

Supply Chain Analytics

Spring 2024

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An example: Travels of a T-Shirt

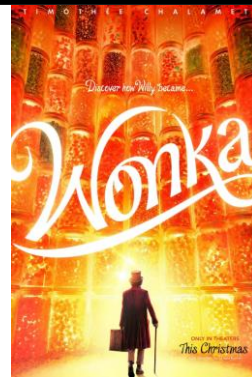


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Wonka

- Theatrical Release:
December 15, 2023
- Digital HD from Amazon Video and iTunes:
January 30, 2024

→ Release time window: 46 days



❑ Traditional Sequential Product Introduction in the motion pictures industry



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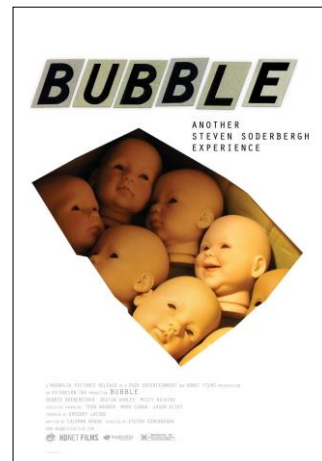
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2929 Entertainment

- Founded by Mark Cuban and Todd Wagner
- Steven Soderbergh's *Bubble*
 - Released Jan. 27, 2006
 - Using "day-and-date" strategy
- NATO's John Fithian
 - "radically misguided"
 - "the reality is the window is not changing"



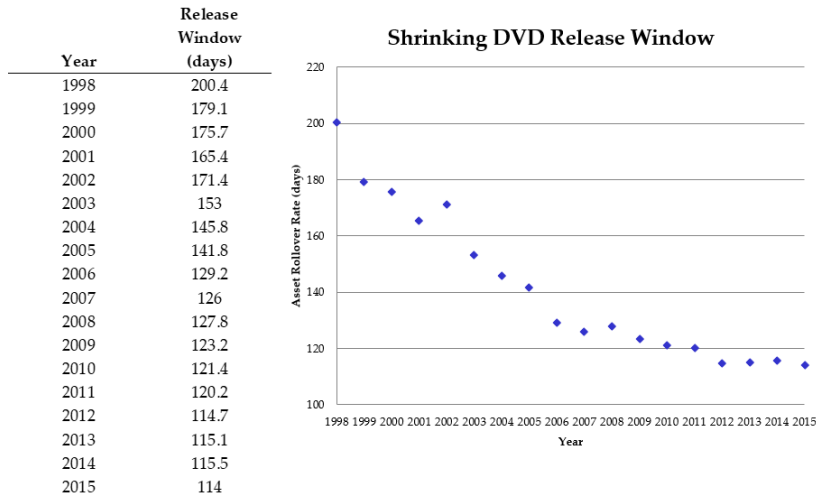
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Data confirms otherwise



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Margin Call (2011)

- Indie film about 2008 financial crisis
- Film characteristics
 - ✓ Niche audience
 - ✓ High quality content (88% fresh on Rotten Tomatoes)
 - ✓ Relatively low durability
- Production budget: \$3.4 million
- Domestic Box Office: \$5.3 million
- International box office: \$7.5 million



Released day-and-date over VOD (\$8 million)

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An Example: The Movie Industry



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Blockbuster?



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Scales?



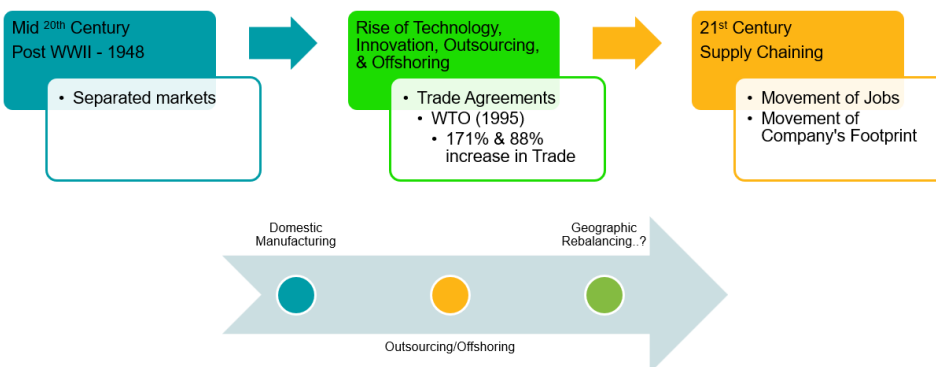
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Evolution of Global Supply Chains



