Certified Supply Chain Professional

Supply Plans, Categories, and Segmentation

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Supply Plans, Categories, and Segmentation

1. Definition and Purpose of Supply Planning

Supply planning ensures that materials, production, and logistics resources are aligned to meet forecasted demand. It balances customer service levels, inventory investment, and operational efficiency. The goal is to ensure the right product is available at the right time and place, without excess cost. Effective supply planning integrates demand forecasts with production and procurement strategies across the supply chain.

2. Levels of Supply Planning

Supply planning occurs at **strategic, tactical, and operational** levels. Strategic planning sets long-term capacity and infrastructure; tactical planning determines medium-term production and inventory policies; and operational planning executes daily and weekly schedules. Understanding these levels ensures that supply chain decisions remain consistent, feasible, and synchronized across time horizons.

3. Aggregate Planning

Aggregate planning determines production, inventory, and workforce levels over a medium-term horizon (typically 6–18 months). It seeks to balance demand and capacity using strategies like chase, level, or hybrid plans. Aggregate planning provides the foundation for detailed master scheduling and helps align business goals with supply capabilities.

4. Master Production Scheduling (MPS)
MPS translates the aggregate plan into specific production quantities and timing for individual products. It acts as a bridge between planning and execution by setting priorities for manufacturing. A stable, accurate MPS helps optimize capacity utilization, minimize stockouts, and support efficient material planning.

5. Material Requirements Planning (MRP)
MRP determines what materials are needed, when, and in what quantity to support production schedules. It uses inputs like the bill of materials (BOM), inventory records, and MPS data. MRP ensures component availability, minimizes inventory levels, and supports efficient production flows—critical to effective supply planning.

6. Distribution Requirements Planning (DRP)
DRP extends MRP principles to distribution networks. It calculates replenishment needs for warehouses and distribution centers based on demand forecasts and inventory policies. DRP improves customer service, reduces logistics costs, and ensures synchronized supply flow throughout the distribution network.

7. Rough-Cut Capacity Planning (RCCP)
RCCP checks whether the master production schedule is feasible by comparing planned production with available capacity at key resources. It prevents overloading of critical work centers and highlights where additional capacity or schedule adjustments are needed. RCCP helps maintain a realistic and achievable supply plan.

8. Capacity Requirements Planning (CRP)

CRP takes a detailed view of capacity needs across all work centers. It identifies bottlenecks and supports scheduling adjustments to meet demand efficiently. CRP helps balance workloads, reduce overtime, and maintain smooth production flows, ensuring that supply plans are operationally feasible.

9. Inventory Planning and Policies

Inventory planning defines the optimal levels and positioning of stock to support supply plans. It includes safety stock calculations, reorder points, and replenishment policies. The goal is to minimize total cost while maintaining target service levels. Inventory segmentation ensures that different items receive appropriate planning attention.

10. Supply Categories and Planning Approaches

Supply categories refer to types of supply processes—such as **make-to-stock (MTS)**, **assemble-to-order (ATO)**, **make-to-order (MTO)**, and **engineer-to-order (ETO)**. Each category requires a distinct planning approach. For instance, MTS relies on forecasts, while MTO depends on actual orders. Understanding these categories ensures planning aligns with customer and product characteristics.

11. Product Segmentation by Demand and Supply Attributes

Product segmentation classifies items based on demand patterns, profitability, lead time, or volume (e.g., ABC or XYZ analysis). Segmenting products helps tailor supply plans—high-value items may require tighter control, while low-value items can be planned more flexibly. This enhances resource efficiency and service balance.

12. ABC and XYZ Classification

ABC analysis segments items by value (A = high, B = moderate, C = low), while XYZ analysis segments by demand variability (X = stable, Z = unpredictable). Combining both helps prioritize planning and stocking efforts. A-X items require precise forecasts, while C-Z items may rely on make-to-order strategies.

13. Supply Chain Segmentation

Supply chain segmentation divides the overall supply network into distinct streams based on product, customer, or channel characteristics. Each segment follows customized planning, sourcing, and fulfillment strategies. Segmentation improves responsiveness, cost efficiency, and alignment with customer expectations.

14. Demand-Supply Balancing

Balancing demand and supply involves reconciling forecasted demand with available supply capacity. Techniques include adjusting production rates, changing inventory levels, or influencing demand through promotions. Maintaining equilibrium ensures stable operations, minimized shortages, and optimized working capital.

15. Sales and Operations Planning (S&OP) Integration

S&OP aligns supply plans with business and financial objectives through cross-functional collaboration. It integrates marketing forecasts, production capacities, and financial constraints to create a unified plan. Regular S&OP cycles enable proactive adjustments and improve organizational agility in balancing demand and supply.

16. Collaborative Planning, Forecasting, and Replenishment (CPFR)

CPFR involves joint forecasting and supply planning between trading partners to improve visibility and reduce uncertainty. Shared data enables synchronized replenishment and better alignment of production with actual market demand. CPFR enhances supply chain efficiency and reduces stockouts or excess inventory.

17. Supply Constraints and Bottleneck Management

Identifying and managing constraints ensures that supply plans remain achievable. Bottlenecks—whether due to limited capacity, material shortages, or logistics delays—can disrupt execution. Techniques such as the Theory of Constraints (TOC) help prioritize improvement efforts and maintain continuous supply flow.

