

# Supply Chain Management

## ABC (Activity-Based Costing)

Related terms: cost allocation, overhead, product costing.

Explanation: A costing method that assigns costs to products based on the activities required to produce them.

Example: A public-health vaccine program uses ABC to determine the true cost of distribution by tracing labor, storage, and transportation activities.

Challenges: Requires detailed data collection and can be time-consuming for complex supply chains.

## ABC analysis

Related terms: inventory classification, Pareto principle, fast-moving items.

Explanation: Segments inventory into three categories (A, B, C) based on value and turnover to prioritize management focus.

Example: A health department classifies essential medicines as “A” items, ensuring tight control and frequent review.

Challenges: Misclassification can lead to stockouts of critical items or excess holding costs.

## Advanced Planning and Scheduling (APS)

Related terms: production planning, optimization, demand forecasting.

Explanation: Software tools that integrate constraints such as capacity, lead times, and material availability to generate optimal production schedules.

Example: An emergency response unit uses APS to allocate limited PPE across multiple hospitals during a surge.

Challenges: Requires accurate input data and may be costly to implement.

## Aggregation

Related terms: demand pooling, economies of scale, order batching.

Explanation: Combining demand from multiple locations to create larger, less frequent orders, reducing per-unit costs.

Example: Regional health clinics aggregate vaccine orders to negotiate lower prices with manufacturers.

Challenges: Increases inventory holding time and may delay delivery to individual sites.

## Airway Bill (AWB)

Related terms: freight document, bill of lading, customs clearance.

Explanation: A contract between shipper and carrier that details the shipment’s contents, destination, and terms of transport.

Example: A shipment of test kits includes an AWB to expedite customs processing.

Challenges: Errors in the AWB can cause clearance delays and additional fees.

## Allocation

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Related terms: rationing, inventory distribution, supply equity.

Explanation: The process of assigning limited resources to various demand points based on predefined criteria.

Example: During a flu outbreak, limited antivirals are allocated to high-risk populations first.

Challenges: Determining fair criteria and managing stakeholder expectations.

#### Alternative sourcing

Related terms: dual sourcing, supplier diversification, risk mitigation.

Explanation: Identifying and qualifying additional suppliers to reduce reliance on a single source.

Example: A health agency adds a secondary manufacturer for rapid-diagnostic kits to avoid disruptions.

Challenges: Additional qualification costs and potential variations in product quality.

#### Asset management

Related terms: equipment lifecycle, preventive maintenance, depreciation.

Explanation: Systematic approach to tracking, maintaining, and optimizing physical assets throughout their useful life.

Example: Managing cold-chain refrigeration units to ensure vaccine potency.

Challenges: Data accuracy, integration with finance systems, and budgeting for replacements.

#### Backorder

Related terms: stockout, order fulfillment, lead time.

Explanation: A customer order that cannot be filled at the time of request due to insufficient inventory.

Example: A clinic places a backorder for a new malaria drug while awaiting shipment.

Challenges: Customer dissatisfaction and increased administrative effort to track pending orders.

#### Barcoding

Related terms: SKU, RFID, inventory tracking.

Explanation: Use of machine-readable codes to identify and track items throughout the supply chain.

Example: Each vaccine vial is labeled with a barcode that records receipt, storage temperature, and expiration.

Challenges: Implementation cost, barcode damage, and staff training.

#### Benchmarking

Related terms: performance metrics, best practice, continuous improvement.

Explanation: Comparing an organization's processes and performance against industry standards or peers.

Example: A national health service benchmarks its cold-chain loss rate against WHO targets.

Challenges: Access to comparable data and adapting best practices to local contexts.

#### Bill of Materials (BOM)

Related terms: product structure, component list, manufacturing recipe.

Explanation: Detailed list of raw materials, components, and sub-assemblies required to produce a finished product.

Example: The BOM for a rapid-test kit includes swabs, reagents, and packaging.

Challenges: Keeping the BOM up-to-date with design changes and supplier substitutions.

### Blind procurement

Related terms: sealed bidding, confidentiality, competitive tendering.

Explanation: A procurement method where supplier identities are concealed until after bids are submitted, preventing bias.