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Post-Globalization

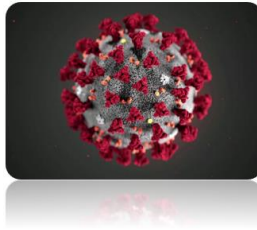
Rise of Populism & Trade Wars

Political Push towards Protectionism



Effects of COVID

Acceleration of Post-Globalization



Biden Victory & New Trade Agreements

Regional Comprehensive Economic Partnership (RCEP)



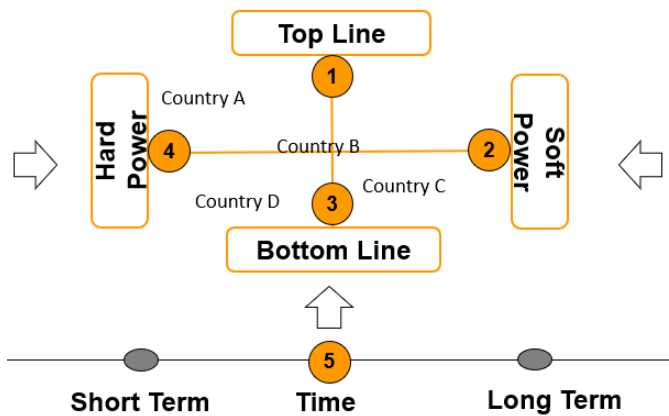
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5 Dimensions to consider



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Emerging Strategy



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Supply Chain Context

- Global networks are involving:
 - ✓ Transportation cost is Volatile? Oil Price!
 - ✓ Tariffs?
- COVID-19
 - ✓ Supply Chain Disruption
- Retail as we know it changing!

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Retailing of the Past:

1895: Pushcarts



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Retailing of the Past:

1912: The Great Atlantic & Pacific tea Co.



- Organized
- Replicable
- Vertically integrated

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Retailing of the Past: 1930: The First Supermarket - King Cullen



- Not vertically integrated
- Variety
- Low cost



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Retailing of the Present I:



COSTCO
WHOLESALE



Walmart



**WHOLE
FOODS**
MARKET

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Retailing of the Present II :



Korea: Tesco Home Plus

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Retailer

The Honest Kitchen Dehydrated Whole Grain Chicken Dog Food, 4 lb Box

Visit the The Honest Kitchen Store
4.3 ★★★★★ 9,882 ratings
#1 Best Seller in Dehydrated Dog Food
1K+ bought in past month

Price: **\$37.99**

Savings: Get a \$30 promotional credit when you spend at least \$100 in promotional item(s). [Shop items](#)

May be available at a lower price from other sellers, potentially without free Prime shipping.

Flavor Name: **Chicken**

FREE delivery Today
10 AM - 3 PM. Order within 52 SECS

Subscribe & Save:
~~\$37.99~~ **\$37.99** (15% off)
Save 5% now and up to 15% on future deliveries. [Learn more](#)

FREE delivery Today
10 AM - 3 PM. Order within 52 SECS

One-time purchase:
\$39.99 (\$10.00 / lb)
prime Same-Day

FREE delivery: Today
Ships from: Amazon.com
Sold by: Amazon.com

9:59 AM
1/6/2024

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Selling Diamonds



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Some Supply Chain Issues

- McMaster Carr/W.W. Grainger have succeeded with high cost supply chains. How is that possible?
- Where should Amazon locate its warehouses? How large? Which markets should they serve?
- How should diamonds be sold in the future?
- Electronics retailer are struggling. Why? What should BestBuy do?
- What would be a good supply chain structure for same day delivery?
- How should supply chains manage risk such as COVID-19?

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What is Supply Chain Management?

Managing supply chain flows and assets, *to grow supply chain surplus in a financially sustainable manner.*

- What are the *supply chain flows*?
- What is *supply chain surplus*?
- What is *financially sustainable*?

