

Optimizing Supply Chain Efficiency

This presentation explores how data analysis empowers supply chain professionals to improve operational efficiency , reduce costs and improve inventory performance. Identify and analyze key performance indicators (KPIs) to make data-driven decisions we can identify areas for improvement and unlock substantial cost savings



Case Study: Optimizing Makeup Supply Chains

Data-Driven Insights

Our case study analyzes a dataset from a Fashion and Beauty startup, focusing on makeup products.

Data Source

Kaggle - Supply Chain Analysis Dataset.

Data includes

- **Product details (categories/names).**
- **Operational costs (transportation, storage).**
- **Orders and sales across regions.**
- **Delay rates**

Key Data Points

- **Product Type**
- **SKU**
- **Price**
- **Availability**
- **Number of products sold**
- **Revenue generated**
- **Customer demographics**

Unlocking Insights: Key Performance Indicators (KPIs)

Procurement

Supplier performance, sourcing effectiveness, and purchase order cycle time.

Inventory

Inventory turnover, days sales of inventory, inventory accuracy, and carrying cost.

Production

Production cycle time, first pass yield, capacity utilization, and schedule adherence.



Procurement

- **Supplier Performance:** This refers to evaluating suppliers based on product quality, delivery timeliness, and ability to meet quantity requirements, ensuring they support supply chain success.
- **Sourcing Effectiveness:** This evaluates the success of supplier selection and contracting based on costs, product quality, negotiation outcomes, and the establishment of long-term supplier relationships.
- **Purchase Order Cycle Time:** This refers to the time from issuing a purchase order to receiving the goods or services. Reducing this cycle time improves efficiency, minimizes delays, and ensures timely resource availability.

Inventory

- **Inventory Turnover:** This metric indicates how often inventory is sold and replaced within a given period, usually a year.
- **Inventory Turnover = Cost of Goods Sold (COGS) / Average Inventory:** (A high turnover rate signifies brisk sales, reducing storage costs, while a low rate suggests excess stock, potentially leading to increased costs or spoilage.)
- **Days Sales of Inventory (DSI):** This measures the average time (in days) it takes to convert inventory into sales.
- **Days Sales of Inventory = (Average Inventory / Cost of Goods Sold (COGS)) × 365 :**(A low DSI indicates efficient inventory sales, while a high DSI may signal challenges in converting inventory to revenue.)
- **Inventory Accuracy:** This measures the agreement between recorded inventory and physical stock, comparing records to physical counts. (Improved accuracy reduces errors, prevents stockouts, and avoids overstocking, leading to more reliable data for decision-making.)
- **Carrying Cost:** These are the costs associated with holding inventory, encompassing storage (rent, utilities, security), financing (interest), insurance, and risk (damage, theft, obsolescence). (Minimizing carrying costs improves profitability by efficiently managing stock levels and preventing excess inventory.)

Production

- **Production Cycle Time:** This refers to the total time required to complete the production process of a single product, from start to finish.
- **Cycle Time = Time taken for one product from start to finish:** (Reducing production cycle time improves efficiency, increases productivity, and lowers costs, reflecting the effectiveness of internal processes.)
- **First Pass Yield:** This measures the percentage of products manufactured correctly on the first attempt without requiring rework or repairs.
- **First Pass Yield = (Number of defect-free products / Total products produced) × 100:** (A high percentage indicates high-quality production processes. Reducing rework lowers costs and increases efficiency.)
- **Capacity Utilization:** This measures the percentage of actual production capacity used relative to the maximum available capacity.
- **Capacity Utilization = (Actual Output / Maximum Possible Output) × 100:** (This helps determine if the company is using its resources efficiently. Low utilization indicates unused capacity, while excessive utilization may overstress equipment and resources.)
- **Schedule Adherence:** This measures adherence to the established timeline for product production or process execution.
- **Schedule Adherence = (Number of completed tasks on time / Total planned tasks) × 100:** (This reflects the company's ability to meet deadlines for customer orders. Improving schedule adherence fosters trust between the company and its customers.)

Understanding Supplier Performance



On-Time Delivery

Percentage of orders delivered on or before the promised date.



Quality

Percentage of defect-free products received.



Lead Time

Time taken from order placement to delivery.

Supplier Performance

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Optimizing Inventory Management

- 1 — **Analyze inventory turnover rates to identify slow-moving items.**
- 2 — **Reduce carrying costs by optimizing inventory levels and storage space.**
- 3 — **Implement a robust inventory accuracy system to minimize stockouts and improve customer service.**



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2

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Data-Driven Insights: Actionable Recommendations

1

Supplier Optimization

Partner with high-performing suppliers to improve on-time delivery, quality, and cost efficiency.

2

Inventory Control

Implement forecasting models to predict demand and optimize inventory levels.

3

Route Optimization

Use advanced routing algorithms to streamline deliveries and minimize transportation costs.

4

Data-Driven Decisions

Use data analytics to identify trends, patterns, and areas for improvement, enabling proactive decision-making.

Conclusion: A Future-Ready Supply Chain

By implementing these data-driven recommendations, businesses can achieve significant cost savings, improve operational efficiency, and ultimately build a more resilient and competitive supply chain. Continuous monitoring and analysis are crucial to identify ongoing areas for improvement and stay ahead in a dynamic and evolving business landscape.





THANK YOU!