

Putting the **AI** into **supply chAI**ns

How Artificial Intelligence is reshaping logistics, warehousing, shipping, freight and the future of global trade.



**Parcel
hero.**

**Industry
report**

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Executive summary

Parcelhero's analysis of the latest ONS data reveals that AI adoption among UK transport & storage sector firms leapt from 16.1% to 27.1% in the first quarter of 2026 – an 11 percentage-point surge in just three months. With over 20% of remaining firms planning adoption within Q2 of 2026, and Deloitte reporting that 41% of global retailers will deploy AI for supply chain visibility within a year, the question is no longer whether artificial intelligence will transform logistics. It already has. This report asks what that transformation looks like across every node of the supply chain – and where it is heading next.

1. The intelligent backbone: AI has moved from boardroom experiment to operational infrastructure. Around 40% of supply chain organisations are now investing in generative AI, with early adopters gaining measurable advantages across the four building blocks of supply chain operations: Plan, Source, Make and Move.

2. Routing reinvented: AI-driven route optimisation is delivering a 10% saving in logistics costs and a 15% improvement in on-time delivery rates. Algorithms now reorder sequences of over 100 stops in seconds: processing live traffic, weather and customer preference data simultaneously.

3. The last-mile revolution: The final leg of delivery has historically accounted for over 53% of total shipping costs. AI is reshaping its economics: intelligent systems can now forecast shipment volumes for specific facilities with up to 95% accuracy, pre-positioning stock before demand is even formally registered.

4. The smart warehouse: McKinsey reports 56% of businesses have integrated AI into at least one operational function. In warehousing, autonomous mobile robots navigate dynamically rather than following fixed routes, while predictive maintenance flags equipment failures before they cause costly downtime.

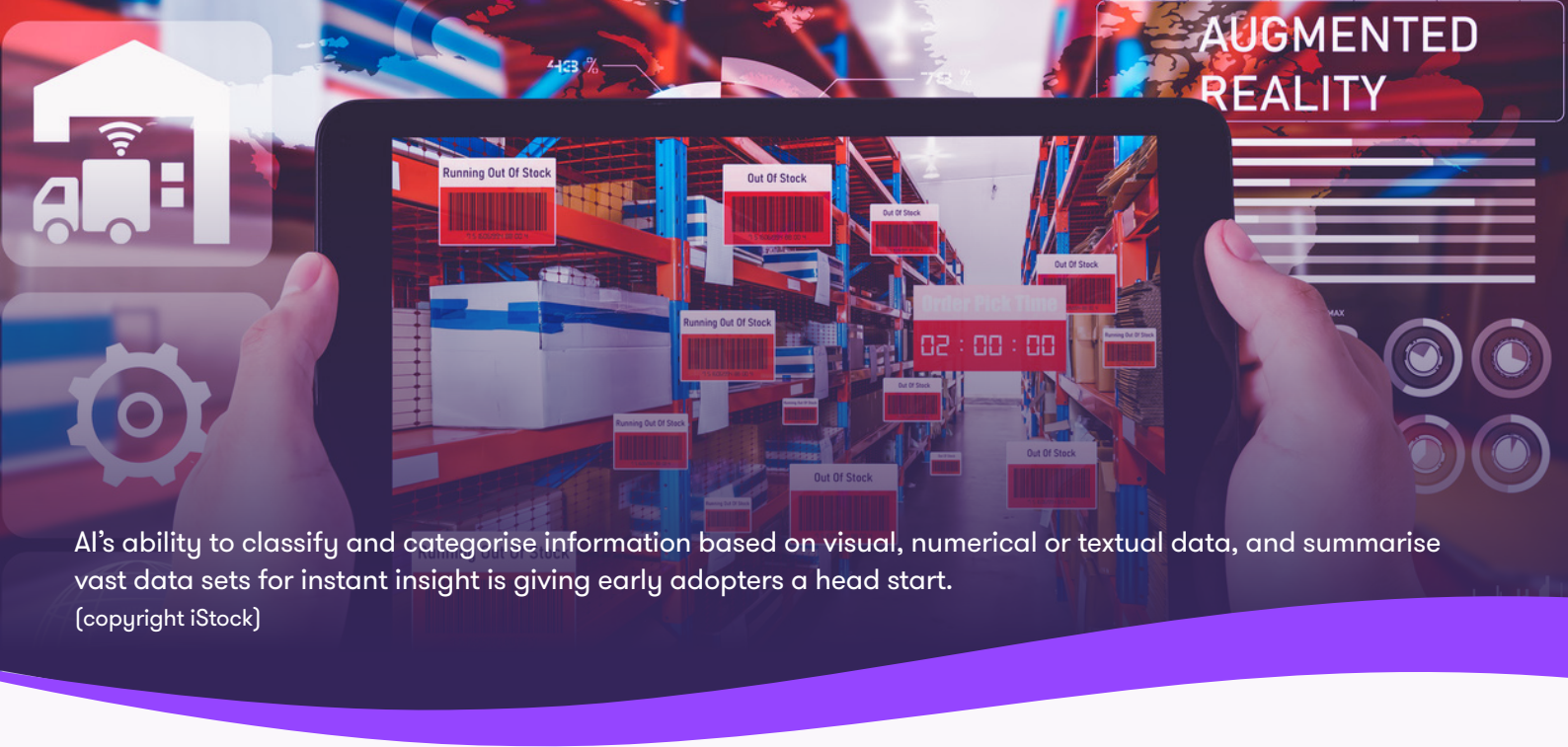
5. AI sets sail: The maritime AI market, valued at £4.13 billion in 2024, is projected to grow at a compound annual rate of 23% over the next five years. In 2025 alone, 420 organisations adopted maritime AI, up from 276 the previous year. The world's first fully autonomous commercial container ship, the Yara