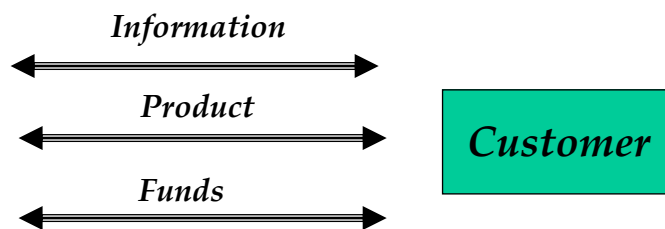
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Flows in a Supply Chain



SUPPLY CHAIN

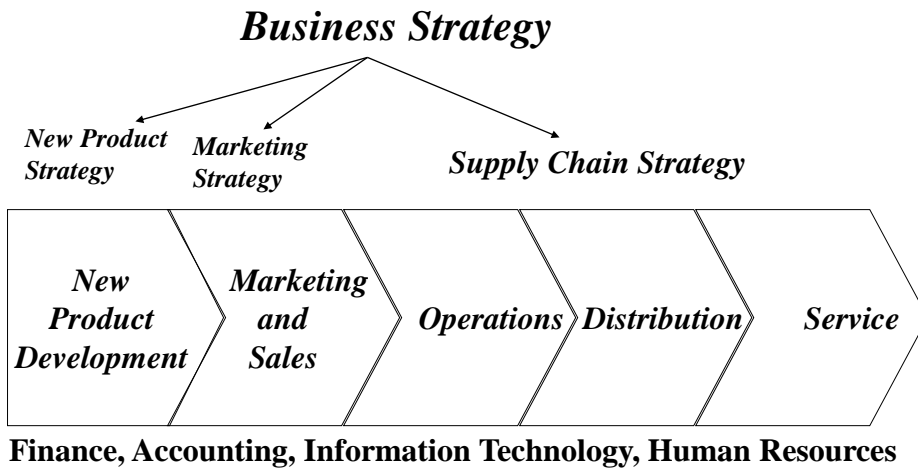
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Maximizing Supply Chain Surplus: The Value Chain



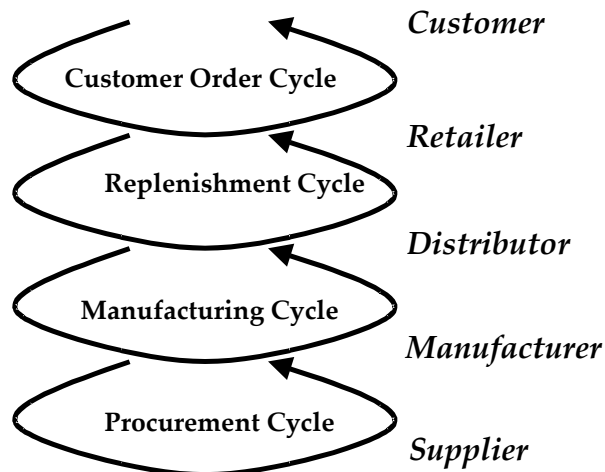
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Cycle View of Supply Chains