Example: A government agency uses blind procurement to select a new mask supplier.

Challenges: Requires robust evaluation criteria and may limit supplier interaction.

### Block chain (in supply chain)

Related terms: distributed ledger, traceability, data integrity.

Explanation: A decentralized digital ledger that records transactions in immutable blocks, enhancing transparency.

Example: Using blockchain to verify the provenance of donated medical supplies.

Challenges: Technical expertise, integration with existing systems, and scalability.

### Bulk purchasing

Related terms: economies of scale, volume discount, central procurement.

Explanation: Acquiring large quantities of goods to obtain lower unit costs.

Example: A regional health authority purchases a year's supply of gloves in one contract.

Challenges: Increased storage needs, risk of expiration, and cash flow impact.

### Capacity planning

Related terms: resource forecasting, bottleneck analysis, throughput.

Explanation: Determining the production capacity needed to meet future demand.

Example: Estimating the number of vaccine doses that can be manufactured per month during a pandemic.

Challenges: Uncertain demand, equipment downtime, and labor constraints.

### Cold chain

Related terms: temperature-controlled logistics, vaccine potency, refrigerated transport.

Explanation: A temperature-controlled supply chain necessary for preserving the efficacy of temperature-sensitive products.

Example: Maintaining a 2-8 °C environment for COVID-19 vaccines from manufacturer to clinic.

Challenges: Power outages, equipment failures, and monitoring compliance.

### Collaboration platform

Related terms: shared portal, real-time data, stakeholder communication.

Explanation: Digital environment that enables multiple parties to exchange information, coordinate activities, and track progress.

Example: A cloud-based platform where donors, logisticians, and health officials view shipment status.

Challenges: Data security, user adoption, and interoperability with legacy systems.

### Commercial off-the-shelf (COTS)

Related terms: ready-made software, standard product, customization.

Explanation: Pre-packaged software or hardware solutions that can be used without extensive modification.

Example: Deploying a COTS inventory management system for a national immunization program.

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**Challenges:** May not meet all specific regulatory requirements, leading to additional configuration.

**Compliance audit**

**Related terms:** regulatory review, quality assurance, gap analysis.

**Explanation:** Systematic examination to ensure processes adhere to laws, standards, and internal policies.

**Example:** Auditing a supply chain for adherence to WHO Good Distribution Practices.

**Challenges:** Resource intensive and may uncover non-conformities requiring corrective actions.

**Consignment inventory**

**Related terms:** vendor-managed inventory, stock ownership, replenishment.

**Explanation:** Inventory that remains the supplier's property until it is used or sold by the buyer.

**Example:** A pharmaceutical company places vaccine vials on consignment at a remote clinic.

**Challenges:** Accurate tracking, revenue recognition, and coordination of replenishment triggers.

**Contract management**

**Related terms:** service level agreement (SLA), performance monitoring, renewal.

**Explanation:** The process of creating, executing, and overseeing contracts with suppliers and service providers.

**Example:** Managing a multi-year contract for waste-disposal services for medical facilities.

**Challenges:** Maintaining compliance, handling amendments, and managing disputes.

**Cross-docking**

**Related terms:** transshipment, inbound/outbound flow, warehouse efficiency.

**Explanation:** Direct transfer of goods from inbound to outbound transportation with minimal storage.

**Example:** Receiving donated PPE at a central hub and immediately loading it onto trucks for distribution.

**Challenges:** Precise timing, synchronization of inbound and outbound schedules, and limited handling capacity.

**Cycle counting**

**Related terms:** inventory audit, perpetual inventory, accuracy.

**Explanation:** Periodic counting of a subset of inventory items to verify records without a full physical count.

**Example:** Quarterly cycle counts of high-value insulin vials to ensure record accuracy.

**Challenges:** Scheduling counts without disrupting operations and reconciling discrepancies.

**Demand forecasting**

**Related terms:** predictive analytics, trend analysis, seasonal variation.

**Explanation:** Estimating future product demand using historical data, statistical models, and expert judgment.

**Example:** Forecasting the number of flu vaccines needed for the upcoming season based on past uptake.

**Challenges:** Data quality, unpredictable outbreaks, and changing population demographics.

**Distribution network**

**Related terms:** hub-spoke model, last-mile delivery, supply routes.

**Explanation:** The system of facilities, transportation modes, and pathways that move products from

manufacturers to end users.

