Exclusive Case Studies on Supply Chain Management

Case Study: Inventory Design and Simulation

22-Feb-2026

About SCM Connect Private Limited

Optimizing Supply Chains

- 7+ years in Operations
- Expertise in Supply chain Strategy and Planning, Supply chain-as-a-service, Data analytics & AI, Technology and Supply chain education
- Clients across industry segments Manufacturing, Retail, e-Commerce, Consulting and Logistics
- Well networked with partner ecosystem comprising of Technology, Logistics and Academic players
- Multiple offices across India
- 20+ Professionals; Expertise in Supply Chain domain, Operations, Data Analytics and Technology

Our vision is to revolutionize Supply Chain Management by providing innovative solutions that focus on

- Cost Effectiveness
- Enhance Efficiency
- Improve Visibility

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Increasing economic and political uncertainties and changing expectations of stakeholders…

Business shocks

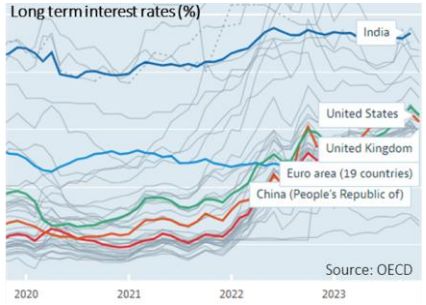
More frequent business shocks due to interplay of climate change, pandemics, geo-political tensions.

Recent conflicts in easter Europe and the Middle East has disrupted global supply chains significantly

Economic uncertainties

Economic uncertainties continues. Post pandemic recovery in global growth and falling inflation rates is surprisingly resilient

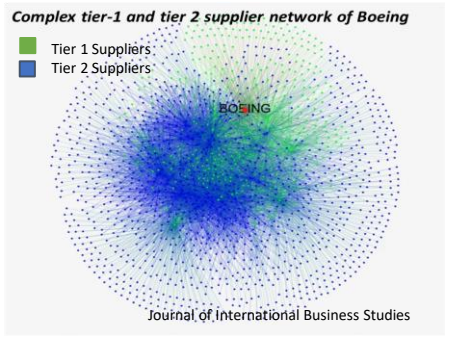
However, high interest rates will continue to weigh heavily on growth momentum



Global operating complexity

Evolving 'China + many' strategy offers significant opportunity

However, labor and logistics capacity constraints coupled with need for omni-channel presence and evolving ecosystem of players are increasing the complexity of supply chain



Changing customer expectations

Customers expectations in terms of quality, timeliness and sustainability are evolving faster than expected

This is likely to put innovation and collaboration high on agenda within supply chain management

According to a Verint report, 44% of Gen Z and 43% of Millennial shoppers had to make more effort than expected to complete an interaction. This indicates that new generations have even higher expectations for their digital experiences

Sustainability

Rising expectations from regulators, customers and investors to minimize the environmental impact

High focus on sustainable supply chains in pursuit of "net zero"

>90% of publicly traded companies have adopted ESG reporting

According to Statista, consumers are 44% more likely to buy from a brand with a clear commitment to sustainability

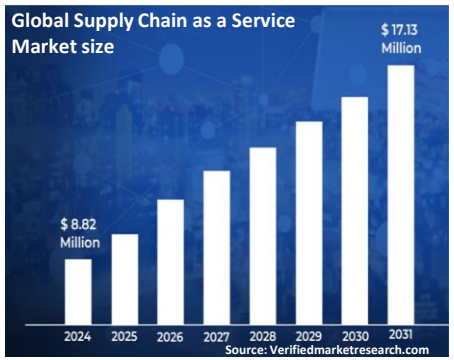
… are mounting pressure on supply chains to innovate and become more efficient.

1 2 3 4 5

Supply Chain As A Service

Need for agility, best practice adoption, end-to-end visibility, cost savings and resiliency is driving faster adoption of SCaaS

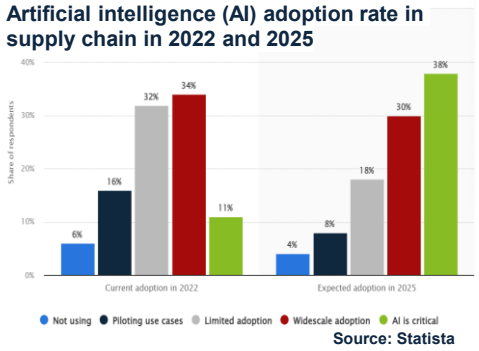
The global SCaaS market is expected to grow at 8.65% CAGR between 2024 and 2031



Data Analytics and AI

Future supply chains will be data and AI driven

Analytics will reduce cost, increase visibility and improve customer experiences. AI is likely to augment quality, bring agility and automation of supply chains globally



Digitalization

Digital transformation of supply chain has become top priority to support new business, improve efficiency and productivity, enhance decision making and improve resiliency/agility amid ongoing supply chain disruption

A study by the Council of Supply Chain Management Professionals (CSCMP) has found that more companies than ever (93%) are actively engaged in digital transformation for a significant competitive advantage

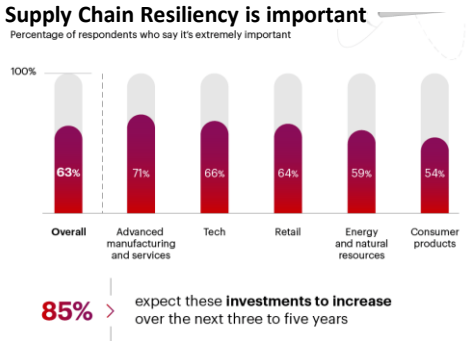
Circular Supply Chain

Circular supply chain is likely to be a major trend driven by sustainability goals of reducing carbon emissions across the supply chain coupled with need to mitigate inflation risks, reduce wastage and respond to the return logistics requirements

A recent Gartner survey found that 74% of supply chain leaders expect profits to grow over the next two years as a result of applying circular economy principles

Risk Management

Being resilient and mitigating the risk is critical in an environment of economic uncertainties, increasing frequency of globally disruptive events, growing operational complexity, and rising instances of cybersecurity breaches and loss of IPs



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Service offerings

Strategy | Service | Data & AI | Technology | Training

Supply Chain Strategy & Planning

- Supply Chain Strategy
- Network Strategy & optimization
- Inventory optimization
- Procurement strategy
- Supply Chain Risk Management
- Opportunity assessment
- Sustainability & ESG
- Research & Intelligence

Supply Chain-as-a-Service

- Demand Planning and Management
- Sales & Operations Planning & Management
- Inventory Planning & Management
- Production Planning & Scheduling
- Procurement Planning & Management

Data Analytics & AI

- Supply Chain Data Strategy
- Supply Chain Diagnostics
- Supply Chain Analytics (AI, machine learning and advanced analytics)
- Procurement Analytics
- Supply Chain master data management
- Data Governance
- Visualization
- AI adoption

Supply Chain Technology

- Digital Supply Chain
- Supply Chain Simulations
- Supply Chain Apps and APIs
- Supply Chain Visibility through RFID, QR codes and bar codes
- Telematics
- Solver Integrations for Optimization

Supply Chain Training & Development

- Supply Chain Master Class
- Bespoke learning programs
- Utilizing modern methods including Gamification and Case Study based
- Change Management

We extensively leverage the **partner ecosystem** to augment our capabilities in the areas of Technology and Operations

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Why SCM Connect?

