

Supply chain management



Ch 11 Supply Chain Management

12 October 2022

Objectives

At end of lesson, you should be able to

This week

1. **Explain** the strategic importance of SCM
2. **Identify** 6 sourcing strategies
3. **Explain** supply chain risks and mitigation tactics
4. **Evaluate** issues for an Integrated Supply Chain
5. **Describe** steps in supplier selection
6. **Explain** major issues in Logistics Management
7. **Measure** Supply Chain Performance

What is Supply Chain Management?

Give an example of supply chain.

1. Automotive supply chain
2. Electronics chips supply chain
3. Food products supply chain

What is the objective of SCM in Operations?

Value chain for Automobile industry

The dealership is responsible for selling the product to customers

Dealership

Customer

The customers receives the final product for which they pay and are entitled to related services

Distribution

The assembled vehicles are distributed to different dealerships

Factory

The parts bought from different suppliers are assembled in vehicle factory

Supplier

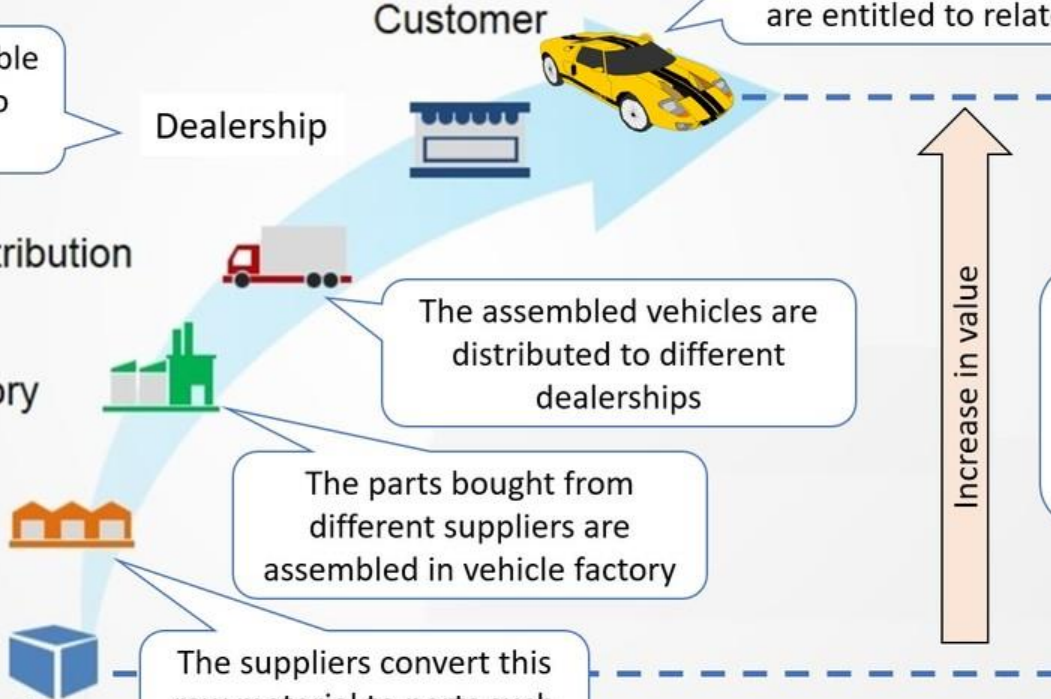
The suppliers convert this raw material to parts such as radiator, headlights, etc.