Example: A national health system's network of regional warehouses, district depots, and community clinics.

Challenges: Balancing cost, speed, and service level across diverse geographic areas.

#### Drop-shipping

Related terms: direct fulfillment, vendor-direct delivery, inventory reduction.

Explanation: Supplier ships goods directly to the end customer, bypassing the buyer's warehouse.

Example: A health NGO orders diagnostic kits that are shipped straight from the manufacturer to field sites.

Challenges: Limited control over packaging and delivery timelines, and reliance on supplier performance.

#### Dual sourcing

Related terms: risk diversification, backup supplier, supply continuity.

Explanation: Maintaining two qualified suppliers for a critical item to reduce dependence on a single source.

Example: Procuring antiretroviral drugs from both a domestic manufacturer and an overseas partner.

Challenges: Managing price differences, quality consistency, and coordination of contracts.

#### E-procurement

Related terms: electronic tendering, online purchasing, digital workflow.

Explanation: Use of electronic platforms to streamline procurement processes from requisition to payment.

Example: An online portal where health facilities submit purchase requests for medical supplies.

Challenges: System integration, user training, and ensuring data security.

#### Economic order quantity (EOQ)

Related terms: inventory optimization, holding cost, ordering cost.

Explanation: Formula that determines the optimal order size minimizing total inventory costs.

Example: Calculating EOQ for a steady-demand item such as disposable syringes.

Challenges: Assumes constant demand and lead time, which may not hold in public-health emergencies.

#### Emergency procurement

Related terms: fast-track acquisition, crisis response, procurement exception.

Explanation: Accelerated procurement procedures activated during emergencies to obtain critical supplies quickly.

Example: Rapid acquisition of ventilators during a respiratory disease outbreak.

Challenges: Balancing speed with due-diligence, ensuring accountability, and managing post-event audits.

#### End-to-end visibility

Related terms: supply chain transparency, real-time tracking, data integration.

Explanation: Ability to monitor and trace a product's status throughout the entire supply chain.

Example: A dashboard showing temperature logs, location, and ETA for a shipment of insulin.

Challenges: Integrating data from multiple partners, data latency, and protecting sensitive information.

#### Environmental sustainability

Related terms: green logistics, carbon footprint, waste reduction.

Explanation: Practices that minimize ecological impact of supply chain activities.

Example: Using reusable containers for vaccine transport to reduce plastic waste.

Challenges: Higher upfront costs, need for stakeholder buy-in, and measuring sustainability metrics.

#### Escalation protocol

Related terms: incident management, response hierarchy, corrective action.

Explanation: Predefined steps for raising and addressing supply chain issues that exceed normal thresholds.

Example: If a cold-chain breach occurs, the protocol triggers immediate notification of senior logistics officers.

Challenges: Ensuring timely communication and clear responsibility assignments.

#### Evaluation criteria

Related terms: scoring matrix, weighted scoring, supplier selection.

Explanation: Set of factors and weights used to assess and compare proposals or suppliers.

Example: Criteria may include price, delivery reliability, quality certifications, and social impact.

Challenges: Subjectivity in weighting and potential bias.

#### FIFO (First-In, First-Out)

Related terms: inventory rotation, expiration management, stock rotation.

Explanation: Inventory issuance method where the oldest items are used first to reduce waste.

Example: Distributing the oldest vaccine batches before newer ones to prevent expiry.

Challenges: Requires accurate tracking and disciplined handling procedures.

#### Fixed-dose combination (FDC)

Related terms: multi-ingredient product, therapeutic synergy, packaging efficiency.

Explanation: A pharmaceutical product that combines two or more active ingredients in a single dosage form.

Example: An antimalarial FDC containing artesunate and lumefantrine.

Challenges: Manufacturing complexity and regulatory approval for each combination.

#### Forecast bias

Related terms: forecast error, systematic deviation, demand planning.

Explanation: Consistent over- or under-prediction of demand, indicating a systematic error in forecasting.

Example: Repeatedly over-forecasting the need for seasonal flu vaccines leading to excess inventory.