Flexible ways of working suiting specific requirements

Domain expertise
Extensive experience and know-how of managing and improving solutions through converged supply chain operations, data, technology and business expertise

High performing team
Skilled pool of resources, across supply chain domain; Matured processes to ensure talent management and development, and operations resilience

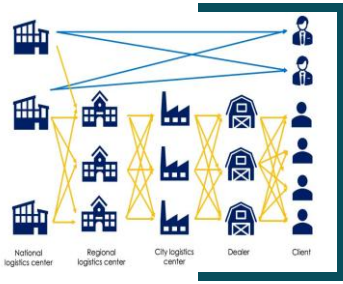
Delighted clients base
High concentration of repeat engagements (~90%) ; highly satisfied clients with high Net Promoter Score

Commitment to success
Commitment and focus with the goal of “Work as One” team, having “courage”, “technical excellence” and “customer focused” as DNA

Best suited engagement models
Flexible engagement models as per client’s need with focus on outcome & continuous quality monitoring

Case Studies

Cost Optimization | Efficiency Enhancement | Visibility Improvement

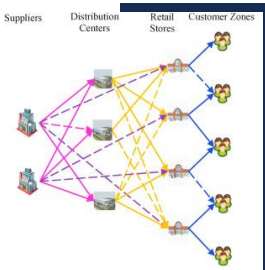


SUPPLY CHAIN NETWORK DESIGN

INDUSTRY – Refrigerant Gas

APPROACH : Supply Chain Network designed for next 5 years including OEMs and Trade, as per targtted SLAs OEM 90% within 36 hrs and Trade 80% within 48 hrs

RESULT : Cost Reduction of 16.71%



SUPPLY CHAIN NETWORK DESIGN

INDUSTRY – Animal Nutrition

APPROACH : Re-Design Supply Chain in view of GST to achieve Service Level efficiency of 90% + within 96hrs of Customer order.

RESULT : Cost Reduction of 8.25%

FACILITY LOCATION

INDUSTRY – Industrial Gas

APPROACH : Determine the ideal location of RG filling station to cater to Trade Distributors. Customers based in North and East India

RESULT : Wt. Average distance reduction = 39% and Cost reduction of 3.6%.

INVENTORY STRATEGY and S&OP

INDUSTRY – Tyre Retreading

APPROACH : Designed inventory strategy for finished goods across depots, setting SKU-specific policies, and executing monthly S&OP for demand-production-procurement alignment

RESULT : Reduction in DIO by 23%

SUPPLY CHAIN VISIBILITY

INDUSTRY – FMCG

APPROACH : Implemented supply chain visibility solution for a French electrical MNC, integrating plant-to-customer tracking for two product lines and linking with loyalty program app.

RESULT : 100% visibility of all SKUs on a single platform

LOGISTICS COST REDUCTION

INDUSTRY – HVAC

APPROACH : Optimized outbound logistics costs while maintaining service levels through RFQ design, vendor selection, and contract standardization

RESULT : Savings in freight cost by 31%

FREIGHT OPTIMIZATION

INDUSTRY – Chemicals

APPROACH : Optimized outbound logistics costs for CMS, including tanker and drum movement through product flow optimization and service provider contract standardization

RESULTS : Cost reduction of 4.94%

INVENTORY MANAGEMENT & PROCUREMENT SERVICE

INDUSTRY – Home Appliances

APPROACH : Designed RM hierarchy, FG BOMs, and inventory policies. Spend Analysis, RFQ/Sourcing, Contract Management, and Supplier Performance Dashboard

RESULTS : Annualized Savings of INR 50mn

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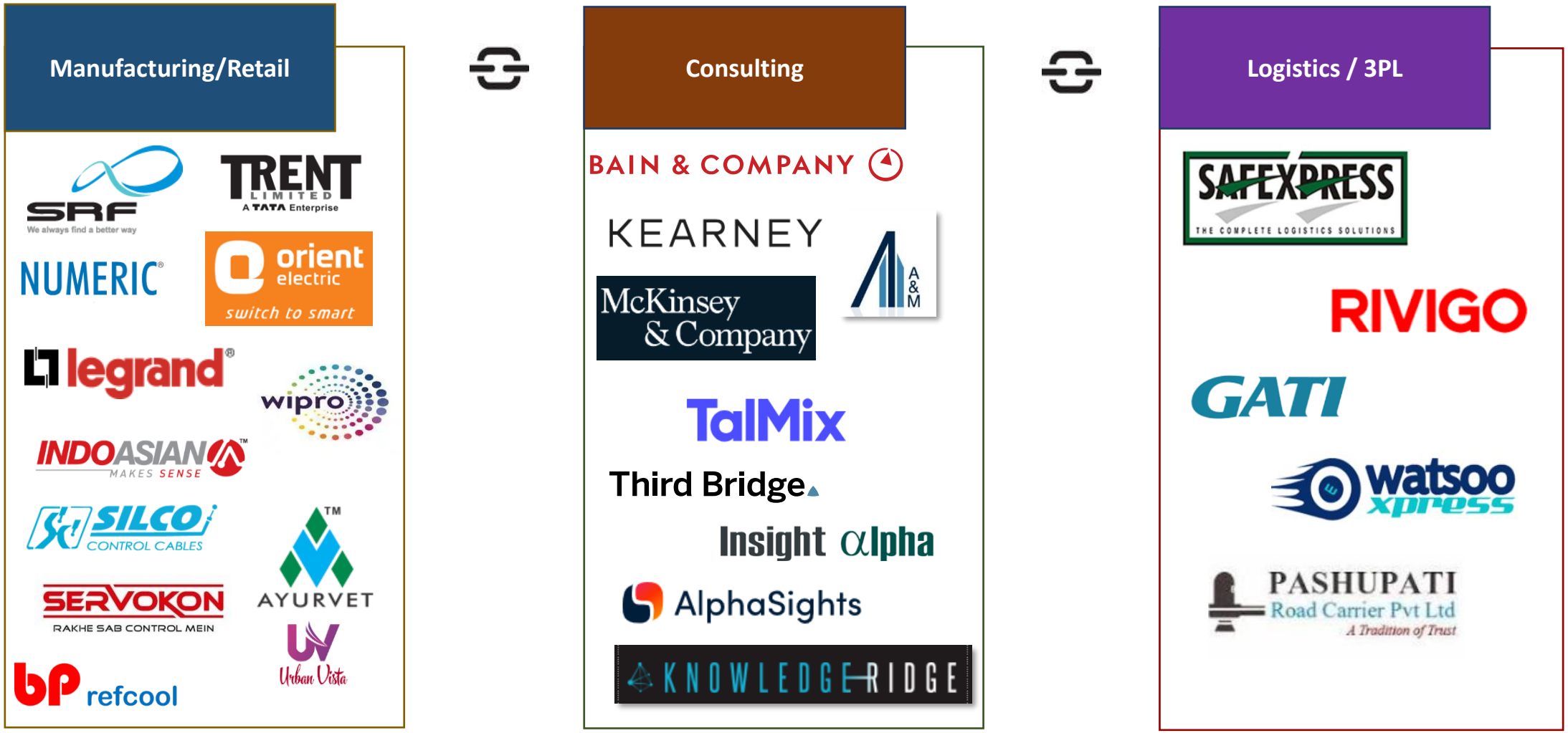
Key client segments

