SUPPLY CHAIN connect™

February 2026

PROACTIVE STRATEGIES FOR MITIGATING 3PL RISK

CONTENTS February 2026

SUPPLY CHAIN connect

By DEVIN PARTIDA

Proactive Strategies for Mitigating 3PL Risk

Partnering with a 3PL can deliver more drawbacks than benefits if not done carefully. Business leaders must leverage proactive strategies to mitigate such risk.

Partnering with a third-party logistics (3PL) provider is generally beneficial. However, without due diligence, sufficient oversight and ongoing monitoring, this partnership can expose businesses to legal, reputational, financial and security risks. Leaders must take a proactive approach to mitigating this possibility.

Common Risks Associated With 3PL Providers

Expanding your access to warehousing and transportation can inadvertently decrease your supply chain visibility. 3PLs with many customers may struggle to track shipments in real time, debilitating their reporting capabilities. An irregular or inaccurate data stream can cause delays.

Typically, reputable 3PLs are cost-efficient and have high on-time rates. However, not all are created equal. Some deliver substandard service quality. They may be unable to manage order surges, have low inventory accuracy rates or provide spotty communication.

Loose adherence to service level agreements could amplify mounting mistakes, resulting in noncompliance with shipping or security regulations. Under laws such as the European Union's General Data Protection Regulation and the California Consumer Privacy Act, companies can be held liable for breaches even if the third party is the one collecting the data.

Technology mismatches such as outdated or poorly integrated tech stacks can exacerbate these issues by complicating tracking, reporting and communication. Supply chains are highly coordinated due to digitalization, so mistakes have ripple effects. Incorrect information may send goods to the wrong address or ship the wrong quantity.

Although integrating into a vendor's tech stack can be beneficial, it expands attack surface. Studies show AI can reduce fulfillment mistakes by 25% and accelerate order fulfillment by almost seven days on average. However, there are security risks associated with third-party models, as breaches are often linked to third-party vendors.

Strategies for Proactive 3PL Risk Management

A proactive 3PL risk management strategy is crucial. By moving beyond reactive measures, businesses can minimize disruptions, fulfillment mistakes and stockouts. Here are four key strategies.

1. Do Your Due Diligence

A lack of due diligence during the vetting stage can result in major consequences, such as hidden fee structures or overreliance on inefficient supply chains. Decision-makers should carefully vet each provider themselves or hire external experts.

Third-party risk evaluations can help businesses eliminate high-risk 3PLs from the running and identify potential backup partners. Thorough vetting is data-based. Leaders should evaluate cost, capacity, visibility and reliability by assessing facility locations, technology stacks and key performance indicators (KPIs).

2. Negotiate Contracts

Since 3PLs transport goods between cities, states and countries, they must carefully comply with continually evolving local, state, federal and international laws. Robust contract negotiation helps ensure compliance. Contracts are vital because they set clear expectations, reducing risk. If a 3PL doesn't uphold its end of the agreement, they can be taken to court.

However, choice of language is critical, as unclear phrasing could nullify the contract and negate legal protection. Business contract attorneys can help to draft ironclad agreements that limit liability and protect businesses.

3. Avoid Vendor Lock-In

Vendor lock-in occurs when an organization is heavily dependent on a single third party, making it difficult or impossible to switch to another provider. They will be affected if their sole 3PL experiences operational issues, goes bankrupt or undergoes a skilled labor shortage. Diversification can alleviate these effects, supporting business continuity.

Avoid vendor lock-in by working with multiple 3PLs from the start. Even if a vendor does not offer 24/7 shipping, companies may still be able to ship around the clock if one provider's shipping windows cover the gaps. This approach also supports technology interoperability, network expansion and communication resilience.

4. Closely Monitor KPIs

Closely evaluate each potential provider's on-time rate, delivery speed, order accuracy, cost per unit shipped and inventory management accuracy before committing to a contract. Proactively evaluate key metrics to ensure providers meet expectations.

Real-time tracking software, open communication channels and predictive analytics facilitate continuous performance monitoring. Research shows that implementing a real-time management information system can increase operational efficiency by 45%, improve supply chain responsiveness by 35% and accelerate lead times by 38%.

The Importance of Strong Partner Relationships

In the 2025 WTW Global Supply Chain Risk Survey, 63% of businesses reported higher-than-anticipated losses. This finding is unsurprising, given that only 8% reported having complete control over their supply chain risks. The vast majority lack a deep understanding of potential risks because they have not conducted thorough risk assessments.

A comprehensive risk management system could've helped them identify avoidable losses and partner with reputable 3PLs. In this industry, forecasts are exceedingly valuable. However, they are not the only facet of a strong partner relationship.

Building a strong relationship with third-party partners is essential for developing a resilient supply chain. Beyond ensuring they consistently adhere to their service level agreement and meet industry standard KPIs, decision-makers should ensure their communication is frequent, informative and transparent.

When companies simply sign contracts and move on, they make themselves vulnerable to supply chain risks. To their 3PLs, their partnership adds to the noise. A set-it-and-forget-it mentality doesn't work in this fast-paced field.

Professionals must continually develop robust relationships built on a foundation of trust and mutual understanding. This way, when one entity succeeds, so does the other. Data-driven metrics can back up claims, providing quantifiable support.

Continually Mitigating 3PL Risk with Information

In this business, occasional fulfillment errors or delays are inevitable. If a business chooses the right provider, they can minimize the likelihood of mistakes. Continually mitigate 3PL risks with regular, in-depth evaluations, contract renegotiations and risk assessments.

Stakeholders should work with reputable partners, regardless of their supply chain's size or scope. This relationship will become a foundation for success as the business grows and scales. Look beyond basic service capabilities to carefully evaluate potential financial, legal and security risks during the vetting stage.

BACK TO TABLE OF CONTENTS

By AVERY LARKIN

5 Steps to a More Resilient Supply Chain

As disruption becomes routine, companies are rethinking how their supply chains anticipate, absorb and recover from shocks.

The phrase "supply chain resilience" is getting thrown around a lot these days as companies work to fortify their domestic and global networks. They're applying technology, people and new processes to the task, hoping that the end result will be a stronger, more agile supply chain that can withstand disruption and recover quickly when something goes wrong.

The strategies vary by company, but some of the more common moves include developing tighter relationships with key suppliers, investing in better visibility and shoring up the financial aspects of running a global network. Many organizations are also monitoring severe weather, cybersecurity threats and geopolitical risks more closely so they can respond faster amid shifting conditions.

