

# Challenges and opportunities of supply chain management

Webinar for Bourstad simulation participants  
March 14, 2023, 7pm

**Guest Expert**  
Mr. Thierry Warin, Fellow CIRANO, Professor at HEC Montréal

# Content

- ▶ Welcome to all
- ▶ Introduction: Basic concepts to understand the issues
  - ▶ The value chain
  - ▶ The industrial structure
  - ▶ 3 examples: automotive, microprocessors and clothing
- ▶ Challenges of supply chain management  
**Thierry Warin**, CIRANO Fellow, Professor at HÉC Montréal
  - ▶ Perceptions in Quebec
  - ▶ Vulnerability of global value chains
  - ▶ Impact on industries





# Challenges and opportunities of supply chain management

Introduction

Basic concepts

Examples



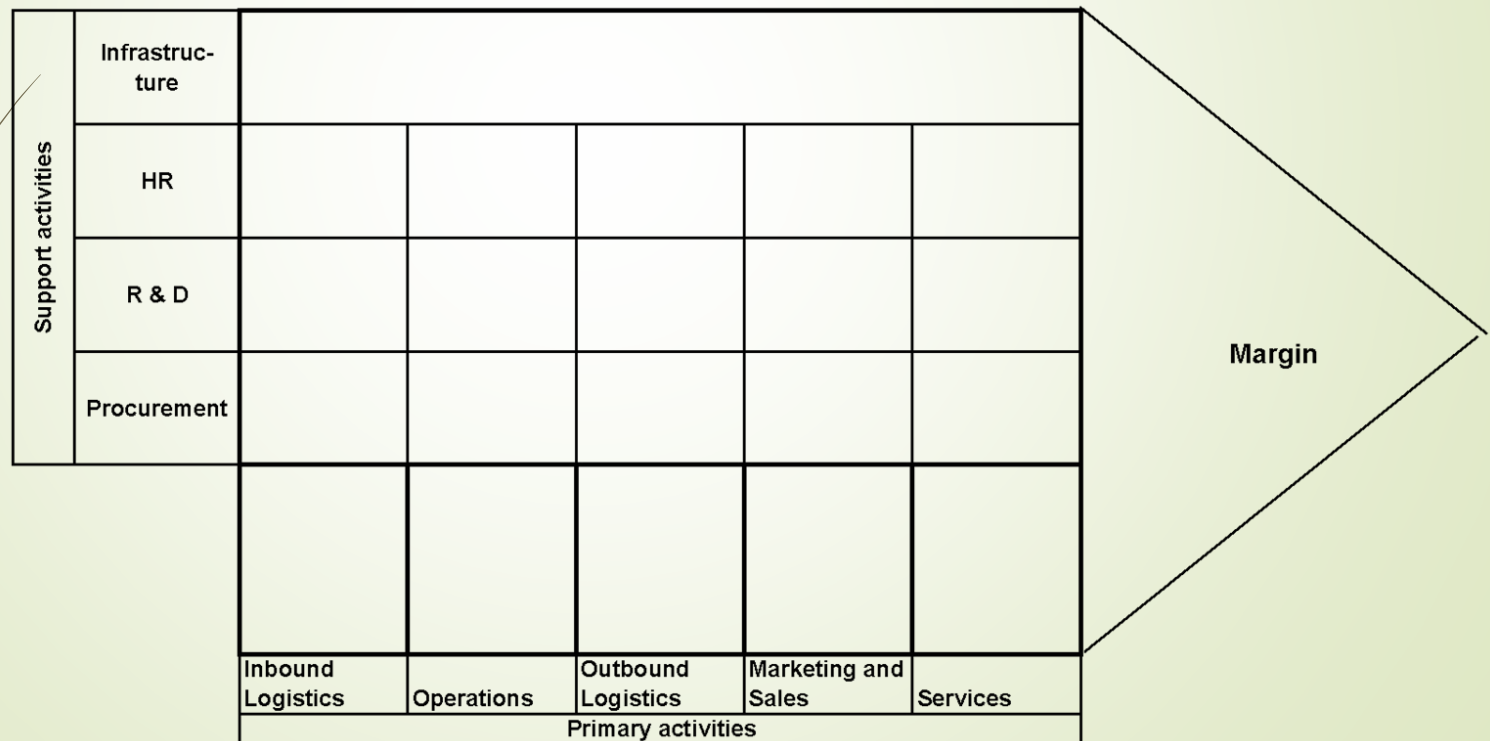
# Basic concept

The value chain


Concept developed by Michael E. Porter

# Porter's value chain

- In his book *Competitive Advantage*, Michael Porter proposed a model, the value chain, which allows us to better understand how value is created within a company



