

talent in a tight labor market, lowers insurance premiums, avoids regulatory penalties, and earns the trust of shippers who want their goods to arrive without incident. In a hyper-competitive industry where margins are razor-thin, the inability to run a safe operation is a hidden tax that erodes profitability. Conversely, a demonstrably superior safety record is a differentiator that wins contracts and strengthens brand reputation. The supply chains that will lead the future are those that put safety first—not because they are required to, but because they understand it is the smartest business decision they can make.

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INVENTORY COSTS: THE HIDDEN PRICE OF STOCK

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Inventory is often described as the lifeblood of a business—ensuring product availability, buffering against uncertainty, and enabling customer satisfaction. Yet inventory carries a silent, corrosive price that many organizations fail to measure accurately. While the purchase cost of goods is visible on every invoice, the true cost of holding stock extends far deeper, eroding profitability in ways that do not appear on

a standard profit-and-loss statement.

Research consistently demonstrates that total inventory carrying costs typically range from 20% to 30% of the inventory value per year, a figure that astonishes executives who have never moved beyond unit cost accounting (Heizer, Render and Munson, 2020). When organizations hold millions of dollars in stock, these hidden costs represent a substantial drain on working capital and competitive agility. Understanding the full spectrum of inventory costs is the first step toward controlling them.

The Four Pillars of Inventory Cost Inventory costs are conventionally categorized into four components. Mastery of each is essential for effective supply chain management.

Capital Cost: The Opportunity You Forgot Capital tied up in inventory is capital that cannot be deployed elsewhere. Whether a company uses its own cash reserves or borrowed funds, inventory represents a financial commitment with a measurable opportunity cost. For many organizations, capital cost is the single largest component of carrying cost, often calculated at the company's weighted average cost of capital (WACC) or a hurdle rate reflecting alternative investment returns.

A study by Hendricks and Singhal (2005) demonstrated that supply chain disruptions—which often manifest as excess inventory—lead to a 10.28% decline in shareholder value over two years. The stock market penalizes inefficient inventory management because investors recognize that every dollar sitting idle on a warehouse shelf is a dollar not generating returns.

Storage Cost: More Than Rent Storage costs encompass the obvious—warehouse rent, utilities, and insurance—but extend to equipment maintenance, material handling labor, and the systems required to track and manage inventory. As e-commerce drives demand for faster fulfillment, many companies have increased their network footprint, multiplying storage costs across numerous forward-deployment centers. The temptation to decentralize inventory to improve delivery speed must be weighed against the compounding effect of fixed facility costs across multiple locations.

Service Cost: The Protector's Premium Inventory must be protected, and

protection carries a price. Insurance premiums typically scale with inventory value, and in high-risk categories such as electronics or pharmaceuticals, these premiums can be substantial. Taxation also plays a role; many jurisdictions levy property taxes on business inventory, creating an annual recurring cost that increases in direct proportion to stock levels. According to the Council of Supply Chain Management Professionals, insurance and taxes together often account for 2% to 5% of total inventory carrying costs annually (CSCMP, 2023).

Risk Cost: The Price of Uncertainty Risk costs are the most difficult to quantify because they represent potential rather than actual losses. They include obsolescence—where products become unsellable due to technological advancement, changing consumer preferences, or expiration dates. In the fashion and electronics industries, obsolescence risk can render inventory virtually worthless within months. Shrinkage from theft, administrative errors, and damage further erodes inventory value. The 2023 National Retail Security Survey reported that retail shrinkage alone averaged 1.57% of sales, representing over \$112 billion in losses industry-wide, a significant portion of which is tied to inventory (National Retail Federation, 2023).

Procurement and Ordering Costs: The Front-End Burden Beyond holding costs, the act of acquiring inventory generates its own expenses. Procurement costs include supplier identification and qualification, purchase order processing, freight, receiving inspection, and accounts payable processing. These fixed transaction costs create an economic tension: ordering larger quantities less frequently minimizes procurement costs but maximizes holding costs. Conversely, smaller, more frequent orders reduce inventory on hand but inflate administrative and transportation expenses. The economic order quantity (EOQ) model, first developed by Ford W. Harris in 1913, remains foundational because it mathematically balances these competing forces, yet many organizations still make replenishment decisions based on intuition rather than analysis.

