Business Fundamentals for Analytics

Supply Chain Management

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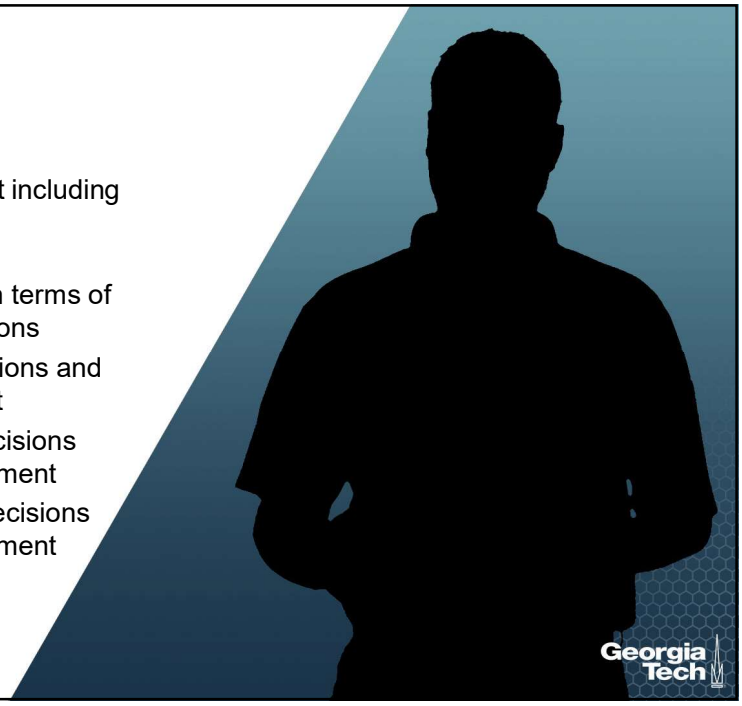
What is Operations and Supply Chain Management?

1

Learning Objectives

- Describe supply chain management including strategy, challenges and design considerations
- Define supply chain management in terms of short, medium and long term decisions
- Examine long term (strategic) decisions and issues in supply chain management
- Examine medium term (tactical) decisions and issues in supply chain management
- Examine short term (operational) decisions and issues in supply chain management



2

Operations and Supply Chain Management (OSCM)

Operations and supply chain managers focus on how to **develop capabilities to design, produce and deliver** products and services in a competitive market.

Capabilities drive performance including:

- Products & service features
- Costs
- Quality
- Time to market
- Ability to innovate

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Six Primary Processes

The Supply Chain Council sees OSCM as having 6 Primary Processes:

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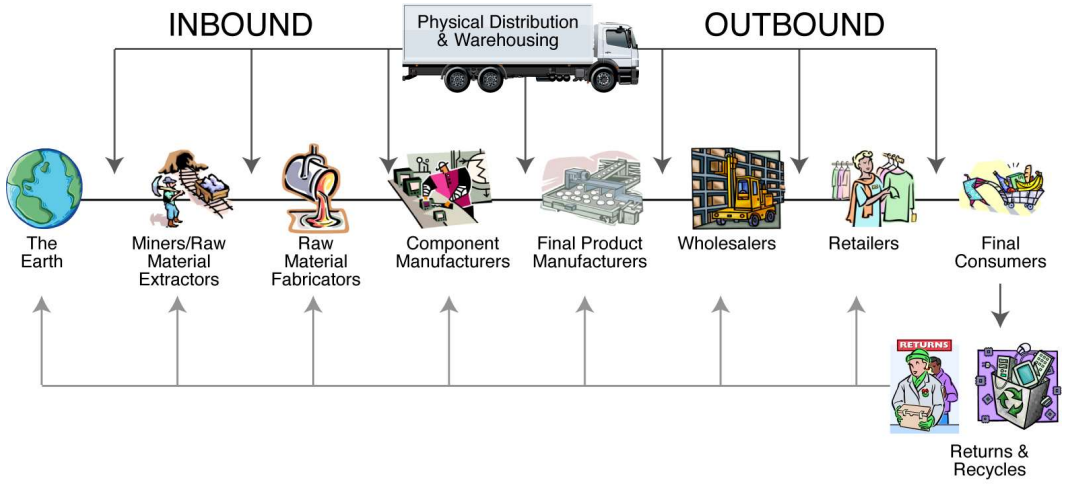
Sample Supply Chain



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Boeing and Supply Chain

Source: Boeing, Reuters (diagram not to scale)

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Why is OSCM Important?

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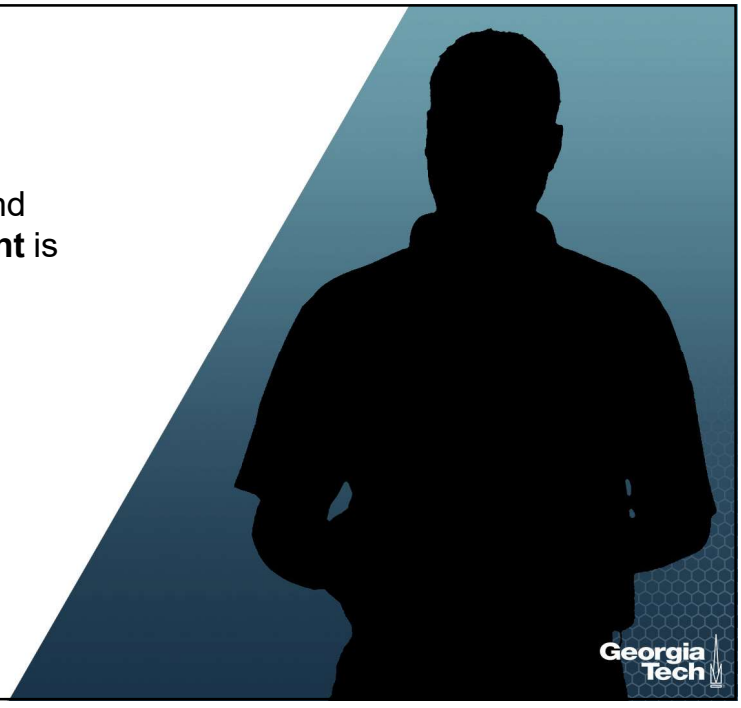
Learning Objectives

- Explain why **Operations** and **Supply Chain Management** is important.



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Why Does Ops & Supply Chain Matter?

"We've brought a new delivery partner on board, but they've had a couple of teething problems — getting fresh chicken out to 900 restaurants across the country is pretty complex!"

The company recently switched from a specialist food-delivery company to German shipping giant DHL, which promised in October to "set a new benchmark for delivering fresh products to KFC in a sustainable way."

Instead, DHL conceded that it has had "operational issues" in recent days, which resulted in "incomplete or delayed" bird deliveries.

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Why Does Ops & Supply Chain Matter?

By **REUTERS** April 17, 2016

Toyota, the world's biggest-selling automaker, said on Sunday it would suspend much of its production at plants across Japan this week after earthquakes in the country's south led to a shortage of parts, while some other manufacturers extended stoppages due to damage to factories.