Birkeland, has already completed over 250 voyages – replacing 40,000 diesel truck journeys annually.

6. Air freight takes off: A sector once run on spreadsheets and reactive problem-solving is now powered by real-time data and machine learning. AI is compressing tasks that once required specialist knowledge – rate comparisons, export classifications, ETA predictions – into automated workflows that take minutes, not days.

7. The readiness gap – the real challenge: Only 16% of logistics and supply chain organisations say they are unlikely to adopt AI within five years. Yet many are held back not by the technology itself, but by legacy systems, batch-processed data and manual workflows incompatible with the real-time data AI requires. The firms that will lead their industries by 2030 are those investing in data quality, digital infrastructure and workforce upskilling today.

Not everything about this AI revolution is straightforward, however. Workforce displacement fears remain, even though Parcelhero's own analysis found that over 31% of AI-adopting transportation and storage firms reported no change in headcount, and the number reporting definite job cuts was too small to register statistically. Ethical concerns around transparency, data privacy and algorithmic bias demand equal attention as AI takes on increasingly consequential decisions across supplier selection, pricing and logistics planning. The supply chains that will define the next decade are those treating AI not as an efficiency tool, but as a strategic transformation. The question is no longer whether to put the AI into supply chains. It is how quickly – and how well.



AI's ability to classify and categorise information based on visual, numerical or textual data, and summarise vast data sets for instant insight is giving early adopters a head start.
(copyright iStock)

1. AI comes of age

Artificial intelligence (AI) is rapidly moving from boardroom buzzword to operational backbone across global supply chains – and the data revealed in this report bears out this transformation. Parcelhero's analysis of Office for National Statistics (ONS) figures for the first quarter of 2026 shows that 27.1% of UK transport and storage firms are now using AI, up from just 16.1% in December 2025, an 11 percentage-point rise in just three months.^[1] Over 20% of firms plan to adopt AI for core business operations within Q2 of 2026, signalling that the first wave of adoption is far from complete.

The pace of change is global as well as domestic. Deloitte's 2026 Retail Industry Global Outlook found that 41% of retailers plan to deploy AI within twelve months specifically to support supply chain visibility.^[2] EY's data goes further still, reporting that AI adoption in sustainability tracking and measurement alone has reached 62% across supply chain organisations.^[3]

From experimentation to core operations

The shift in corporate language is telling: firms are no longer piloting or exploring AI, they are embedding it. Retailers are moving from experimentation to embracing AI in core operational capabilities, focused on creating smarter, faster and more resilient supply chains. Around 40% of supply chain organisations are now investing in generative AI (GenAI), with particular emphasis on knowledge management applications.^[4]

Parcelhero's research reveals 29.8% of those transport & storage sector companies who have adopted AI say they are using it to improve business operations, 15.7% are using it to provide or personalise products or services and 10.2% to explore new markets.

AI's ability to classify and categorise information based on visual, numerical or textual data and summarise vast data sets for instant insight is giving early adopters a head start across the four key building blocks of supply chain operations: Plan, Source, Make, and Move.

