



Certified in Planning and Inventory Management

Distribution Plans



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Distribution Plans

1. Distribution Requirements Planning (DRP)

DRP is a time-phased planning technique used to determine when and how much inventory should be replenished at each node in a distribution network. It uses forecasts, on-hand balances, scheduled receipts, and lead times to calculate planned order releases. DRP ensures the right products are positioned at the right locations to meet customer demand. CPIM emphasizes how DRP aligns distribution with production, improves service levels, and reduces stockouts. Understanding its logic, inputs, and outputs is fundamental for managing distribution plans.

2. Time-Phased Order Planning

Time-phased order planning breaks planning into discrete time buckets—daily, weekly, or monthly—allowing planners to map future supply and demand at each location. It supports proactive scheduling of replenishment orders and highlights shortages or surpluses. CPIM stresses that time-phasing is essential for maintaining accurate distribution plans and synchronizing inventory flows across the network. Proper use of time-phased records avoids last-minute expedites and supports balanced inventory.

3. Demand Forecast Integration

Distribution plans depend heavily on accurate SKU-location forecasts. Integrating forecasting into distribution planning ensures replenishment decisions reflect expected customer demand and seasonal variations. CPIM highlights the importance of forecast accuracy, forecast error measurement, and collaboration between sales, marketing,

and supply chain teams. Strong integration reduces the bullwhip effect, minimizes excess inventory, and improves customer service.

4. Inventory Position and Projected Stock Levels

Distribution plans rely on understanding inventory status, including on-hand quantity, allocated stock, work-in-transit, and safety stock. Projected stock levels (PSL) show how inventory will change over time as demand and receipts occur. CPIM emphasizes calculating PSL accurately to trigger replenishment orders before stockouts occur. This enables planning teams to balance cost and service-level commitments.

5. Lead Time and Transit Time Planning

Lead times—including order processing, picking, packing, transportation, and receiving—directly impact replenishment timing. Distribution plans must incorporate variable lead times to avoid late replenishments or inflated safety stocks. CPIM highlights managing lead-time uncertainty, evaluating carrier performance, and using realistic planning parameters. Proper lead-time planning ensures timely product availability across the network.

6. Safety Stock in Distribution

Safety stock protects against uncertainties in demand and supply. In distribution planning, safety stock must be calculated for each location based on its unique demand variability, lead-time variability, and service-level targets. CPIM emphasizes using statistical formulas, ABC classification, and multi-echelon approaches to optimize safety stock levels. Proper safety stock placement prevents stockouts while minimizing inventory carrying cost.

7. Distribution Network Structure

The structure of the distribution network—plants, central warehouses, regional distribution centers, and retail locations—determines how products flow. Distribution plans must align with the network's design, transportation routes, and consolidation points. CPIM highlights understanding multi-echelon networks, centralization vs. decentralization, and how structural decisions affect inventory levels, replenishment logic, and service commitments.

8. Replenishment Policies

Replenishment policies define how inventory is refilled—using min-max systems, reorder point (ROP), periodic review, or demand-driven replenishment. CPIM stresses how each policy impacts inventory turnover, stock availability, and total cost. Distribution plans must choose replenishment methods appropriate for product characteristics, demand patterns, and service requirements. Effective policy alignment ensures steady inventory flow throughout the network.

9. Push vs. Pull Distribution Strategies

Push strategies rely on forecasts to drive inventory deployment across locations, while pull strategies rely on actual demand signals. CPIM emphasizes understanding when each strategy is appropriate: push is useful for stable, predictable items; pull is beneficial for high-variability or fast-moving items. Hybrid strategies are common in modern distribution. The right approach enhances responsiveness and reduces excess inventory.

10. Order Consolidation and Load Optimization

Distribution planning includes decisions on shipment frequency, load building, and consolidation. Consolidating orders reduces transportation costs but may increase lead times. Load optimization ensures vehicles are used efficiently while meeting service expectations. CPIM stresses the importance of balancing transportation cost, delivery speed, and warehouse workload. Effective consolidation supports cost-efficient and reliable distribution plans.

11. Distribution Capacity Planning

Distribution centers must have adequate capacity for receiving, put-away, storage, picking, packing, and shipping. Distribution plans must consider labor, equipment, storage space, and handling capabilities. CPIM highlights evaluating peak periods, promotional events, and seasonal surges to ensure capacity matches demand. Proper capacity planning prevents bottlenecks and maintains service-level performance.

12. Allocation and Deployment Rules

Deployment rules dictate how available stock is allocated among different locations or orders. Techniques include fair-share allocation, priority-based allocation, and service-level-driven deployment. CPIM emphasizes understanding how allocation policies affect customer service, stock imbalances, and inventory utilization. Proper deployment ensures the right products reach the right markets without overloading specific facilities.

13. Transportation Planning Integration

Transportation is critical in distribution planning. Decisions about route planning, mode selection, shipment timing, and carrier contracts must align with replenishment plans. CPIM stresses analyzing transportation costs, transit times, reliability, and carrier performance. Integrating transportation planning with DRP improves on-time delivery, reduces safety stocks, and enhances overall network efficiency.

14. Collaboration Across the Supply Chain

Effective distribution planning requires strong collaboration among procurement, production, warehousing, transportation, and customer service teams. CPIM highlights the role of S&OP in aligning supply and demand, sharing market insights, and coordinating inventory strategies. Collaboration prevents misalignment, reduces variability, and ensures consistent execution of distribution plans.

15. Multi-Echelon Inventory Planning

Multi-echelon planning considers inventory levels across the entire network rather than optimizing one node at a time. CPIM emphasizes risk pooling, coordinated safety stock placement, and synchronized replenishment across echelons. This approach lowers total inventory investment while maintaining or improving service levels. Multi-echelon planning is essential for complex networks with multiple warehouse layers.

16. Performance Metrics for Distribution Plans

Performance metrics evaluate how well distribution plans

support customer service and cost efficiency. Key indicators include fill rate, order cycle time, inventory turnover, forecast accuracy, shipment reliability, and distribution cost. CPIM stresses using metrics to identify improvement opportunities and sustain continuous improvement. Effective KPIs ensure distribution plans remain aligned with organizational goals.

17. Exception Management and Alerts

Exception management focuses on identifying and responding to disruptions in the distribution plan—such as shortages, delays, capacity issues, or demand spikes. CPIM emphasizes the use of alerts, dashboards, and automated workflows to highlight deviations from the plan. Rapid resolution of exceptions minimizes service disruptions and avoids costly expedites.

18. Scenario Planning for Distribution

Scenario planning evaluates how changes in demand, lead times, transportation capacity, network structure, or supplier risk impact distribution plans. CPIM highlights this as a key planning tool, allowing organizations to test alternatives before implementing changes. Scenario planning strengthens resilience and ensures that distribution decision-making is fact-based and robust under uncertainty.

19. Integration with ERP and WMS

Distribution plans rely heavily on system integration. ERP systems generate DRP outputs, while WMS handles execution activities like picking and shipping. CPIM stresses the importance of accurate master data, synchronized

transactions, and seamless information flow. Proper integration ensures planned orders are executed correctly and inventory records remain accurate across the network.

20. Customer Service Level Planning

Distribution plans must support defined service levels, such as delivery lead times, fill rates, and availability targets.

CPIM highlights balancing service-level goals with cost and inventory investment. Too high a service level increases carrying cost; too low a level risks customer loss.

Distribution planners must align service expectations with inventory strategies, network design, and transportation capabilities.

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49. Managing Procurement with Power BI Dashboards
50. Future Skills and Trends in Procurement



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