



Raise your AI short game to boost supply chain agility



Introduction

As we approach the second half of the decade, compound volatility¹ remains a primary concern. Disruptive risk to growth and demand for structural change has left companies with little choice but to invest in initiatives that rearchitect supply chain operations for the long-term. This involves redesigning operating models to enhance resilience and ensure sustainable success in an ever-evolving business landscape.

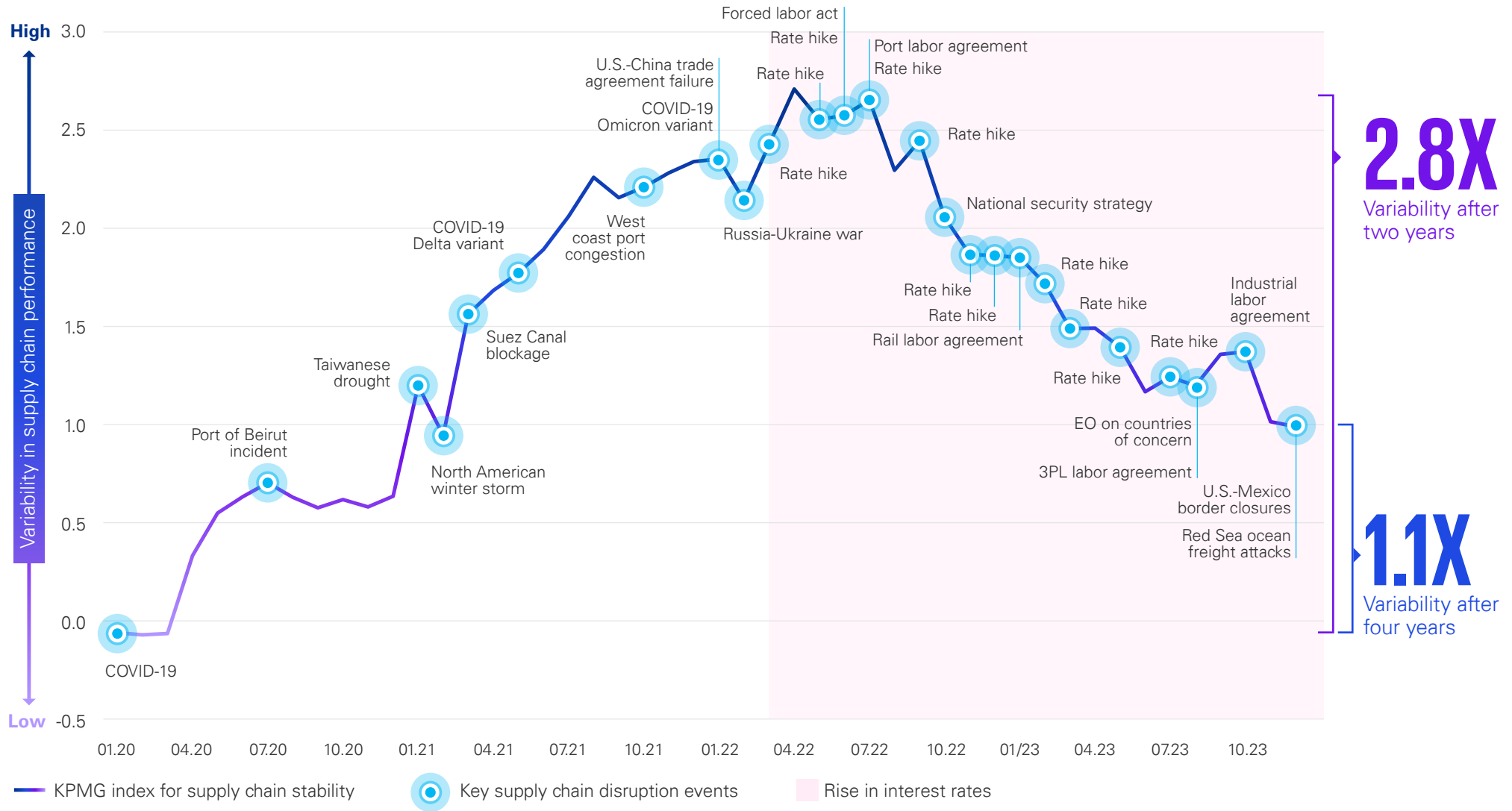
But investing in future outcomes has proven to be challenging, especially during an inflationary period characterized by the most aggressive interest rate hikes the U.S. has seen in over four decades. And while inflation continues to cool, the descent on rates is expected to be slower than the ascent.² Consequently, interim solutions are needed to provide some much-needed supply chain flexibility amidst economic complexity.