Challenges: Identifying root causes and adjusting forecasting models.

#### Freight forwarder

Related terms: logistics intermediary, customs broker, cargo consolidation.

Explanation: An entity that arranges transportation of goods on behalf of shippers, handling documentation and coordination.

Example: A freight forwarder consolidates shipments of medical kits for delivery to remote clinics.

Challenges: Ensuring carrier reliability and managing cost transparency.

#### Full-truckload (FTL)

Related terms: transportation mode, load optimization, shipping cost.

Explanation: Shipment that occupies an entire truck, maximizing efficiency and often reducing per-unit cost.

Example: Transporting a bulk consignment of PPE in a dedicated FTL to a regional hub.

Challenges: Requires sufficient volume to fill the truck and may increase waiting time.

#### Functional safety

Related terms: product reliability, risk assessment, compliance standards.

Explanation: Measures ensuring that a product operates safely under intended conditions, often relevant for medical devices.

Example: Verifying that a portable oxygen concentrator meets functional safety standards before distribution.

Challenges: Rigorous testing, documentation, and certification processes.

#### Gantt chart

Related terms: project scheduling, timeline visualization, critical path.

Explanation: Bar chart that illustrates a project schedule, showing tasks, durations, and dependencies.

Example: Mapping out the rollout phases of a national immunization campaign.

Challenges: Maintaining accuracy as tasks shift and dependencies change.

#### Global positioning system (GPS)

Related terms: geolocation, route tracking, asset monitoring.

Explanation: Satellite-based navigation system used to determine precise location of assets in transit.

Example: Real-time GPS tracking of a refrigerated truck delivering vaccines to rural outposts.

Challenges: Signal loss in remote areas and data privacy concerns.

#### Good Distribution Practice (GDP)

Related terms: quality standards, regulatory compliance, supply chain integrity.

Explanation: International guidelines ensuring that products are consistently stored and transported under appropriate conditions.

Example: Adhering to GDP for handling biologics throughout the supply chain.

Challenges: Training staff, auditing compliance, and adapting to local infrastructure limitations.

#### Good Manufacturing Practice (GMP)

Related terms: quality control, process validation, regulatory approval.

Explanation: Standards governing the manufacturing environment, processes, and documentation to ensure product quality.

Example: Ensuring a vaccine manufacturer complies with GMP before entering a procurement contract.

Challenges: Continuous monitoring, corrective actions, and costly compliance upgrades.

#### Gross margin

Related terms: profitability, cost of goods sold (COGS), revenue.

Explanation: Difference between sales revenue and the cost of producing the goods, expressed as a percentage.

Example: Calculating gross margin for a donated drug to assess cost recovery when reselling.

Challenges: Accurate cost allocation and fluctuating price structures.

#### Hazard analysis and critical control points (HACCP)

Related terms: risk assessment, food safety, preventive controls.

Explanation: Systematic approach to identify, evaluate, and control hazards throughout a product's lifecycle.

Example: Applying HACCP to ensure safe handling of blood products during transport.

Challenges: Requires detailed documentation and ongoing monitoring.

#### Health Technology Assessment (HTA)

Related terms: cost-effectiveness, clinical efficacy, policy decision.

Explanation: Systematic evaluation of the medical, social, economic, and ethical implications of a health technology.

Example: Using HTA results to decide whether to procure a new diagnostic platform.

Challenges: Data availability, methodological consistency, and stakeholder alignment.

#### Hybrid supply chain

Related terms: public-private partnership, shared resources, collaborative logistics.

Explanation: A supply chain that combines resources from government, NGOs, and private sector to achieve common goals.

Example: A joint vaccine distribution effort between a national health ministry and a private logistics firm.

Challenges: Coordination of differing objectives, contractual arrangements, and data sharing.

#### Inventory turnover

Related terms: stock velocity, days of inventory, demand rate.

Explanation: Ratio measuring how many times inventory is sold or used over a period, indicating efficiency.

Example: High turnover of disposable gloves suggests effective demand forecasting.

Challenges: Balancing turnover with service level; low turnover may signal over-stocking.

#### Just-in-Time (JIT)

Related terms: lean manufacturing, demand pull, minimal inventory.