"Building supply chain resilience has become a strategic priority for businesses worldwide," *Global Trade Magazine* reports. "In this new era of uncertainty, flexibility, adaptability, and risk mitigation are more valuable than ever. Companies are rethinking their operations to create networks capable of withstanding shocks while maintaining efficiency and global competitiveness."

What is Supply Chain Resilience?

IBM defines supply chain resilience as the "ability to anticipate, adapt and recover from disruptions, such as natural disasters, pandemics or other unexpected events," but it doesn't take a global pandemic to throw these critical networks off-balance. It can be as simple as a factory fire that halts production at a sole-source supplier, or a disgruntled employee who steals and sells sensitive files, triggering operational and reputational fallout across multiple tiers of the network.

If 2026 is the "year of resilience" for your company's supply chain, here are five practical steps leaders can take now to reduce risk, spot vulnerabilities early and recover faster if and when disruption occurs:

1) **Shore up your working capital.** If your business sells products or services to a larger buyer, J.P. Morgan recommends asking that company about its supply chain finance program. These buyer-led, bank-funded early payment programs help suppliers accelerate payments on their buyer-approved invoices maturing in the future. "While large companies commonly offer supply chain finance, midsize businesses can also establish these programs to provide suppliers fast payment while maintaining credit reserves," J.P. Morgan explains. Accounts receivable financing is another option. "When customers don't offer supply chain finance, consider receivables financing, which allows suppliers to sell invoices for upfront payment."

2) **Invest in your supplier relationships.** Know which of your suppliers are business-critical and establish a supplier relationship management strategy to build strong, collaborative ties that create joint value. Effective supplier relationship management helps companies operate more efficiently when times are good, and can also be invaluable during disruptions. "Businesses with strong supplier relationship management monitor important suppliers' health to prevent costly delays," J.P. Morgan points out. "They implement practices that keep suppliers financially healthy and stable, including balanced payment terms and development initiatives."

3) **Get engineering teams thinking about alternative components.** If you're selling products that incorporate PCBAs (i.e., circuit boards), Designworks' Ryan Gray says you should be aware that the components on those boards can go obsolete with little or no warning. The solution? Have your engineering or product development teams identify alternative components in alternative design files and alternative bills of material. "That way, when something does reach EOL (end of life), you'll be able to quickly and confidently direct your production teams to source the alternative," Gray tells *Forbes*.

4) **Monitor industry trends and market shifts.** Keep close tabs on what's happening both in and out of your industry and marketplace. Though that may seem obvious, factors can change suddenly, and understanding how these shifts will impact supply or demand is not always simple to determine. "Collecting and analyzing the right data and insights is the first step to effectively monitoring industry trends and market changes," NetSuite recommends. "Taking into account quick or unexpected changes in economic conditions, geopolitical situations, weather forecasts, or competitors' moves that can disrupt supply chains is also important."

5) **Implement inventory and capacity buffers.** This will help minimize supply chain disruption and ensure operational continuity even when challenges arise. "Inventory buffers, also called safety stock, are extra volumes of inventory kept on hand to deal with sudden increases in demand or supply chain issues," NetSuite explains. "Companies can analyze demand patterns and monitor existing inventory levels to project future variability and optimize the levels of additional inventory to keep in stock."

☞ BACK TO TABLE OF CONTENTS

All-Electric Semi Truck Hits the Road in California

Early deployments of electric semi-trucks provide new data on range, efficiency and operational fit for commercial freight operations

The transportation industry is one of the biggest contributors to greenhouse gas (GHG) emissions in the U.S., where light-duty vehicles and medium/heavy-duty trucks generate about 80% of the sector's total emissions, according to the U.S. Environmental Protection Agency (EPA). This makes transportation a prime candidate for electrification, particularly for moving freight—a place where even incremental sustainability improvements can translate into meaningful emissions reductions.

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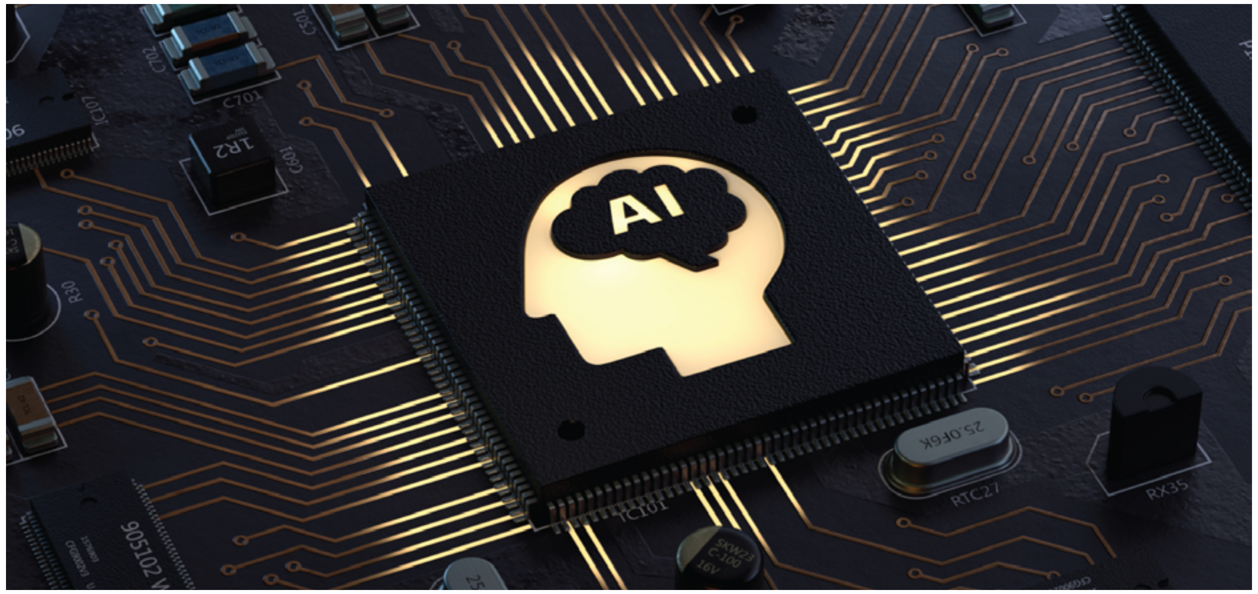
By BRIDGET MCCREA



AI Boom Drives a Memory Shortage

From HBM to hard drives, AI's infrastructure boom is pushing memory markets to the breaking point.

For procurement teams focused on electronic components, shortages have become part of life. Over the past several years, buyers have moved from scrambling for microcontrollers and analog chips to managing tight supply of power devices, memory and specialty semiconductors. Lead times expand, then contract. Allocation eases in one category while another tightens, and stability never seems to last long.