No AI without pAI: the integration challenge

Of course, the adoption of AI in supply chains comes at a cost – and not just financially. The integration of AI is not without friction. As well as the upfront cost, AI-adopters must consider the complexity of implementation. For organisations still relying on paper-based inventory systems, batch-processed data entry or legacy on-premise infrastructure, the digital groundwork required to support AI is substantial.^[5]

Manual processes and lack of automation create a ‘square peg, round hole’ situation: AI thrives on standardised, repeatable workflows that generate reliable, real-time data. Batch processing, prone to error and delay, disrupts the pattern recognition that machine learning depends upon.

Whether to develop AI in-house or outsource/use “off the peg” AI solutions is a question many companies must consider. Parcelhero’s analysis of the latest ONS data reveals 12.4% of transport & storage businesses that have already adopted AI say that they have developed AI programmes in-house while 13.3% have purchased external software or ready-to-use SaaS solutions and 12.6% are using free software.

There are also legitimate concerns around workforce displacement. Studies suggest AI will affect nearly 40% of jobs worldwide, yet the picture for supply chain is more nuanced than the headlines suggest. Parcelhero’s own analysis found that 31.3% of AI adopters in transport and storage reported no change in headcount, while the number of companies reporting that it would definitely reduce their headcount was so small it did not register in the figures (less than 1%).

The more pressing challenge may be reskilling rather than redundancy, ensuring that workers can operate alongside intelligent systems rather than being made obsolete by them.

Ethical concerns around transparency, data privacy, and algorithmic bias demand equal attention, particularly where AI makes consequential decisions in supplier selection, pricing or employee evaluation. Organisations that prioritise explainability – ensuring

AI decisions can be audited and understood – will be better positioned to build trust and achieve regulatory compliance as AI governance frameworks continue to develop.



AI systems now process live traffic feeds, weather data, hyper-local conditions and delivery priorities simultaneously. Pictured, a Voltempo autonomous HGV combines automated driving with dynamic route optimisation. [Courtesy Voltempo]

2. AI in logistics: The intelligent backbone

Logistics represents the connective tissue of any supply chain, and it is here that AI is beginning to demonstrate its most transformative capabilities. The core challenge of logistics, coordinating the movement of goods across complex, variable, and often unpredictable networks, is precisely the kind of problem at which AI excels.

Demand forecasting was among the first AI applications. AI algorithms analyse historical sales data, market trends, seasonal fluctuations and external variables to build real-time demand models. With these models, optimal inventory levels, production schedules and distribution plans can be generated dynamically: reducing both costly stockouts and expensive overstock positions. Leading logistics networks now use AI to forecast where packages need to be even before an order is placed, significantly cutting total transit times.

Dynamic route optimisation

One of the biggest operational challenges in logistics is real-time routing. AI systems now process live traffic feeds, weather data, hyper-local conditions and delivery priorities simultaneously. If a road closes or a customer changes delivery preferences mid-route, algorithms can reorder a sequence of over 100 stops in seconds.^[6] The results are startling: AI-driven route optimisation can deliver a 10% saving in logistics costs and a 15% improvement in on-time delivery rates. One of the largest logistics companies in the USA has deployed a proprietary AI platform to optimise picking routes within its warehouses, boosting workforce productivity by approximately 30% while reducing operational costs through better space and materials handling. Crucially, the generative AI component adds customisation that earlier rule-based systems could not provide – allowing planners to optimise based on fuel reduction targets, delivery priority or specific operational constraints, all through a conversational interface.

Risk management and global trade

At the international level, AI is also transforming how companies navigate the complexity of international trade. Algorithms can analyse tariffs, Customs regulations, trade agreements and shipping costs simultaneously, suggesting the most efficient trade routes and flagging compliance risks before they materialise. In today's troubled geo-political landscape, that's a huge win.

For small businesses, machine learning is now guiding users through international export classifications automatically – compressing tasks that once required specialist knowledge into minutes of guided workflow.

Risk management is another area in which AI has rapidly taken hold. Today's AI tools can analyse historical data, market conditions, weather patterns and global events to identify potential supply chain risks proactively.

Generative AI goes further: rather than presenting pre-built dashboards, it can produce bespoke risk assessments, scenario simulations and mitigation strategies on demand – giving supply chain planners a genuinely dynamic tool for navigating uncertainty.