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Consequences of Poor Supply Chain

- Loss of productivity
- Customer complaints
- Increased costs (ex: expediting)
- Loss of revenue
- Damage to brand

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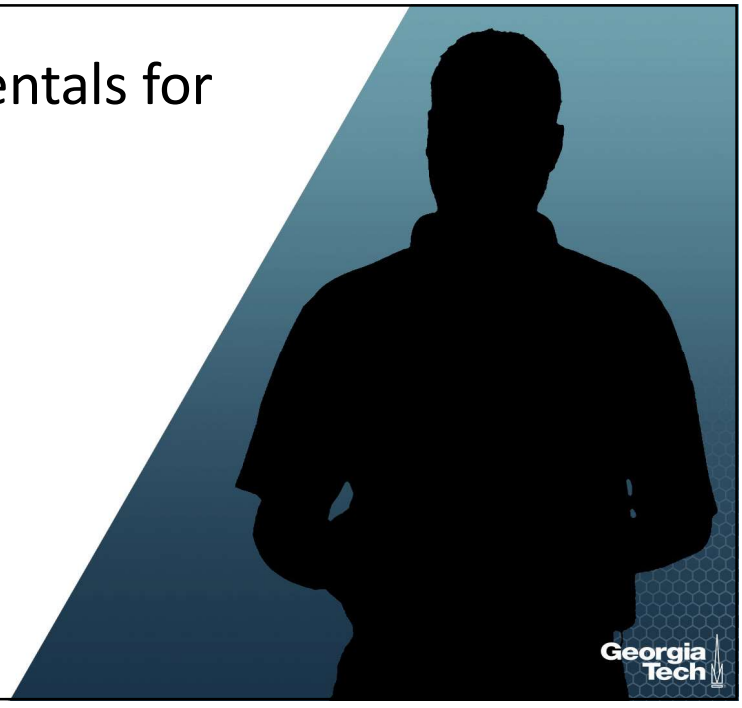
Supply Chain Challenges



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Learning Objectives

- Discuss supply chain challenges faced by companies

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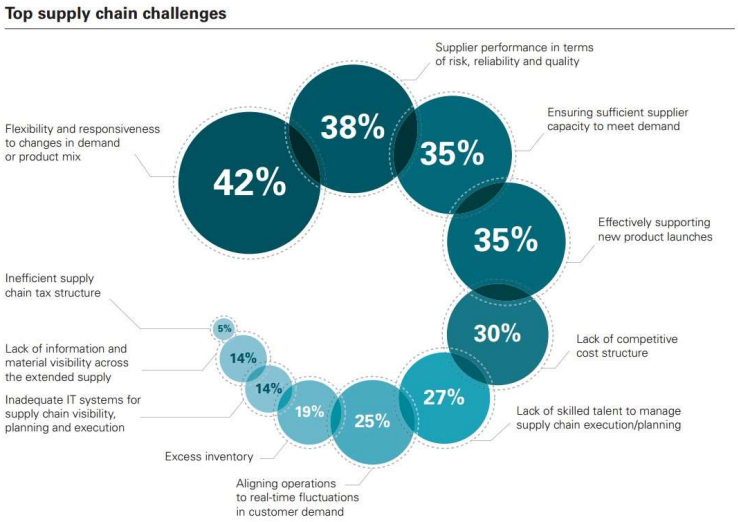
Top Challenges - 2015



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Top 5 Challenges - 2019

Source: 2019 MHI Annual Industry Report

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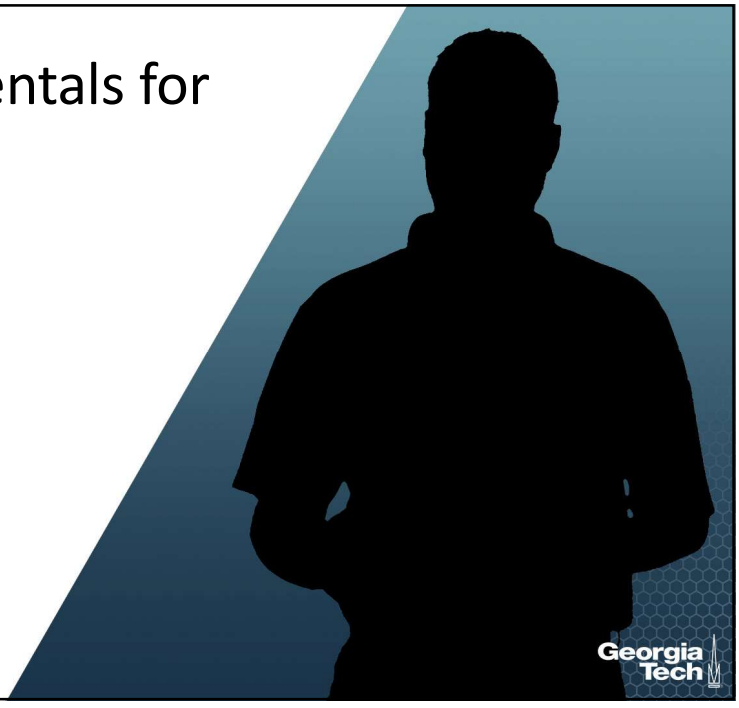

Types of Decisions

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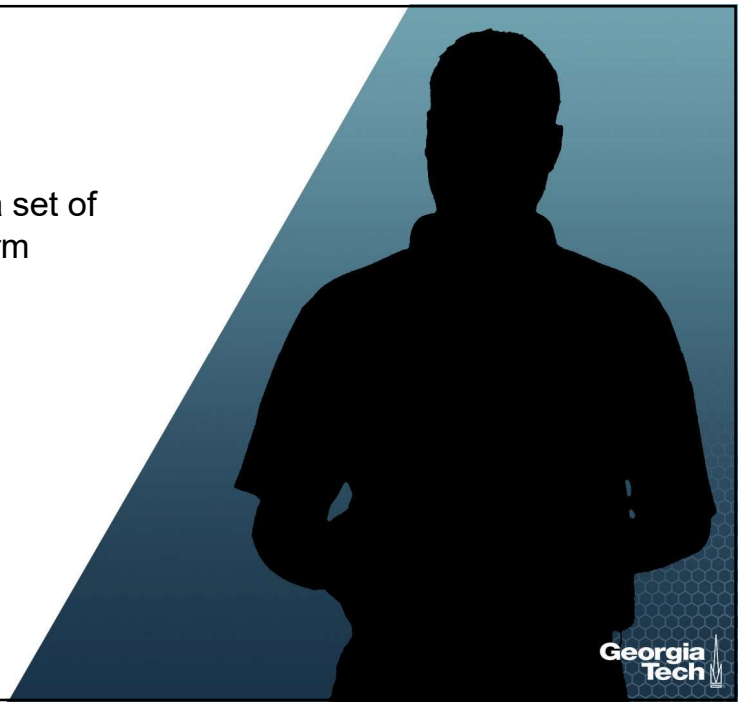
Learning Objectives

- Describe supply chain as a set of short, medium and long term decisions



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Hierarchy of Decisions

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Long Term

- Network Configuration
- Supply Chain Model
- Outsourcing
- Vertical Integration

