

AI Hasn't Fully Paid Off Yet in Logistics. But It Will.

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Logistics companies are not holding back on AI. Nearly every operator has a strategy, a budget, and a growing list of tools in production. And yet almost none of them can point to the financial return, with the possible exception of a few targeted use cases.

In BCG's 2026 AI in Logistics Executive Survey of 30 leading global Logistics players, 97% of executives rank AI as a strategic priority, 70% have an AI strategy, and 67% have a dedicated AI

budget. But only 13% say that AI is delivering measurable financial impact. Put simply, the tools (and the accompanying resource allocation) are going in, but the results are not coming out.

The gap between input investment and concrete output benefits is a deployment problem, not a technological one. AI already touches nearly every part of the logistics value chain, including network planning, demand forecasting, pricing, customer service, invoicing automation, and warehouse robotics. AI has exited the experimental stage and is now a strategic priority that management teams actively marshal budgets to protect.

But breadth of deployment and depth of impact are very different things, and the industry is proving that the hard way. The chasm between the two has several clear causes, and recognizing these can offer access to a scale of opportunity that is worth quantifying.

At BCG, we see the fundamental problem as threefold:

- **Fragmented Data.** AI depends on having clean information flow freely between tools, yet most logistics players must grapple with fragmented, siloed legacy systems that were never designed to talk to one another. AI itself can help solve this, but an industry-wide resolution is still a distant prospect.
- **Isolated Solutions.** Most companies deploy AI as isolated point solutions rather than a connected set of capabilities across a workflow or domain.
- **The Human Gap.** Companies are underinvesting time and capacity in the human side of AI deployment. Many of them haven't established effective processes to make the transition, and they lack the talent and change management practices necessary to sustain adoption. As a result, although logistics players are spending on AI and deploying it across a complex web of use cases, the effects are rarely transformational.

The Foundations Under Repair

The data and integration issue is not unique to logistics, but it plays a large part in the industry's short-term investment gap. Across industries, AI pilots are struggling to reach production, and the failure rate is rising. S&P Global Market Intelligence reported in 2025 that 42% of companies had abandoned most of their AI initiatives, up from 17% a year earlier, and that they scrapped almost half of all pilots before going live.

The logistics industry is already funding efforts to fix this fundamental problem, so the negative trend should ease soon. IT and data have become key areas of investment precisely to resolve the fragmented systems and siloed data that have hampered progress and scaling.

The Confusion in Defining AI Maturity

Much of the confusion about AI in logistics comes from failing to distinguish between three different stages of maturity and to address them accordingly. BCG's maturity assessments place companies on a ladder that has three levels, each of which represents a stage of maturity.

- **Level 1: AI Stagnating.** Most of the industry occupies this level today, using single AI tools aimed at narrow problems such as route planning, invoice processing, or a customer-service chatbot. These point solutions tend to keep AI fragmented rather than connected.
- **Level 2: AI Emerging.** Here, AI tools begin working together inside a single process. In a commercial workflow, for example, an AI agent handling a customer inquiry draws on live pricing that reflects real-time capacity—generating, adjusting, and booking a quote without requiring a human to rekey data between steps. Reaching this level requires rethinking the operating model behind each workflow, but it's where value starts to compound rather than just accumulate.
- **Level 3: AI Leading.** This is the aspiration: a connected, autonomous enterprise with workflows linked across the organization, so that intelligence in one domain informs another. No logistics company operates here today, but the direction is clear. Network and route optimization in operations will feed directly into customer engagement. When capacity tightens or a route shifts, the customer-facing agent will already know and will proactively requote or rebook. Pricing, capacity, routing, and customer communications will reinforce one another. At the frontier, agents, autonomous vehicles, and warehouse robotics will run much of the network with human oversight and governance. At this level, the company goes beyond merely using AI and fundamentally changes how it makes decisions.

Today, most companies in the logistics industry are crowded onto Level 1, although some haven't reached even that initial rung of the ladder yet. But the real returns start to appear at Level 2, and few companies have begun to climb any higher.

The Pressure to Move

As the logistics market becomes more demanding, the pressure to climb the maturity ladder increases. Beneficial cargo owners (BCOs) now expect a fast, transparent fix when a shipment goes off plan, such as when vessel delays disrupt transshipment connections. BCOs view real-time tracking and rapid exception management as a standard capability rather than a premium feature.