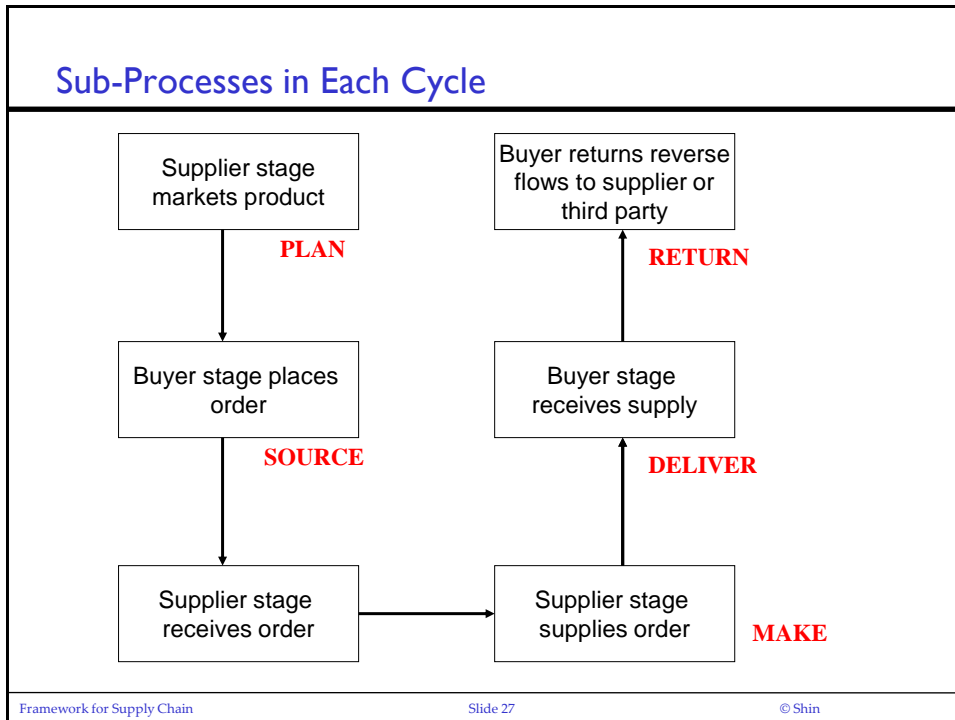


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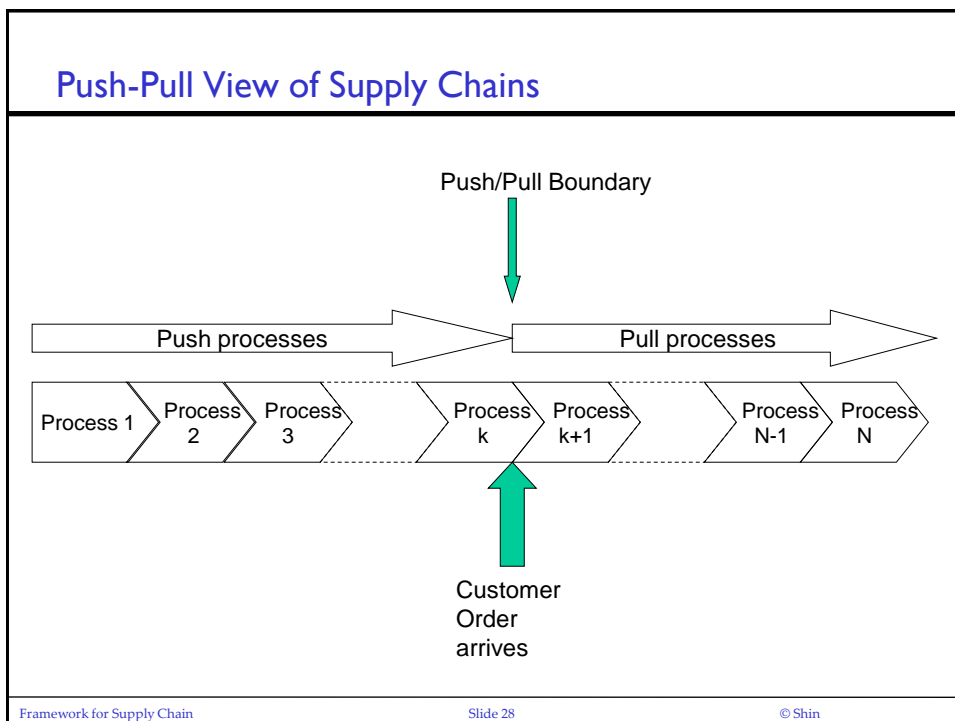
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Maximizing SC Surplus: Achieving Strategic Fit

Understanding the Customer

- ❖ Lot size
- ❖ Response time
- ❖ Service level
- ❖ Product variety
- ❖ Price
- ❖ Innovation



***Implied
Demand
Uncertainty***

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Levels of Implied Demand Uncertainty

Detergent
Long lead time steel

High Fashion
Emergency steel

Customer Need

Price

Responsiveness



Low

High

Implied Demand Uncertainty

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Supply Uncertainty

- Low supply uncertainty
 - Detergent and other consumer goods
 - PC assembly
- High supply uncertainty
 - Semiconductor components
 - Agriculture output
 - Capacity constrained supply
 - Poor and unpredictable quality