Creating incisive impact across client segments



Supply Chain Playbook

THE SUPPLY CHAIN PLAYBOOK

50 EXCLUSIVE CASE STUDIES ON SCM

FOCUS AREA

Learning SCM through Case Studies

GOAL

Learn to solve Real World SCM problems using Industry proven strategies

LEARNING MODE

Training
100 hours

SUPPLY CHAIN TECHNOLOGY

FOCUS AREA

Supply Chain Planning

GOAL

Gain hands-on skills with Supply Chain Planning Softwares and Apps

LEARNING MODE

Training
30 hours

MANAGING LOGISTICS EFFECTIVELY

FOCUS AREA

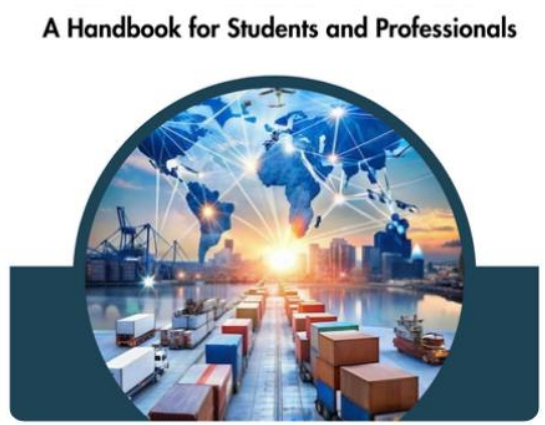
Logistics Efficiency and Cost Reduction

GOAL

In Depth understanding of Logistics Process and levers to Balance
Cost Vs Service Levels

LEARNING MODE

Training
20 hours



SUPPLY CHAIN TERMS MADE SIMPLE

FOCUS AREA

Supply Chain Terminologies

GOAL

Master key SCM Terms for easy Conceptual understanding and career growth

LEARNING MODE

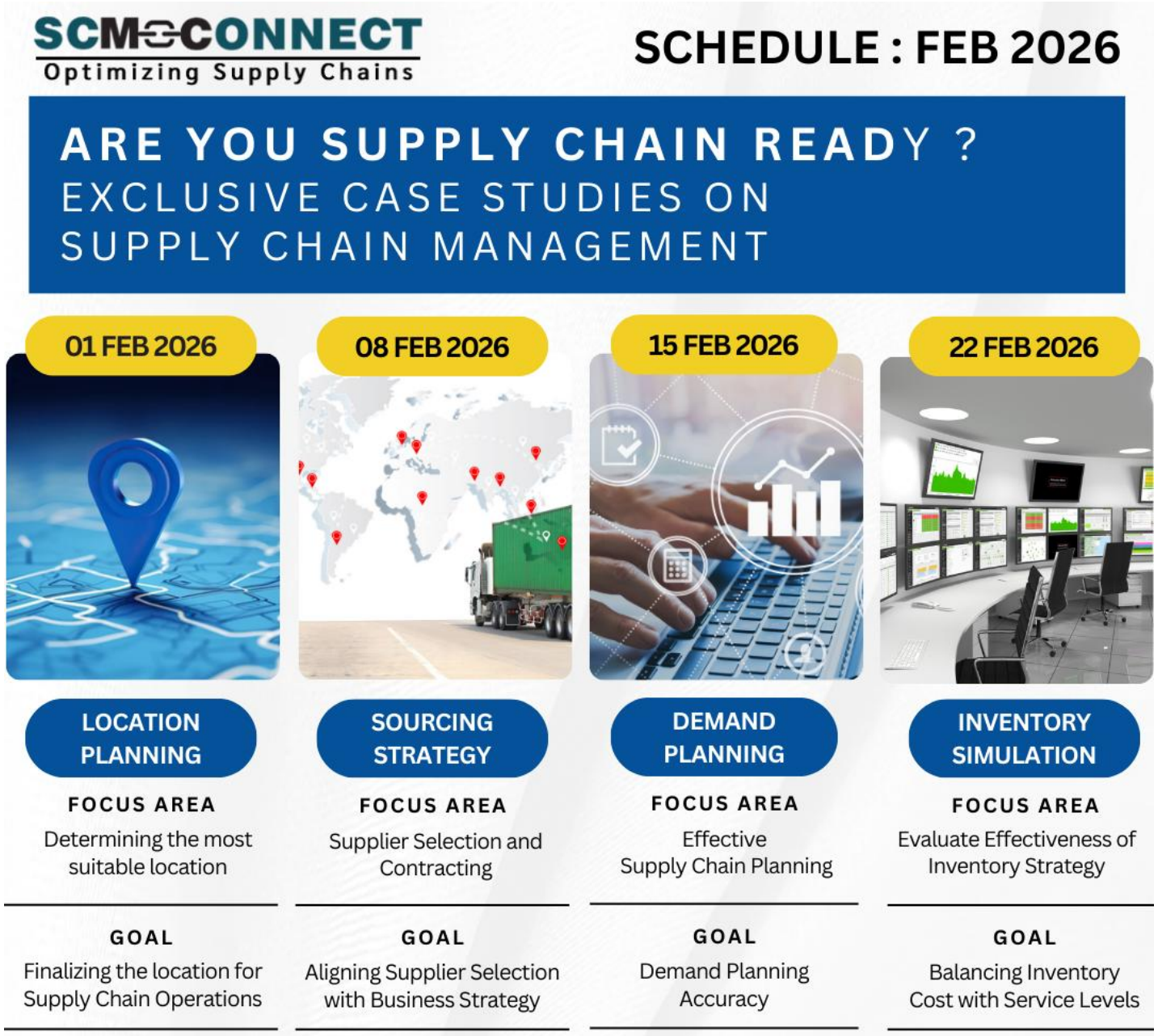
eBook
Continuous

SCMCONNECT

50 Exclusive Case Studies on Supply Chain Management

What will you learn?

- Structuring a Supply Chain Problem
- Location Planning to determine the most suitable location for the facility
- Supplier Selection and Contracting
- Demand Planning as a key component of Effective Supply Chain Planning
- Evaluating the Effectiveness of Inventory Strategy
- Interpreting Results
- Scenario based Simulations



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Case Study : Inventory Design & Simulation

22-Feb-2026

What will you learn?

- Data Requirements & Structuring the Problem
- Conceptual understanding of Inventory Strategy
- Inventory Performance metrics
- Designing the Inventory Strategy
- Modelling Inventory Simulation
- Testing the impact of Inventory Strategy on Random Demand
- Interpreting Results
- Scenario based Simulations

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Optimizing Supply Chains

www.scmconnect.in

Supply Chain Case Study : LIVE

Inventory Design & Simulation

Challenge

Mug Life, a Coffee Chain wants to Design an Inventory Strategy for Coffee beans for one of its Stores in Delhi. Supply Chain Manager wants to test the impact of this policy by setting up a simulation on Random Demand

Solution

Using an Analytics based approach :

- ✅ Design the Inventory Strategy
- ✅ Structure the Inventory Simulation problem
- ✅ Simulate Inventory policy for Random Demand

JOIN US

A Live Case Study with MR. MOHIT GAUBA

Founder : SCM Connect Pvt Ltd | Supply Chain Expert | 25+ years of Experience

Key Takeaways !