AI developments in the last mile are progressing exponentially. Sweden's Einride has already developed autonomous electric trucks for final mile deliveries that are being approved for US and EU operations. (Courtesy Einride)

3. AI in deliveries and the 'last mile': The last leg, reimagined

The 'last mile' – the final trip from a local hub to a customer's door – has long been the most expensive and complex leg of the delivery journey, historically accounting for over 53% of total shipping costs.^[7] That fundamental challenge has not changed, but AI is reshaping the economics and mechanics of final-mile delivery in ways that would have seemed implausible even five years ago. The use of AI across this stage of the delivery chain has grown by 39% in the past year alone.

From static maps to living routes

The era of morning route planning that becomes obsolete by noon is ending. AI turns delivery paths into fluid, adaptive systems. Algorithms process live traffic data, weather events and local conditions in real time, and can instantly reorder a multi-stop

sequence based on specific priorities: ensuring, for example, that an urgent medical delivery arrives first while maintaining the most fuel-efficient overall path.

Intelligent systems can also forecast optimal delivery windows by analysing when customers are typically available at home, increasing the probability of first-attempt success and reducing the cost and carbon footprint associated with re-delivery.

Companies such as Einride have already developed autonomous electric trucks that it says are approved and operational on roads across Europe and the United States.^[8]

Predictive analytics and pre-emptive stocking

One of the most remarkable developments in final-mile logistics is the transition from reactive shipping to predictive operations. By analysing historical patterns and market trends, intelligent systems can predict shipment volumes for a specific facility with up to 95% accuracy.^[9]

This means logistics networks can pre-position stock before demand is formally registered, cutting total transit times and reducing the pressure spikes that have historically disrupted operations during peak periods.

Sustainability and the green ROI

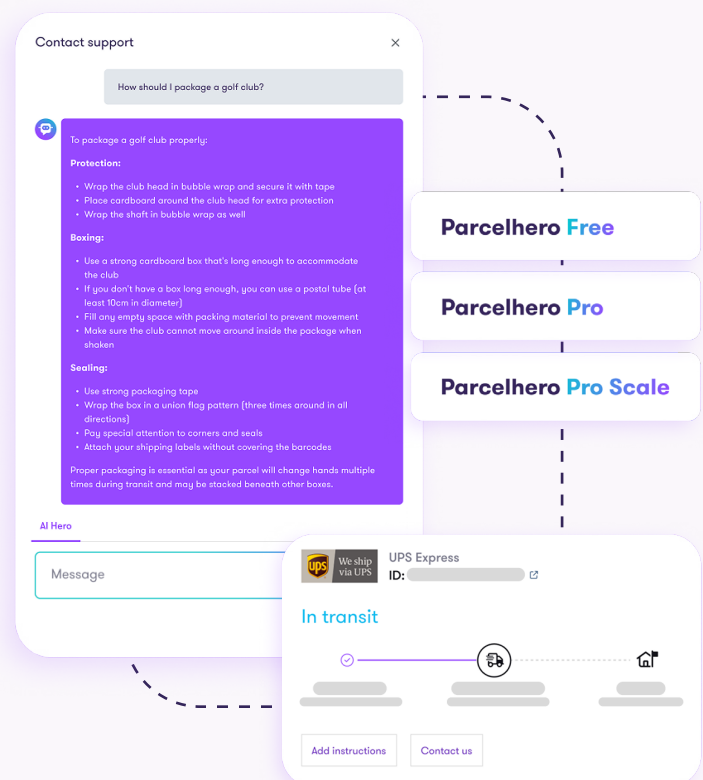
AI's contribution to sustainable last-mile logistics is growing in importance and effectiveness. By minimising empty miles and reducing idling time, intelligent routing directly lowers CO₂ emissions. Specialist AI planners now account for battery range and charging station locations in real time, making electric vehicle fleets more operationally reliable. Load-balancing algorithms ensure every vehicle is optimally packed, removing unnecessary vans from road networks entirely and reducing the number of vehicles required to fulfil a given volume of deliveries.

Parcelhero's AI levels the playing field

As just one example of putting AI into practice operationally, Parcelhero has embraced the technology to transform its services. Parcelhero's new AI-powered tracking technology delivers accuracy and speed. If a shipment requires attention, such as a Customs delay, the system notifies the sender immediately and provides built-in smart solutions to solve the issue before it escalates.