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Medium Term

- Lean
- S&OP
- Inventory Management

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Short Term

- Scheduling
  - People
  - Equipment
  - Product

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Hierarchy of Decisions

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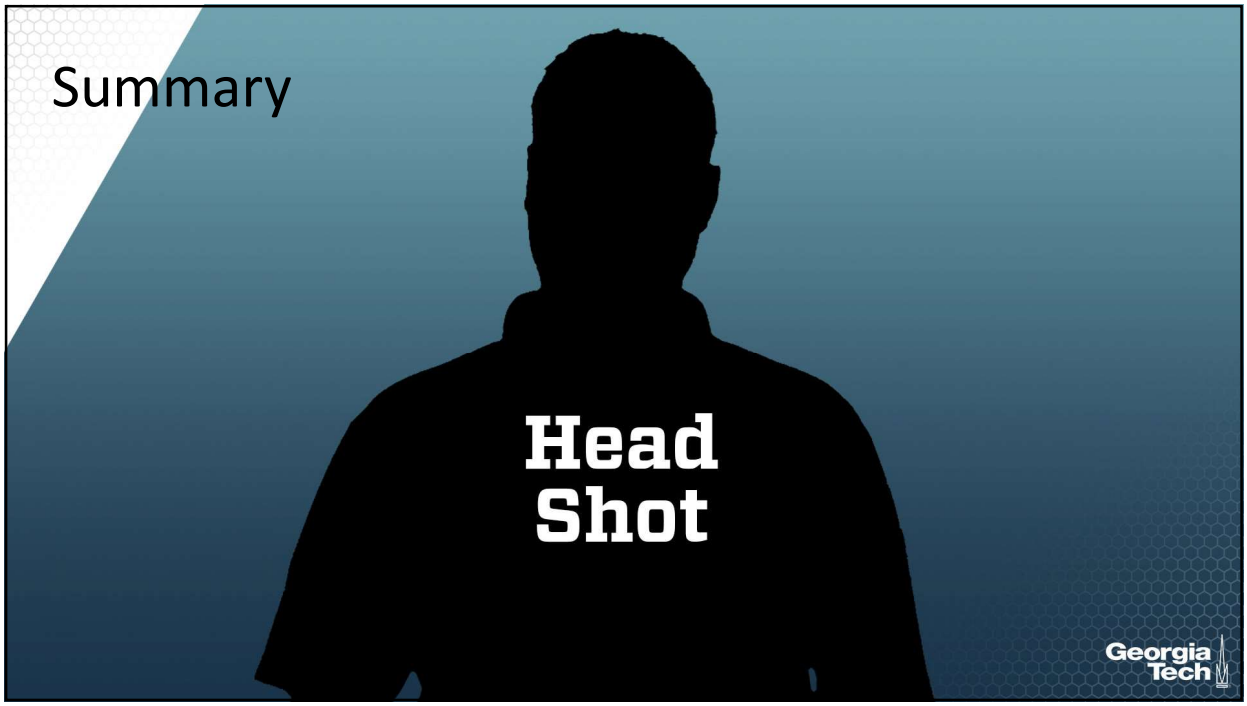
Summary
Head Shot
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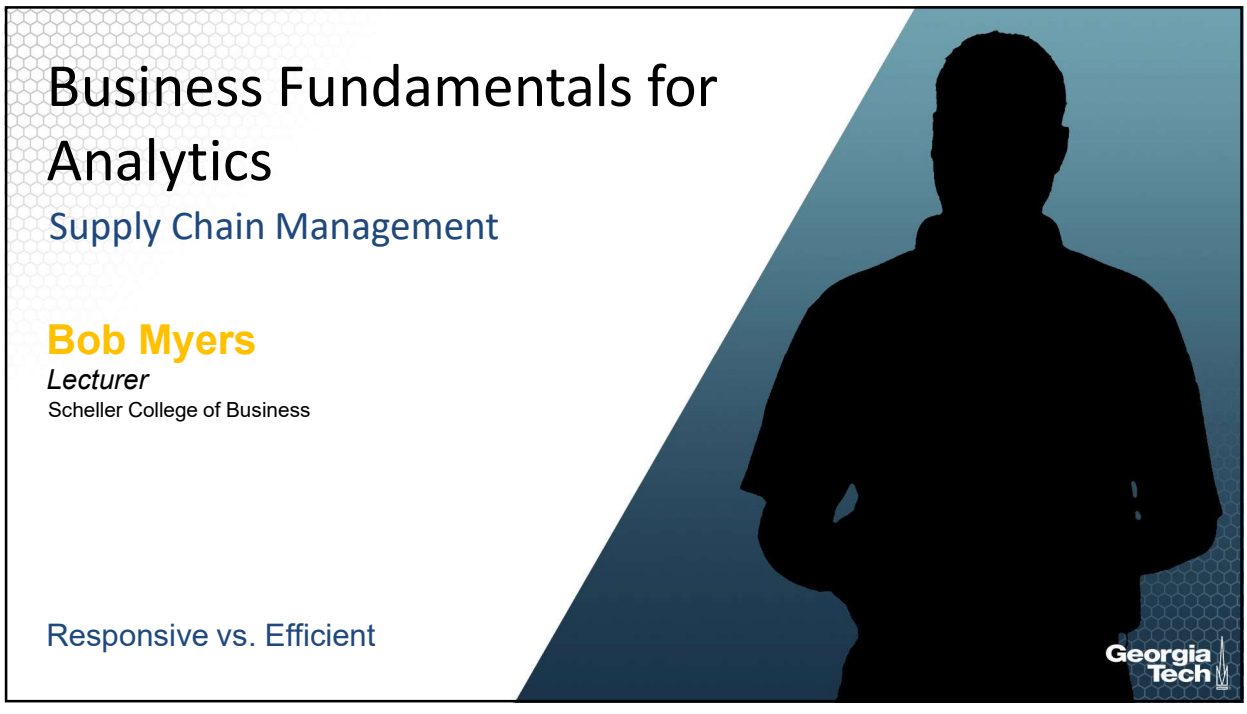
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Responsive vs. Efficient
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Learning Objectives

- Compare and contract **responsive** and **efficient** supply chains

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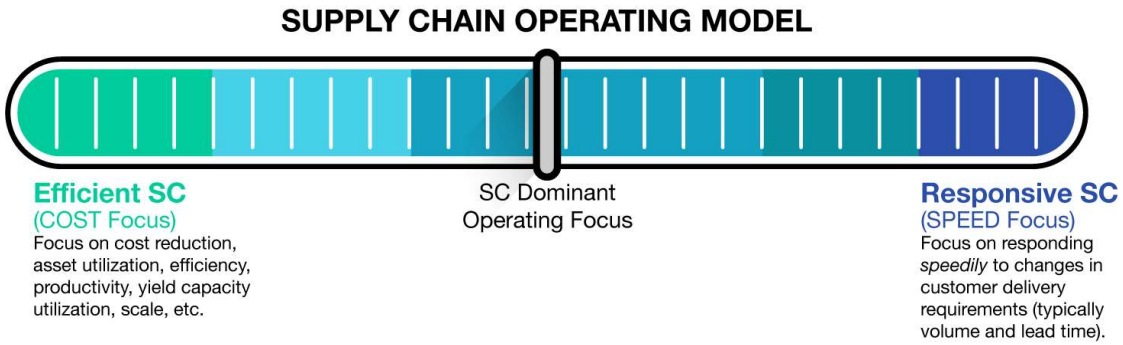
Supply Chain Operating Model



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Driving the Operating Model thru the Supply Chain

	Efficient SC (Cost Focus)	Responsive SC (Speed Focus)
SC Operating Model	Supply predictable demand efficiently at the lowest possible cost	Respond quickly to unpredictable demand in order to minimize stockouts, lost sales, markdowns, & obsolete inv
Capacity Strategy	Maintain high average util. rate	Deploy excess buffer capacity/capacity flexibility
Inventory Strategy	Generate high turns and minimize inventory throughout the supply chain	Deploy significant buffer/safety stocks of parts or finished goods
Lead Time Strategy	Reduce lead time as long as it doesn't increase cost	Invest aggressively in ways to reduce lead time
Supplier Capability	Select primarily for cost and quality	Select primarily for speed, flexibility, resp., and quality
Logistics Strategy	Greater reliance on low cost modes	Greater reliance on fast/speedy modes

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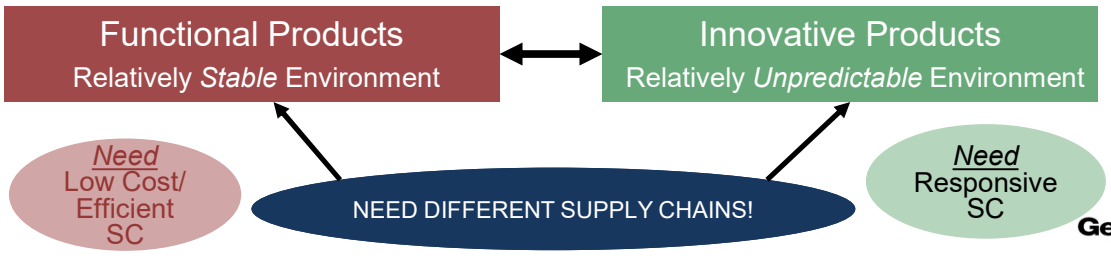
Why Different Models?