- Conceptual understanding of Inventory Strategy
- Key Concepts of Inventory Performance Metrics
- Testing the Impact of Inventory Strategy on Random Demand

22nd Feb, 2026
11:00AM - 01:00PM

Become Supply Chain Ready !
Join our Exclusive SCM Case Study Series

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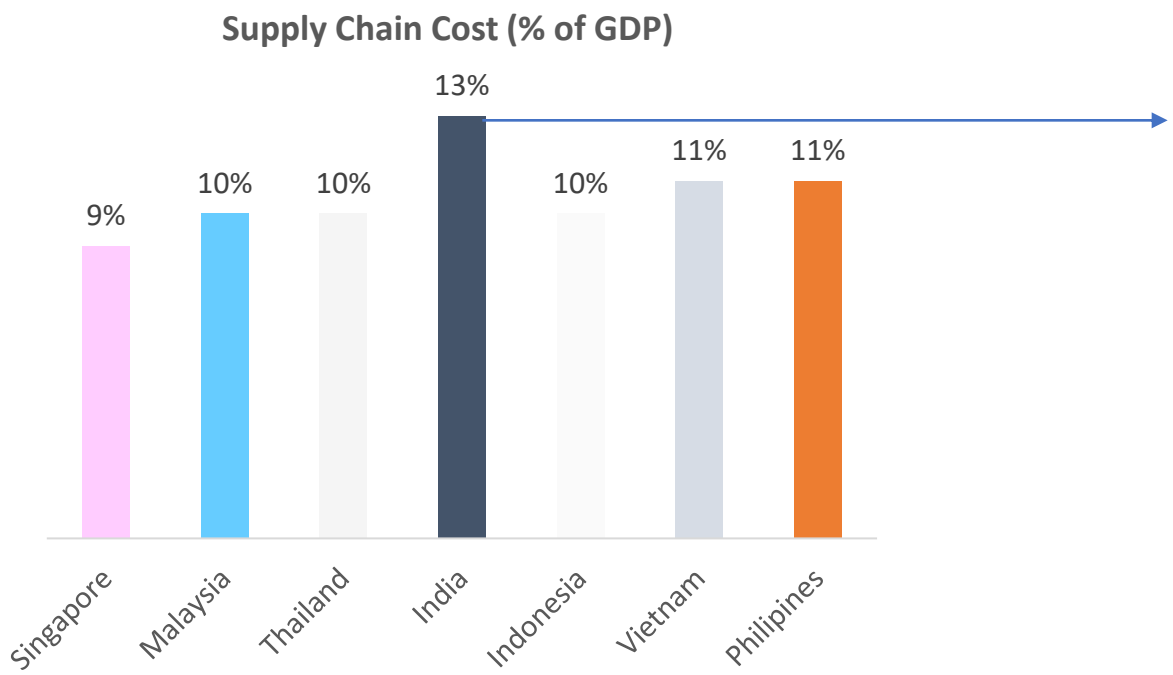
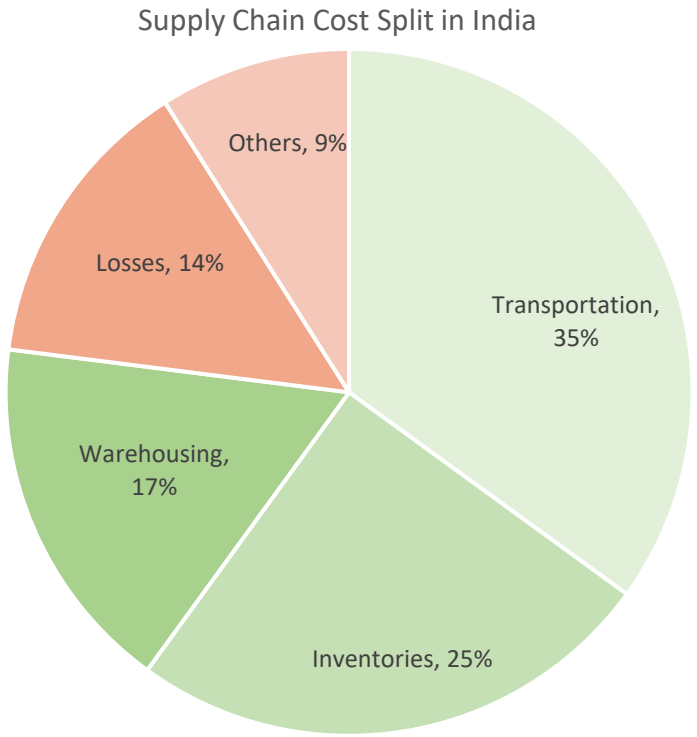
Why Inventory Planning Matters?

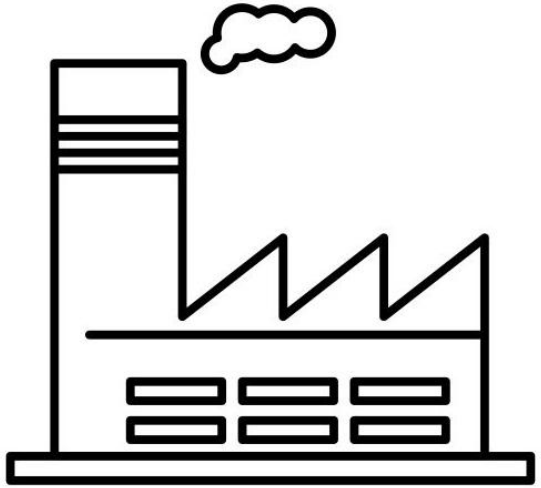
Concept of VALUE DENSITY

India has one of the highest supply chain costs in the world
India has one of the lowest logistics cost in INR/Kg in the world
Potential reduction of inventory cost by up to $100-150bn in India
Reducing the costs while improving service levels is essential for Make in India





Inventory Concepts



Factory

Pipeline Inventory

Warehouse

Total Logistics Cost

$$TC(Q) = cD + c_t\left(\frac{D}{Q}\right) + c_e\left(\frac{Q}{2} + k\sigma_{DL} + LD\right)$$

Total Logistics Cost =

- Transportation Cost
- Ordering Cost
- Cycle Stock Cost
- Safety Stock
- Pipeline Stock

Key Concepts : Notation

D = Average Demand (units/time)

c = Variable (Purchase) Cost ($/unit)

h = Carrying or Holding Charge ($/inventory $/time)

c_t = Fixed Ordering Cost ($/order)

c_e = c*h = Excess Holding Cost ($/unit/time)

c_s = Shortage Cost ($/unit/time)

Q = Replenishment Order Quantity (units/order)

L = Replenishment Lead Time (time)

T = Order Cycle Time (time/order)

N = 1/T = Orders per Time (order/time)

IP = Inventory Position (units)

IOH = Inventory on Hand (units)

IOO = Inventory On Order (units)

μ_{DL} = Expected Demand over Lead Time (units/time)

σ_{DL} = Standard Deviation of Demand over Lead Time (units/time)

k = Safety Factor

s = Reorder point (units)

S = Order up to Point (units)

R = Review Period (time)

IFR = Item Fill Rate (%)

CSL = Cycle Service Level (%)

CSOE = Cost of Stock Out Event ($/event)

CSI = Cost per item short

E[US] = Expected Units Short (units)

G(k) = Unit Normal Loss Function

Case Study : Inventory Replenishment Policies

- Policy: How much to order and when

- Five Methods
  - EOQ Policy – deterministic demand
    - Order Q* every T* time periods
    - Order Q* when IP= μ_{DL}
  - Single Period Models – variable demand
    - Order Q* at start of period where P[x≤Q]=CR
  - Base Stock Policy – one-for-one replenishment
    - Order what was demanded when it was demanded
  - Continuous Review Policy (s,Q) - event based
    - Order Q* when IP≤s
  - Periodic Review Policy (R,S) – time based
    - Order up to S units every R time periods.