Explanation: Inventory strategy that delivers goods exactly when needed, reducing holding costs.

Example: Scheduling vaccine deliveries to arrive shortly before scheduled immunization sessions.

Challenges: Vulnerable to supply disruptions and requires precise coordination.

#### Kitting

Related terms: pre-assembly, order fulfillment, component bundling.

Explanation: Process of assembling individual items into ready-to-use kits before distribution.

Example: Creating malaria-test kits by bundling lancets, reagents, and instruction sheets.

Challenges: Additional labor, quality control, and storage considerations.

#### Lean logistics

Related terms: waste reduction, value stream mapping, continuous improvement.

Explanation: Application of lean principles to streamline logistics processes, eliminate non-value-added activities, and improve flow.

Example: Reducing unnecessary handling steps in the distribution of antiretroviral tablets.

Challenges: Cultural change, employee engagement, and measuring lean impact.

### Lot size

Related terms: batch production, economies of scale, setup cost.

Explanation: Number of units produced or ordered in a single batch.

Example: Determining optimal lot size for manufacturing a new oral vaccine.

Challenges: Balancing production efficiency with inventory holding risk.

### Logistics performance index (LPI)

Related terms: benchmarking, supply chain metrics, service quality.

Explanation: Composite indicator measuring a country's logistics efficiency across customs, infrastructure, and tracking.

Example: Using LPI scores to assess feasibility of importing essential medicines.

Challenges: Data comparability and relevance to specific health logistics contexts.

### Loss prevention

Related terms: shrinkage, theft mitigation, security controls.

Explanation: Strategies to reduce loss of inventory due to theft, damage, or misplacement.

Example: Implementing sealed containers and RFID tags for high-value vaccines.

Challenges: Cost of security measures versus potential loss, and training personnel.

### Make-to-order (MTO)

Related terms: demand-driven production, customization, lead time.

Explanation: Production approach where items are manufactured only after receiving a customer order.

Example: Customizing a rapid-test kit with specific language instructions for a target region.

Challenges: Longer lead times and need for flexible manufacturing capacity.

### Material Requirements Planning (MRP)

Related terms: bill of materials, inventory control, production scheduling.

Explanation: System that calculates material needs based on demand forecasts, lead times, and existing inventory.

Example: MRP software determines when to order reagents for a laboratory network.

Challenges: Data accuracy, change management, and integration with ERP systems.

### Medical countermeasure (MCM)

Related terms: emergency stockpile, biodefense, therapeutic agent.

Explanation: Products such as vaccines, antivirals, or diagnostics used to protect public health during a crisis.

Example: Maintaining a national stockpile of anthrax vaccine as an MCM.

Challenges: Shelf-life management, funding, and rapid deployment logistics.

### Mitigation strategy

Related terms: risk management, contingency planning, resilience.

Explanation: Planned actions to reduce the impact of identified risks on supply chain performance.

Example: Establishing backup cold-chain equipment to mitigate power outage risks.

Challenges: Allocating resources and ensuring strategies are regularly updated.

### Mode selection

Related terms: transportation choice, cost-speed trade-off, multimodal transport.

Explanation: Decision process for choosing the most appropriate transportation method (road, air, sea, rail).

Example: Selecting air freight for time-critical vaccine shipments versus sea freight for bulk, non-perishable items.

Challenges: Balancing cost, speed, reliability, and regulatory constraints.

### Multi-criteria decision analysis (MCDA)

Related terms: weighted scoring, decision matrix, stakeholder preferences.

Explanation: Structured approach to evaluate alternatives based on multiple criteria, each weighted according to importance.

Example: Using MCDA to select a logistics partner based on cost, capacity, and sustainability.

Challenges: Determining appropriate weights and managing subjective inputs.

### Net-revenue cost

Related terms: total cost of ownership, cost recovery, budgeting.

Explanation: The total expense incurred to deliver a product or service, subtracted from the revenue generated.

Example: Calculating net-revenue cost for a subsidized malaria treatment program.

Challenges: Capturing indirect costs and aligning with funding mechanisms.

### Non-conformance report (NCR)

Related terms: corrective action, quality deviation, incident log.