And just when one issue clears up, five more pop up in its place. A supplier finally catches up, but a different component on the board goes on allocation. Pricing stabilizes, but lead times stretch again. A backlog clears, and demand from another sector soaks up the extra capacity. "A significant shortage of memory products across the board is expected to continue for the time being," a Samsung spokesperson said on a recent earnings call, *Reuters* reports. He went on to say that expansion of supply is expected to remain "limited" right into 2027 as AI-related demand remains strong.

That statement is the latest development procurement teams have to factor into their planning. As demand for AI accelerates across data centers, cloud infrastructure and edge devices, it isn't just GPUs that feel the strain. Memory sits at the center of that buildout, and tighter supply there has ripple effects across boards, systems and finished products.

What's Going on?

The world is hungry for more AI, and its infrastructure is consuming a large amount of specialized memory. AI chips rely on high-bandwidth memory (HBM), a fast, specialized type of DRAM that sits alongside the GPU and feeds it data at very high speeds.

Unlike memory used in laptops or smartphones, HBM is built by stacking multiple layers of memory into a single package, which makes it more complex to produce. The tradeoff is significant: When manufacturers increase HBM output to support AI systems, they divert production away from conventional DRAM.

Now, the few companies that make that memory can't expand capacity fast enough to keep up. "We have seen a very sharp, significant surge in demand for memory, and it has far outpaced our ability to supply that memory and, in our estimation, the supply capability of the whole memory industry," Micron business chief Sumit Sadana told *CNBC*, which adds

that it's produced in a complicated process where Micron stacks 12 to 16 layers of memory on a single chip, turning it into a "cube."

"As we increase HBM supply," Sadana added, "it leaves less memory left over for the non-HBM portion of the market, because of this three-to-one basis." To address the issue, *WSJ* says Micron is spending $50 billion to more than double the size of its 450-acre campus in Boise, Idaho, including the construction of two new chip factories (fabs).

"The first fab's inaugural silicon wafers are expected to roll off the factory line in mid-2027, making DRAM, a type of memory used to make the [HBM chips], that are increasingly essential to advanced [AI] computing," WSJ reports, nothing that both plants should be in production by the end of 2028.

"Behind the frenetic manufacturing arms race is the AI boom," the publication notes. "As large language models have become increasingly complex and firms such as OpenAI, Oracle, xAI and Anthropic have announced lofty plans to build trillions of dollars' worth of data centers, demand has far outpaced capacity in the memory-chip market."

Not Limited to HBMs

Micron isn't the only producer on the memory hot seat right now. According to *Mashable*, Western Digital has already sold out of its storage capacity for 2026 with more than 10 months still left in the year. CEO Irving Tan said most of that storage space has been allocated to its top seven customers, three of which already have agreements with Western Digital for 2027 and even 2028.

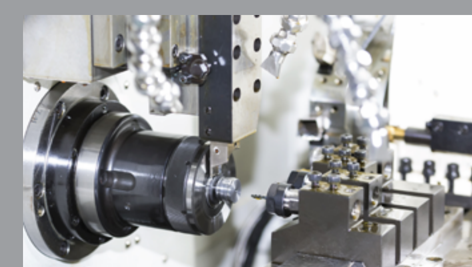
"With this latest news from Western Digital, it appears the ever-increasing demands from AI companies for memory and storage will continue to grow, with no end in sight," the publication adds. "Unless, of course, investors decide to pull back from AI over fears that AI's promises may not come to fruition. But, for now at least, the shortages and price hikes for consumers will continue."

BACK TO TABLE OF CONTENTS

Manufacturing PMI Hits a New Low in December

Tariffs, rising input costs and weak demand continue to pressure U.S. manufacturers.

The U.S. manufacturing sector couldn't catch a break in 2025, ultimately wrapping up December on its weakest footing of the year. Activity remained uneven across the sector, with most industries still contracting and only limited areas showing signs of stability as the year came to a close.



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Eliminating the Silo Tax: How to Unify Procurement and Supply Chain Operations

Dean Bain of Coupa explains the true cost of the "silo tax," dissects the strategy-to-execution gap and shows how leading organizations are closing those gaps through digitalization.

In this episode of Supply Chain Connect, Dean Bain, Senior Vice President and General Manager of Supply Chain at Coupa, unpacks how procurement and supply chain have operated in silos for decades and why that model is no longer sustainable. Bain explains the true cost of the "silo tax," dissects the strategy-to-execution gap and the "missing middle" and shows how leading organizations are closing those gaps with digital twins, scenario planning and integrated sourcing.

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5 Ways to Shield the Electronics Supply Chain From Cyberthreats

This episode covers five practical steps electronics companies can take to reduce supply chain cyber risk.

The electronics supply chain has become a prime target for cybercriminals. This episode covers five things organizations can do to close common cybersecurity gaps in the electronics supply chain.

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BACK TO TABLE OF CONTENTS

By EMILY NEWTON

Will Class 8 Truck Production Bounce Back After Stalling Last Year?

Class 8 truck production stalled after a volatile cycle, which forced fleets to reconsider demand signals and capacity plans. Learn what factors will determine whether Class 8 trucking orders rebound in 2026.

Class 8 trucking orders stalled in 2025 as fleets cleared backlogs and delayed new capital commitments. The pause forced original equipment manufacturers (OEMs) and tier suppliers to reset build rates and reevaluate pricing and inventory strategies. For 2026, the primary issue centers on whether improving freight demand drives a true recovery or whether labor and regulation constraints continue to limit production upside.

Procurement teams and fleet buyers watch order signals closely to monitor commitments and avoid another cycle of overcapacity. OEMs must balance cautious ramp-ups with the risk of missing early demand if the market turns faster than expected.

What Drove the Class 8 Production Slowdown?

Order normalization accelerated once record backlogs cleared, which brought Class 8 volumes back toward baseline replacement demand. Tighter monetary policy and elevated interest rates cooled freight demand, raising financing costs and delaying purchase decisions.

As a result, fleets cut capex and faced persistent rate pressure. It also limits new orders across large fleets and owner-operators. Many fleets shifted focus from expansion to sweat-the-asset strategies and extended trade cycles, which reduced near-term visibility for OEMs and amplified production planning risk.

Macroeconomic and Freight Market Scenarios

Industrial output influences the flow of raw materials and finished goods. Meanwhile, construction activity supports heavy-haul and project-driven freight. Consumer demand sets the pace for retail and distribution volumes. When these factors align, carrier utilization improves and fleets regain confidence to replace or add trucks.