¹ KPMG 2023 CEO Outlook - Growth in an era of compound volatility, KPMG LLP, Oct 2023

² KPMG Economics - The Fed's Final Round, KPMG LLP, Dec 2023

The pandemic induced unpredictable market behavior in its first two years of onset, increasing supply chain variability by three-fold. Although the public health crisis has since subsided, instability lingers due to geopolitical influences on supply and logistics as well as inflationary effects on cost of capital and labor.

Stability of U.S. supply chains since 2020



Source: [KPMG Supply Chain Stability Index in association with ASCM](#), KPMG LLP, Jan 2024

Retailers confronted sporadic inventory shortages and gluts, accelerating supply chain modernization initiatives. Manufacturers hit physical thresholds of under- and over-utilization, prompting substantial investments in new facilities and equipment. And logistics operators grappled with balancing worker rights and headcount, leading to ramifications that affect reputability and profitability for years to come.

As companies prioritize long-term efforts, compound volatility continues to create short-term stress, making it increasingly difficult to maintain focus. Ultimately, playing the long game demands greater focus on the short game. This sentiment

is shared by executives in our latest CEO Outlook study, where chief officers are investing in long-term growth strategies while remaining agile in response to unforeseen challenges.⁴

To ensure agility in operations, anticipating market volatility to make complex network decisions is vital. This is a capability that is well-served by artificial intelligence (AI), with 57 percent of executives believing it will help them achieve their short-term goals. With the right approach, AI can improve fiscal year performance while accelerating outcomes of long-term investments.⁵

⁴ [KPMG 2023 CEO Outlook - Growth in an era of compound volatility](#), KPMG LLP, October 2023

⁵ [KPMG Global Tech Report 2023](#)



57% of executives believe AI will help achieve ambitions in the short-term

The long game

Long-term supply chain initiatives abound, but there are few that rewire the core operating model to enable future growth. In recent years, multi-year programs have centered on digital renovation, network re-engineering, and workforce restructuring.

Digital renovation

Over the past 24 months, more than 60 percent of executives reported improved performance from digital transformation efforts.⁶ For operations, transformation is often anchored in modernizing IT systems for planning, manufacturing, transportation, and warehouse management. Given the extensive scope and the scale of supply chain networks, implementations are expected to continue for the next few years.

Network re-engineering

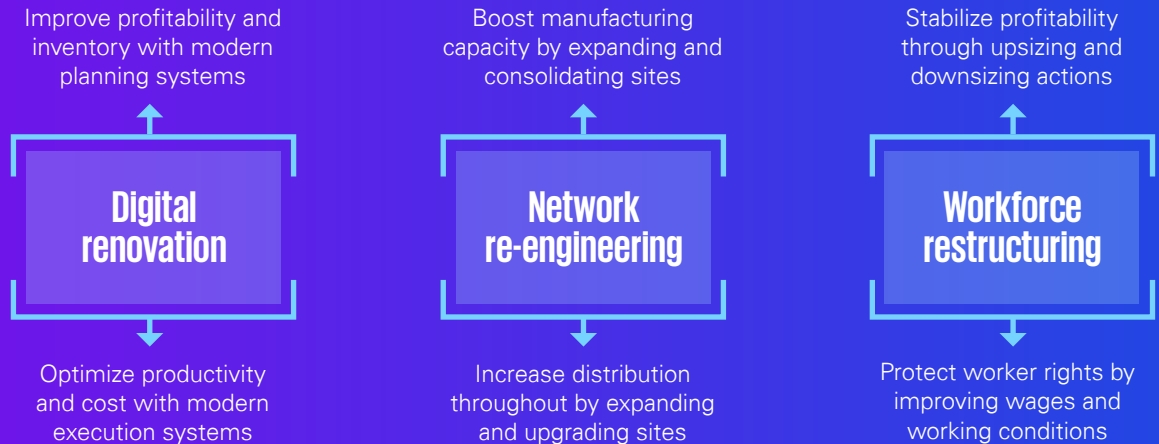
New construction completions for industrial and logistics facilities increased by 33 percent compared to the previous year. However, new construction starts declined by 64 percent as companies postponed expansion plans, awaiting greater economic clarity.⁷ These delays are extending completion timelines by several years, shifting some of the focus towards upgrades to existing facilities such as plants, distribution centers (DCs), stores, and other outlets.