Raw Material

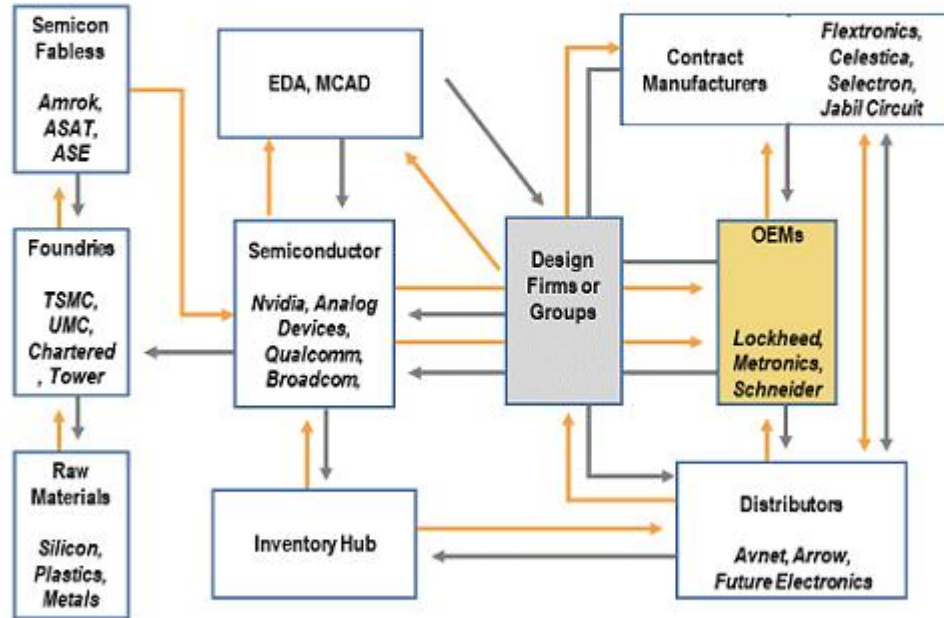
Raw material such as sheet metal, rubber, plastic, etc.

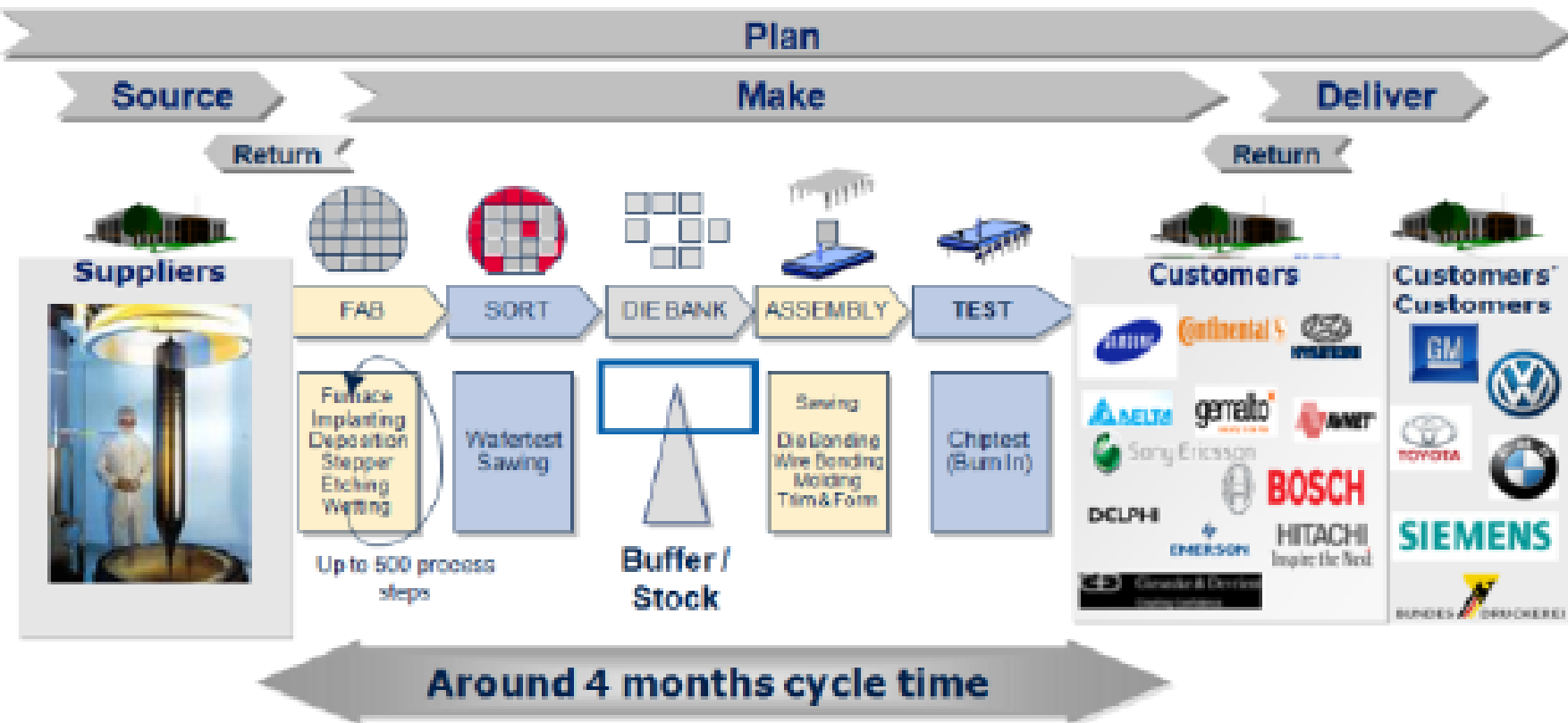
Increase in value

The value of product goes on increasing as it is converted from raw materials to final product



