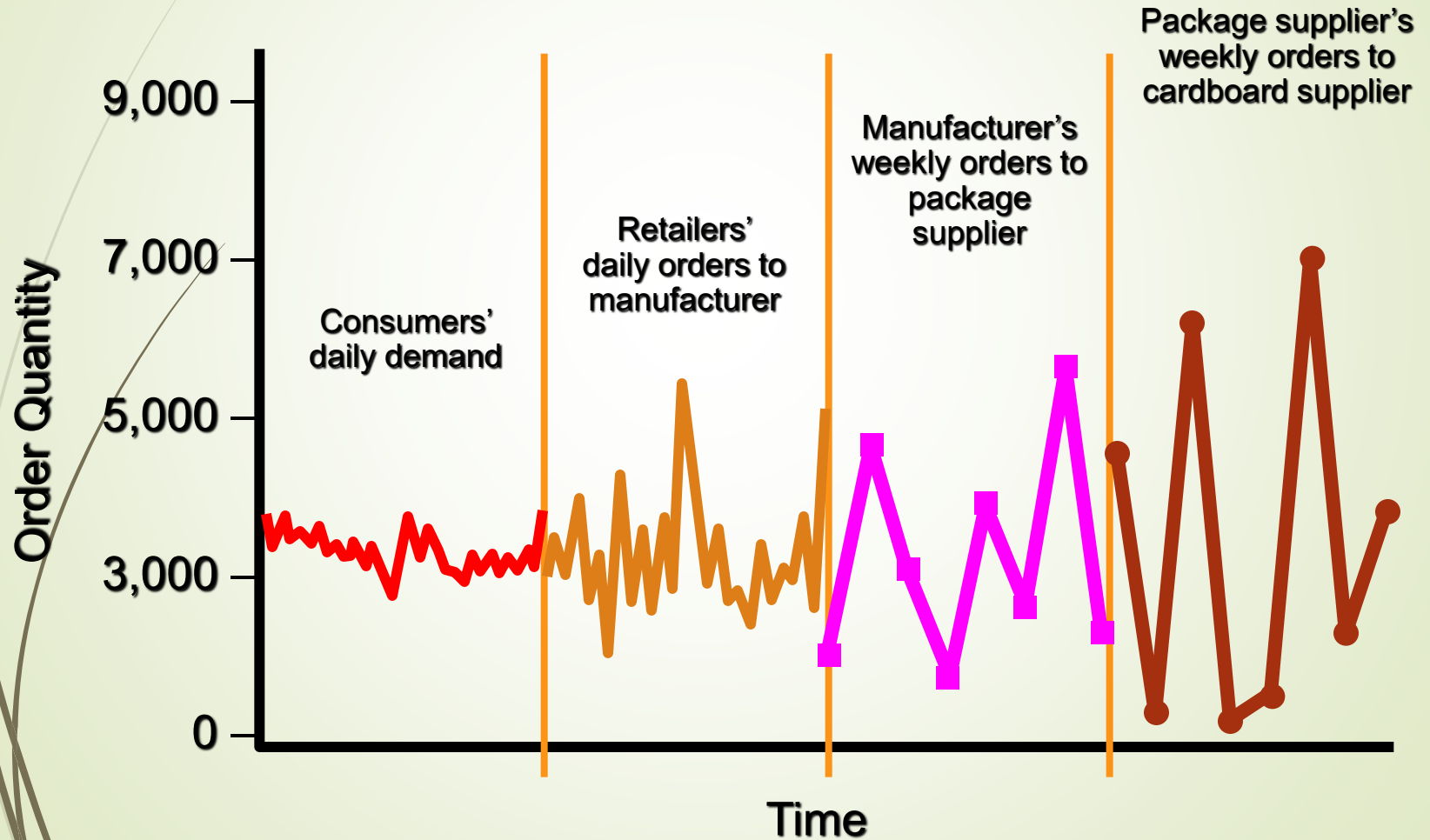


5. Often difficult to evaluate for quality (e.g., performance of a law firm).

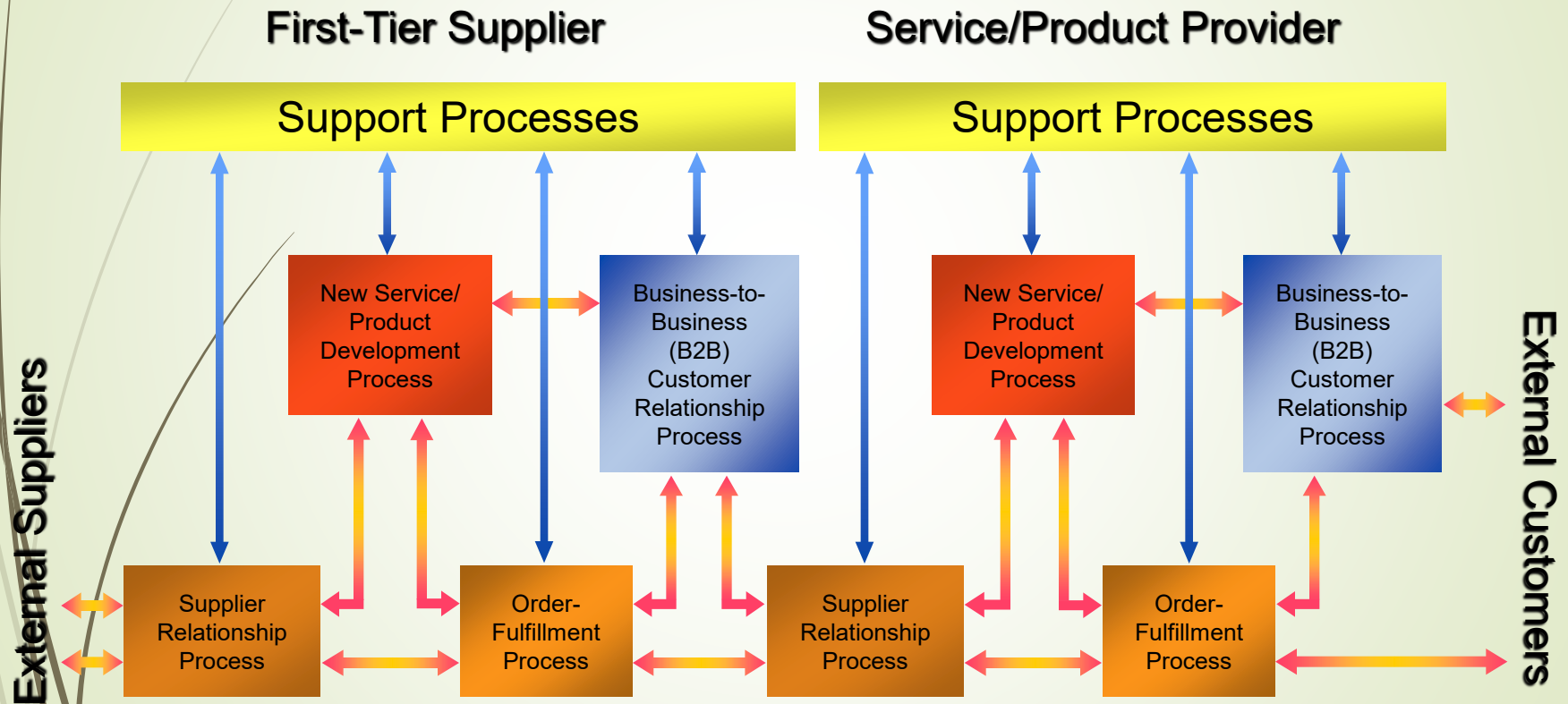
Supply-Chain Design



Supply Chain Dynamics for Facial Tissue



External Value-Chain Linkages



End of life phase

- Supply chains that consider forward and reverse product **flows over the entire life cycle**
- A group of 100 apparel brands and retailers have created the **Eco Index** to display an eco-value on a tag, like the Energy Star rating does for appliances.
- ISO 14000
 - A series of environmental management standards established by the International Organization for Standardization (ISO).
 - **ISO 14000 standards** report environmental and economic benefits such as
 - reduced raw material/resource use
 - reduced energy consumption
 - lower distribution costs
 - improved corporate image
 - improved process efficiency
 - reduced waste generation and disposal costs, and better utilization of recoverable resources
 - ISO 14001, which addresses environmental management systems
 - guidance to companies to minimize harmful effects on the environment caused by their activities
 - **Corporate Social Responsibility ...**



Supply management to sum up

- Step 1
 - Service reliability
 - Quality
 - Quantity
 - Time
 - Packaging
 - Delivery address
 - Shipping documents ...
 - Reactivity
 - Speed
 - Way of answer
- CUSTOMER CARE



Supply management

Step 2

- **Priorities**

- What performance is most important to the customer
- Our own performance on all criteria
- Benchmark with competitors
- Customers evaluation
- Conclude order qualifiers and winners

Step 3

- **Measure and comparison**

- Service
- Supply chain cost / total cost
- Finance : stock level
- Sustainable development indicators

Step 4

- Identify gaps vs customer expectations

Step 5

- Review goals
 - Reliability of our competitor high...
 - Delivery with our competitors : faster they are
 - Best level of stock (minimum)