In a soft-landing scenario, steady manufacturing and stable consumption support gradual volume recovery. They allow Class 8 volumes to recover through replacement and selective growth. A delayed recovery brings uneven freight and cautious ordering. Under a downside scenario, weakening output and credit forces fleets to extend trade cycles and keep Class 8 production constrained.

Class 8 Trucking Orders and OEM Build Schedules

Class 8 trucking orders remain uneven, with net orders tracking below prior-cycle averages and limited backlog visibility beyond the short term. OEMs maintained a streamlined production discipline in 2025. They aligned build rates with weak order intake and margin protection priorities, which helped prevent excess finished inventory as freight demand weakened.

Build schedules continue to follow confirmed orders rather than forecast optimism. The goal is to protect pricing and avoid an inventory overhang if demand slips. This means shorter lead times but less flexibility if volumes rebound quickly. Tier suppliers also face tighter planning windows as OEMs keep builds tightly synchronized with order flow.

Fleet Demand Signals to Watch

Replacement demand now dominates Class 8 purchases, as fleets prioritize uptime and life cycle economics over capacity growth. Predictive maintenance adoption has extended trade cycles, with some saving as much as $1 million in four months by cutting repair costs and lost productivity. That efficiency reduces urgency to replace assets because of mileage or age.

Large fleets tend to buy in structured waves tied to maintenance analytics and network planning. Owner-operators respond more to spot rates and short-term cash flow, which makes their purchasing patterns more volatile. Expansion demand remains limited until sustained freight improvement supports higher utilization. As a result, replacement cycles offer the clearest signals for near-term production stability.

Supplier Capacity and Bottleneck Risks

Component availability has improved, but labor constraints and tooling readiness continue to limit how fast production can scale. Material choices also factor into readiness. For example, the 3004 alloy aluminum sheet emerges as a strong alternative to 5052 for buses and brackets due to its higher recycled content and availability. Even as chip shortages ease, upstream fragility still matters because delays in castings or specialized tooling can halt builds.

Tight labor markets amplify these risks by slowing changeovers and ramp-ups. For OEMs and suppliers, resilience depends on depth across the entire supply base. Any sudden demand rebound could expose weak links that were hidden during the downturn, which keeps OEMs cautious about accelerating build rates too quickly.

Pricing, Lead Times and Procurement Strategy

Pricing discipline remains firm as OEMs defend margins amid softer Class 8 trucking orders. Incentives appear selectively, often tied to volume or strategic relationships. Contract terms now offer more flexibility around build slots and delivery windows.

Procurement teams use spot buys to capture near-term availability or pricing advantages. Then, long-term agreements lock in capacity and cost certainty that helps manage exposure if demand recovers unevenly. Shorter commitment horizons allow buyers to adjust specifications as emissions rules and powertrain options change. Disciplined pricing reduces the risk of margin erosion during a slow order cycle.

Powertrain Transition and Regulatory Effects

Emission rules and powertrain uncertainty continue to define order timing as fleets weigh near-term compliance against future technology risk. Under the Environmental Protection Agency Clean Trucks Plan, emissions limits tighten from 200 mg/bhp-hr for covered diesel engines to 50 mg/bhp-hr for Class 8 diesel trucks. This development raises cost and complexity concerns for operators. It encourages buyers to pull orders forward, while others delay commitments until compliant platforms mature.

Diesel optimization remains the volume anchor, but parallel investments in natural gas and early electrification force OEMs to split tooling and pace builds carefully. The result is more conservative production planning until regulatory clarity and fleet adoption patterns stabilize.

What a "Bounce Back" Looks Like

Realistic production growth reflects a gradual lift from 2025 lows rather than a rapid return to prior cycle peaks. OEMs are expected to adjust output in small, quarter-by-quarter increments as order visibility improves, which limits risk while testing whether demand holds.

A full return to peak production would require sustained freight strength across several quarters. Until that pattern emerges, growth should be viewed as incremental. Planning assumptions should focus on sequential improvement instead of year-end totals, which changes how capacity and supplier commitments get staged.

Implications for Supply Chain and Procurement Leaders

Class 8 trucking orders remain volatile, so planning now centers on flexibility rather than point forecasts. Fleets and logistics buyers rely on scenario planning to test decisions against soft-landing and downside outcomes. Supplier diversification enhances flexibility and responsiveness in the supply chain, reduces dependence on single sources, and improves recovery speed when disruptions occur.

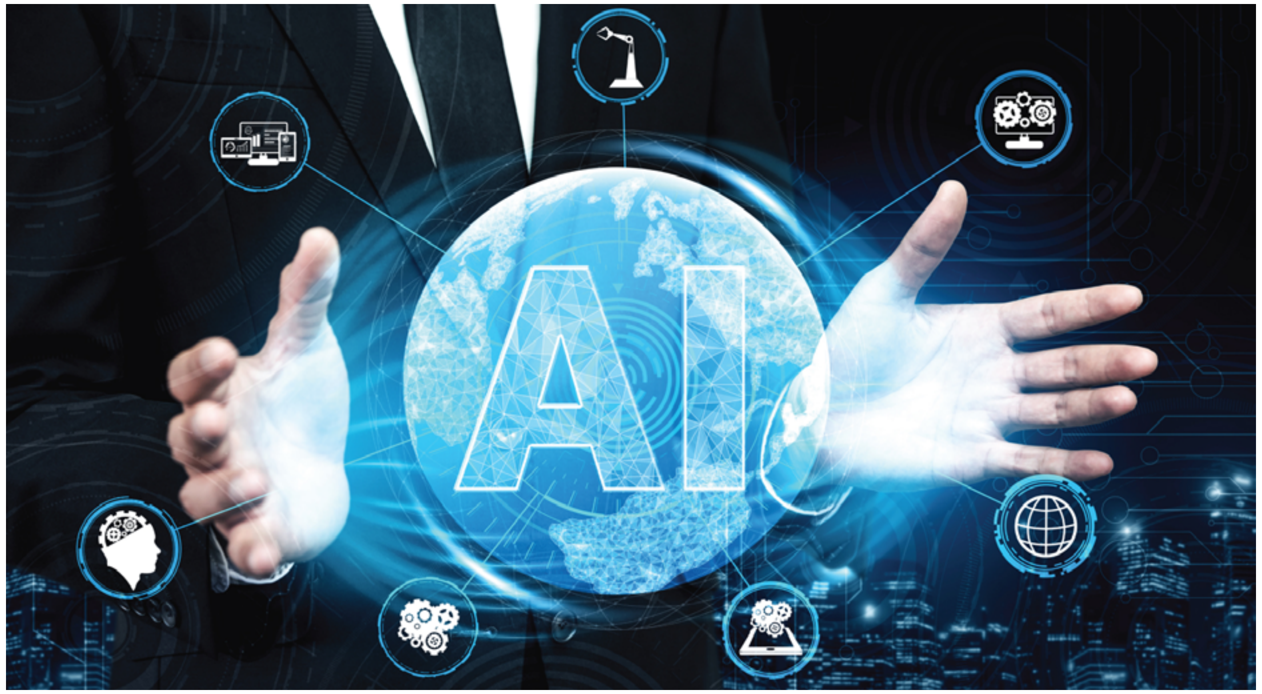
Timing discipline matters as well because it helps buyers align commitments with real demand signals instead of optimistic projections. These practices reduce risk while keeping organizations positioned to act quickly when conditions improve.