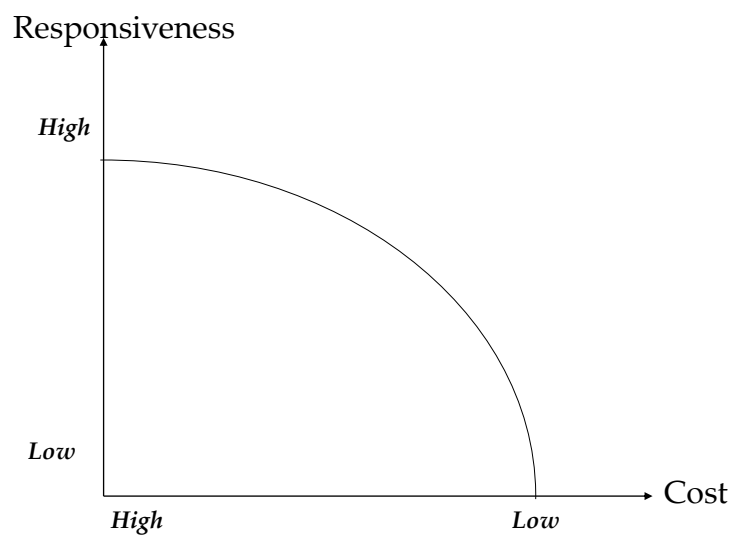
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Understanding Supply Chain Capabilities



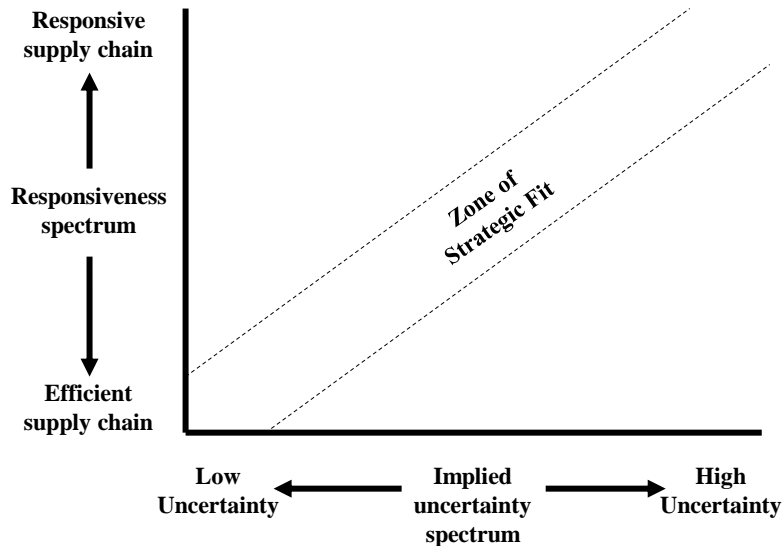
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Achieving Strategic Fit



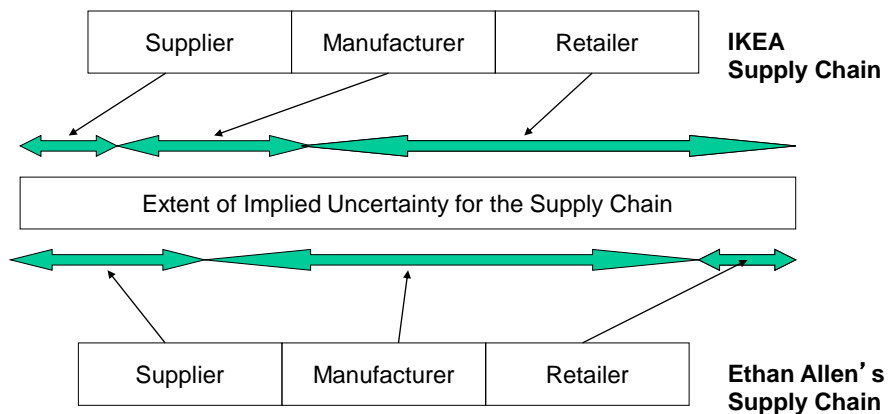
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Allocating Uncertainty: Two Furniture SCs



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Seven Eleven Japan



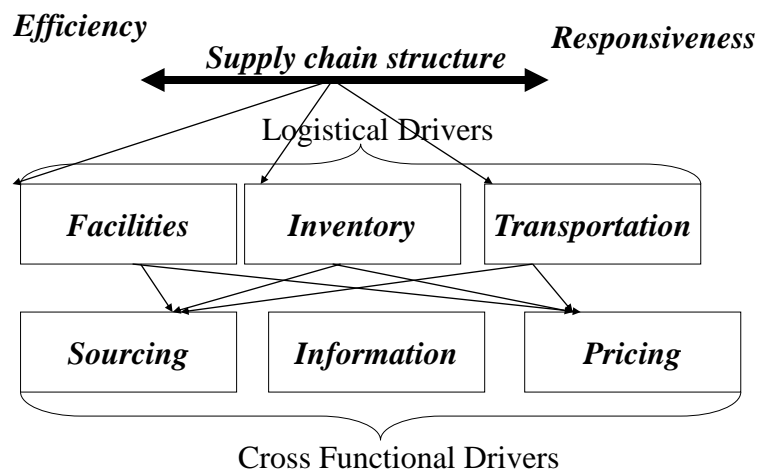
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Drivers of Supply Chain Performance