Explanation: Document describing a deviation from specified requirements, triggering investigation and remediation.

Example: Reporting a temperature excursion in a vaccine shipment as an NCR.

Challenges: Timely reporting and effective root-cause analysis.

### On-time delivery (OTD)

Related terms: service level, delivery performance, punctuality.

Explanation: Metric measuring the percentage of orders delivered by the agreed-upon date.

Example: An OTD rate of 95 % for monthly distribution of antimalarial tablets.

Challenges: External factors such as customs delays and transportation disruptions.

### Order fulfillment

Related terms: pick-pack-ship, customer service, lead time.

Explanation: Complete process of receiving, processing, and delivering a customer order.

Example: From receiving a request for cholera kits to delivering them at the field site.

Challenges: Coordination among procurement, warehousing, and transport functions.

### Order-to-cash (O2C) cycle

Related terms: invoicing, receivables, cash flow.

Explanation: End-to-end business process that starts with order receipt and ends with cash collection.

Example: Tracking the O2C cycle for a contract supplying syringes to a health ministry.

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Challenges: Delays in payment, credit risk, and reconciliation of invoices.

#### Outsourcing

Related terms: third-party logistics (3PL), contract manufacturing, service provider.

Explanation: Delegating certain supply chain functions to external organizations.

Example: Engaging a 3PL to manage last-mile delivery of vaccines in remote regions.

Challenges: Loss of direct control, data sharing, and ensuring service quality.

#### Performance dashboard

Related terms: KPI visualization, real-time metrics, decision support.

Explanation: Interactive tool that displays key performance indicators for quick monitoring.

Example: Dashboard showing temperature compliance, order lead times, and inventory levels for a national immunization program.

Challenges: Data integration, user training, and avoiding information overload.

#### Perishable inventory

Related terms: expiry date, shelf life, cold chain.

Explanation: Items that deteriorate or become unusable after a certain period, requiring careful handling.

Example: Live attenuated vaccines that must be used within six months of manufacture.

Challenges: Forecast accuracy, waste reduction, and storage constraints.

#### Pharmacovigilance

Related terms: adverse event reporting, safety monitoring, post-marketing surveillance.

Explanation: Ongoing process of detecting, assessing, and preventing adverse effects of medicinal products.

Example: Tracking vaccine side-effects through a national pharmacovigilance system.

Challenges: Data collection from remote sites and timely analysis.

#### Physical security

Related terms: access control, surveillance, asset protection.

Explanation: Measures to protect facilities, equipment, and inventory from unauthorized access or theft.

Example: Secure storage rooms with biometric locks for high-value antiretroviral drugs.

Challenges: Balancing security with ease of access for authorized personnel.

#### Pick-and-pack

Related terms: order fulfillment, warehouse operations, fulfillment accuracy.

Explanation: Process of selecting items from inventory (pick) and preparing them for shipment (pack).

Example: Picking individual test kits from bulk inventory and packing them for distribution to clinics.

Challenges: Error rates, ergonomics, and efficient layout design.

#### Plan-Do-Check-Act (PDCA) cycle

Related terms: continuous improvement, quality management, iterative process.

Explanation: Four-step model for implementing and refining processes.

Example: Applying PDCA to improve cold-chain monitoring procedures.

Challenges: Maintaining momentum and documenting each cycle.

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### Point of Use (POU)

Related terms: bedside inventory, immediate consumption, decentralized storage.

Explanation: Location where a product is actually used, often requiring local stock management.

Example: Storing oral rehydration salts at community health posts for immediate access.

Challenges: Accurate demand estimation and preventing stockouts at POU.

### Predictive analytics

Related terms: forecasting, machine learning, data modeling.

Explanation: Use of statistical techniques and algorithms to predict future events based on historical data.

Example: Predicting surge demand for PPE during a pandemic wave using time-series models.

Challenges: Data quality, model selection, and interpretability.

### Procurement lifecycle

Related terms: requisition, tendering, contract award, supplier management.

Explanation: Sequence of activities from identifying need to closing the purchase and evaluating performance.

Example: The lifecycle for acquiring a new diagnostic platform includes market research, RFP issuance, evaluation, and post-award monitoring.

