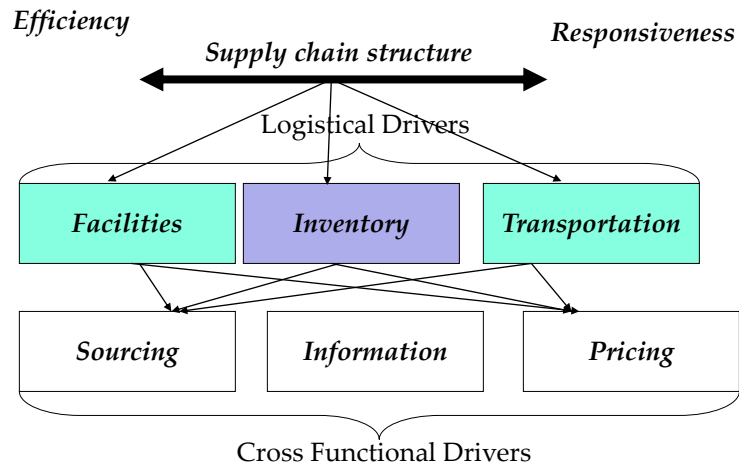


Drivers of Supply Chain Performance



Inventories/Safety Stock

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HW#6: Transportation Cost

- Current Distribution Center (Regional DC)



- Alternative Distribution Center (NDC)



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Calculating Safety Stock for Region 1 for Product 1

- Daily demand
 - Mean: 29.9 and Standard deviation =4.9
- Lead time, L=5 days
- Periodic review policy with T=6 days
- Cycle Service Level is 95%
- Holding cost: \$0.15 per unit per day
- OUL
- Average Order Quantity
- Average Cycle Stock
- Average Safety Stock
- Average Inventory
- Daily Average Inventory holding cost
- Daily Average Transportation cost (Sum of both inbound and outbound)
- Daily Average Total cost

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What is the value of NDC?

Pros. vs. Cons.

Product 1 vs. Product 2

Product 2 vs. Product 3

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Summary Statistics and Financials for HW#6

		R1	R2	R3	R4	Agg.
P1	Mean	30	30	30	30	120
	STDEV	5	5	5	5	10

P2	Mean	10	10	10	10	41
	STDEV	3	3	3	3	6

P3	Mean	10	10	10	10	39
	STDEV	3	3	3	3	10

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Coefficient of Variation

		R1	R2	R3	R4	Agg.
P1	Mean	30	30	30	30	120
	STDEV	5	5	5	5	10
	CV	0.2	0.2	0.2	0.2	0.1

P2	Mean	10	10	10	10	41
	STDEV	3	3	3	3	6
	CV	0.3	0.3	0.3	0.3	0.1

P3	Mean	10	10	10	10	39
	STDEV	3	3	3	3	10
	CV	0.3	0.3	0.3	0.3	0.3

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Product 2 vs Product 3

Correlation Matrix				
	D1	D2	D3	D4
D1	1	0.02	-0.03	-0.03
D2		1	0.01	0.02
D3			1	0.03
D4				1

Correlation Matrix				
	D1	D2	D3	D4
D1	1	0.57	0.54	0.52
D2		1	0.52	0.48
D3			1	0.56
D4				1

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Implication of HW#6 for Centralization

	Centralized Inventories	Decentralized Inventories
CV Low	Transportation Cost is too high!!	✓
CV High	✓	Inventory Cost is too high!!

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Centralization vs Decentralization		
	Centralized Inventories	Decentralized Inventories
Slow Moving Product	Low cost blue nile.	<input type="checkbox"/>

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Centralization vs Decentralization <i>Selling Diamonds</i>		
	Centralized Inventories	Decentralized Inventories
Slow Moving Product	Low cost blue nile.	Customer willing to pay a premium? TIFFANY & CO.

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Centralization vs Decentralization

	Centralized Inventories	Decentralized Inventories
Fast Moving Product		<input type="checkbox"/> Low cost 
Slow Moving Product	Low cost 	Customer willing to pay a premium? 




Inventories/Safety Stock

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Centralization vs Decentralization

	Centralized Inventories	Decentralized Inventories
Fast Moving Product	Transportation cost is too high!!	<input type="checkbox"/> Low cost 
Slow Moving Product	Low cost 	Customer willing to pay a premium? 

Inventories/Safety Stock





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Centralization vs Decentralization

The danger of the middle path

	Centralized Inventories	Decentralized Inventories
Fast Moving Product	Transportation cost is too high!! (Need Premium)	<input type="checkbox"/> Low cost 
Slow Moving Product	Low cost  	Customer willing to pay a premium? 

Amazon customers currently pay little (?) premium for fast moving products

Inventories/Safety Stock

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Centralization vs Decentralization

Applying the framework in various settings.

	Centralized Inventories	Decentralized Inventories
Fast Moving Product	Transportation cost is too high!! (Need Premium)	<input type="checkbox"/> Low cost
Slow Moving Product	Low cost	Customer willing to pay a premium?

- How to explain the failure of blockbuster and the success of both Netflix and Redbox?

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