Ref : PORTER, Michael E., *Competitive advantage*, Free Press, 2008



# The value chain (Michael Porter)

- ▶ Value is created by a sequence of activities, the primary activities, which form a process. The primary activities are :
  - ▶ Internal logistics (reception of inputs)
  - ▶ Operations (manufacture of the good or service)
  - ▶ External logistics (shipping)
  - ▶ Sales and marketing
  - ▶ After sales service



# Porter's value chain

- ▶ Primary activities are facilitated by support activities
  - ▶ human resources management
  - ▶ technological development
  - ▶ supply management
  - ▶ A particular type of support activity, infrastructure activities, has an overall effect on primary activities



# Basic concept

**Industrial structure** (the 5 forces of competition)

Concept developed by Michael E. Porter

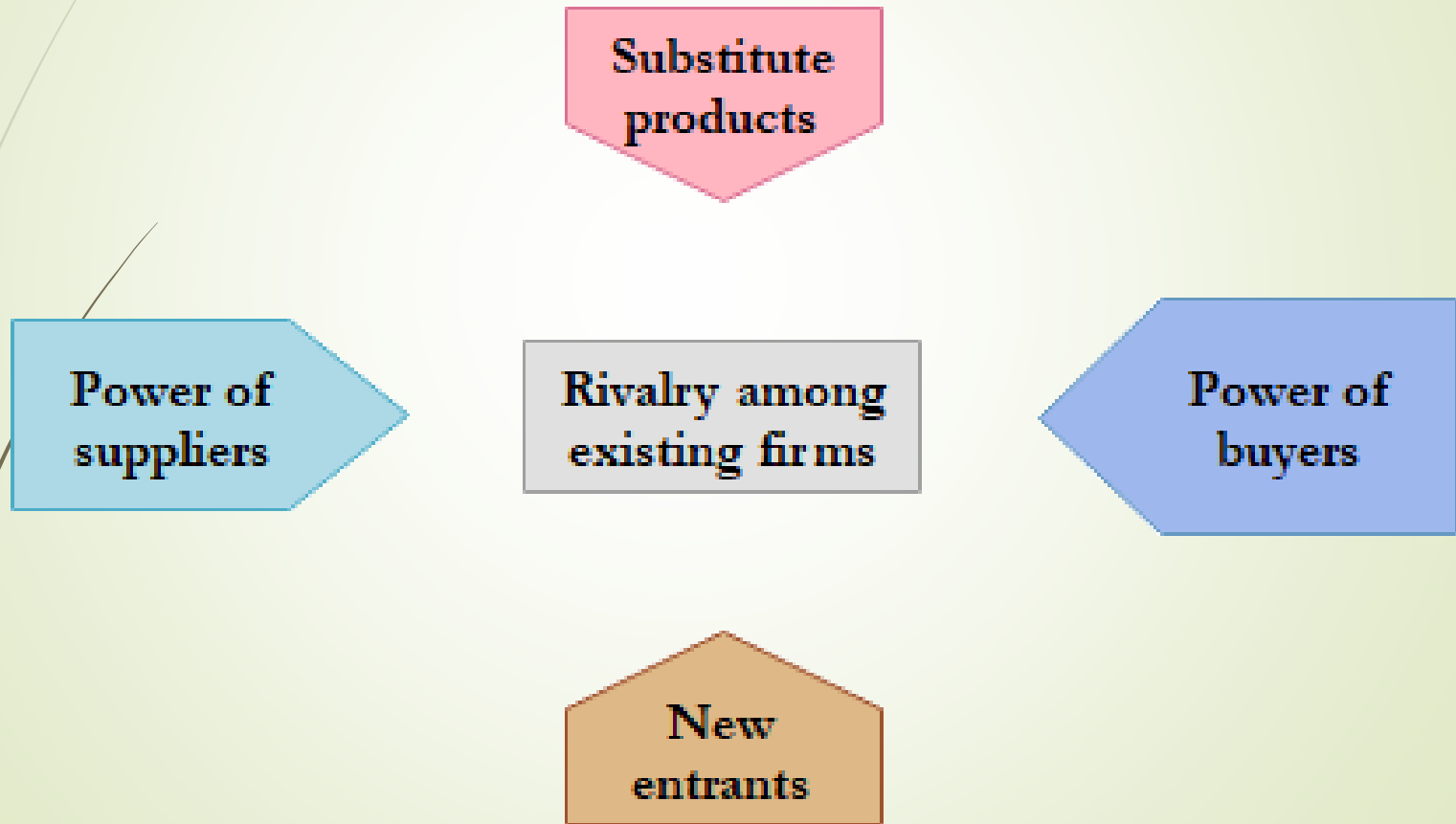




# Porter's 5 Forces Model of Competition

- ▶ The 5 forces model of competition, also known as the industry structure model, is applied to describe the elements that determine the strength of competition in a given industry sector

# Porter's 5 Forces Model of Competition



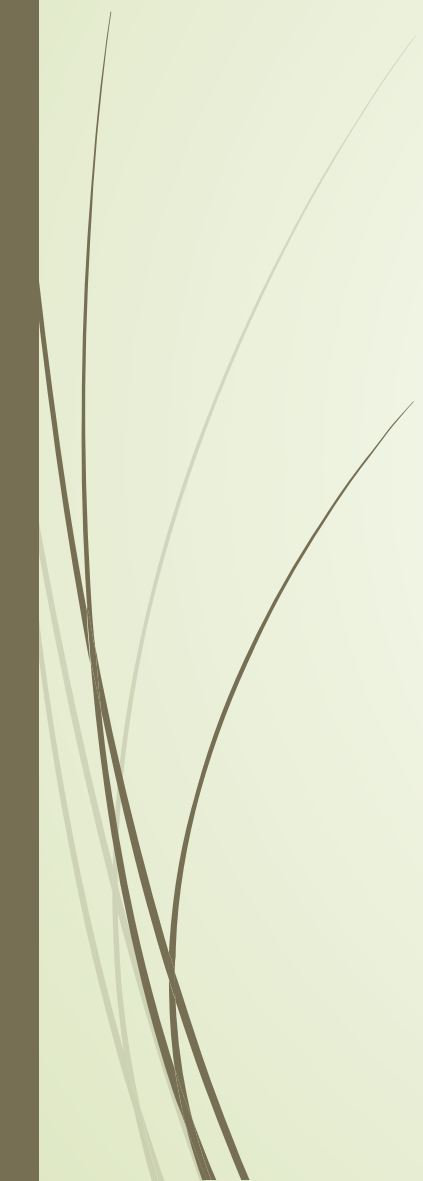


# The power of customers

- ▶ the ability of industry customers to put pressure on companies in the industry
  - ▶ The number of customers seeking the industry's products
  - ▶ Financial strength of clients
  - ▶ Regulation that can support the rights of industry customers, or even limit or eliminate competition in an area



# The power of suppliers

- Negotiating power of industry suppliers
  - For example, Walmart facing
    - a fragmented industry such as clothing (low supplier power)
    - Apple (high power, considering the uniqueness of the products)
- 



# Threat posed by substitute products

- ▶ Most products or services can be replaced by other products that provide the desired benefits to the customer
  - ▶ Companies try to create *transfer costs* to prevent or minimize this possibility
- ▶ Schumpeter used the term *creative destruction* to describe the phenomenon of the disappearance of sectors of activity when new economic activities are created



# Threat posed by new entrants

- ▶ The entry of new players into an industry varies depending on the stage the industry has reached.
- ▶ When the industry starts to grow significantly, other players come on board
- ▶ The opportunity to enter an industry varies greatly from industry to industry



# Degree of competitive rivalry in the industry

- ▶ the result of the other 4, but also one of the 5 forces in the relationship
- ▶ For example, a price war (strong competition)
  - ▶ Puts customers in a position of strength
  - ▶ Makes it more difficult for new players to enter the industry
  - ▶ Will weaken or even make some players disappear, which will change the game.