Recall:
Inventory Position (IP) =
Inventory on Hand (IOH)
+ Inventory on Order (IOO)
- Backorders

Demand over
Leadtime=D*L= μ_{DL}

(be careful with dimensions)

Key Concept: Continuous Review Vs Periodic Review

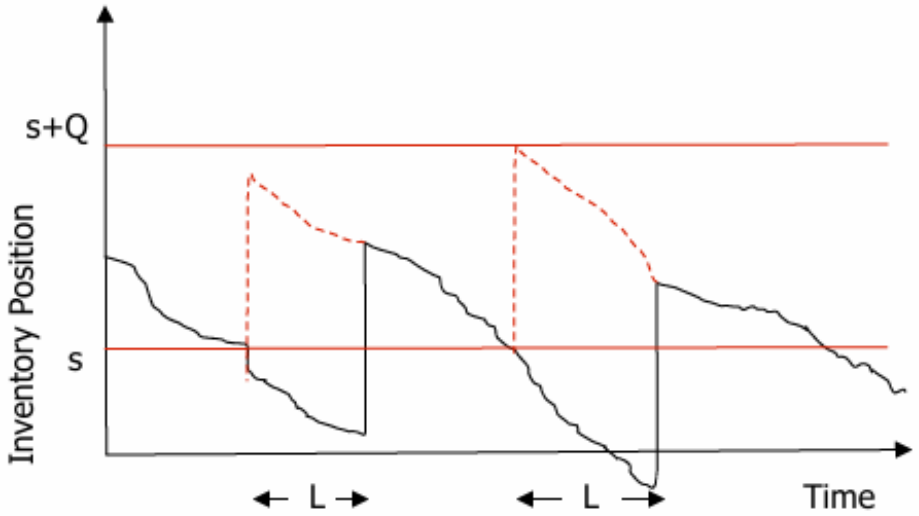
Aspect	Continuous Review	Periodic Review
Review Frequency	Continuous	Fixed Intervals
Order Quantity	Fixed	Variable
Order Timing	Variable	Fixed
Monitoring Cost	High	Low
Stock Out Risk	Low	High
Use Case	High Value items	Low Value items

Assumptions: Continuous Review Policy

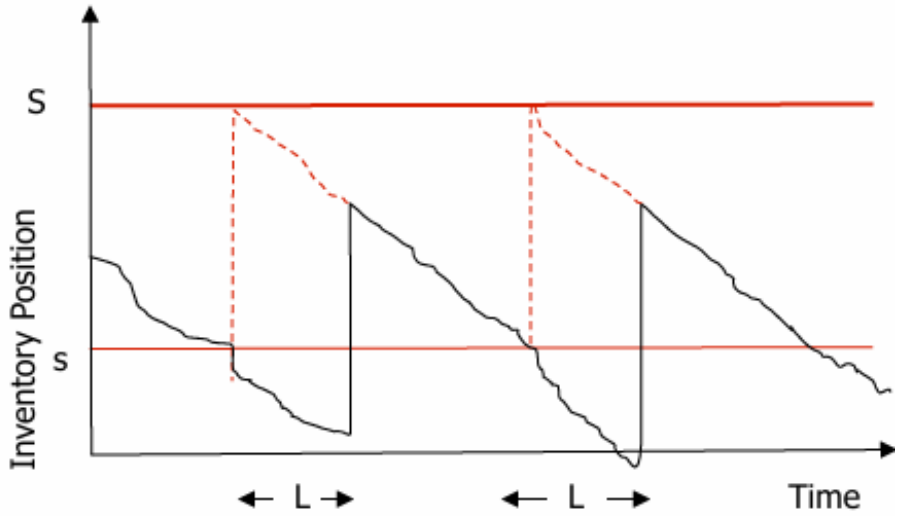
- Demand
  - Constant vs **Variable**
  - Known vs **Random**
  - **Continuous** vs Discrete
- Lead Time
  - Instantaneous
  - **Constant** vs Variable
  - **Deterministic** vs Stochastic
  - Internally Replenished
- Dependence of Items
  - **Independent**
  - Correlated
  - Indentured
- Review Time
  - **Continuous** vs Periodic
- Number of Locations
  - **One** vs Multi vs Multi-Echelon
- Capacity / Resources
  - **Unlimited**
  - Limited / Constrained
- Discounts
  - **None**
  - All Units vs Incremental vs One Time
- Excess Demand
  - None
  - All orders are backordered
  - **Lost orders**
  - Substitution
- Perishability
  - **None**
  - Uniform with time
  - Non-linear with time
- Planning Horizon
  - Single Period
  - Finite Period
  - **Infinite**
- Number of Items
  - **One** vs Many
- Form of Product
  - **Single Stage**
  - Multi-Stage

Key Concept: Continuous Review Policy

- Order-Point, Order-Quantity (s,Q)
  - Policy: **Order Q if IP ≤ s**
  - Two-bin system



- Order-Point, Order-Up-To-Level (s, S)
  - Policy: **Order (S-IP) if IP ≤ s**
  - Min-Max system



Notation

s = Reorder Point	S = Order-up-to Level	L = Replenishment Lead Time
Q = Order Quantity	R = Review Period	IOH= Inventory on Hand

IP = Inventory Position = (IOH) + (Inventory On Order) – (Backorders)

Key Concept: Service and Cost Metrics

$$TC = cD + c_t\left(\frac{D}{Q}\right) + c_e\left(\frac{Q}{2} + k\sigma_{DL}\right) + c_s P[StockOutType]$$

Performance Metrics

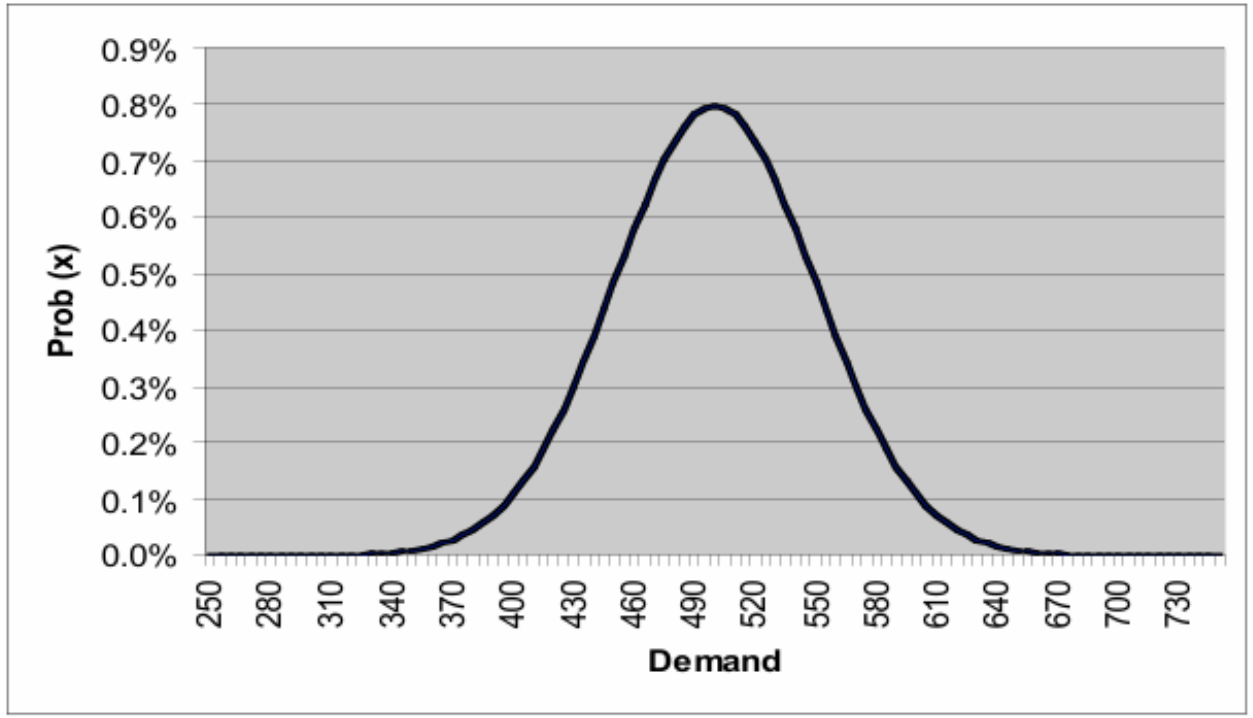
- Cycle Service Level (CSL)
- Item Fill Rate (IFR)