Electronics Supply Chain

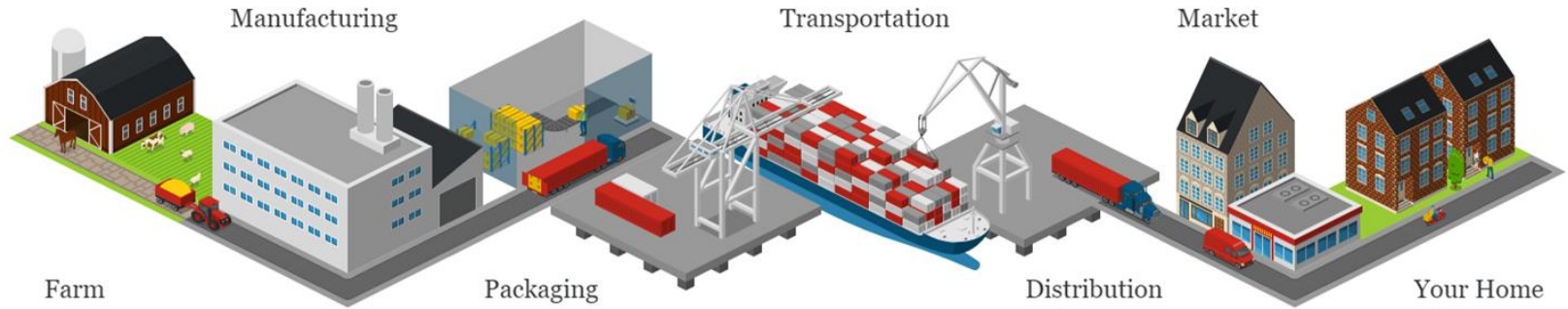




- The SCOR model is used at Infineon for supply chain management
- Product innovation and short lead time increase the complexity
- The Plan process has to handle up and downturns

FARM TO TABLE

The Food Production Chain



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 consumer

- ◆ Walmart cooperates with its top 200 supplier factories in China to reach the goal of 20% energy efficiency improvement.
- ◆ Mercury Marine, the large boat-engine producer, uses the Internet to enhance design with boat builders and engine dealers as it fights off competition from Honda, Yamaha, and Volvo.
- ◆ Unifi, the leading U.S. maker of synthetic yarn, shares daily production-scheduling and quality-control information with raw materials supplier DuPont.
- ◆ Amazon, to reduce logistics costs, has moved its fulfillment activities for Procter and Gamble products directly into Procter and Gamble's warehouse.

TABLE 11.1

Supply Chain Costs as a Percentage of Sales

INDUSTRY	% PURCHASED
Automobile	67
Beverages	52
Chemical	62
Food	60
Lumber	61
Metals	65
Paper	55
Petroleum	79
Restaurants	35
Transportation	62



Supply Chain

[sə-'plī 'chān]

A network between a company and its suppliers to produce and distribute a specific product to the final buyer; it includes different activities, people, entities, information, and resources.

Coordination

What are **typical activities needed for good coordination** when there are many parties involved - suppliers - local and overseas, parts, packaging, shipment finished goods, export to 30 countries, overseas factories, etc.?

Activities?

Logistics - need to determine mode of shipping

Purchasing orders must specify correct quantity, type, colour, etc. - part of effective and efficient management

What about other INFORMATION ? Design changes, Engineering, Material changes, ?

Explain the strategic importance of SCM

Why is SCM strategically important?