More like…
Functional Products
- Low demand uncertainty
- More predictable/stable demand
- Long product life
- Low inventory cost
- Low profit margins
- Low product variety & higher volume
- Low stockout & obsolescence cost

More like…
Innovative Products
- High demand uncertainty
- Difficult to forecast/variable demand
- Short product life
- High inventory cost
- High profit margins
- High product variety & lower volume
- High stockout & obsolescence cost



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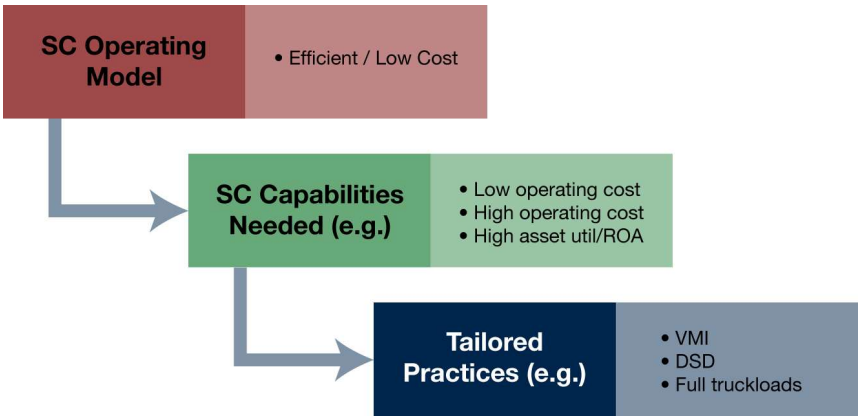
Model Should Drive Tactical Decisions



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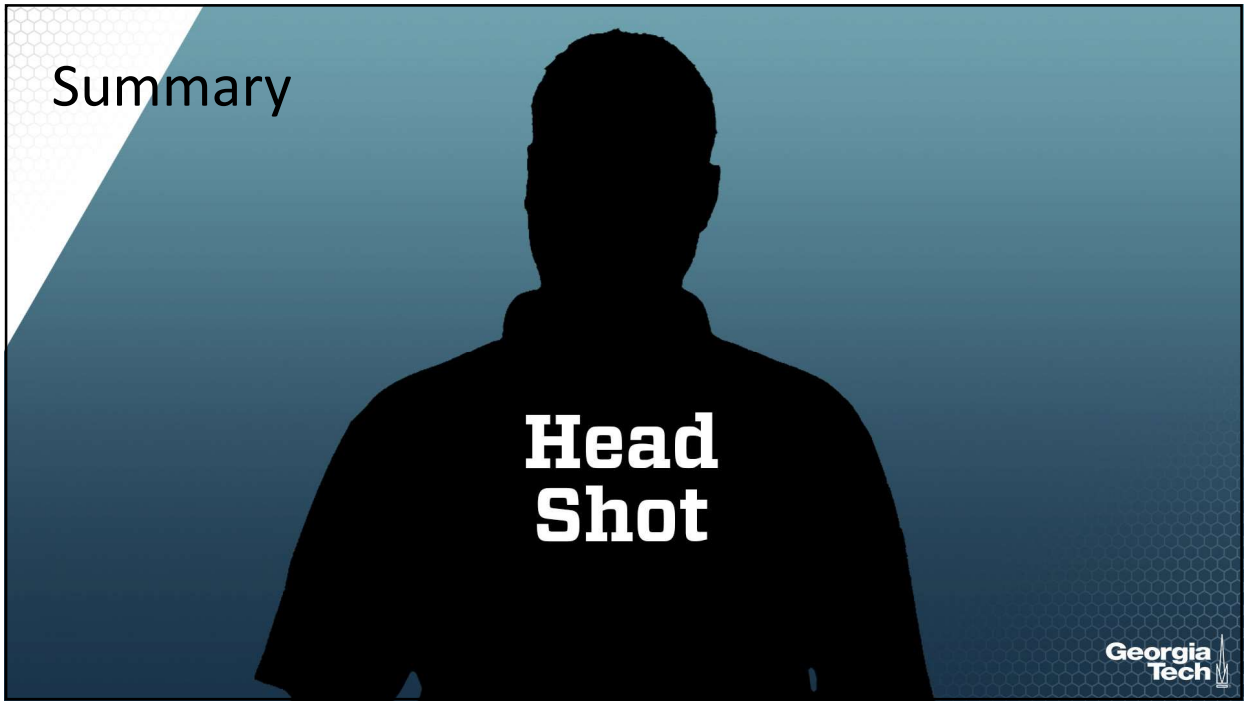
Summary



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Network Configuration

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Learning Objectives

- Compare and contrast **centralized** and **decentralized** networks

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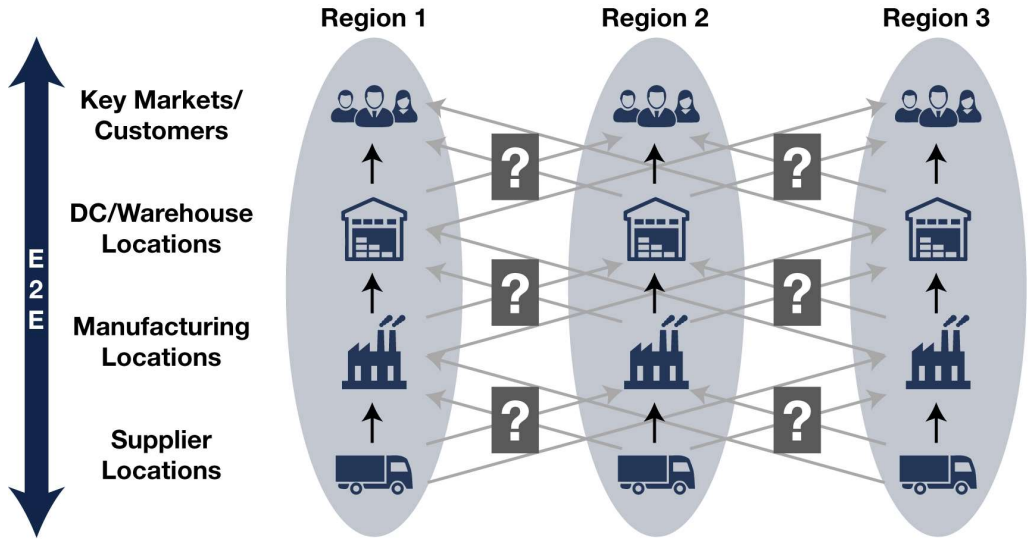
Strategic Global Supply Chain Network Configuration



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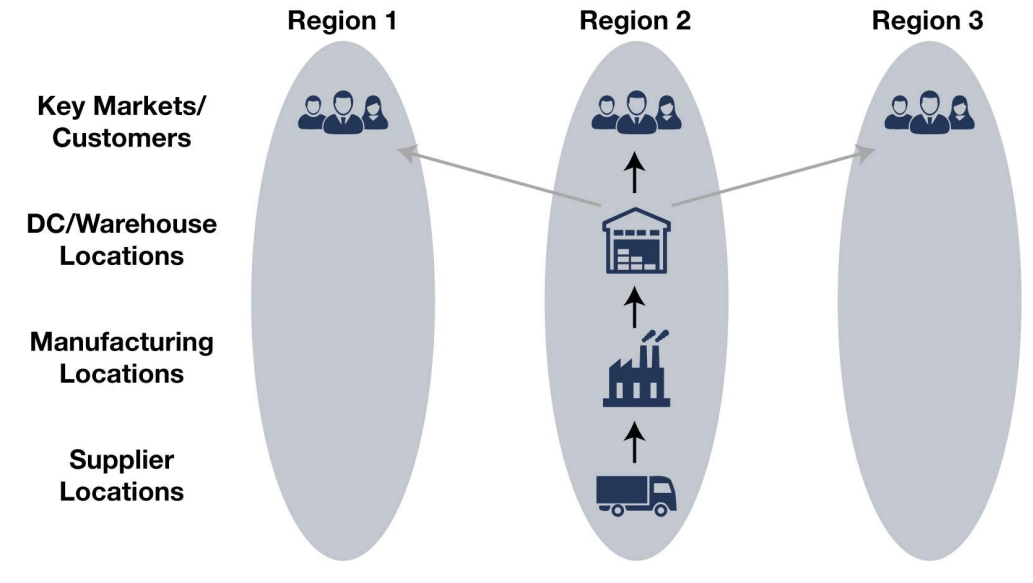
Centralized Distribution, Manufacturing and Sourcing



