

Module 4: Inventory Management Fundamentals

Logistics & Supply Chain Management | Industry Readiness & Interview Skills



Inventory Classifications & SKU Management

Understanding how to categorize stock and manage individual Stock Keeping Units effectively.



Safety Stock & EOQ

Calculating optimal buffer levels and the best order quantities to minimize costs.



ABC Analysis

A strategic framework for prioritizing inventory based on value and importance.



Inventory Flow Methods

Implementing FIFO (First-In, First-Out) and FEFO (First-Expired, First-Out) methodologies.



Operational Risk Mitigation

Managing inventory levels to prevent the dual risks of stockouts and overstocking.



Metrics & Controls

Tracking turnover ratios and conducting accurate stock verification for control.

Understanding Inventory and Its Types

An overview of essential inventory categories for effective supply chain management.

Type	Meaning	Example	Location
Raw Materials	Basic inputs for production	Steel, fabric	Warehouse
Work-in-Progress	Items in the production process	Partially built cars	Factory Floor
Finished Goods	Completed products ready for sale	Retail merchandise	Stockroom
MRO Inventory	Maintenance & operations supplies	Lubricants, tools	Maintenance Closet

SKU and Stock-Level Fundamentals

Optimizing inventory tracking and metrics for warehouse efficiency



- **SKU Definition**

A unique identifier assigned to specific product variants to enable granular tracking.

- **Key Stock Metrics**

Critical thresholds include Minimum (replenishment trigger), Maximum (storage capacity), Available (ready for sale), and Reserved (allocated to orders).

- **Stock Calculation Example**

From a system total of 200 units, 30 are reserved, leaving 170 units available for sale.

Maintaining high accuracy in labeling and automated scanning is critical to reducing picking errors and optimizing warehouse throughput.

Preventing Stockouts: Safety Stock and Reorder Point

Essential inventory management strategies to maintain optimal stock levels



Safety Stock

A strategic buffer held to insulate the business against supply chain variability and demand uncertainty.



Reorder Point (ROP) Formula

$(\text{Average Daily Demand} \times \text{Lead Time}) + \text{Safety Stock}$



Practical Application

Example: $(20 \text{ units/day} \times 5 \text{ days}) + 30 \text{ units} = 130 \text{ units ROP}$.



Common Causes of Stockouts

Forecasting errors, unexpected lead time delays, and inconsistent inventory planning.

Understanding Economic Order Quantity (EOQ)

Optimizing inventory costs through balanced ordering and holding strategies



Definition

A model designed to minimize total inventory costs by balancing ordering costs against holding costs.



The Formula

$$EOQ = \sqrt{((2 * D * S) / H)}$$



Key Variables

D: Annual Demand (units), S: Ordering Cost per order, H: Holding Cost per unit per year.



Illustrative Example

With D = 10,000, S = \$500, and H = \$20, the calculated EOQ is approximately 707 units.

The model assumes stable, predictable demand; always apply business judgment to account for real-world variables.

ABC Analysis: Focus on What Matters Most

Categorizing inventory based on annual consumption value to optimize resource allocation.

Category	Usage Frequency	Unit Cost	Financial Impact
A	Low	High	High (Critical)
B	Medium	Medium	Moderate
C	High	Low	Low (Routine)

Inventory Rotation: FIFO vs FEFO

Comparing rotation strategies to optimize inventory management

Feature	FIFO (First In, First Out)	FEFO (First Expired, First Out)
Priority Rule	Order of receipt	Earliest expiry date
Information Required	Receipt/Arrival dates	Batch/Expiry dates
Typical Application	General inventory / Non-perishables	Perishables / Pharma / Chemicals

Select the inventory rotation strategy that aligns with your product's specific characteristics and shelf-life requirements to maximize efficiency and minimize waste.

Inventory Problems and Performance Measurement

Balancing efficiency with service level requirements

- **Stockouts**

Insufficient inventory resulting in lost sales and diminished customer loyalty.

- **Overstock**

Excess inventory causing high carrying costs and trapped working capital.

- **Inventory Turnover Metric**

Calculated as Cost of Goods Sold divided by Average Inventory Value (e.g., $\$1.2\text{M} / \$0.3\text{M} = 4\text{x/year}$).

Higher turnover is not always optimal; it must be balanced against service level requirements and overall supply chain stability.

Maintaining Accurate Inventory Records

Core Methodologies and Control Processes



- **Cycle Counting**

Regular, partial counts focused on high-value items to maintain ongoing accuracy.

- **Physical Stock Verification**

Comprehensive, periodic full-warehouse audits to ensure total inventory compliance.

- **Inventory Control Process**

A 6-step cycle: Prepare, Count, Compare, Investigate, Adjust, and Correct Root Cause.

- **Common Discrepancies**

Typical issues include receiving errors, unrecorded movements, shrinkage, or mislabeling.

Inventory Management & Interview Prep

Root Cause Analysis, Practical Application, and Essential Metrics



Scenario Analysis: Causes of Stockouts

Analyze key drivers like Forecasting, ROP, Supplier reliability, Inventory Accuracy, Demand Spikes, and Planning efficiency.



Practical Activity

Identify inventory anomalies, validate data records, and propose both short-term corrective and long-term preventive strategies.



Interview Core Concepts

Master key metrics including Safety Stock, ROP, EOQ, ABC Analysis, FIFO/FEFO, and Inventory Turnover.