Firms strive for increased competitiveness through product customization, high quality, low costs, speed to market, sustainability, = really require coordinated and excellent supply chain management system and processes

Require supplier integration up and down - Tier 1, 2, 3 - Raw Material - Manufacturer - Customer - User/Consumer

(See Slides 9 - 15)

Supply Chain Management

TABLE 11.2

How Corporate Strategy Impacts Supply Chain Decisions

	LOW COST STRATEGY	RESPONSE STRATEGY	DIFFERENTIATION STRATEGY
Primary supplier selection criteria	<ul style="list-style-type: none"> • Cost 	<ul style="list-style-type: none"> • Capacity • Speed • Flexibility 	<ul style="list-style-type: none"> • Product development skills • Willing to share information • Jointly and rapidly develop products
Supply chain inventory	<ul style="list-style-type: none"> • Minimize inventory to hold down costs 	<ul style="list-style-type: none"> • Use buffer stocks to ensure speedy supply 	<ul style="list-style-type: none"> • Minimize inventory to avoid product obsolescence
Distribution network	<ul style="list-style-type: none"> • Inexpensive transportation • Sell through discount distributors/retailers 	<ul style="list-style-type: none"> • Fast transportation • Provide premium customer service 	<ul style="list-style-type: none"> • Gather and communicate market research data • Knowledgeable sales staff
Product design characteristics	<ul style="list-style-type: none"> • Maximize performance • Minimize cost 	<ul style="list-style-type: none"> • Low setup time • Rapid production ramp-up 	<ul style="list-style-type: none"> • Modular design to aid product differentiation

What are 6 Sourcing Strategies?

1. Many suppliers
2. Few suppliers
3. Vertical integration
4. Joint ventures
5. *Keiretsu* networks
6. Virtual companies

Sourcing Issues

- Make or Buy
- Outsourcing

(Slides 16 - 24)

What is Keiretsu ?

Please Google for Mitsubishi Keiretsu and Toyota Keiretsu

What are your findings?

KEIRETSU

KEIRETSU is an informal business group that is closely aligned & works together to ensure mutual gain for all companies in the network.

HISTORY

It got popular in Japan after World War II. These are still in existence, but they are now less popular than they were earlier.

TYPES

1. **Horizontal Keiretsu:** Belong to different industries & there is no one company that leads the group.
2. **Vertical Keiretsu:** One big company leads the group & smaller companies in group are usually the suppliers to leading company.

ADVANTAGES

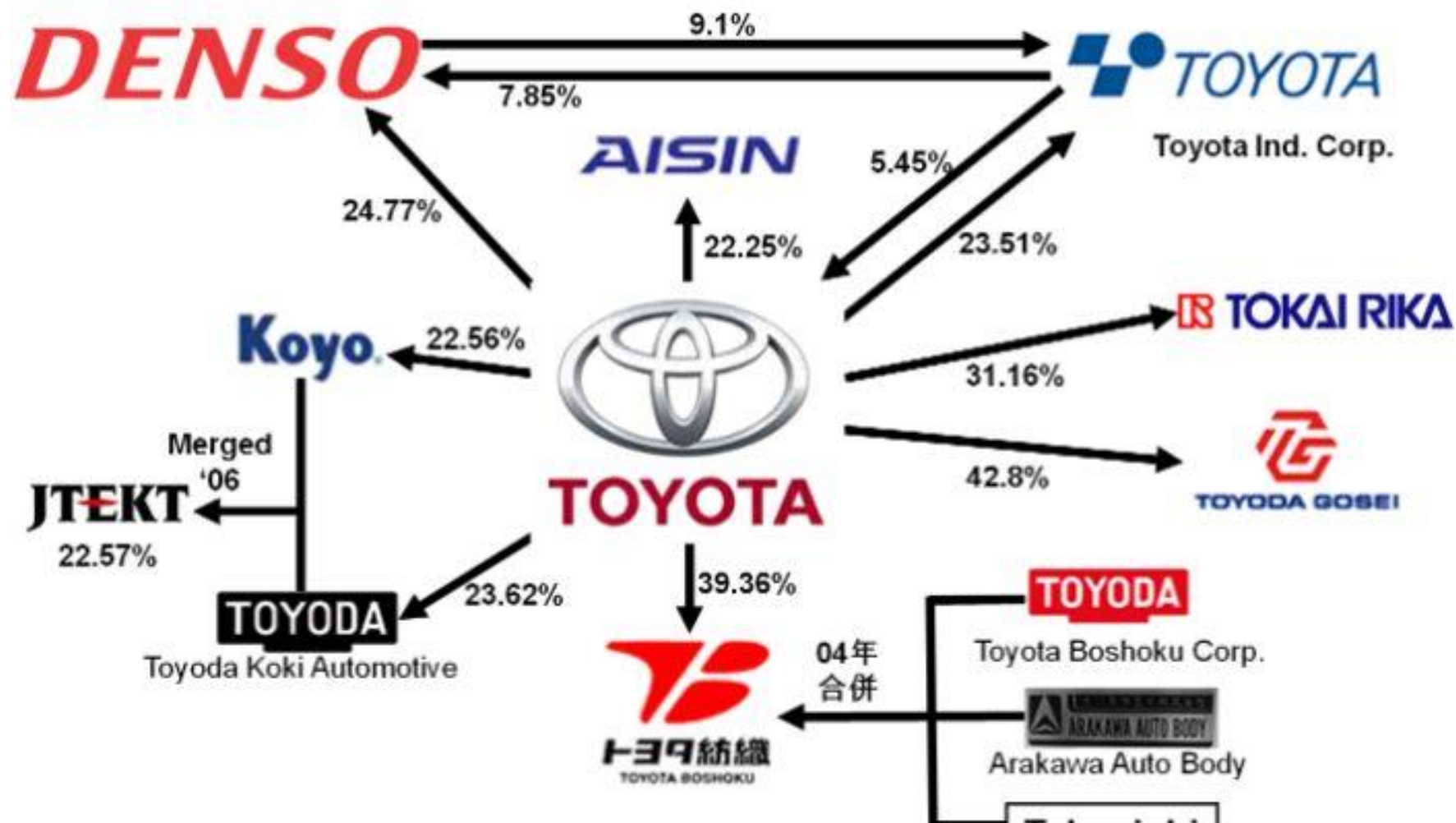
- Better coordination
- Increased efficiency.
- Reduce cost & risk
- Prevention from hostile takeovers