Stockout Cost Metrics

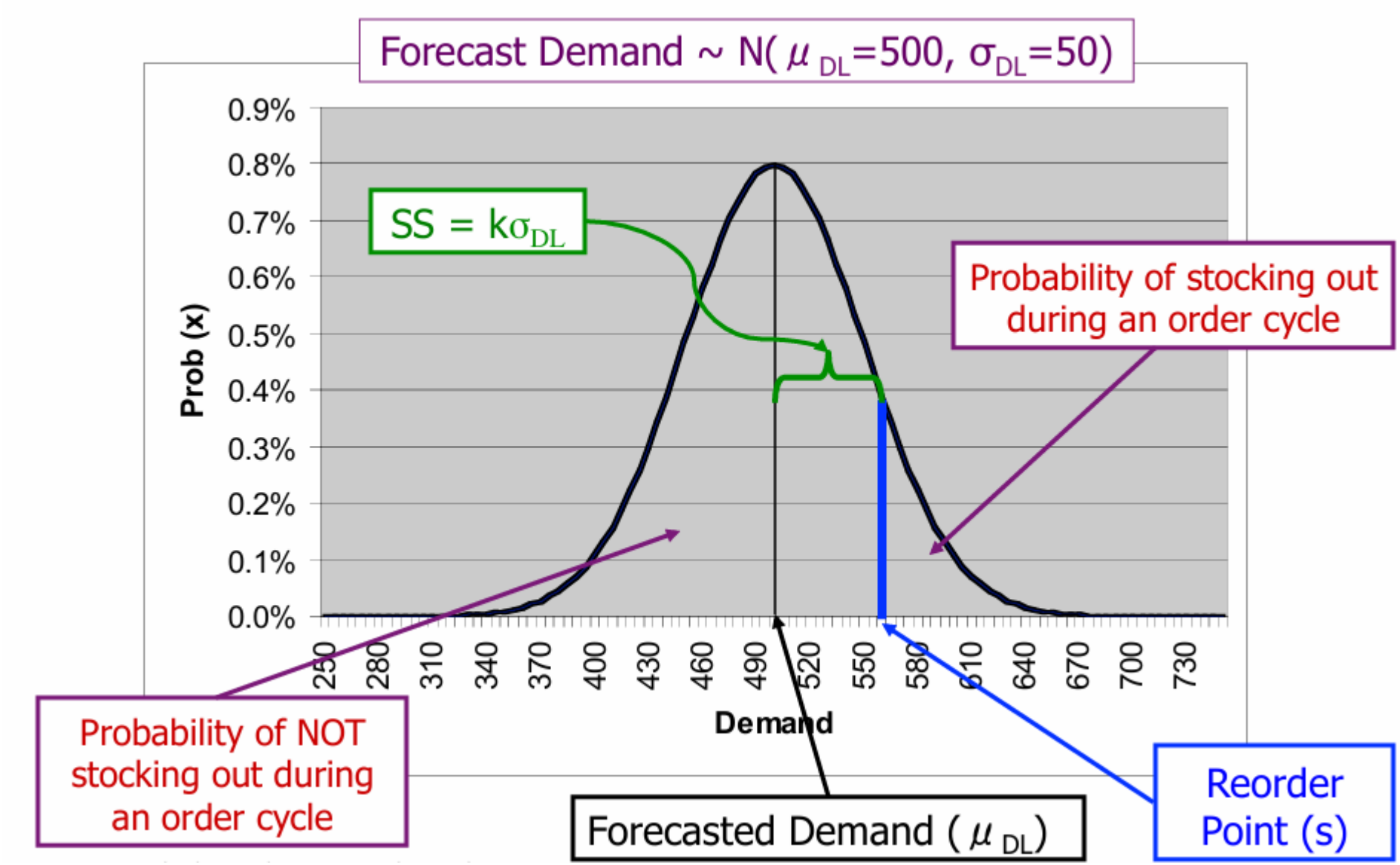
- Cost per Stockout Event (CSOE)
- Cost per Item Short (CIS)

Key Concept: Cycle Service Level

- Probability of no stockouts per replenishment cycle
  - Equal to one minus the probability of stocking out
  - X is the demand during lead time
  - = 1 – P[Stockout] = 1- P[X > s] = P[X ≤ s]



Key Concept: Cycle Service Level



Key Concept: Item Fill Rate

- Item Fill Rate
  - Fraction of customer demand met routinely from IOH
  - This is equal to one minus the fraction we expect to be short