Stockout Costs: The Unseen Threat The most insidious inventory cost is the one incurred when inventory is absent. Stockout costs encompass lost sales, customer goodwill erosion, order cancellation penalties, and the long-term damage to brand reputation. Academic research confirms that stockouts do not merely shift purchases to

competitors in the short term; they can permanently alter customer loyalty. A study by Zinn and Liu (2001) demonstrated that consumer responses to stockouts vary by product category, but the aggregate effect is consistently negative, with a significant proportion of consumers switching retailers after a single stockout experience.

The difficulty of measuring stockout costs leads many firms to adopt a defensive posture—holding excess inventory "just in case"—which merely exchanges one cost category for another.

The Hidden Costs Within Hidden Costs

Beyond the conventional categories, several less-visible costs deserve attention.

Coordination complexity multiplies as inventory levels and SKU counts grow. More stock means more picking errors, more misplacements, and more management overhead. Obsolescence acceleration occurs when slow-moving inventory blocks shelf space for faster-moving items, creating a compounding effect on storage costs and reducing overall warehouse throughput. Carbon and sustainability costs are emerging as regulatory and consumer pressures mount; holding excess inventory involves unnecessary production, transportation, and storage emissions, exposing companies to reputational risk and potential carbon taxation.

The Lean Inventory Imperative and Its Risks The Toyota Production System and its lean manufacturing derivatives revolutionized inventory thinking by treating stock as waste—a symptom of process inefficiency rather than a necessary buffer. Just-in-time (JIT) principles demonstrably reduce carrying costs, but the COVID-19 pandemic and subsequent supply chain disruptions exposed the fragility of ultra-lean supply chains. Research by Craighead, Ketchen and Darby (2020) on pandemic supply chain vulnerabilities highlighted that firms with excessively lean inventories faced catastrophic stockouts when global logistics networks seized.

The lesson is not that lean is wrong, but that inventory strategy must be dynamic and risk-informed. Strategic inventory segmentation—holding safety stock for critical, volatile, or high-margin items while aggressively minimizing stock for predictable, low-value SKUs—represents the current best practice.

Technology as a Cost Reduction Enabler Modern inventory management

systems offer unprecedented visibility and control. RFID technology enables real-time inventory counting with accuracy rates exceeding 99%, dramatically reducing shrinkage from administrative errors (Zelbst et al., 2010). Advanced demand sensing algorithms can forecast requirements with greater precision, reducing the need for safety stock. Digital twins allow organizations to simulate inventory scenarios before committing resources, identifying cost-optimization opportunities that static spreadsheets cannot reveal.

Machine learning systems can dynamically optimize reorder points based on real-time demand signals, supplier lead time variability, and service level targets, adjusting inventory parameters continuously rather than relying on periodic manual reviews.

Conclusion: Seeing the Full Picture Inventory costs are hidden only because organizations choose not to see them. The first step toward inventory optimization is a rigorous, honest accounting of all cost components—capital, storage, service, risk, procurement, and stockout—using actual organizational data rather than industry averages. The second step is recognizing that these costs are interrelated; reducing one category often increases another, demanding system-level optimization rather than siloed cost-cutting.

The most profitable supply chains are not necessarily the ones with the least inventory or the most inventory. They are the ones that understand exactly what their inventory costs them, and manage that cost with the same discipline they apply to labor, materials, and revenue. In a business environment where margins are perpetually under pressure, inventory cost management is not a back-office function—it is a strategic capability that separates industry leaders from the rest.

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LOGISTICS JOBS: AN OVERVIEW OF CAREERS POWERING THE SUPPLY CHAIN

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Logistics is often described as the invisible industry. Consumers click "buy" and goods appear at their doors without a thought to the intricate human machinery that made it possible. Yet behind every delivery is a vast workforce of planners, drivers, warehouse operatives, analysts, and executives orchestrating one of the world's largest and most essential sectors. The logistics industry employs millions globally and is projected to grow substantially in the coming decade, driven by e-commerce expansion, supply chain restructuring, and technological transformation.

Far from the outdated stereotype of manual labor and clipboard tracking, modern logistics careers span a remarkable spectrum—from artificial intelligence specialists optimizing delivery routes to sustainability officers decarbonizing freight networks. This article provides an overview of the logistics job landscape, the skills in demand, and the forces reshaping careers in this dynamic field.

The Scale and Economic Significance of Logistics Employment Logistics and transportation form the backbone of global trade, and their employment footprint reflects this centrality. In the United States alone, the transportation and warehousing sector employed over 6.5 million workers as of 2023, with projections indicating continued growth above the national average for all occupations (Bureau of Labor Statistics, 2024). Globally, the logistics market is expected to exceed \$6.3 trillion by