Workforce restructuring

During a year of workforce downsizing that experienced a 198 percent increase in layoffs compared to the previous year,⁸ many of the largest U.S. industrial manufacturers and logistics operators have committed to new labor agreements. These negotiated agreements raise manufacturing and distribution workforce wages by more than 30 percent over the next four to five years.⁹

These initiatives pave the way for future growth by improving operations performance, network capacity, and labor productivity. However, they also often come with multi-year payback periods, substantial upfront investments, and other unforeseen cost implications.

Key initiatives and objectives for long-term growth



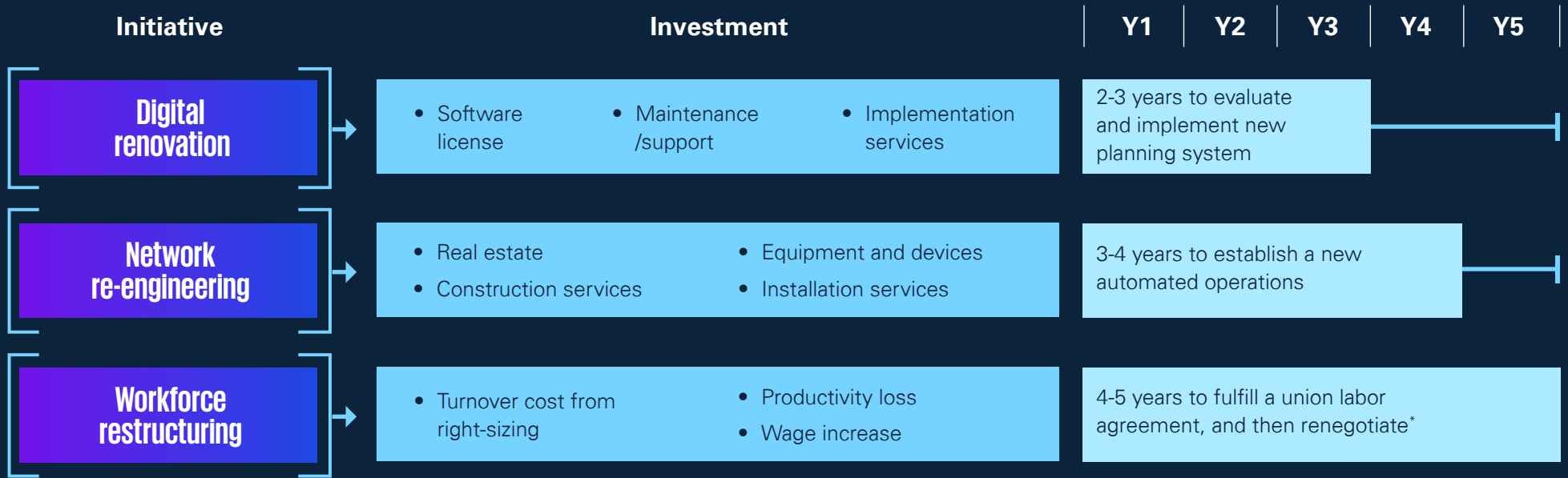
⁶ [KPMG Global Tech Report 2023](#)