What Will Drive the Next Class 8 Upswing?

Recovery in Class 8 trucking orders depends on tighter alignment between freight demand and supplier readiness. Fleets and OEMs that pair flexibility with data-driven forecasting gain clearer signals on when to commit capital and capacity. This creates a competitive edge in a market where timing matters as much as volume.

BACK TO TABLE OF CONTENTS

By BRIDGET MCCREA



6 Ways to Close the AI Confidence Gap

New insights from Accenture signal a real need to get employees on board with and involved in more AI initiatives and conversations.

The pace of change in business isn't just picking up—it's compounding on itself. What took a year to unfold in 2023 now happens in a quarter, and leaders know they're facing more disruption this year than they saw last year. The question isn't whether things will keep accelerating, but whether organizations can actually handle it.

Artificial intelligence (AI) is driving most of this momentum and has moved well past the pilot program stage and into the daily reality of how companies operate. But while executives bet big on this technology, a disconnect is forming between the C-suite and everyone else, according to new research from Accenture.

In its latest *Pulse of Change* report, the company says that:

- 82% of C-suite leaders expect a higher level of change in 2026 versus one year ago (a 24-percentage-point gap compared to what employees think).
- 55% of C-suite leaders feel prepared for technological disruption in 2026, up from 49% from last year.
- 71% of leaders rank investment in digital tools as their top strategy for managing change, up sharply from 53% in 2025.
- AI remains the centerpiece of 2026 investment strategies, with 86% of C-suite leaders planning to increase AI investment in 2026.
- 78% of them now see AI as more beneficial to revenue growth than cost reduction, up from 65% in 2024.
- 32% of C-suite leaders use AI tools daily in their work, up from 8% in 2024.

But here's the disconnect: Accenture says worker confidence in organizational response remains uneven. "The positivity reverberating across the C-suite does not align with what their workforce is experiencing, even though talent is the primary accelerator of AI scale," the firm points out, noting that:

- 23% of C-suite leaders say improved access to skilled talent and training would accelerate their ability to implement and scale AI.
- 38% of workers believe their organizations can respond effectively to technological disruption, and just 30% feel confident about how their company will handle talent disruption.
- 48% of workers feel secure in their jobs, down 11 percentage points from 59% compared to last year.
- 59% also believe that young professionals are having a harder time finding jobs due to automation and AI.

6 Ways to Bring People Along on the Journey

Right now, Accenture says AI is widely seen as a driver of revenue growth, even though just 32% of survey participants have achieved "sustained, enterprise-wide AI impact." About one-third of employees say they regularly work with AI agents, and just 27% say they're comfortable delegating tasks to those agents.

Some employees feel left out of the AI conversation and are unsure how the technology will ultimately affect their livelihoods. For example, just 20% feel like active co-creators in how AI changes their work and only 17% enjoy using AI, and seek new ways to apply it (down from 21% last year). Finally, 13% frequently encounter misleading and low-quality outputs when using AI.

Here are six ways companies can bring employees into the AI conversation:

1. **Communicate early and often.** Don't just introduce tools and hope they're used. Tell employees why they're being implemented and how they'll change their day-to-day work.
2. **Invest in hands-on training.** Move beyond webinars and give employees structured opportunities (e.g., sandbox pilots and guide use-case workshops) to experiment with AI tools.
3. **Get input from the frontlines.** They can tell you what slows them down and what would actually make a difference.
4. **Make it safe to try things.** Give teams room to test AI ools and talk openly about what worked and what didn't.
5. **Be honest about what changes and what doesn't.** Show employees how AI skills fit into their future roles.
6. **Set aside time for testing and feedback.** Build short, focused sessions into the workweek where teams can apply AI to real tasks and compare results.

BACK TO TABLE OF CONTENTS

By AVERY LARKIN

New Efforts to Strengthen U.S. Critical Materials Supply

An innovative federal lab is applying its research capabilities to strengthen domestic mineral extraction and processing.

The U.S. relies heavily on foreign sources for many of the critical materials used in defense systems, advanced manufacturing, energy technologies and electronics. In many cases, U.S. companies import not only raw materials but also refined and processed inputs from a small number of countries.

According to the U.S. Geological Survey's 2024 Mineral Commodity Summaries, the U.S. is 100% import reliant for at least 12 critical minerals and more than 50% reliant for many others used in semiconductors, batteries, defense systems and renewable energy technologies. "In several cases, processing capacity is concentrated in just one or two countries," USGS says, "increasing exposure to supply disruption and geopolitical tension."

Federal reviews warn that this dependence exposes the supply chain to disruption, price volatility and geopolitical risk. Indeed, the White House has identified processed critical minerals as a national security concern tied directly to import reliance. One of the Department of Energy's 17 national labs is stepping in to help minimize this dependence. Idaho National Laboratory (INL) says it's using its geoscience expertise and advanced technologies to develop more efficient methods for locating, extracting and processing critical materials.

"Critical materials and metals are crucial to our daily lives; we rely on them," said Travis McLing, a subsurface research scientist at INL, in "Securing America's critical materials supply chain." "However, we depend heavily on foreign entities, jeopardizing our technological leadership, modern lifestyle and national security."

Expanding Domestic Extraction & Processing

According to INL, its geoscientists study the location and distribution of critical materials and analyze how to extract them efficiently. These materials can come from mining, recycled electronic waste (such as computers and cellphones), industrial byproducts, geothermal brines, phosphate and mining waste. INL researchers explore every potential source to lay the groundwork for more strategic and efficient resource development.

INL's geology team examines how different materials are bonded in ore bodies, including both desired elements and hazardous ones. Once these bonds are understood, the information is passed to separation chemists who develop more efficient and environmentally friendly methods for isolating the desired materials.