DISADVANTAGES

- Complacency & inefficiency.
- Funds availability may result in risky activities.
- May lead to monopoly.
- Unable to respond swiftly.

Mitsubishi's horizontal keiretsu

Mitsubishi Corporation	Bank of Tokyo-Mitsubishi	Mitsubishi Heavy Industries
Automotive Mitsubishi Fuso Truck Bus Mitsubishi Motors Shin Caterpillar Mitsubishi	Finance & insurance DC Card Diamond Lease Meiji Life Mitsubishi Auto Credit Mitsubishi Securities Mitsubishi Trust & Banking Tokio Marine and Fire	Industrial equipment Mitsubishi Electric Mitsubishi Kakoki Mitsubishi Precision Toyo Engineering Work
Electronics & telecom IT Frontier Mitsubishi Research Inst Mitsubishi Space Software Nikon Space Communications	Transportation & dist Mitsubishi Logistics Mitsubishi One Transport NYK Line	Industrial materials Asahi Glass Dai Nippon Toryu Mitsubishi Aluminum Mitsubishi Cable Indus Mitsubishi Materials Mitsubishi Plastics Mitsubishi Rayon Mitsubishi Shindoh Mitsubishi Steel
Resources & energy Nippon Oil Mitsubishi LPG Mitsubishi Nuclear Fuel Mitsubishi Paper Mills	Chemical & pharmaceutical Dai Nippon Toryu Mitsubishi Chemical Mitsubishi Gas Chemical Mitsubishi Petrochemical	Consumer goods & foods Kirin Beverage Kirin Brewery Ryoshoku
Real estate & construction Mitsubishi Estate P.S. Mitsubishi		



Vertical Integration

What is difference between backward and forward integration?

Give example for production of one item.

Question

1. A fried chicken fast-food chain that acquired feed mills and poultry farms has performed which of the following?

A) horizontal integration

B) forward integration

C) backward integration

D) current transformation

E) job expansion

ANSWER C

2. When Daimler and BMW pooled resources to develop standardized auto components, the sourcing strategy could best be described by which of the following?