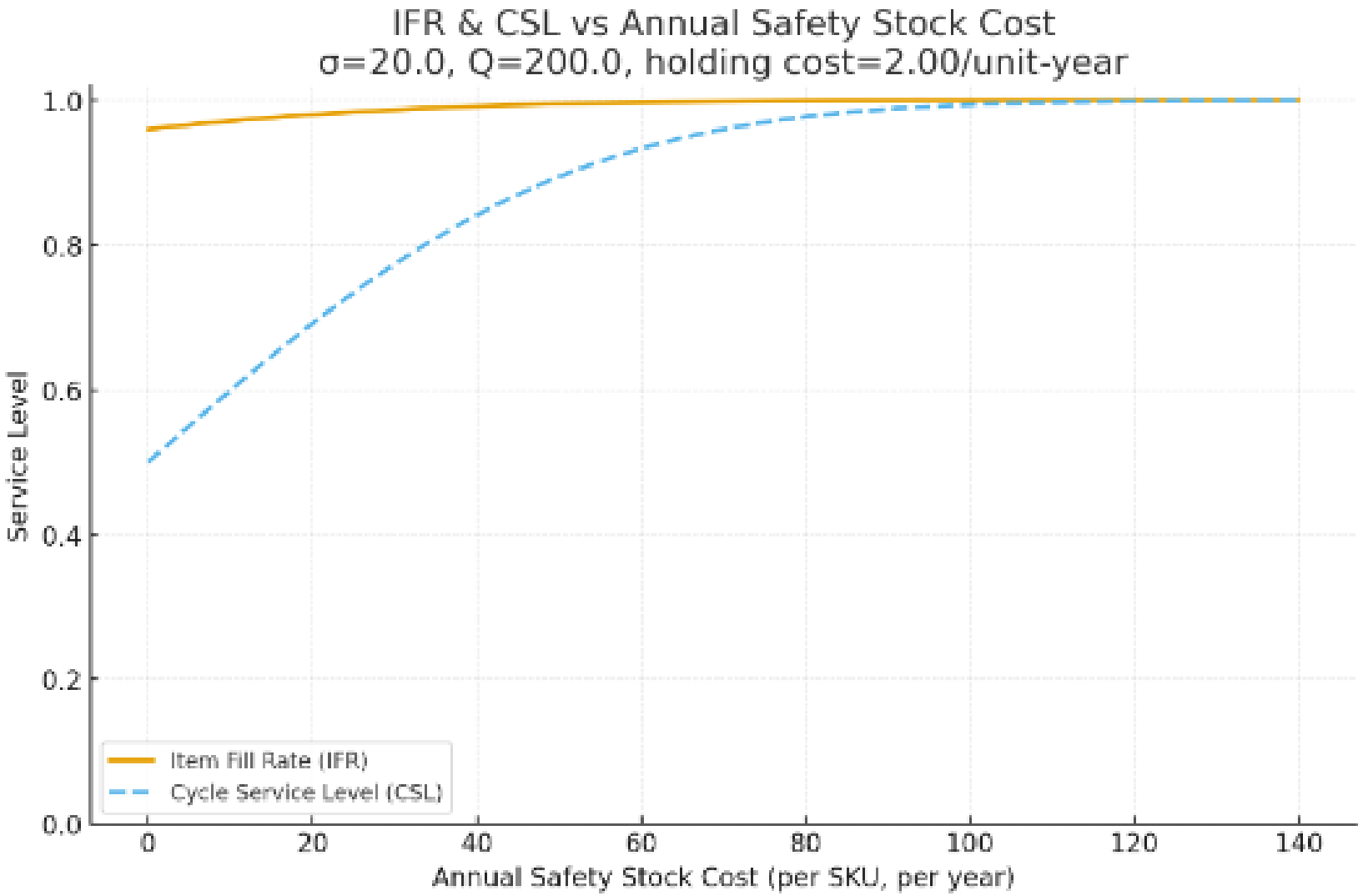
- Logic for Rule
  - We order Q each cycle
  - The fraction we are short = E[US]/Q
  - Therefore, item fill rate = 1 - E[US]/Q
  - Assuming ~Normal, E[US]= $\sigma_{DL}G(k)$
  - Calculate the desired G(k)
  - Find appropriate k

$$IFR = 1 - \frac{E[US]}{Q}$$

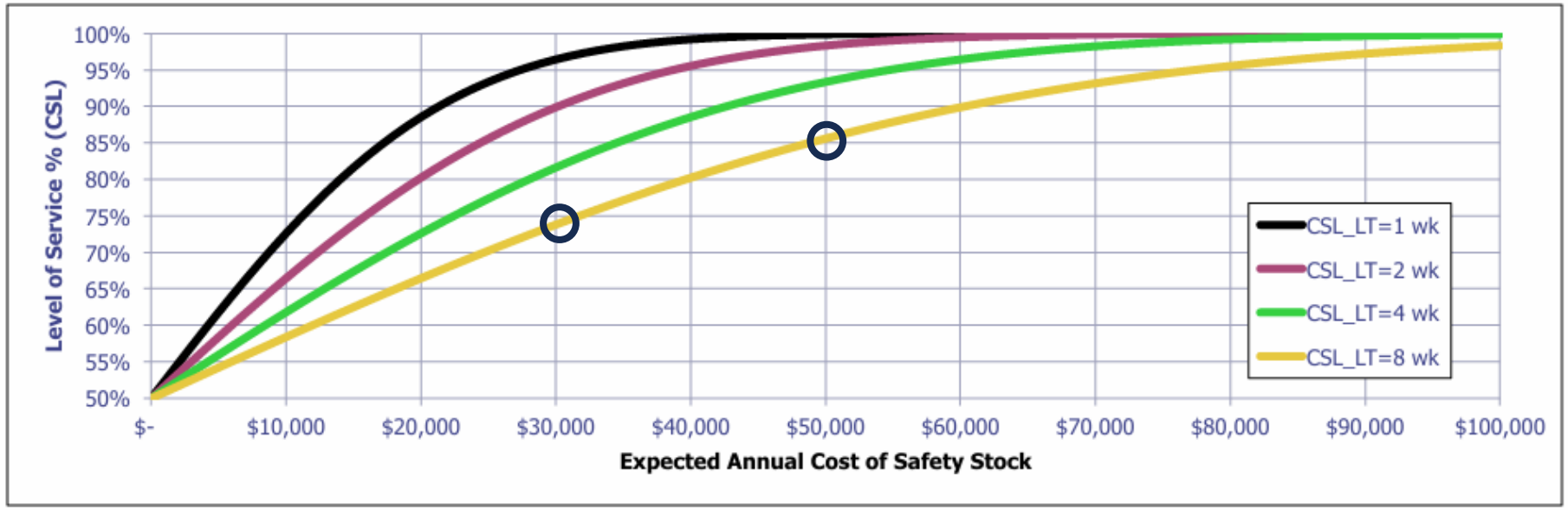
$$IFR = 1 - \frac{\sigma_{DL} G[k]}{Q}$$

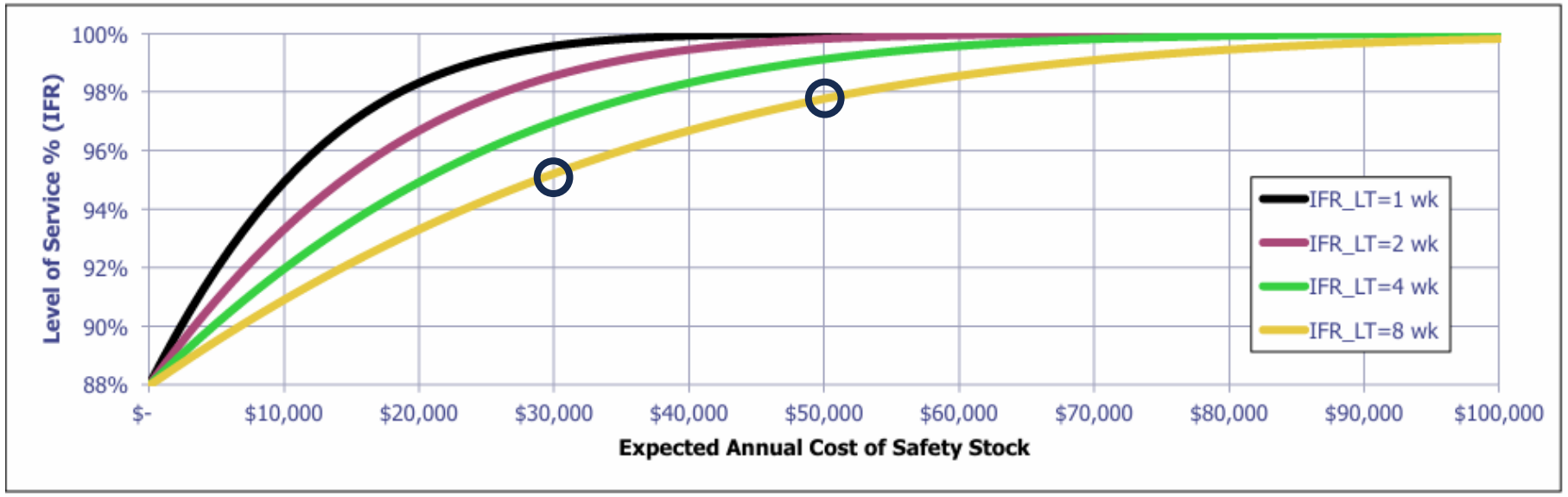
$$G[k] = \frac{Q}{\sigma_{DL}}\left(1 - IFR\right)$$