⁷ Rise in construction completions increases vacancy rate, CBRE Research, Oct 2023

⁸ Layoffs Are Up Almost 200% So Far In 2023 - These Industries Hit Hardest, Forbes, Oct 2023

⁹ UAW members at Ford and Stellantis approve contract, CNN, Nov 2023

Implications for long-term initiatives



*UAW members at Ford and Stellantis approve contract, CNN, Nov 2023

Due to the end-to-end nature of supply chain transformation initiatives, IT modernization programs often encounter risks due to the scope and scale of processes, networks, and data. This can extend implementation timelines with additional phases to accommodate multiple geographies over several years.

New facilities and equipment represent fixed asset capacity that is held hostage by fixed procurement and installation timelines. If demand shifts in the

short term, alternative solutions are necessary to address unexpected capacity needs until assets are in place.

While higher worker compensation helps address wage disparity, it also affects corporate profitability. To offset the impact, supply chains must find savings in other areas, often leading to right-sizing actions and other investments in productivity improvement.



The short game

While the long game helps reset a fixed operating model to enable future growth, the short game activates agility to address volatility in the near-term and help stabilize performance within the fiscal year.

In recent years, AI has emerged as a key enabler of operations agility. From discriminative models that sense fluctuations in market demand to generative algorithms that help negotiate supplier contracts, AI has delivered material impact to supply chain performance. And in our latest research, speed to value is no longer the obstacle it once was, as AI is now considered the most crucial technology to achieve business objectives in the short-term.¹⁰

Moreover, AI algorithms generate incremental value at a lesser cost than long-term endeavors. As 67 percent of executives are expected to accomplish more with less budget than in previous years,¹¹ it presents an opportune moment for supply chains to improve their short game through a more measured application of AI.

In our experience working with leading supply chain organizations, there are key practices to consider when utilizing AI for increased agility. The following section outlines guiding principles to accelerate AI impact on operations and how companies have applied them to realize incremental value in the short-term.

^{10,11} [KPMG Global Tech Report 2023](#)



1 Progress over perfection

There is a widely-held belief that massive data migration and a modern supply chain application stack are required before being able to reap the benefits of AI. While certainly beneficial, these are not fixed requirements. To accommodate data readiness and IT system hurdles, companies can incrementally deploy AI to achieve incremental value within months, not years.

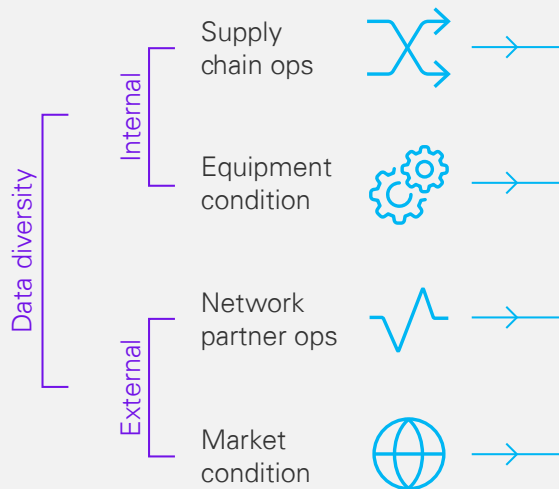
AI implementation follows an agile approach that allows capability to be delivered in increments. This means that it can be deployed with partial data, a subset of algorithms, and gradual levels of automation so that value can be realized sooner rather than later.



Delivering incremental value with an incremental approach

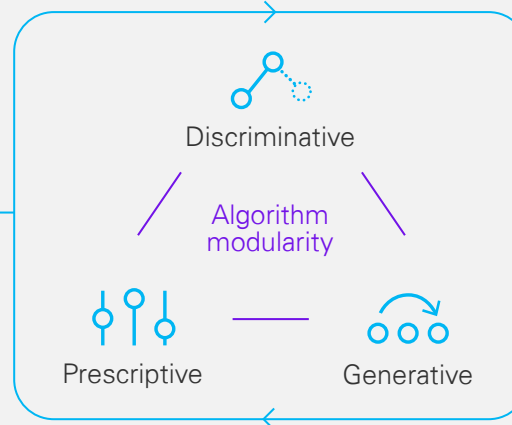
Incremental data

Data input is scoped with diverse datasets, providing flexibility to navigate availability issues