A) *keiretsu*

B) virtual companies

C) joint venture

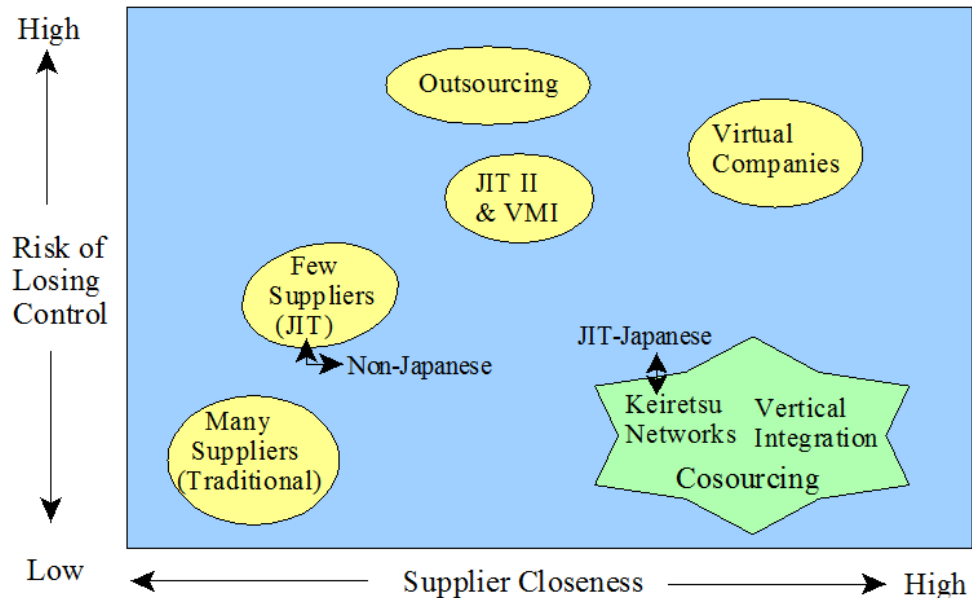
D) vertical integration

E) few suppliers

ANSWER C

Supplier Arrangements Map*

(Cosourcing Compared to 7 Other Supply Chain Arrangements)



* Adapted from Clinton & Del Vecchio, Exhibit 1, p. 6.
<https://maaw.info/SupplierArrangementsSummary.htm>

Supply Chain Risks and Mitigation

Risk compounded by globalization and logistical complexity.

Reliability and quality of suppliers critical to operations

Fast delivery, low inventory supply chain, operating across political and cultural boundaries, added shipping times, logistics reliability, all add up risks.

Need to identify risk and its mitigation (what if A happens, what we do?)

(see Slides 26 - 32)

Managing Integrated Supply Chain (ISC)

Independent organizations involved from raw material to finished goods

Issues in Managing ISC **(SEAMLESS)**

-Local optimization, Incentives, Large Lots (bullwhip effect)

Opportunities for effective SCM

- Accurate pull data, Lot size reduction, Single stage Replenishment, Vendor Managed Inventory (VMI), Collaborative Planning Forecasting, Replenishment (CPFR), Blanket Orders, Standardization, Postponement, Electronic Order Fund Transfer, Drop Shipping and Special Packaging **(See slides 33 - 36)**

Supply Chain Risks and Managing Integrated Supply Chain

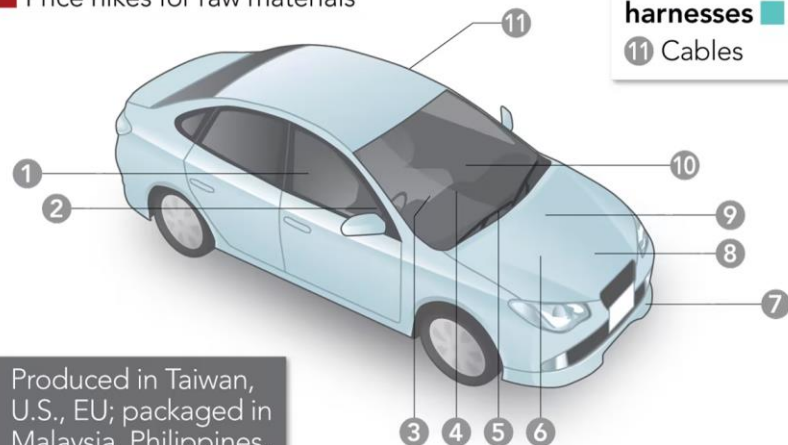
Analyse the Risks in current Covid-19 Pandemic for Global Supply Chain of Microchips.

How can companies build resilience to mitigate risk of supply chain disruption in the future?

Car components in short supply or at risk globally

Cause of shortage/risk:

- Worldwide chip shortage
- COVID-19 related production delay
- Price hikes for raw materials



Produced
in Vietnam

**Wire
harnesses**
11 Cables

Produced in Taiwan,
U.S., EU; packaged in
Malaysia, Philippines,
Taiwan

Semiconductors

- 1 Power window
- 2 Power steering
- 3 Air conditioner
- 4 Car navigation
- 5 Wiper
- 6 Transmission

Produced in various locations

Steel

- 7 Car body

Lithium/cobalt/nickel

- 8 Battery cell

Plastic

- 9 Electrical components 10 Interiors

Reported in Nikkei
Asia December 2021