Challenges: Aligning timelines with program schedules and ensuring compliance at each stage.

### Product lifecycle management (PLM)

Related terms: design phase, launch, maintenance, retirement.

Explanation: Managing a product from conception through disposal, ensuring quality and regulatory compliance.

Example: Tracking a vaccine from development, through approval, distribution, and eventual phase-out.

Challenges: Coordinating across multiple departments and handling version control.

### Quality Management System (QMS)

Related terms: ISO 9001, SOPs, continuous improvement.

Explanation: Structured set of procedures and processes to ensure product quality and regulatory compliance.

Example: Implementing a QMS for a national drug procurement agency to standardize supplier evaluation.

Challenges: Documentation burden and maintaining staff competence.

### Quantity discount

Related terms: bulk pricing, tiered pricing, cost reduction.

Explanation: Reduced unit price offered when a buyer purchases a larger volume.

Example: Negotiating a 10% discount for ordering 100,000 doses of a vaccine.

Challenges: Balancing discount benefits against storage capacity and demand uncertainty.

### Quick Response Code (QR code)

Related terms: scanning technology, data capture, traceability.

Explanation: Two-dimensional barcode that can store more information than a traditional barcode.

Example: Scanning a QR code on a medical device to retrieve its serial number and warranty details.

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Challenges: Smartphone compatibility and ensuring data accuracy.

#### Rack and shelf management

Related terms: warehouse organization, slotting, inventory accessibility.

Explanation: Systematic arrangement of items on racks and shelves to optimize space and retrieval efficiency.

Example: Placing temperature-sensitive vaccines on lower shelves near climate control units.

Challenges: Dynamic inventory turnover and space constraints.

#### Recall management

Related terms: product withdrawal, safety alert, corrective action.

Explanation: Process for identifying, communicating, and retrieving defective or unsafe products from the market.

Example: Coordinating a recall of a batch of contaminated syringes across multiple health facilities.

Challenges: Rapid communication, tracking distributed items, and maintaining public trust.

#### Reorder point (ROP)

Related terms: safety stock, lead time demand, inventory trigger.

Explanation: Inventory level at which a new order should be placed to replenish stock before it runs out.

Example: Setting ROP for antimalarial tablets based on average monthly consumption plus safety buffer.

Challenges: Accurate demand forecasting and lead-time variability.

#### Reverse logistics

Related terms: returns processing, waste management, product refurbishment.

Explanation: Flow of products backward in the supply chain for returns, recycling, or disposal.

Example: Collecting unused vaccine vials for safe disposal after a campaign ends.

Challenges: Tracking, regulatory compliance, and cost recovery.

#### Risk assessment matrix

Related terms: probability, impact, mitigation.

Explanation: Tool that maps risks based on likelihood and severity to prioritize response actions.

Example: Mapping the risk of cold-chain failure against its potential impact on vaccine efficacy.

Challenges: Subjectivity in scoring and updating as conditions change.

#### Safety stock

Related terms: buffer inventory, demand variability, service level.

Explanation: Extra inventory held to protect against uncertainties in demand or supply.

Example: Maintaining a safety stock of oral rehydration salts to cover unexpected outbreaks.

Challenges: Tying up capital and potential for waste if demand is over-estimated.

#### Scenario planning

Related terms: what-if analysis, strategic foresight, contingency development.

Explanation: Developing and evaluating multiple plausible future states to inform decision-making.

Example: Modeling supply chain performance under scenarios of a 30% transport disruption versus normal

operations.

Challenges: Data intensity and ensuring scenarios are realistic.

#### Service level agreement (SLA)

Related terms: performance metrics, contractual obligations, penalty clauses.

Explanation: Formal document outlining expected service standards and remedies for non-performance.

Example: SLA specifying 95 % on-time delivery for a cold-chain logistics provider.

Challenges: Defining measurable metrics and enforcing compliance.

#### Six Sigma

Related terms: DMAIC, process improvement, defect reduction.

Explanation: Data-driven methodology aimed at reducing process variation and defects to 3.4 per million opportunities.

Example: Applying Six Sigma to reduce labeling errors in vaccine packaging.

Challenges: Requires training, cultural change, and sustained leadership support.