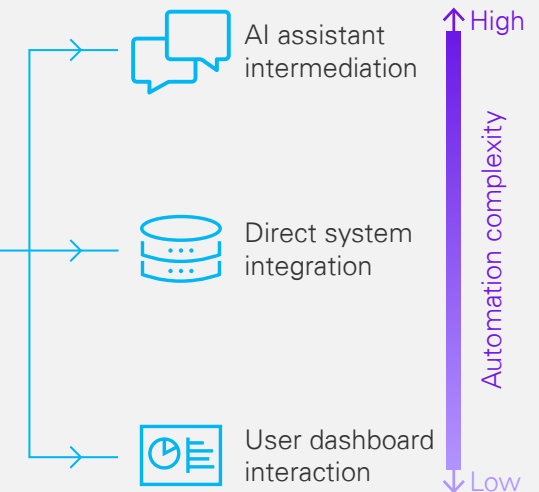
Incremental algorithms

AI model is built one algorithm at a time, delivering intelligence earlier through increments



Incremental automation

Consumption of output is automated over time, expediting user accessibility in gradual stages





A supply chain planning organization launched an initiative to sense customer demand with AI, delivering capability in four increments. The first increment produced an algorithm that interpreted market signals such as local events, weather, and social trends. Within four months, planners were using a new forecast that beat current accuracy by 5 percent. Three months later, second and third increments were delivered that accounted for price

and promotion elasticity, increasing accuracy by another 2 percent.

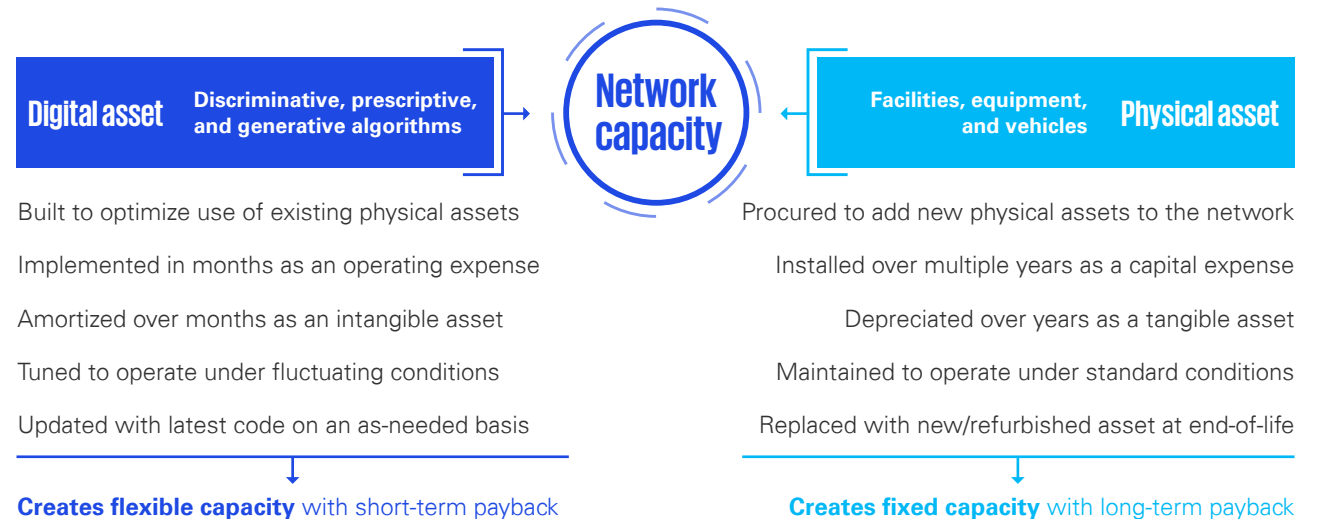
For the two years that followed, AI was used to reap inventory benefits in the short-term, while a longer-term initiative to implement a modern supply chain planning system was underway. It was not until this stage where they delivered the fourth and final increment, embedding and automating AI in the new system to deliver a more cumulative outcome.