"We've embraced the national lab charge to do hard things, and we have a proven history of working successfully and safely in challenging environments," said McLing, in the article. "For example, many ore bodies contain elements like arsenic, mercury or naturally occurring radioactive materials that complicate mining and research. Yet we're able to study them safely and extract the critical materials."

Key Capabilities and Technical Strengths

As the nation's center for nuclear energy research and development, INL's capabilities include:

- **Advanced characterization tools.** The Microscopy and Characterization Suite uses powerful tools like electron microscopes and X-ray systems to identify and map critical minerals at very small scales.
- **Next-generation exploration.** Scientists at INL use advanced software to integrate geologic, geophysical and geochemical data to build high-resolution models of underground formations.
- **AI and digital twins.** INL uses artificial intelligence (AI) and digital twin technology to speed up mineral discovery and optimize production. Digital twins are virtual replicas of mineral systems and processing operations that allow scientists to test and refine strategies before implementation. AI models trained on large geoscience datasets help predict deposit locations, identify patterns and support real-time decision making.
- **Simulating real-world conditions.** The Multiphysics Object-Oriented Simulation Environment (MOOSE) is an advanced software tool that helps scientists and engineers simulate complex physical processes such as heat, mechanical stress and fluid flow. Its versatile modeling capabilities apply to fields like nuclear engineering, energy systems, environmental science, materials science and geoscience.
- **Smarter processing and recovery.** INL is working on increasing the efficiency of comminution (the process of grinding and crushing rocks to a more manageable size) and beneficiation, which improves ore quality by separating valuable materials from rock.

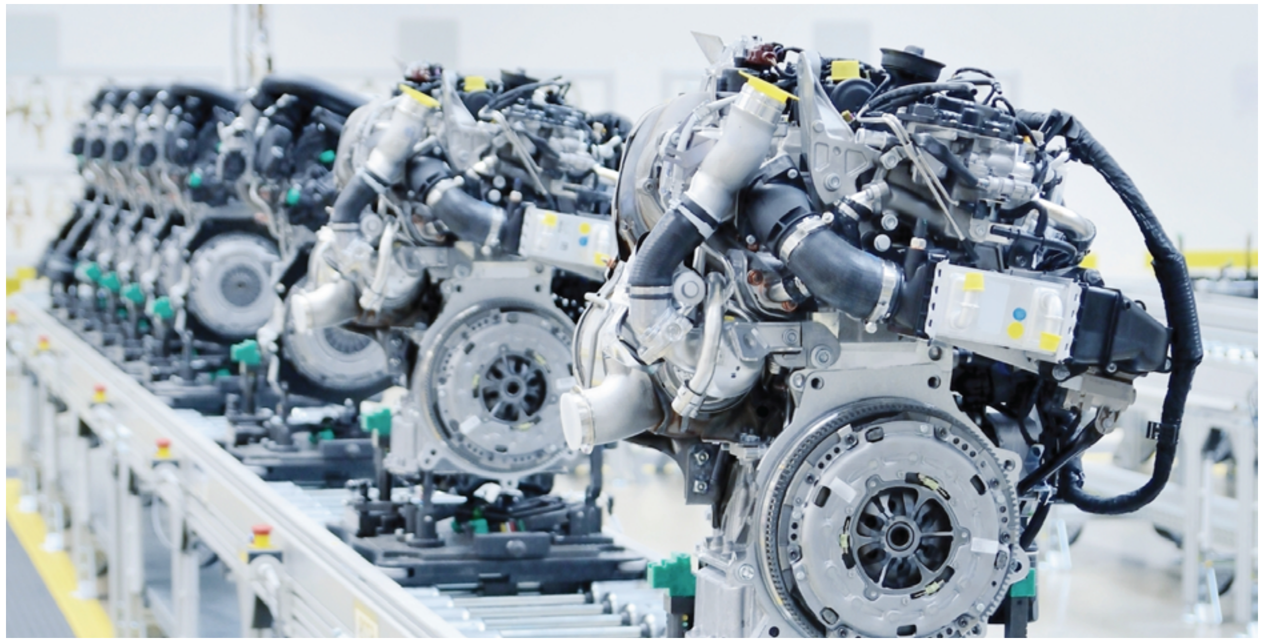
Supporting a Broader, Multi-Lab Effort

Looking ahead, INL says its efforts are "pivotal in ensuring a stable and secure supply of these essential resources." Its capabilities and expertise allow INL to contribute to the Minerals to Materials Supply Chain Facility (METALLIC), a multi-laboratory initiative to accelerate the development and commercialization of technologies for critical materials extraction and production.

INL's role in METALLIC includes supporting research in separation science, AI, pilot-scale processing, feedstock beneficiation and critical material extraction and separation. "INL benefits from its proximity to the Intermountain West region, which is rich in critical materials," said McLing. "Our research teams are collaborative; we share what we learn to improve the work of all our teams and, by extension, the economic value and efficiencies for our partners."

BACK TO TABLE OF CONTENTS

By BRIDGET MCCREA



U.S. Manufacturing Shows Signs of Recovery in January

The January PMI offers early signs that manufacturing conditions are improving in the U.S

As if waking up from a long winter's nap that lasted a full year, the U.S. manufacturing sector showed signs of improvement and growth in January. According to the January 2026 ISM Manufacturing PMI Report, the volume of new orders and production both grew during the first month of the year. That's a good sign for a sector that's been contracting for the last 12 months.

The news gets better: The index reached its highest point since February 2022, according to ISM, which says PMI hit 52.6% in January, a 4.7-percentage-point increase compared to the seasonally-adjusted reading of 47.9% in December. A PMI reading below 50 indicates contraction in manufacturing activity, while those above 50 signal expansion. Over time, ISM notes that a PMI above approximately 47.5 is generally consistent with expansion in the overall U.S. economy.

"In January, U.S. manufacturing activity returned to expansion territory, with improvements in all five subindexes that make up the PMI (new orders, production, employment, supplier deliveries and inventories)," Susan Spence, chair of the ISM Manufacturing Business Survey Committee, said in the report, "though the employment and inventories indexes still remain in contraction."

Here's how the other metrics played out in January:

- The New Orders Index expanded for the first time since August, with a reading of 57.1%, up 9.7 percentage points over December's seasonally adjusted figure of 47.4% and its highest since February 2022 (59.7%).
- The Production Index (55.9%) was 5.2 percentage points higher than December's seasonally adjusted figure of 50.7% and the highest since reaching 58.1% in February 2022.
- The Prices Index remained in expansion (or "increasing" territory), registering 59%, or 0.5 percentage point higher than December's reading of 58.5%.