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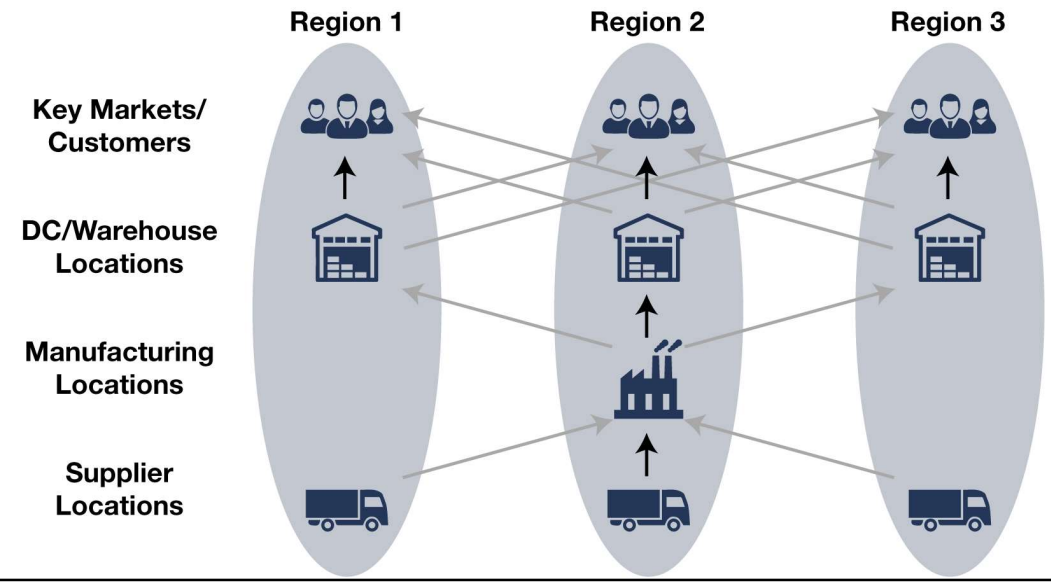
Centralized Manufacturing



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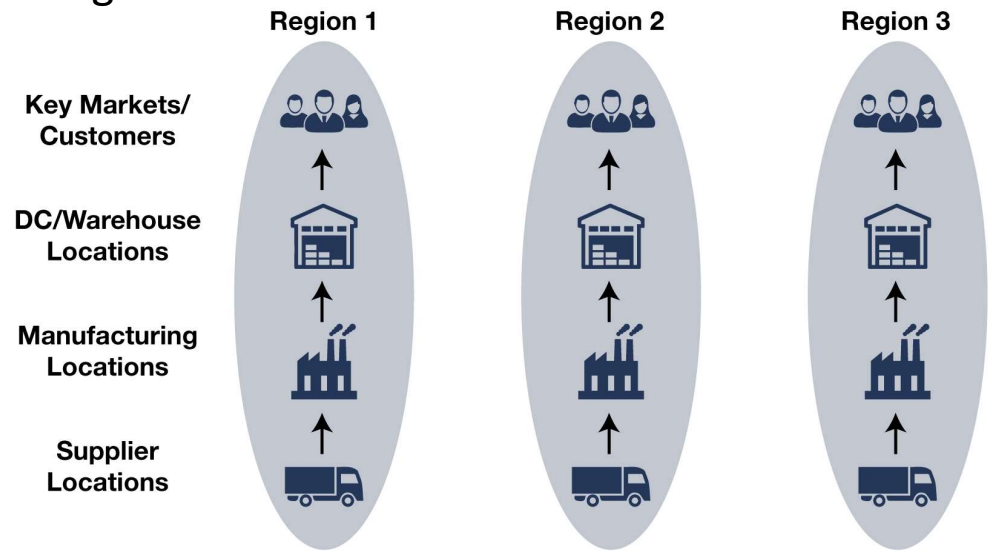
Decentralized (Local) Distribution, Manufacturing and Sourcing