2 Algorithms over assets

The inflationary cost of capital and the struggle to secure financing has hampered supply chain network expansion initiatives over the past year. And while the worst of U.S. rate hikes may be over,¹² economic uncertainty remains, leading companies to retrofit existing factories and sublease over-expanded DCs to lower the cost of excess capacity.¹³ While network engineering provides fixed assets in the long run, AI offers a more flexible option that unlocks physical capacity through digital means.

Similar to how lean practices are used to improve asset efficiency at a plant or DC, AI advances the cause through use of sophisticated algorithms to determine the most optimal use of assets, freeing up additional capacity to do more with less capital.

Creating network capacity in the near-term



¹² [Incomes rise faster than spending](#), KPMG Economics, Nov 2023
¹³ [Industrial sublease space availability on the rise](#), CBRE, Jun 2023

A manufacturing organization struggled to effectively address short-term demand volatility at one of its plants, leading to a capital request to procure capacity by installing several new production lines over the following year.

To evaluate alternatives, a parallel initiative was launched at the plant to explore how AI might be used to improve yield. Over the course of six weeks, an algorithm was trained to understand worker, material, and machine behavior, generating an optimized schedule for every shift. In the end, the algorithm increased overall plant capacity by 20 percent and subsequently nullified the capital request for expansion.



3 Resilience over rightsizing

The supply chain workforce continues to struggle with challenges around labor attrition, activism, and availability. Over 73,000 manufacturing, transportation, and warehouse workers participated in over 80 labor strikes across more than 100 U.S. locations this past year.¹⁴ This incurred productivity losses that exacerbate longstanding operations

issues in employee absenteeism, worker rights, and organizational turnover.

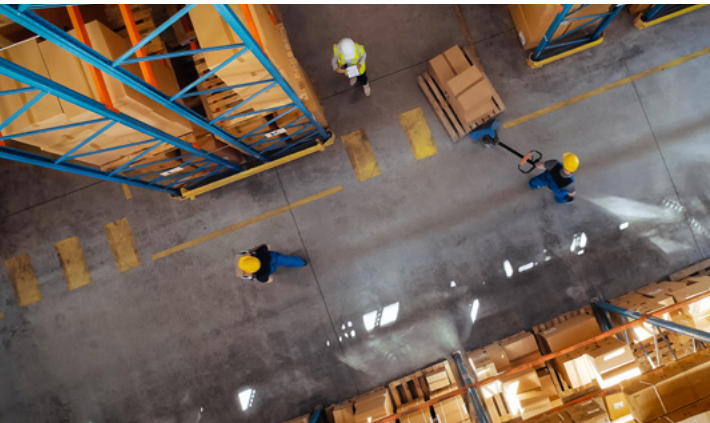
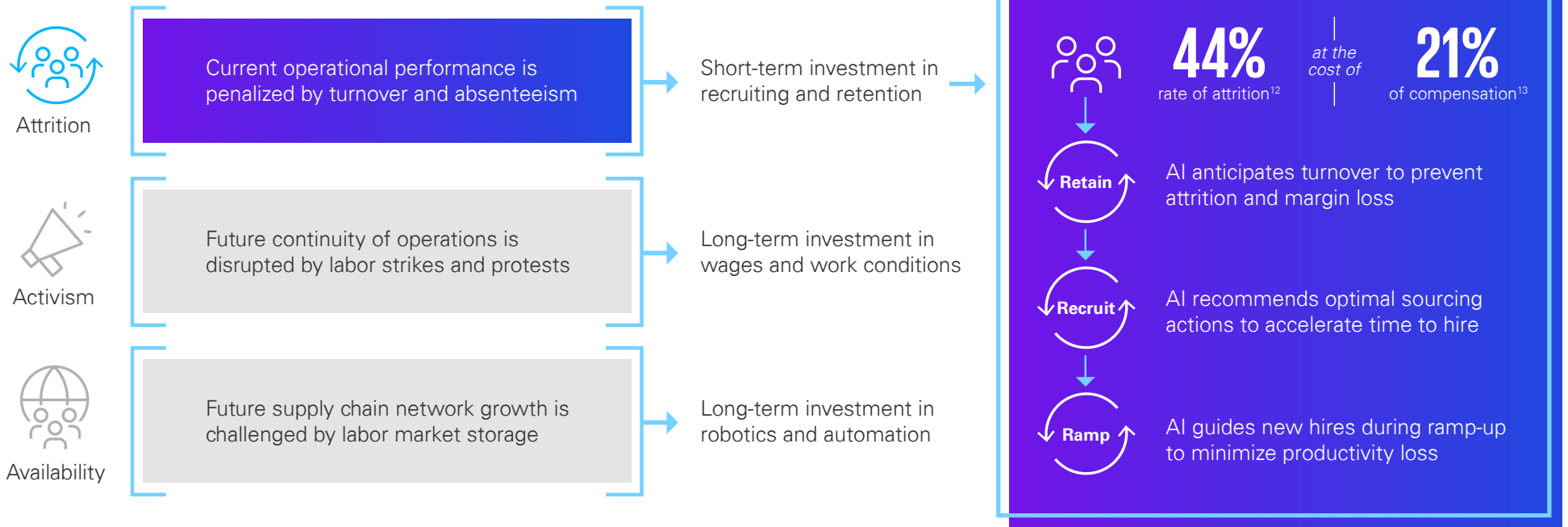
As facilities continue to develop and pilot robotic automation strategies for the long-term, the organizational right-sizing actions being taken today are not enough to keep up with market volatility

