



# **Certified in Logistics, Transportation and Distribution**

**Transportation and  
Transportation Cost  
Structure**





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# Transportation and Transportation Cost Structure

## 1. Components of Transportation Cost Structure

Transportation costs generally consist of fixed costs, variable costs, semi-variable costs, and joint costs. Fixed costs include equipment ownership, terminals, and administrative overhead. Variable costs relate to fuel, labor, tolls, and maintenance that fluctuate with usage. Semi-variable costs change gradually with activity levels, while joint costs arise when multiple shipments share capacity. Understanding these categories is essential in analyzing carrier pricing, evaluating shipment alternatives, and optimizing total logistics cost—core skills tested in CLTD.

## 2. Line-Haul vs. Terminal Costs

Line-haul costs relate to moving freight between origin and destination, influenced by distance, equipment type, speed, congestion, and regulations. Terminal costs include pickup, delivery, consolidation, documentation, and cross-docking activities. Terminal operations often determine service reliability and speed, especially in LTL networks. CLTD candidates must understand how both cost types interact to influence pricing structures and service levels across different transportation modes.

## 3. Economies of Scale and Distance

Economies of scale (larger shipment size lowers cost per unit) and economies of distance (longer distances reduce cost per mile) shape transportation economics. Carriers aim to maximize load factor and reduce empty miles to achieve cost efficiency. Understanding these cost behaviors helps CLTD candidates choose optimal shipment sizes, consolidation strategies, and transportation modes.

#### **4. Transportation Modes and Cost Characteristics**

Each mode—road, rail, air, ocean, and pipeline—has unique cost structures and performance trade-offs. Road transport offers flexibility but higher variable costs; rail provides lower cost for bulk over long distances; air delivers speed at premium cost; ocean offers low cost for large volumes but long lead times; pipelines have high fixed cost but low variable cost. Mastery of modal characteristics supports effective modal selection and cost optimization.

#### **5. Freight Rates and Pricing Structures**

Carriers use various pricing methods: tariff rates, contract rates, spot rates, value-of-service pricing, and cost-of-service pricing. Rating factors include distance, weight, density, stowability, handling, and liability. CLTD candidates must understand how freight classifications and accessorial charges influence final cost and how shippers can negotiate competitive rates.

#### **6. Accessorial and Surcharge Costs**

Accessorial charges include liftgate service, inside delivery, detention, redelivery, residential delivery, hazardous materials handling, and after-hours service. Surcharges—such as fuel, congestion, and peak-season surcharges—are commonly applied. Mastering these extras helps CLTD candidates understand actual delivered cost, prevent billing disputes, and evaluate total landed cost.

#### **7. Carrier Cost Drivers**

Major cost drivers include fuel prices, driver wages, maintenance, insurance, tolls, fleet utilization, and regulatory compliance. Network design, traffic congestion,

and backhaul availability also impact carrier economics. Understanding cost drivers helps CLTD professionals assess shipping alternatives and negotiate smarter contracts.

## **8. Freight Classification and Density**

In many markets (e.g., the U.S. LTL system), freight classification depends on density, handling characteristics, stowability, and liability. High-density freight is cheaper to ship, while fragile or irregular freight increases cost. CLTD candidates must understand density calculations and National Motor Freight Classification (NMFC) concepts to optimize packaging and shipping cost.

## **9. Consolidation, Break-Bulk, and Cross-Docking**

Freight consolidation lowers cost through improved utilization, while break-bulk terminals distribute smaller shipments regionally. Cross-docking bypasses storage and reduces lead times. Understanding these distribution strategies helps reduce transportation cost, optimize load factors, and support just-in-time operations.

## **10. Transportation Network Design**

Transportation network design considers origin-destination patterns, modal mix, terminal locations, routing, and load planning. Efficient networks balance cost, speed, and service reliability. Mastering network design principles supports strategic transportation decisions and enhances supply chain competitiveness—critical for CLTD success.

## **11. Freight Tendering and Carrier Selection**

Carrier evaluation criteria include cost, capacity availability, service reliability, transit time, safety performance,

technology capability, and financial stability. Tendering practices involve routing guides, contracts, spot market bidding, and electronic freight marketplaces. Understanding these concepts ensures carriers align with service expectations and cost targets.

## **12. Transportation Performance Metrics**

Key metrics include cost per mile, cost per shipment, on-time delivery, load factor, cube utilization, dwell time, transit time reliability, claims ratio, and equipment utilization. Performance measurement is critical for continuous improvement, cost control, and carrier scorecarding—skills emphasized in the CLTD exam.

## **13. Total Landed Cost Analysis**

Total landed cost includes transportation, customs, duties, taxes, documentation, port fees, handling charges, and risk mitigation expenses. CLTD candidates must evaluate end-to-end cost rather than transport rate alone. This holistic view supports better global sourcing and logistics decisions.

## **14. Fuel Management and Fuel Surcharges**

Fuel represents a major variable cost in transportation. Carriers use fuel surcharges to offset volatility. Understanding fuel cost behavior, route planning, idle reduction, and load optimization helps control transportation cost and support sustainability goals.

## **15. Freight Risk Management and Insurance**

Transportation risks include theft, damage, delay, and regulatory non-compliance. Insurance options such as cargo insurance, liability coverage, and carrier limits (like Carmack

Amendment rules) must be understood. Managing risk is fundamental to cost control and protecting supply chain continuity.

## **16. Regulatory Impacts on Transportation Costs**

Government regulations, such as driver hours-of-service (HOS), environmental restrictions, weight limits, hazardous material rules, and customs procedures significantly affect costs. Compliance often increases administrative burden and reduces asset utilization. Understanding regulatory impacts helps CLTD candidates anticipate cost changes and ensure legal operations.

## **17. Freight Documentation and Billing**

Key documents include the bill of lading, freight bill, customs documents, commercial invoices, packing lists, and certificates of origin. Errors cause delays and additional costs. Understanding documentation requirements ensures smooth transportation flow and accurate cost control.

## **18. Shipment Planning, Routing, and Scheduling**

Optimizing routes and schedules reduces mileage, fuel use, labor hours, and total transportation cost. Tools include route optimization software, GPS tracking, and dynamic scheduling. CLTD candidates must understand how planning impacts fleet utilization, service level, and cost efficiency.

## **19. Intermodal Transportation Cost Structures**

Intermodal transport integrates multiple modes (truck–rail–ship) to optimize cost and transit time. Intermodal cost advantages include lower rail rates and reduced fuel

consumption. However, drayage and terminal handling add complexity. Understanding intermodal economics helps CLTD candidates evaluate when mode-shifting is beneficial.

## **20. Transportation Budgeting and Cost Control**

Transportation budgeting involves forecasting volume, selecting modes, estimating rates, and including accessorial and risk-related costs. Continuous cost control uses audits, carrier performance reviews, invoice validation, and TMS analytics. Developing cost-control strategies equips CLTD candidates to reduce total logistics expenses effectively.

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# Micro-Learning Programs in Supply Chain Management



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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
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3. Supplier Selection and Evaluation
4. Contract Management Essentials
5. Cost and Price Analysis in Procurement
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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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