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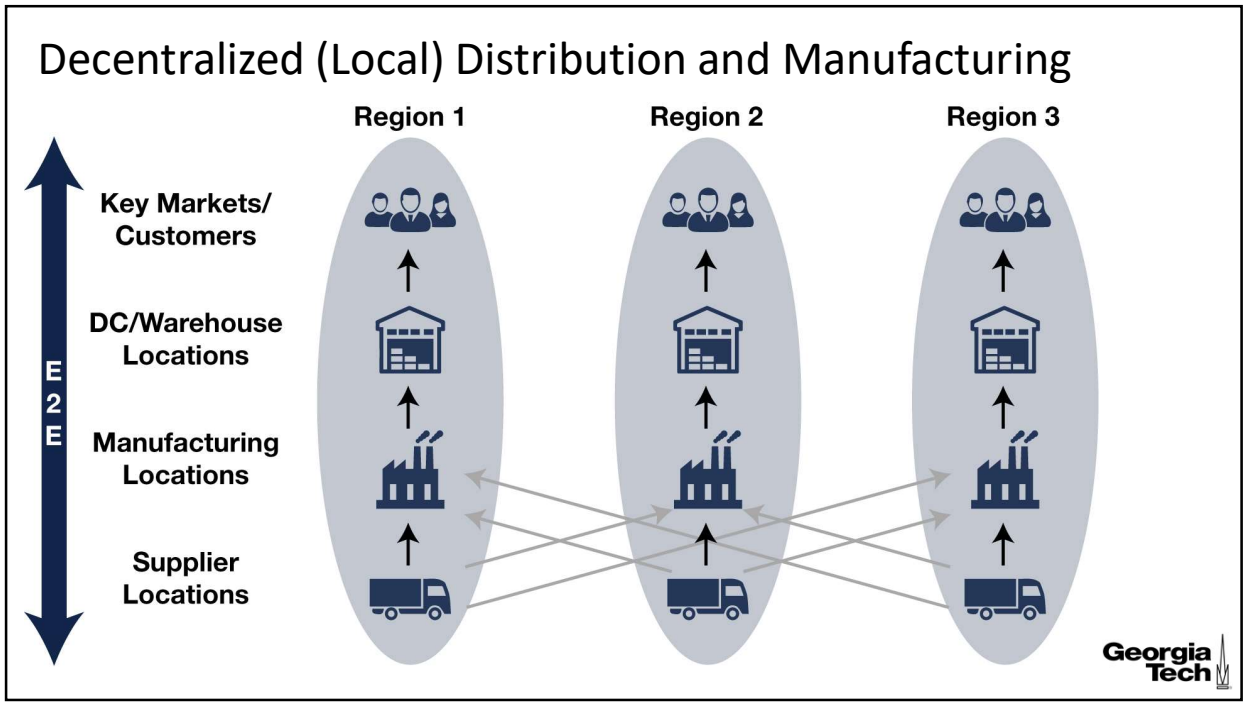
Decentralized (Local) Distribution and Manufacturing
Region 1
Region 2
Region 3
Key Markets/ Customers
DC/Warehouse Locations
Manufacturing Locations
Supplier Locations
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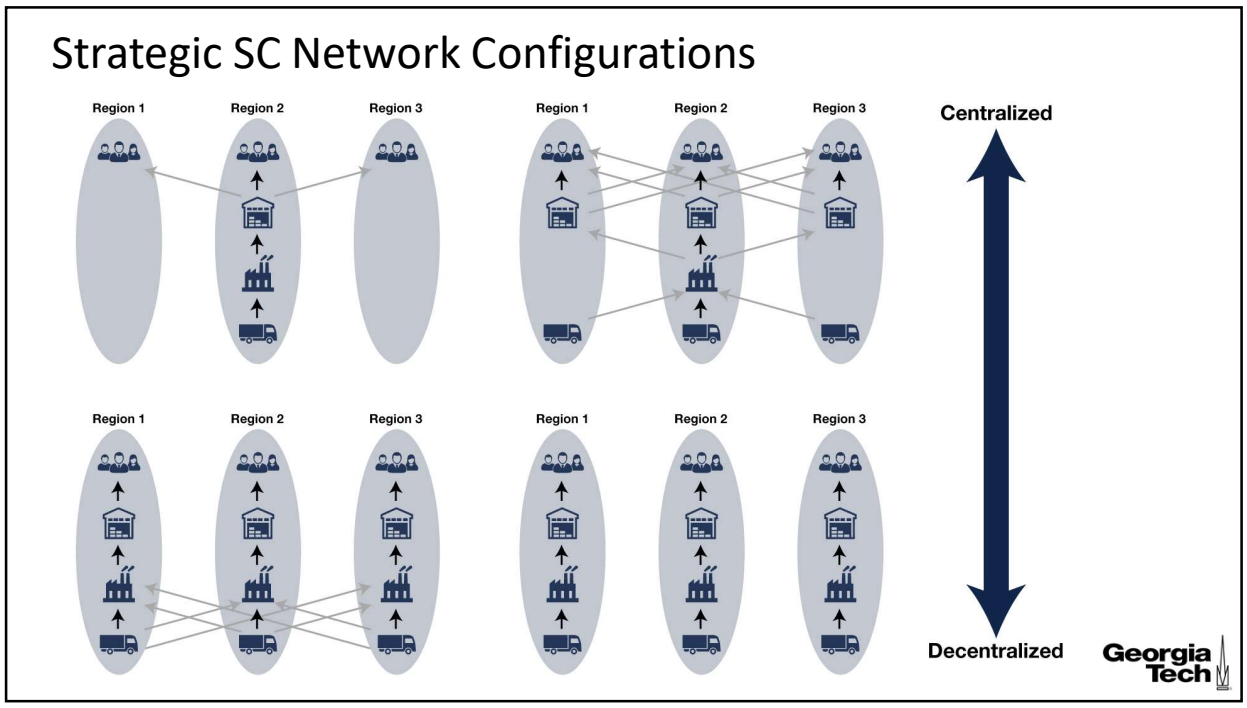
Strategic SC Network Configurations
Region 1
Region 2
Region 3
Centralized
Decentralized
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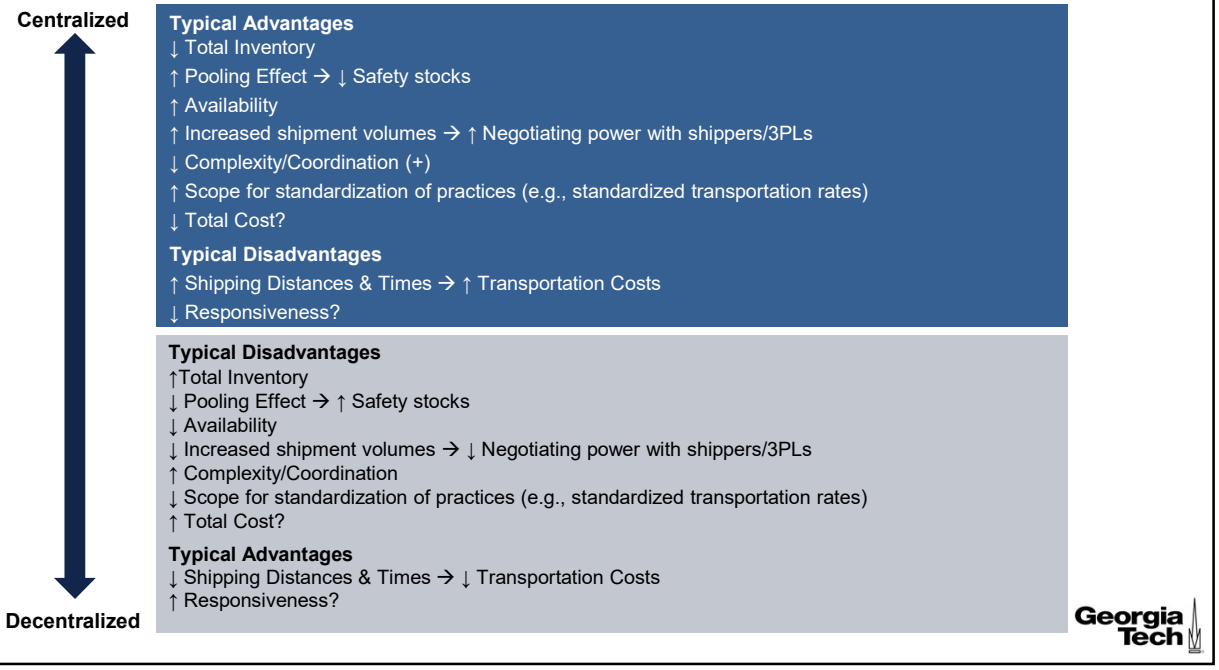

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When is a Centralized Strategy More Appropriate?

- Stable/predictable or unpredictable demand environment?
- High velocity or low velocity?
- When need higher or lower product availability?
- Many or few points of sale (delivery points)?
- Low or high distribution cost per weight?
- High volume or low volume per shipment?
- Low or high distribution complexity?

When need *Efficient* (low cost) supply chain!

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When is a Decentralized Strategy Beneficial?

- High demand uncertainty/unpredictable environment
- High velocity environment – fast moving products
- Need to reduce delivery lead times
- Need higher delivery responsiveness
- Many points of sale
- High distribution cost per weight
- Need more delivery customization

When need a *Responsive* supply chain!

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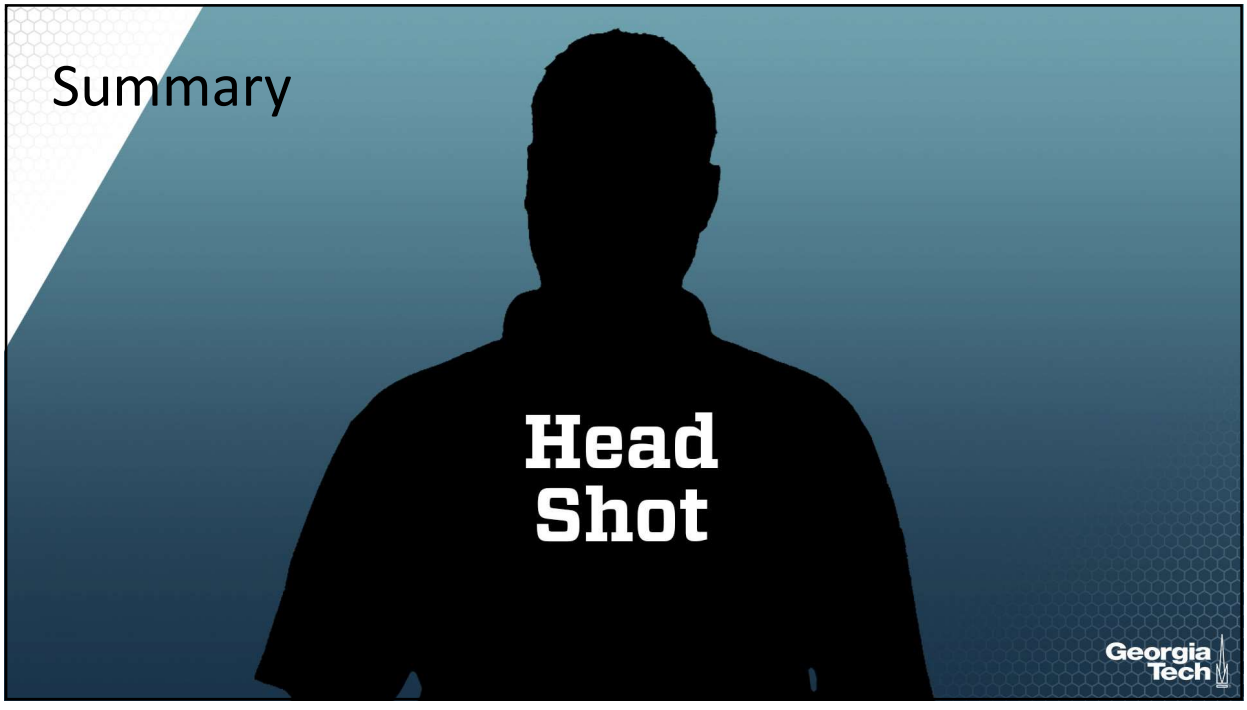