in the short-term. While AI is expected to enable worker productivity gains through use of generative algorithms,¹⁵ it can also help avoid productivity losses by anticipating employee behavior and building resilience to labor variation.

¹⁴ ILR Labor Action Tracker, Cornell University, Dec 2023

¹⁵ [Generative AI in supply chain: A path to better returns](#), KPMG LLP, Oct 2023

Avoiding productivity and margin loss in the short-term^{16,17}



A distribution organization experienced over 30 percent in annual turnover of its warehouse associates and truck drivers. As labor issues emerged, predefined retention actions were taken but often late to be effective. This led to perpetual overtime labor cost, recruiting expense, and productivity loss in nearly every case of employee turnover.

To avoid labor risk altogether, AI was used to help shift the organization from reactive retention to

proactive prevention. The algorithm was trained on what variables influenced employee turnover, including compensation, working conditions, and competitive market behaviors.

Within eight weeks, the AI was able to more accurately anticipate when and why an individual would leave their job. This enabled management to become more effective in retention efforts and target a 40 percent reduction in attrition.

¹⁶ Job Openings and Labor Turnover Survey (Manufacturing, Transportation, and Warehousing), U.S. Bureau of Labor Statistics, Oct 2023

¹⁷ There are significant business costs to replacing employees, Center for American Progress, Nov 2012

How KPMG can help

Achieving speed to value with AI is critical. For a supply chain, the stakes are high due to the complexity of networks and demanding expectations around service level, cost, and inventory performance. KPMG is well-positioned to help your organization navigate AI initiatives to realize operations improvement in the near-term while working towards orchestrating an end-to-end supply chain of the future for the long-term. From strategy and business case through design and implementation, we help you rapidly deploy AI through value-driven and responsible AI transformation using our [KPMG Trusted AI](#) approach.

We understand the challenges that supply chain organizations face due to ongoing market volatility and competitive pressures, and work with you wherever you may be in your AI journey to unlock value where it matters most.

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As the Supply Chain AI leader at KPMG, Jim works with operations, analytics, and digital leaders at many of the world's largest companies to create and execute performance improvement strategies enabled by artificial intelligence (AI) including generative AI. His areas of expertise include operations strategy, data science, and digital innovation for planning, manufacturing, and fulfillment operations.



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