18. Safety Stock and Lead Time Management

Safety stock protects against uncertainties in demand or supply lead time. Calculating optimal safety stock ensures customer service continuity without excessive inventory. Managing supplier and production lead times is equally crucial for maintaining supply reliability and cost control.

19. Scenario and What-If Analysis

Scenario analysis tests how changes in demand, capacity, or supply disruptions affect the supply plan. Using simulation tools, planners can evaluate alternative strategies—such as increasing capacity, changing suppliers, or adjusting schedules—to minimize risk and maintain stability under uncertainty.

20. Technology and Analytics in Supply Planning

Advanced planning systems (APS), AI, and machine learning tools optimize supply plans by processing vast datasets and dynamic variables. These tools enhance forecast accuracy, automate scenario analysis, and support end-to-end visibility. Technology-driven planning enables proactive decision-making and greater supply chain resilience.

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3. Demand Forecasting Techniques
4. Inventory Control and Management
5. Distribution and Logistics Strategy
6. Warehouse Layout and Operations Efficiency
7. Supply Chain Risk Management
8. Supply Chain Performance Metrics (KPIs)
9. Lean Supply Chain Practices
10. Agile and Responsive Supply Chains
11. Sales and Operations Planning (S&OP)
12. Supply Chain Network Design
13. Supply Chain Digital Transformation
14. AI and Data Analytics in Supply Chain
15. Supply Chain Sustainability and Green Logistics
16. Reverse Logistics and Returns Management
17. Supply Chain Collaboration and Integration
18. Supplier Relationship Management in SCM
19. Global Supply Chain Strategy
20. Transportation Management Systems (TMS)
21. Inventory Optimization Models
22. Demand-Driven MRP (DDMRP) Concepts
23. Blockchain Applications in Supply Chain
24. Supply Chain Cost Reduction Techniques
25. SCOR Model and Process Improvement

Micro-Learning Programs in Supply Chain Management …

26. Capacity Planning and Resource Allocation
27. Managing Supply Chain Disruptions
28. End-to-End Supply Chain Visibility
29. Cold Chain Logistics Management
30. Supply Chain Compliance and Ethics
31. Import–Export Procedures and Documentation
32. Managing Third-Party Logistics (3PL) Providers
33. Supply Chain Collaboration Technologies
34. Production Planning and Scheduling
35. Strategic Supply Chain Design Using Case Studies
36. Circular Economy in Supply Chain
37. Vendor-Managed Inventory (VMI)
38. Transportation Optimization Techniques
39. E-Commerce Supply Chain Models
40. Omni-Channel Fulfillment Strategies
41. Warehouse Automation and Robotics
42. SCOR DS Roadmap for Supply Chain Excellence
43. Customer-Centric Supply Chain Strategies
44. Supply Chain Finance and Working Capital Management
45. Supply Chain Data Visualization Using Power BI
46. Strategic Sourcing in Supply Chain Context
47. Supply Chain Benchmarking and Best Practices
48. Integrated Business Planning (IBP)
49. Supply Chain in Crisis Management and Recovery
50. Future Trends and Technologies in Supply Chain

Micro-Learning Programs in Procurement

1. Fundamentals of Procurement Management
2. Strategic Sourcing and Category Management
3. Supplier Selection and Evaluation
4. Contract Management Essentials
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7. E-Procurement and Digital Tools
8. Procurement Planning and Budgeting
9. Risk Management in Procurement
10. Supplier Relationship and Performance Management
11. Sustainable and Ethical Procurement
12. Total Cost of Ownership (TCO) Analysis
13. Make-or-Buy Decision Frameworks
14. Procurement Policies and Governance
15. Procurement in Public vs. Private Sectors
16. Procurement Audit and Compliance
17. Procurement Data Analytics and Reporting
18. Procurement Scorecards and KPIs
19. Strategic Supplier Partnerships
20. Category Strategy Development
21. Managing Global and Offshore Procurement
22. Negotiation Simulation Workshop
23. Contract Law for Procurement Managers
24. Cost Reduction Strategies in Procurement
25. Supplier Risk Assessment Models

Micro-Learning Programs in Procurement …

26. Procurement Process Mapping and Improvement
27. Procurement Automation and AI Applications
28. Managing Procurement Teams Effectively
29. Procurement Ethics and Transparency
30. Procurement in the Digital Supply Chain
31. Vendor Consolidation Strategies
32. Spend Analysis and Optimization
33. Demand Forecasting for Procurement
34. E-Auction and Reverse Bidding Techniques
35. Inventory and Procurement Alignment
36. Procurement in Project-Based Organizations
37. Supplier Onboarding and Development
38. Procurement Market Intelligence
39. Measuring Supplier Innovation
40. Procurement in Times of Supply Disruption
41. Cross-Functional Collaboration in Procurement
42. Writing Effective RFPs, RFQs, and RFIs
43. Contract Negotiation Best Practices
44. Green Procurement and Circular Economy
45. Legal Aspects of Procurement Contracts
46. Performance-Based Contracting
47. Procurement Leadership and Strategic Influence
48. Cost Avoidance and Value Creation in Procurement
49. Managing Procurement with Power BI Dashboards
50. Future Skills and Trends in Procurement

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