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Outsourcing

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Learning Objectives

- Discuss **outsourcing** and its importance to a global supply chain

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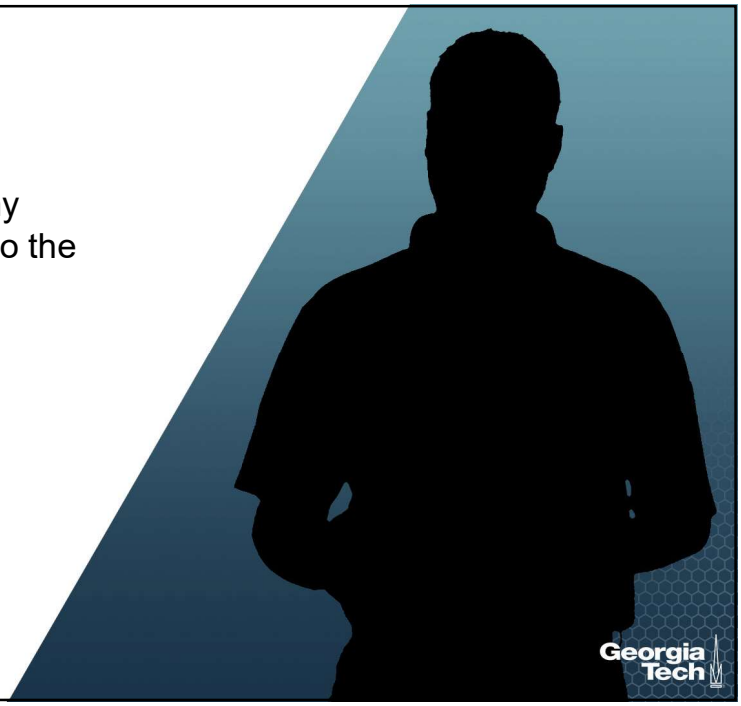
Outsourcing

Outsourcing – Obtaining of any resource or process external to the company.



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Why Should You Outsource?

- Reduce and control costs
- Increase flexibility and speed
- Decrease lead times
- Increase innovation capability
- Focus on core capabilities/competencies
- Gain access to world class capabilities
- Free internal resources for other purposes
- Insufficient resources are available internally
- Share risks with a partner company

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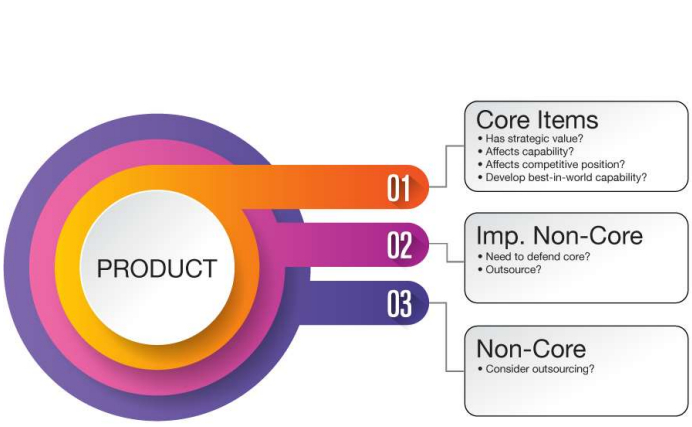
What Should You Outsource?



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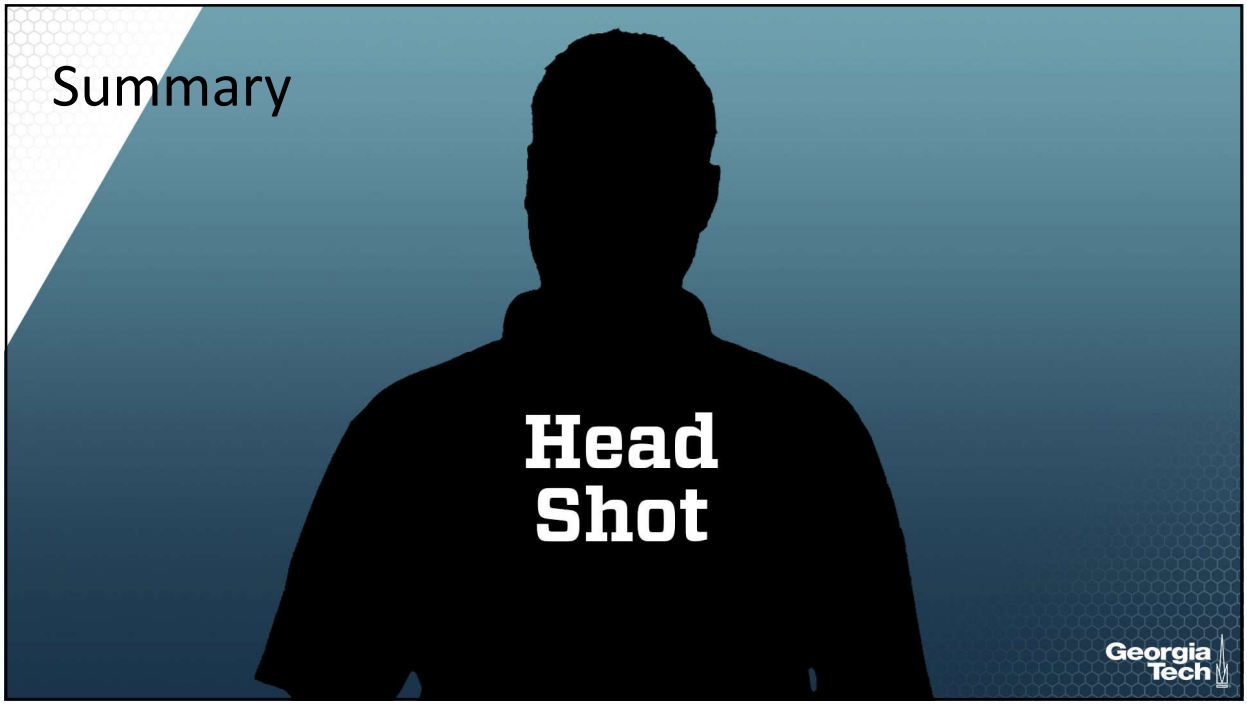
Summary



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Offshoring

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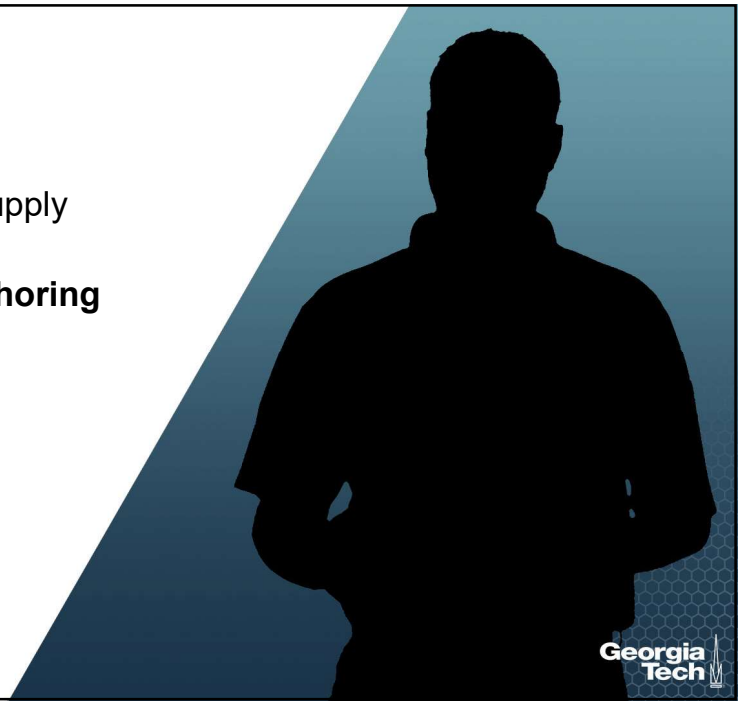
Learning Objectives

- Explain **offshoring** as a supply chain strategic decision
- Contrast and contrast **offshoring** and **outsourcing**



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Offshoring

Obtaining of any resource or process external to the company and across the ocean.