Logistics customers are starting to deploy AI agents to handle their logistics, and those AI agents operate at a speed and volume of production that no human staffer can match. A single customer AI agent can quickly and simultaneously fire off pricing requests, requotes, and rerouting comparisons. Gartner forecasts that by 2028, AI agents will intermediate 90% of business-to-business buying. The pressure for logistics players to adopt AI agents is therefore no longer coming exclusively from within the company but also from logistics customers that are aggressively shifting toward AI agents.

Finally, the pressure to adapt is growing because technology itself is evolving at an unprecedented pace. Theoretically, when adopted from a blank sheet of paper, new technologies can lower the barriers for new competitors. Asset-light, AI-native players have the potential to build lower-cost businesses on data, automation, and network intelligence, without the legacy weight that incumbents carry. That potential is enough to register as a threat: 93% of the logistics executives in our survey affirmed that they already see notable risk from these AI-native entrants.

The Size of the Prize

The economics underlying AI deployment are compelling. The global logistics market generates \$5.5 trillion in revenues per year, according to GSCi. We expect an end-to-end AI transformation to boost industry earnings before interest, taxes, depreciation, and amortization (EBITDA) margins by roughly 5 percentage points. About half of that gain will come from the top line, with leading players achieving a revenue lift of as much as 10%, driven by AI-enabled dynamic pricing, cross-selling, and cost reductions. The rest will come from the cost side, with a further 3 to 4 percentage points—if not more—of EBITDA improvement coming from cost and operating expense levers such as procurement, optimization, and automation of customer service and support functions.

At the industry level, that 5-percentage-point margin lift translates into roughly \$250 billion in additional profit annually. Applied to the P&L of a typical logistics company, which runs on mid-single-digit margins, the potential value is significant.

Why Returns Lag

The data and integration challenge, though real, is already being addressed. But two other problems persist that help explain the lag between adoption and impact: the isolated, fragmented deployment of use cases; and insufficient investment in the human side of the AI deployed.

The evidence of fragmented AI use comes directly from logistics executives themselves. When asked to name their most impactful AI solution, 80% of survey respondents pointed to a single standalone tool, while only one described anything close to an end-to-end capability within a workflow. The rest fell somewhere in between, describing minor connections within a single function without much conviction.

Evidently, instead of building AI as a system, logistics companies are accumulating it as a portfolio of point solutions. Our survey found that close to 90% of logistics respondents are prioritizing cost savings above all else in determining how to deploy AI.

This is not a critique in itself. A point solution has real value and can serve an immediate need. Logistics runs on thin margins, and cost discipline is a critical survival mechanism, not a mistake. Moreover, the efficiency gains that AI delivers are genuine. The point is not to limit or pause these efforts, but to recognize the limitations that ensue when the value generated by a single point solution stays local and when a standalone tool merely shifts work rather than removing it.

When a company automates one step in the quote-to-cash cycle but leaves the next step manual, the bottleneck simply moves to the part of the workflow that AI hasn't touched. The potential gains remain trapped because the larger reward lies in connecting tools across a workflow, a domain, and eventually, the enterprise.

The second reason that returns lag is less visible but just as important. Most companies underinvest in the human side of AI deployment, focusing almost entirely on the technology. Our experience across hundreds of AI engagements points to a consistent ratio: 10% of the effort is for algorithms, 20% is technology and data, and 70% is people, process, and organizational change.

Effectively addressing the people dimension starts at the top. When delegated to IT or to a single function, AI transformation rarely sticks. It demands active, visible ownership from C-level executives who set the ambition, fund the change, and hold the organization accountable to it. From there it extends to capability across the workforce. In our study, 37% of logistics executives cited a lack of internal AI expertise as their primary barrier to adoption, ahead of legacy systems, budget constraints, and regulatory uncertainty. But leadership drive and internal capability are not enough on their own.

It is essential to redesign processes, not just optimize them. Deploying AI on top of a broken quoting process speeds up the wrong thing. The workflow itself has to change first. And people

require convincing, not just informing. A pricing team that continually overrides AI recommendations manually because it never felt that it had any reason to trust them is a change management failure, not an AI problem.

A Fundamentally Different Company

BCG anticipates that the progressive end-to-end transformation of a company's workflows and domains will yield an AI-first company that embeds intelligence throughout the value chain. This will enable companies to make decisions in real time and at scale. It will also ensure that people govern strategy rather than just pushing work through the system.

