Supply Chain Analytics

To cover **20% of Supply Chain Analytics** that will give you **80% understanding**, focus on these core areas:

**1. Basics of Supply Chain**

* Supply Chain Definition and Components: Supplier → Manufacturer → Distributor → Retailer → Customer
* Key Flows: **Material flow, Information flow, Financial flow**

**2. Key Metrics and KPIs**

* **Order Fill Rate** – % of orders fulfilled from stock
* **Inventory Turnover** – How quickly inventory is sold and replaced
* **Lead Time** – Time from order placement to delivery
* **OTIF (On-Time In-Full)** – % of orders delivered on time and in full
* **Cost of Goods Sold (COGS)** – Direct costs tied to production

**3. Demand Forecasting**

* **Time Series Models** – Moving average, exponential smoothing
* **Regression Models** – Finding relationships between variables
* **Seasonality and Trend Analysis**

**4. Inventory Management**

* **EOQ (Economic Order Quantity)** – Optimal order size to minimize costs
* **Safety Stock** – Extra stock to prevent stockouts
* **ABC Analysis** – Classify inventory based on value and frequency
* **Reorder Point** – Inventory level triggering a reorder

**5. Procurement and Supplier Management**

* **Supplier Scorecard** – Performance evaluation (quality, cost, delivery)
* **Lead Time Optimization** – Reducing delays from suppliers
* **Cost-Benefit Analysis** – Evaluating sourcing decisions

**6. Logistics and Distribution**

* **Transportation Modes** – Cost and time trade-offs
* **Warehouse Management** – Picking, packing, and shipping efficiency
* **Last Mile Delivery** – Final step in the delivery process

**7. Cost and Profitability Analysis**

* **Landed Cost** – Total cost to deliver a product (incl. duties, shipping)
* **Margin Analysis** – Profitability per product, customer, or channel
* **Cost-to-Serve** – Analyzing costs associated with serving a customer

**8. Performance Optimization Techniques**

* **Lean Supply Chain** – Reducing waste
* **Six Sigma** – Reducing process variation
* **Just-in-Time (JIT)** – Reducing inventory levels and improving flow

**9. Risk Management**

* **Supplier Diversification** – Avoiding dependence on single suppliers
* **Disruption Planning** – Planning for strikes, weather, political issues
* **Buffer Stock Strategy** – Keeping extra inventory for emergencies

**10. Technology and Tools**

* **ERP (SAP, Oracle)** – Managing supply chain processes
* **WMS (Warehouse Management Systems)** – Managing warehouse operations
* **TMS (Transportation Management Systems)** – Optimizing transportation
* **AI/ML in SCM** – Predictive maintenance, demand forecasting, route optimization

30-days Learning Plan

**✅ Week 1: Foundation & Core Concepts**

🎯 *Goal:* Understand supply chain basics and key metrics

**Day 1: Introduction to Supply Chain**

* What is a supply chain?
* Key components (supplier, manufacturer, distributor, retailer, customer)
* Material, information, and financial flows

**Day 2: Supply Chain Types and Models**

* Push vs. Pull supply chains
* Make-to-Stock (MTS) vs. Make-to-Order (MTO)
* Lean vs. Agile supply chains

**Day 3: Key Metrics and KPIs**

* Fill rate, inventory turnover, lead time, OTIF
* Cost of Goods Sold (COGS)
* Profit margin analysis

**Day 4: Demand Forecasting Basics**

* What is demand forecasting?
* Types of forecasting: qualitative vs. quantitative
* Time series, regression models, seasonality

**Day 5: Inventory Management Basics**

* Economic Order Quantity (EOQ)
* Safety stock and reorder points
* ABC analysis

**Day 6: Case Study: Analyze Supply Chain KPIs**

* Find a supply chain report (or use an example online)
* Identify fill rate, turnover, and lead time