- The Backlog of Orders Index registered 51.6%, up 5.8 percentage points compared to the 45.8% recorded in December and the highest reading since August 2022 (when it was 53%).
- And, the Employment Index registered 48.1%, up 3.3 percentage points from December's seasonally-adjusted figure of 44.8%.

Getting Ahead of Expected Increases

According to Spence, three key demand indicators (new orders, backlog of orders and new export orders indexes) all expanded in January, although the customers' inventories Index remains in "too low" territory and is contracting at a faster rate. "A 'too low' status for the Customers' Inventories Index is usually considered positive for future production," she explained.

"Although these are positive signs for the start of the year, they are tempered by commentary citing that January is a reorder month after the holidays," she cautioned, "and some buying appears to be [focused on] getting ahead of expected price increases due to ongoing tariff issues."

ISM says the nine manufacturing industries reporting growth in January were printing & related support activities; apparel, leather & allied products; fabricated metal products; primary metals; transportation equipment; machinery; chemical products; food, beverage & tobacco products; and computer & electronic products.

And the eight industries reporting contraction in January were textile mills; wood products; nonmetallic mineral products; electrical equipment, appliances & components; petroleum & coal products; plastics & rubber products; furniture & related products; and miscellaneous manufacturing.

What the Manufacturers Had to Say

Manufacturing purchasing and supply chain professionals shared their thoughts on the current state of the industry, with one computer and electronics products maker mentioning tariff uncertainty as the biggest roadblock right now.

"Another round of emotionally charged tariffs seems imminent, changing the landscape once more. Movement of custom product out of China continues, but the progress is slow with new qualifications required for transitioned materials and assemblies."

Another transportation equipment manufacturer said that "hope" is the word of the year for its sector. "Across the board, buyers continue to stand on the sidelines. As we enter 2026, every conversation revolves around hope that the second half of 2026 starts the turnaround. It's hard to set strategy on hope, but thanks to the uncertainty brought about by this administration, here we are."

BACK TO TABLE OF CONTENTS

January 2026 Supply Chain News Wrap-up

Technology policy, fulfillment models and capacity challenges drove key supply chain developments in January.

The new year dawned with a series of supply chain developments tied to technology, manufacturing and delivery operations. Governments moved to tighten oversight of critical technologies, retailers continued testing faster fulfillment models, and manufacturers worked through ongoing supply and capacity challenges. Companies pushed forward with new delivery options, policymakers focused on securing sensitive supply chains, and logistics providers adjusted how last-mile access is priced and managed. Here's a look at some of the supply chain-related news that made headlines last month.

READ MORE

By AVERY LARKIN

A New Approach to Managing Critical Mineral Supply Risks

A new government program focuses on building a domestic stockpile to address ongoing reliance on foreign mineral supplies.

Minerals like cobalt, lithium, graphite and rare earths are all in high demand. The automotive, aerospace, military and high-tech sectors all use a high volume of these raw materials in their products.

Vehicle manufacturers use lithium, cobalt and graphite in electric vehicle batteries, with rare earths supporting electric motors. Aerospace producers rely on rare earths and specialty minerals in engines, avionics and electronic systems. The military depends on cobalt and rare earths for everything from guidance systems and sensors to secure communications equipment.

Because most of these minerals can't be produced or processed at scale in the U.S., those and other domestic industries are heavily dependent on foreign sources. For example, China is the dominant processor of cobalt, graphite and rare earths like cerium, lanthanum and neodymium, which are commonly used in permanent magnets and electronic components.

Citing the 2025 USGS report, the Council on Foreign Relations says China supplies more than 50% of U.S. demand for 21 nonfuel mineral commodities, or naturally-occurring materials like copper and iron. Canada also supplies 21 of these minerals, followed by Germany, Brazil, Japan, Mexico and South Africa. "Data also shows that the U.S. is 100 percent import-dependent on 12 minerals classified by the U.S. government as critical," CFR reports, "and more than 50 percent import-dependent on 28 additional minerals."

Reducing Reliance on Foreign Sources

The current presidential administration has made reducing U.S. reliance on foreign sources for critical minerals a priority and this month announced Project Vault, which is focused on building a domestic stockpile of key materials rather than expanding domestic mining or processing capacity. According to the Export-Import Bank of the United States (EXIM), this federally backed financing effort will create and maintain a U.S.-based stockpile of critical minerals that domestic manufacturers rely on, but are largely sourced from abroad.

The program is structured around long-term purchasing and storage of key materials, with the goal of ensuring manufacturers can access them during periods of market disruption, supply shortages or geopolitical instability. "Project Vault is designed to support domestic manufacturers from supply shocks, support U.S. production and processing of critical raw materials, and strengthen America's critical minerals sector," said EXIM Chairman John Jovanovic in the announcement.

Jovanovic explains that the new reserve will help U.S. manufacturers "compete, grow, and lead globally while creating jobs domestically, strengthening our economy, and advancing the national interest."

Getting Industry & Government on the Same Page

To fund the effort, EXIM's board of directors approved a direct loan of up to $10 billion to Project Vault. The money will provide long-term financing to a partnership between original equipment manufacturers and private sector capital providers. EXIM expects original equipment manufacturers (OEMs) like Clarios, GE Vernova, Western Digital and Boeing to be among the early participants.

The project has garnered positive feedback from numerous OEMs that rely on the minerals that would otherwise have to come from foreign sources. "As we rise to the challenge of meeting America's and the world's rapidly growing needs for key power and grid equipment, the need to grow supply chains and access to critical minerals has never been more important," said GE Vernova CEO Scott Strazik.

"We're thankful for the historic leadership around Project Vault," he added, "a timely initiative that will advance more access to affordable, reliable power and strengthen energy security for American families, communities and partners."

Brian Falik, president of Mercuria Energy Americas, is another supporter of the new initiative. "Project Vault represents a transformative approach to strategic sourcing, and Mercuria is honored to contribute to this historic effort," he said. "By aligning private capital with national security objectives, we're reinforcing the foundations of American manufacturing and ensuring long-term access to critical raw materials. This partnership is a testament to what's possible when industry and government move decisively together."

BACK TO TABLE OF CONTENTS

By BRIDGET MCCREA

New Right to Repair Law Focuses on Digital Equipment

Right to Repair laws are expanding to digital equipment, forcing manufacturers to rethink repair access and service models.

It's fairly common for manufacturers to use proprietary parts, software and hardware in their products, making it difficult for users to do their own repairs. Everything from smartphones to computers to appliances are designed this way, meaning only "authorized technicians" can make them fully operational again.