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A Key Idea: Tailor your Supply Chain

- **Distinct business units, customer segments, product lines may have distinct requirements in terms of**
 - Inventory
 - Transportation
 - Facility
 - Information
 - Sourcing
 - Pricing

Key: How to design the supply chain to achieve capabilities tailored to a range of requirements while realizing possible efficiencies?

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Cupcake Game: A sweet business

- You own a bakery shop located in 8855 Villa La Jolla Drive, La Jolla.
- One of your most popular products is a gourmet cupcake that you make in house.
- **You're heading out on a two-week vacation and need to leave instructions on how many cupcakes to make daily while you are away.**



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Cupcake economics

- Your cupcakes sell for \$2.49.
- Each cupcake costs \$1.24 to make.
- You never sell yesterday's cupcakes!
 - You cut price to 99¢ in the last hour of the day to clear out left over cupcakes.
- You're gone 10 days and your staff will need to make cupcakes 10 times.



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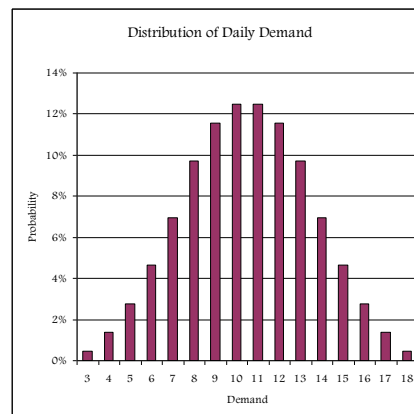
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Time to make the cupcakes...

- Cupcake demand is random but the distribution does not vary from day to day.
 - For simplicity, you tell your staff to make the same number of cupcakes each day that you are out of town.
- How many should they make?



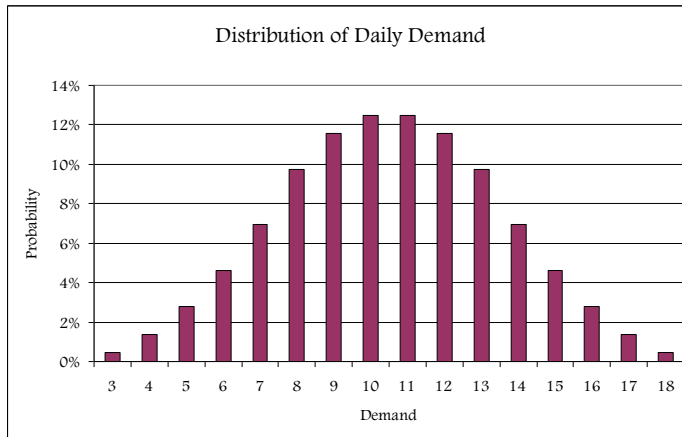
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Summary data



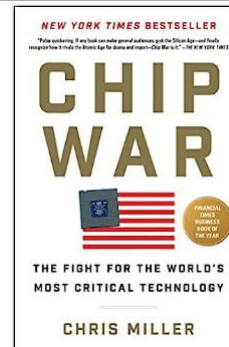
Retail price = \$2.49 Cost = \$1.24 Leftover price = \$0.99

Mean demand = 10.5

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Book Publisher

- You own a bookstore, the BN.
- A new book "Chip War" by Chris Miller is published at Oct. 4, 2023.
- **You purchase from the Publisher, Scribner, at \$14 a copy, and it will sell to the customers at the retail price of \$22 a copy.**
- You need to decide how many books to order.
- You have a demand forecast from the past demands of similar books. The demand/forecast data is given in Canvas.
- After talking with the publisher's sales agent, you learned that it costs \$2 per book for the publisher to print one hard copy.
- Q1: How many books should you order?
- Q2: What can you do better?



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