**Day 7: Recap + Quiz**

* Review key terms and concepts
* Take a short quiz to reinforce learning

**✅ Week 2: Analytics and Forecasting**

🎯 *Goal:* Learn to analyze and forecast demand

**Day 8: Demand Forecasting Models**

* Time Series Models – Moving average, exponential smoothing
* Regression models

**Day 9: Hands-On Forecasting (Excel/Google Sheets)**

* Create a simple moving average and regression model

**Day 10: Inventory Analysis**

* Calculate EOQ and reorder points in Excel
* Perform ABC analysis

**Day 11: Supply Chain Costs and Profitability**

* Calculate landed cost and cost-to-serve
* Analyze product margin

**Day 12: Case Study: Forecasting**

* Use Excel or Python to forecast sales/demand

**Day 13: Risk Management Overview**

* Supplier diversification
* Risk mitigation strategies

**Day 14: Recap + Quiz**

* Review key forecasting methods
* Take a short quiz

**✅ Week 3: Logistics, Distribution, and Performance**

🎯 *Goal:* Understand logistics and performance measurement

**Day 15: Logistics and Distribution Basics**

* Modes of transport
* Last mile delivery challenges

**Day 16: Warehouse and Inventory Management**

* Picking, packing, and shipping
* Reducing warehouse inefficiencies

**Day 17: Transportation Optimization**

* Cost vs. time trade-offs
* Route optimization basics

**Day 18: Lean and Just-in-Time (JIT)**

* Reducing waste and improving efficiency

**Day 19: Six Sigma in Supply Chain**

* What is Six Sigma?
* Reducing variation and improving quality

**Day 20: Performance and Profitability Analysis**

* Cost-to-serve analysis
* Improving profit margins

**Day 21: Recap + Practical Application**

* Identify improvement opportunities in a sample supply chain

**✅ Week 4: Advanced Topics and Application**

🎯 *Goal:* Apply analytics and optimize performance

**Day 22: Supplier Performance and Scorecard**

* How to evaluate suppliers
* Build a sample scorecard in Excel

**Day 23: Cost-Benefit Analysis**

* Evaluate sourcing decisions
* Compare supplier costs

**Day 24: AI/ML in Supply Chain**

* Predictive maintenance
* Route and demand optimization

**Day 25: ERP and TMS Overview**

* How SAP, Oracle, and TMS systems manage supply chains

**Day 26: Inventory Simulation**

* Simulate stock levels using Excel or Python

**Day 27: Case Study: Identify Supply Chain Weak Points**

* Analyze an existing supply chain for inefficiencies

**Day 28: Create a Supply Chain Dashboard**

* Create a simple dashboard with Excel or Power BI
* Include fill rate, lead time, inventory turnover

**Day 29: Final Project**

* Build a supply chain analysis report
* Include forecasting, inventory, and profitability analysis

**Day 30: Review + Next Steps**

* Summarize learning
* Identify next steps (certifications, deeper learning)

**🚀 Output After 30 Days:**

✅ Strong understanding of supply chain structure and flows  
✅ Ability to analyze supply chain KPIs  
✅ Experience with forecasting and optimization techniques  
✅ Hands-on work with Excel/Power BI for supply chain analysis

Resource: ChatGPT

YouTube:

1. NPTL: <https://youtube.com/playlist?list=PLnD8JdB5BhfQAqqcyN7fe0posEQX9rvwO&si=fMzKbz_XMbcKSBei>
2. 360DigiTMG: <https://youtube.com/playlist?list=PLNLDEHOJTZSh-MPZY5hosnChUHhI55sxl&si=jUN0hLvqMS0CqaKk>
3. SCM Case Studies: <https://youtube.com/playlist?list=PLJqiHnBNjacq6AAH3EHWhvGL6yak7usXz&si=XWycUh2yju72tHeA>
4. <https://youtu.be/BWupSzxg1Bc?si=g9L0TqnfxoA3daDa>