Within one or two years, a focused operator can reach Level 2 inside chosen domains. The company can build an AI-ready data backbone and connect intelligence across the workflows that matter most. People will still decide, but they will operate with better signals, faster recommendations, and clearer tradeoffs. Pricing, planning, capacity, service, claims, and network design will start to function as connected capabilities rather than separate silos.

Flexport offers an early glimpse of what this compounding looks like in practice. The company has broken ocean freight forwarding down into more than 100 discrete operational steps, a degree of detail that enables it to deploy AI agents at the task level rather than the process level. The results compound accordingly. As Flexport president Sanne Manders explains, ocean operations are now over 70% automated, cost-to-serve is on track to fall by around 30% within a year, and customs audit error rates run at one-tenth of the industry standard. Ten dedicated agents are already generating measurable ROI across pricing, quoting, and cargo release, with more moving from training into production. When AI is embedded at the task level across a workflow, the value doesn't add up. It multiplies.

Beyond the middle term, leaders will reach Level 3, and the picture will become more concrete. Autonomous trucks will run around the clock without the constraint of driver shortages. Drones will manage inventory counts across warehouses and yards. AI agents will handle planning, routing, and procurement with little day-to-day human input, but within firm guardrails and oversight.

The deeper change at Level 3 is structural. Logistics has always been a labor-intensive business, but this model turns it into a capital- and technology-intensive business. The jobs of the future will shift toward exception management and the oversight of the partnerships that hold the wider network together. Enterprises should build reskilling and redeployment into the program rather than treating them as afterthoughts.

The building blocks of this future are already visible. DHL today operates more than 8,000 robots across its global warehouse network. In some facilities, collaborative robots have increased picking productivity by up to 60%. AI agents now handle hundreds of thousands of emails and millions of voice minutes a year, covering appointment scheduling, driver follow-ups, and warehouse coordination, all without human input. The foundations for Level 3 are being laid now.

Three Principles Informing the Path Forward

The question logistics companies need to answer is whether they can connect AI quickly enough to change the economics of their network, without falling into the trap of scattered pilots and cost-only ambition. Three principles separate the companies that succeed from those that stall:

- **Start with the destination, not the technology.** Most transformations open with a narrow, forward-thinking question about which technology and tools to deploy. A better approach is to first ask what kind of logistics company the organization wants to become. The answer to this question should help the company set the architecture so that the technology can serve that vision. Without this encompassing strategic understanding, even well-run pilots pile up as a portfolio instead of a system.
- **Build the connective tissue early.** In practice, this principle works on two levels. Technically, it means building a unified data layer to enable core systems to share clean information, and setting clear rules for when AI may act versus when a person must step in. Organizationally, it means constructing a federated operating model: a lean central hub that owns standards, platforms, and AI value tracking, paired with teams in or close to the business units that deploy and run the initiatives against their own P&L. The central hub orchestrates; accountability resides with the business units. Companies that defer building this connective tissue guarantee that their pilots will remain pilots and that their value will stay local.
- **Sequence for compounding, not coverage.** Each wave of deployment should make the next wave stronger. The unit of progress is not a single use case but a value package—a small bundle of connected use cases that share data and reinforce one another. Ten connected use cases beat 50 isolated ones. Start with one value package inside one domain, but then link those packages into a network.

The challenge of enabling these three principles is a reminder that technology alone rarely determines success. Transformations that tilt the ratio toward technology and away from people,

processes, and organizational change tend to fail because the organization never changes around the new tools.

The Cost of Waiting

The work begins with focused mobilization. Leaders define their destination and start building the connective tissue alongside the first integrated use cases. The aim in the first six to nine months of this process is to prove the compounding effect, then use that proof to fund the next wave. A full roadmap runs about 18 to 24 months, with people and process absorbing most of the investment.

Time is an unforgiving variable. The risk from AI-native logistics competitors increases with every quarter that passes, even as the strongest incumbents pull further ahead. The costs of waiting include both lost margin and a structural disadvantage that grows harder to close as the gap widens. The companies that deploy standalone tools today are behind because their investment is not yet a system, not because they failed to invest. The leaders across the logistics sector of the next decade will be the companies that build AI as one system rather than as a drawer of tools.

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