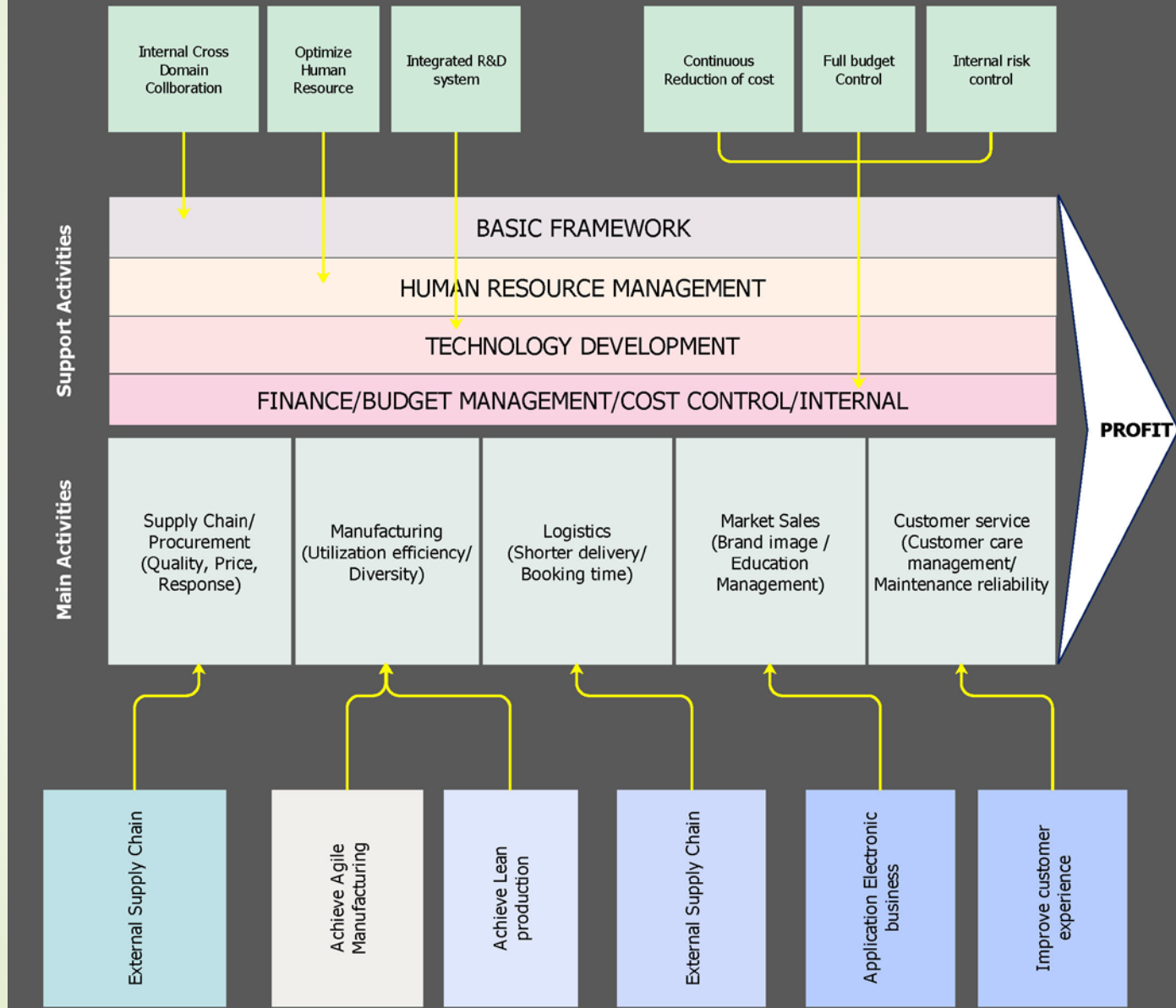


# Example 1

The automobile



# Automotive Industry Value Chain



Value chain of the automotive industry

Source : [Edraw](#)