#### SKU (Stock Keeping Unit)

Related terms: product identifier, inventory code, item master.

Explanation: Unique code assigned to each distinct product for inventory tracking.

Example: SKU 12345-A denotes a 10-dose vial of a specific vaccine.

Challenges: Managing large numbers of SKUs and ensuring consistent labeling.

#### Sourcing strategy

Related terms: single sourcing, multi-sourcing, supplier selection.

Explanation: Plan that defines how an organization will obtain the goods and services it needs.

Example: A mixed strategy using single sourcing for critical reagents and multi-sourcing for consumables.

Challenges: Aligning cost, quality, and risk considerations.

#### Spare parts management

Related terms: maintenance inventory, critical components, reliability.

Explanation: Planning and controlling inventory of replacement parts to ensure equipment uptime.

Example: Stocking spare compressors for cold-chain units in remote warehouses.

Challenges: Predicting failure rates and balancing holding costs.

#### Stakeholder engagement

Related terms: communication plan, partnership, buy-in.

Explanation: Process of involving all parties with interest or influence in the supply chain to achieve shared objectives.

Example: Engaging community leaders in planning the distribution of malaria nets.

Challenges: Managing divergent priorities and ensuring transparent communication.

#### Standard Operating Procedure (SOP)

Related terms: work instruction, process documentation, compliance.

Explanation: Written instructions detailing how to perform a specific task consistently and safely.

Example: SOP for temperature monitoring of vaccine shipments.

Challenges: Keeping SOPs up-to-date and ensuring staff adherence.

#### Strategic sourcing

Related terms: category management, total cost of ownership, long-term partnership.

Explanation: Systematic approach to procurement that aligns sourcing decisions with organizational objectives.

Example: Developing a strategic sourcing plan for essential diagnostics over a five-year horizon.

Challenges: Market intelligence, change management, and measuring strategic impact.

#### Supply chain mapping

Related terms: network visualization, flow diagram, risk identification.

Explanation: Visual representation of all entities, processes, and flows within the supply chain.

Example: Mapping the flow of antiretroviral drugs from manufacturer to patient.

Challenges: Gathering accurate data from multiple partners and maintaining the map as the network evolves.

#### Supply chain resilience

Related terms: robustness, adaptability, disruption recovery.

Explanation: Ability of a supply chain to anticipate, absorb, and recover from unexpected shocks.

Example: Building redundant routes for vaccine transport to mitigate road closures.

Challenges: Cost of redundancy and complexity of coordination.

#### Supply chain risk management (SCRM)

Related terms: risk identification, mitigation, monitoring.

Explanation: Systematic process of identifying, assessing, and controlling risks throughout the supply chain.

Example: Conducting SCRM to evaluate geopolitical risks affecting import of essential medicines.

Challenges: Dynamic risk landscape and limited visibility into supplier practices.

#### Supply chain visibility

Related terms: end-to-end tracking, data sharing, transparency.

Explanation: Extent to which all participants can see real-time information about inventory, shipments, and demand.

Example: Real-time dashboards showing location and temperature of each vaccine shipment.

Challenges: Data integration, confidentiality concerns, and technology adoption.

#### Supply chain segmentation

Related terms: customer classification, product categorization, service differentiation.

Explanation: Dividing the supply chain into distinct segments based on characteristics such as product criticality or demand variability.

Example: Treating emergency medical supplies as a high-priority segment with dedicated logistics.

Challenges: Correctly defining segments and allocating resources appropriately.

#### Supply chain sustainability

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Related terms: environmental impact, social responsibility, green procurement.

Explanation: Incorporating economic, environmental, and social considerations into supply chain decisions.

Example: Selecting suppliers that adhere to fair-labor practices and low-carbon transportation.

Challenges: Measuring sustainability metrics and balancing with cost constraints.

Supply chain visibility platform

Related terms: cloud analytics, IoT integration, stakeholder portal.

Explanation: Software solution that aggregates data from various sources to provide a unified view of supply chain status.

Example: A web-based platform displaying shipment locations, temperature logs, and inventory levels for a national immunization program.

Challenges: Data standardization, user access controls, and system scalability.

Supply chain workforce development</p></div>
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