**Note you can offshore to yourself (Captive Offshore)

Nearshoring

Re-shoring

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Supplier and Location Factors

- Supplier Related Factors

  Innovation/Technical Capability, Quality, Capacity, Lead Time, Delivery, Cost/Price, Dependability, Supply Chain Capability, etc.

- Location/Country Related Factors

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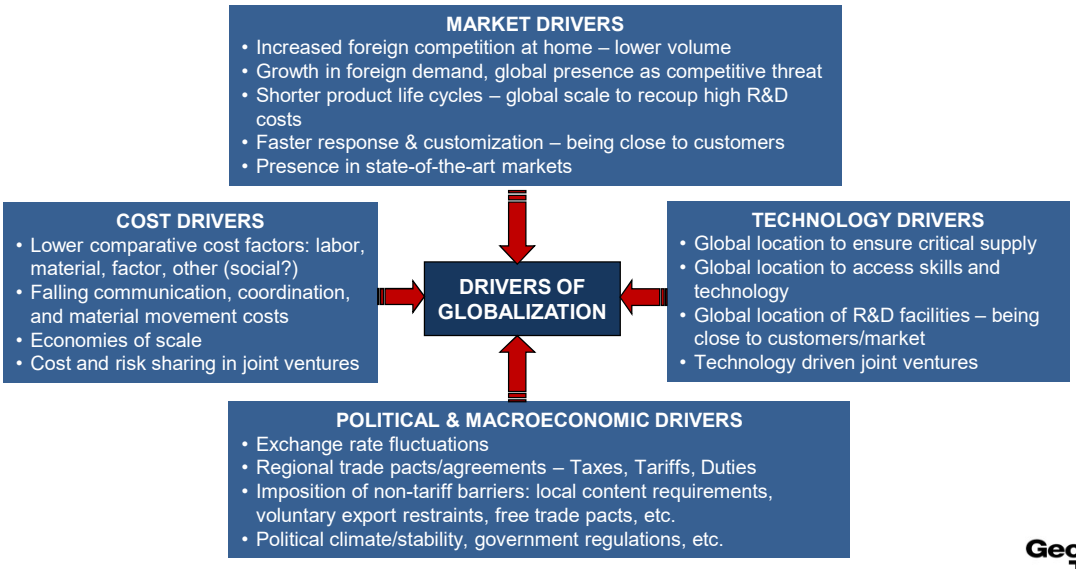
Supplier and Location Factors



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Offshore Cost Elements

- Free On Board (FOB) Cost
- Export Taxes
- International/Ocean transportation costs
- Insurance and tariffs
- Brokerage cost (shipping and money)
- Letters of Credit
- Cost of money (interest rates)
- Exchange rates exposure
- Inland freight costs (domestic & overseas)

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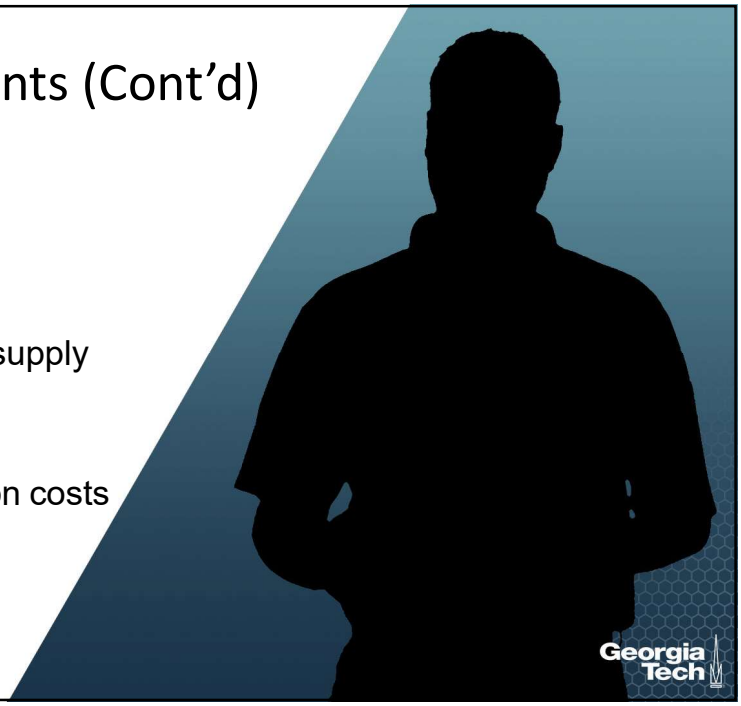
Offshore Cost Elements (Cont'd)

- Risk of obsolescence
- Cost of rejects/rework
- Damage in transit
- Inventory holding costs in supply chain
- Technical support
- Employee travel/repatriation costs



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Pitfalls of Offshoring

- Exchange rate volatility
- Effect on core competencies
- Delivery lead times and reliability
- Suppliers become future competitors
- Often inaccurate "true" cost of offshore sourcing
- Lack of control over suppliers' cost and quality
- Supplier integrity
- Inaccurate determination of overall product cost
- Introduction of various risk elements in the supply chain

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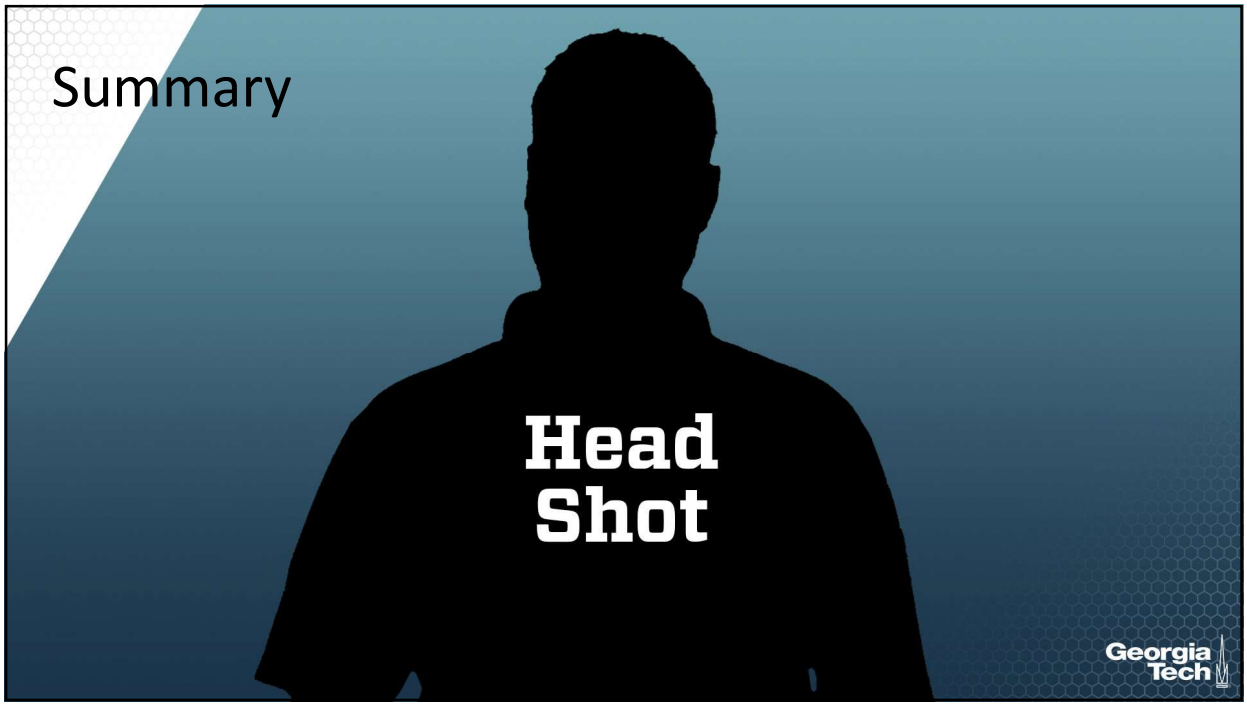

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