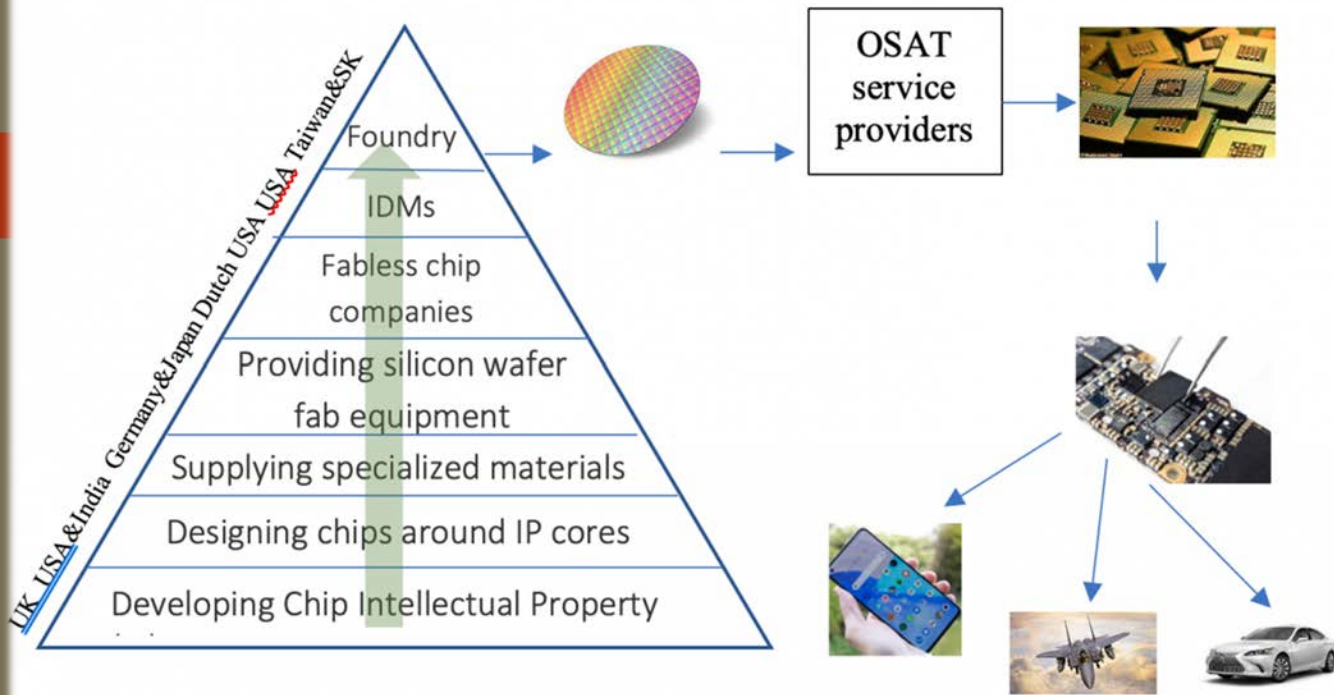
# Example 2

Microprocessors



# Stages in the value chain of microprocessor production

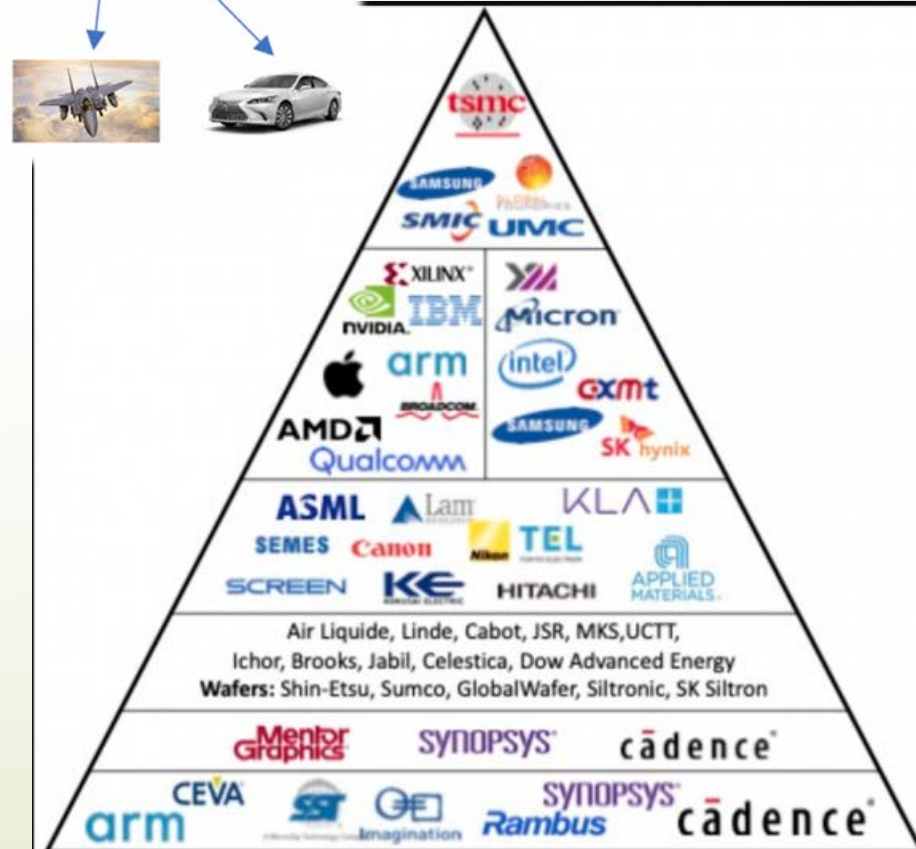
1. Developing Chip Intellectual Property (IP) Cores-core ideas or building blocks forming the foundation of the chip
2. Designing chips around IPs, using Electronic Design Automation (EDA) software tools, as layers of data
3. Supplying specialized materials for fabricating or printing the design as layers of metals.
4. Developing and providing silicon wafer fab equipment
5. Designing, marketing, and selling chips-"Fabless chip companies."
6. Integrated device manufacturing (IDM)
7. Chip making services from 3rd party foundries
8. Chip testing and packaging services-delivered by Outsourced Semiconductor Assembly and Test (OSAT) companies



# Value chain of microprocessors

Source:

<https://www.the-waves.org/2022/03/17/semiconductor-value-chain-globally-distributed-ecosystem/>