A movement known as "Right to Repair" is underway and focused on breaking down those barriers. The goal? Make it so that buyers have the freedom to fix the products they own. According to law firm Crowell, Right to Repair laws generally require manufacturers to give consumers and independent repair providers access to the tools, parts and information to repair certain consumer products and other equipment on fair and reasonable terms.

"Fair and reasonable terms require the manufacturer to offer these resources (and any applicable discounts) at the same (or similar) costs and terms as those given to authorized repair providers," the firm explains, noting that "many of these statutes were created specifically to avoid electronic waste, eliminate barriers and limitations to third-party repair, and to provide consumers with better options to repair their devices."

Digital Equipment on the Radar

The Right to Repair movement dates back to 2023, when a few U.S. states enacted laws that gave consumers access to the parts and resources needed to repair their own products, without relying on the product's original manufacturer. More recently, California, Colorado, Minnesota, New York, Massachusetts and Oregon put new rules in place to give consumers direct access to "tools, parts and information for the repair of various electronic devices and equipment, including digital products and agricultural machinery," Crowell reports.

Last month, Colorado introduced a new law requiring electronics manufacturers to provide access to parts, tools, software and repair documentation for many products that are either sold or first used in the state. House Bill 24-1121 extends the state's current Right to Repair laws to include digital electronic equipment.

Beginning Jan. 1, 2026, the act expanded the scope of the right-to-repair statutes to include digital electronic equipment manufactured and sold or used for the first time in Colorado on or after July 1, 2021. The law states that makers of digital electronic equipment can no longer:

- Prevent an independent repair provider or owner from installing or enabling replacement parts;
- Reduce the functionality or performance of the digital electronic equipment; or
- Cause digital electronic equipment to display misleading alerts or warnings about unidentified parts.

The act includes exemptions for marine vessels, aviation and motor vehicles; medical devices other than powered wheelchairs; certain safety and security equipment; certain construction- and energy-related equipment; and video game consoles, according to Colorado General Assembly.

What Manufacturers Should Know

Colorado's new law doesn't require manufacturers to provide source codes or tools that would bypass privacy or anti-theft protections, but it does restrict parts pairing, *Resource Recycling, Inc.* reports. This software practice links individual components to a device through unique identifiers. "For equipment sold or first used in Colorado after Jan. 1, 2026," the publication explains, "manufacturers can't use parts pairing to prevent installation of replacement parts, reduce functionality or performance, or display misleading alerts about unidentified components."

As the Right to Repair movement continues to spread nationwide, Crowell says manufacturers should work to understand these laws and how they might impact their businesses. "…[providing] repair tools, parts, and documentation may initially increase operational costs and logistical complexities," the law firm points out. "Companies will need to reevaluate their service models, terms of service, agreements with authorized repair providers, and warranty policies to ensure compliance."

BACK TO TABLE OF CONTENTS

By ELLIE GABEL

The "Lights-Out" Warehouse: A Feasibility or a Costly Dream?

Lights-out warehouses represent an automated future where operations run without on-site human workers, leveraging advanced robotics and management systems to increase efficiency and reduce errors.

The concept of a lights-out warehouse currently exists between ambition and reality. As automation technologies advance, supply chain leaders are exploring what is technically possible while considering financial and logistical capabilities. Understanding how these facilities work is the first step toward a stable transition.

The Allure of the Lights-Out Concept

A "lights-out" warehouse refers to a highly automated facility that can operate with no need for human workers on-site. Sometimes, it literally runs in the dark, since machines do not require lighting or other similar accommodations.

Machines handle storage and movement, usually coordinated by advanced software systems. This concept has gained traction as many companies adopt these new technologies, leading to automation success stories worldwide.

For example, Brightpick has released multiple devices that enable lights-out fulfillment for companies. Its Autopicker 2.0 can boost the warehouse's throughput by 50% per robot, equating to 70 to 80 picks per hour.

Is a Lights-Out Warehouse Worth the Investment?

A completely lights-out warehouse operation offers some compelling benefits. It enables true 24/7 operations, as automated systems do not require breaks or shift changes. When properly implemented, automated picking and storage systems can also reduce human error.

As a result, companies can process orders more quickly, which is especially important in e-commerce and retail. For example, Pitman Creek Wholesale, a sport fishing company, reported a 600% increase in sales within eight years of implementing automation-related changes to its warehouse.

However, attempting these operations can also present barriers. One of the most glaring is the high upfront costs. Automated systems, robots, software integration and facility redesigns can require a substantial amount of capital and labor.

They also have complex setup requirements, especially with their numerous moving parts. Companies may need to hire specialists or skilled technicians to ensure proper installation and configuration.

With these factors in mind, leaders face the challenge of balancing long-term operational savings against the financial risk associated with setting up a lights-out warehouse.

Core Technologies Powering the Dark Warehouse

A lights-out warehouse relies on two main categories of technologies. First, its brain, which is powered by warehouse management systems and the industrial Internet of Things (IIoT). Second is the brawn, powered by various types of robots and heavy machinery.

Warehouse Management Systems

The warehouse management system (WMS) is the facility's command center. For traditional warehouses, a WMS usually tracks inventory and manages labor. In lights-out environments, however, its role expands, managing autonomous equipment and resolving issues with minimal human intervention.

Industrial Internet of Things

The IIoT provides data that enables the lights-out warehouse to function autonomously and make informed decisions. It comprises sensors and various devices that continuously report on performance and environmental conditions.

Automated Storage and Retrieval Systems

Automated storage and retrieval systems (AS/RS) do the heavy lifting in these dark warehouses, comprising robots, cranes and other machines to store and retrieve items on a larger scale. Many modern warehouses rely on autonomous mobile robots (AMRs) and driverless forklifts to enhance operational efficiency. The global forklift market has made over $134 billion in revenue in 2024 and is expected to reach $289 billion by 2030.

The Necessary Human Element

The term "lights-out" doesn't necessarily mean phasing out the human element entirely. Instead of having people handle manual picking and transport tasks, labor needs will shift toward system monitoring, maintenance, data analysis and continuous improvement. Workers become supervisors instead of handling repetitive jobs, which emphasizes the importance of upskilling and training.

However, companies do need to be mindful of workers' conditions and safety as they transition toward full automation. Multiple reports have revealed a correlation between warehouse automation and worker injuries.

A Phased Approach to Automation

Fully lights-out warehouses are achievable, but they aren't universally practical. For most organizations, a phased approach is most feasible, prioritizing areas that can deliver the most impact and building on these systems over time. As a result, companies can enjoy the benefits of automation while maintaining financial and operational stability.

BACK TO TABLE OF CONTENTS

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BACK TO TABLE OF CONTENTS