Key Concept: CSL Vs IFR

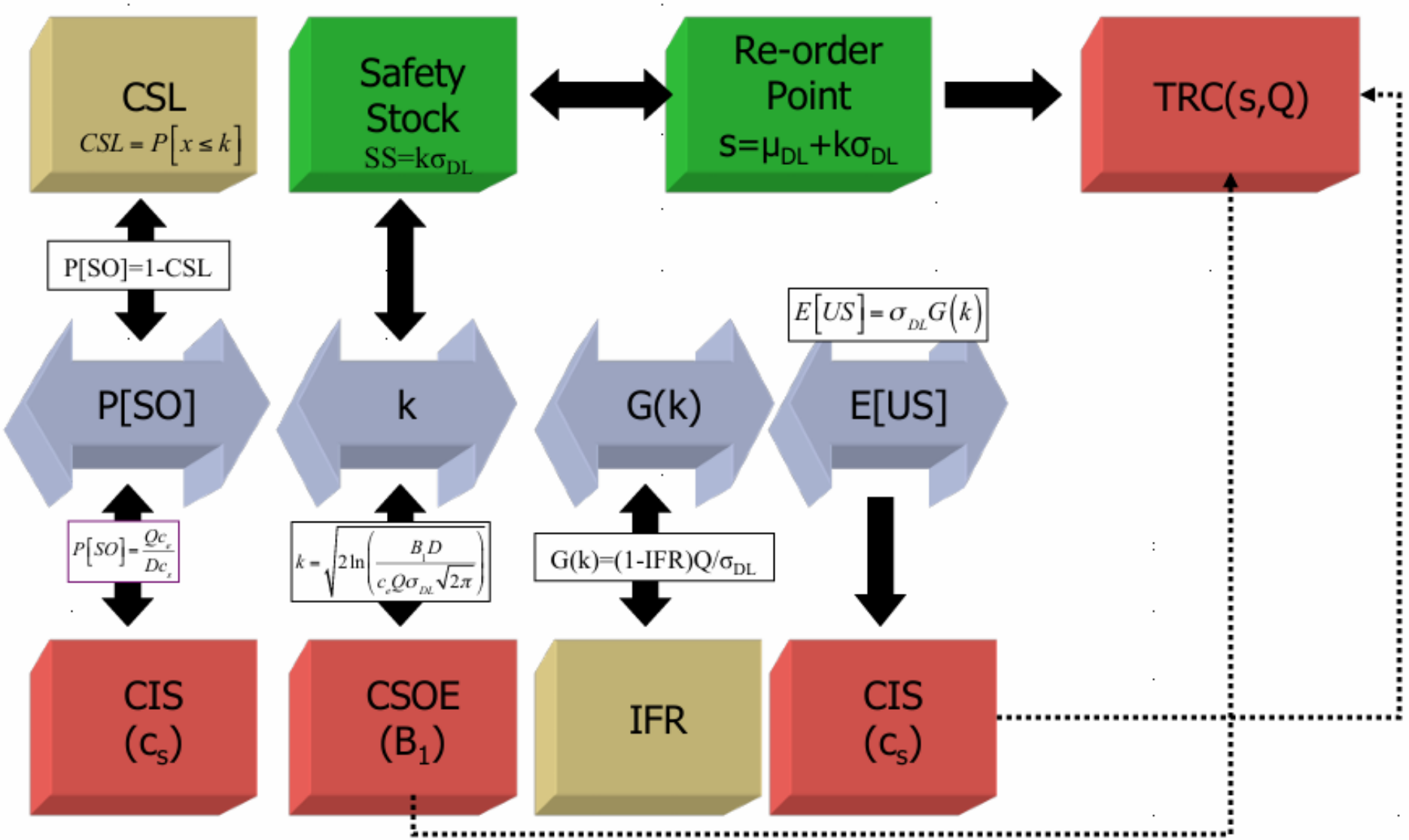


Key Concept: Lead Time Vs Safety Stock Costs

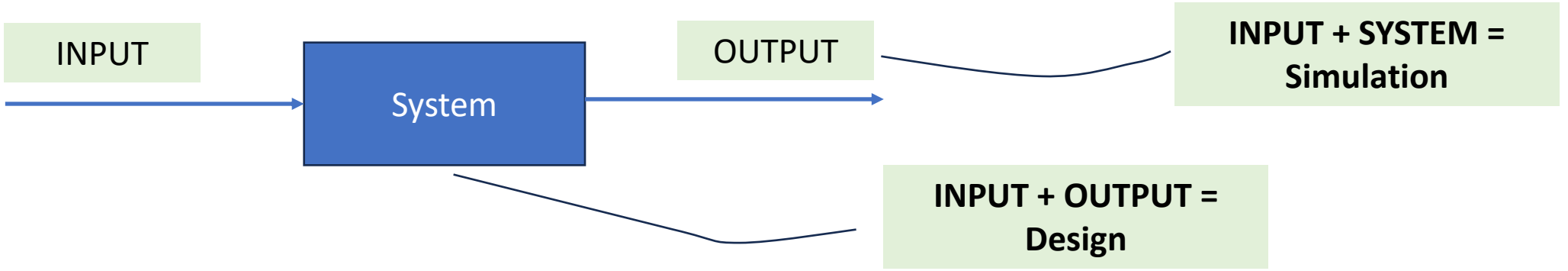




Key Concept: Performance and Stockout Cost Metrics



Key Concept: Inventory Design Vs Simulation



	Inventory Design	Inventory Simulation
Purpose	Structuring the System	Testing the System
Objective	Optimal Inventory Architecture – Balances Cost | Service Levels Risk | Responsiveness	Predict Performance before implementation – Evaluate scenarios
Nature	Strategic Planning	Predictive Analytics
Time Focus	Future	Dynamic
Input	Demand	Designed Model | Variability assumptions
Output	Inventory Rules	Performance Metrics

Train to Gain

Exclusive Case Studies on Supply Chain Management

Exclusive Case Studies on Supply Chain Management

# Case Studies	**2**	**5**	**10**	**25**	**50**
# Hours	4	10	20	50	100
Validity	1 Month	2 Months	3 Months	12 Months	18 Months
Flexible Scheduling	Y	Y	Y	Y	Y
Certificate of Participation	Y	Y	Y	Y	Y
Introduction to SCM Tech Stack	Y	Y	Y	Y	Y
Networking Oppurtunities	Y	Y	Y	Y	Y
# DIY Case Study Material			3	10	25
eBook : Supply Chain Terms Made Simple			Y	Y	Y
Overview of SCM Planning Technology				Basic	Detailed
SCM Masterclass				1	3
Special Offer on Other SCM Courses				Y	Y
Personalized Mentoring					Y
Sessions on SCM by CXO's					Y
Guidance on SCM Career Oppurtunities					Y

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Supply Chain Terms Made Simple : eBook

23-May-2025

SUPPLY CHAIN TERMS MADE SIMPLE

A Handbook for Students and Professionals

From Dock to Desk — Every term delivered

Your ultimate guide to understanding Supply Chain, Logistics, and Operations

Mohit Gauba

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Table of Contents

Welcome to Supply Chain Community !

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