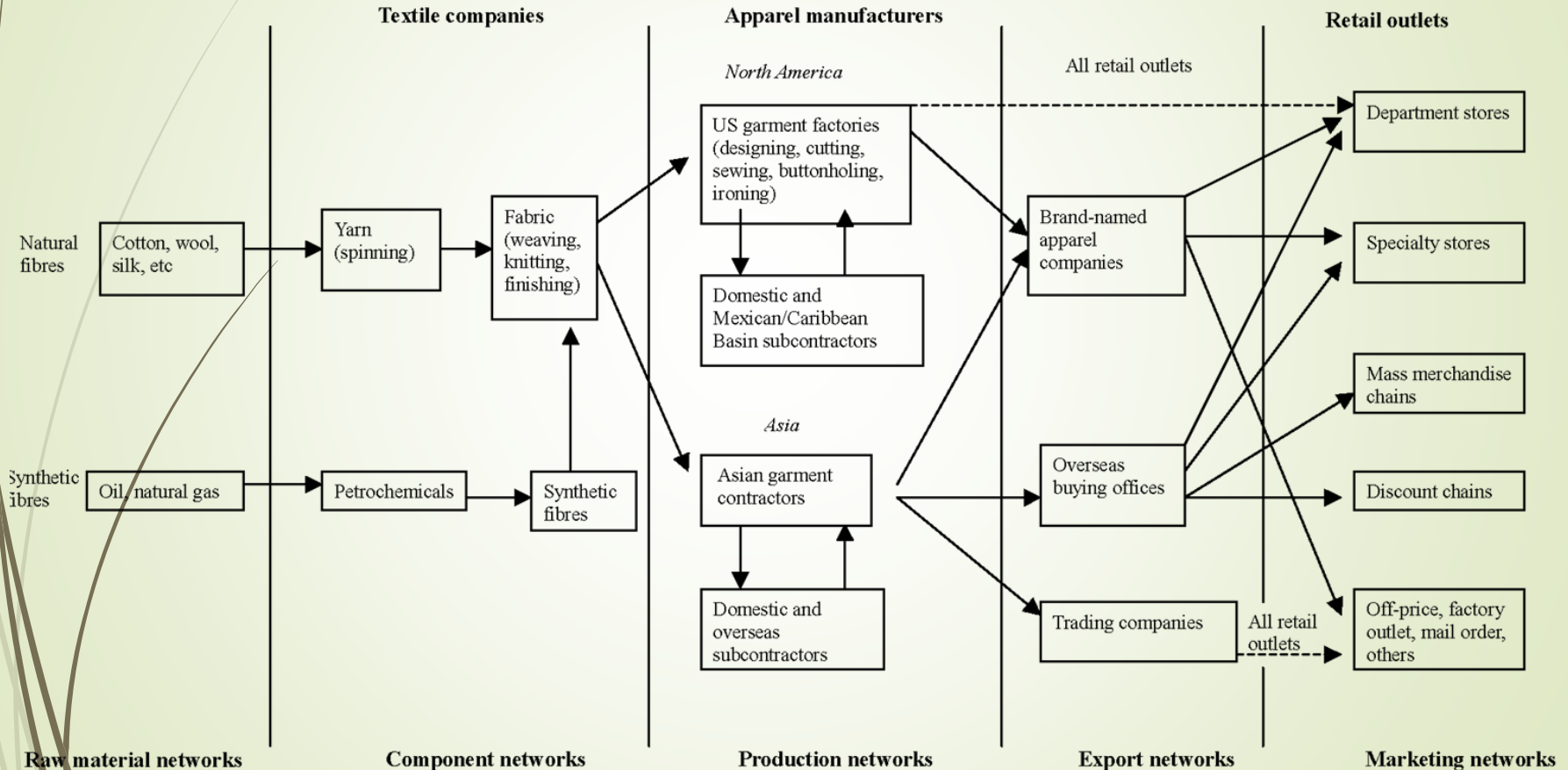


# Example 3

Clothing

# Clothing production chain

Figure 1. The apparel commodity chain



# Conference

## Challenges of supply chain management

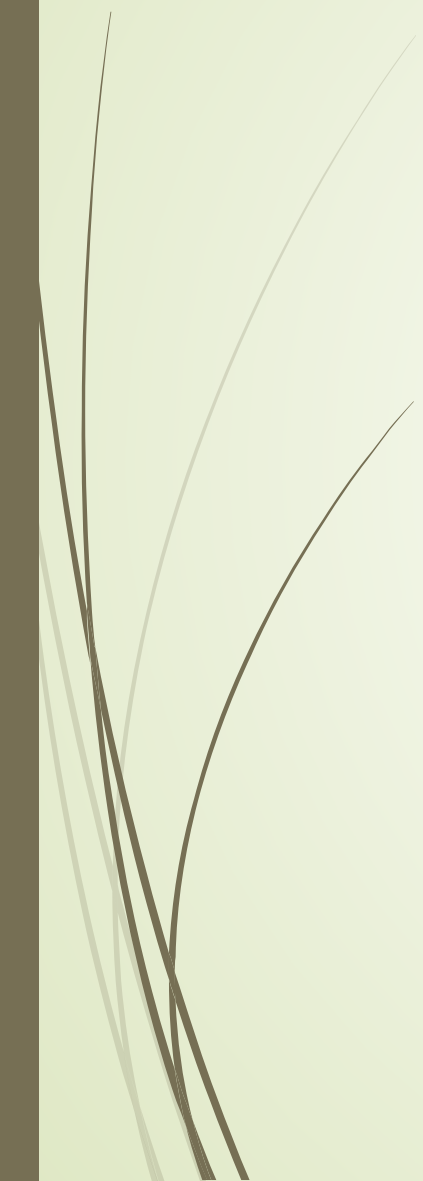


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- ▶ Main researcher at CIRANO of the theme World Economy
- ▶ Responsible of the CIRANO Pole on Data Science for Trade and Intermodal Transportation
- ▶ President of the International Trade and Finance Association
- ▶ President and co-founder of the NGO Ed' Haiti



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