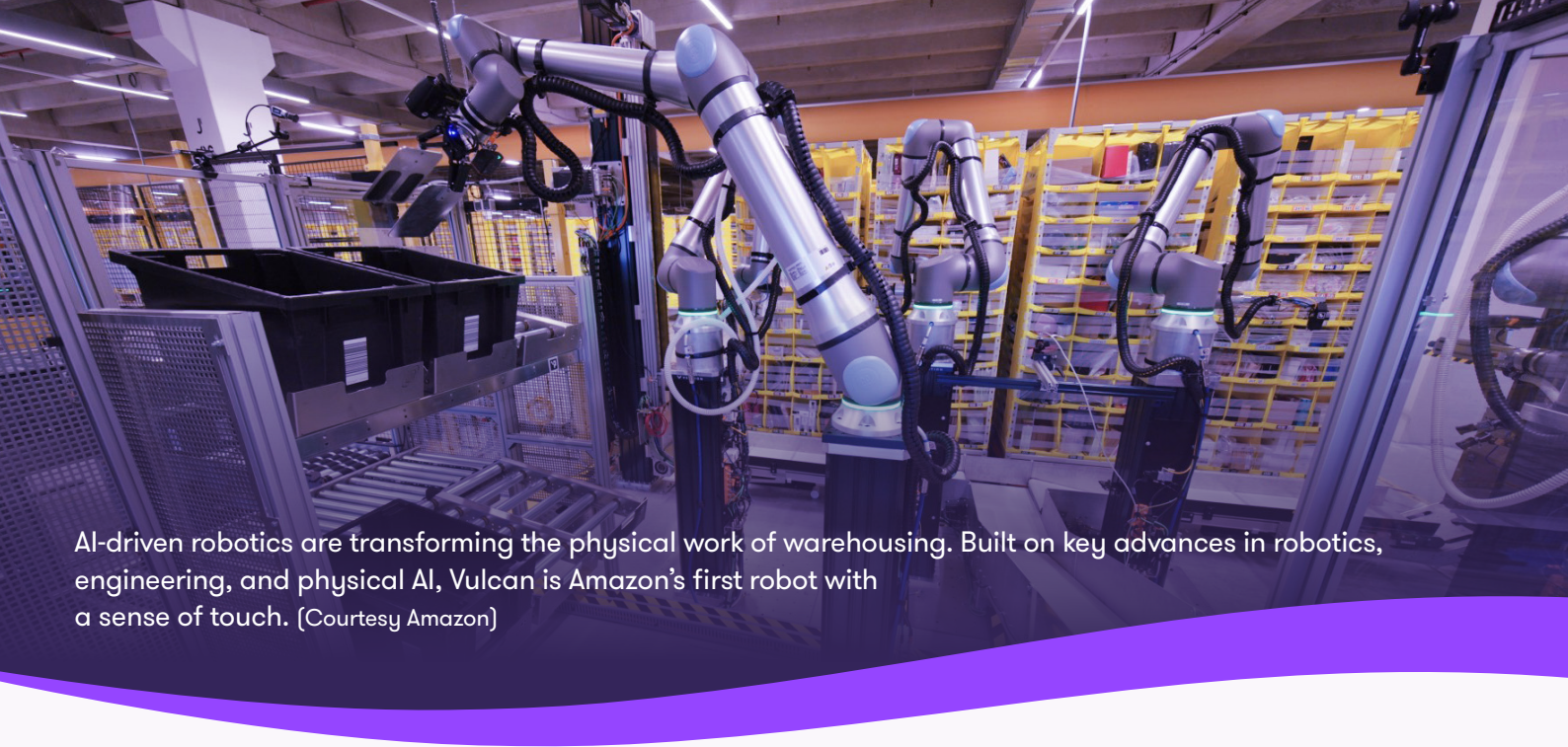
Additionally, Parcelhero's new AI-powered chatbot, which has been dubbed 'AI hero', acts as the first point of contact for customer enquiries. It provides instant responses to common queries, helping customers resolve most issues within seconds.

With so many transport & storage sector firms planning to adopt AI in the coming months, Parcelhero is also well-positioned to help them do so through a range of new AI powered SaaS business services. Parcelhero will imminently be introducing Parcelhero Pro, Parcelhero Pro Scale and ParcelVision. The result will be a unified shipping platform that helps businesses to automate, scale and control their delivery operations with confidence. Growing SME businesses will have access to powerful AI features that only the 'big boys' have had until now.



Enhancing the human experience

AI in last-mile delivery is enhancing human roles rather than replacing them. Wearable technology and augmented reality allow warehouse team members to scan barcodes and sort parcels hands-free, reducing errors and saving significant time per order. AI-powered customer service tools can read the emotional tone of customer communications, proactively updating delivery status and allowing mid-route changes. This creates a more personalised and controllable experience for the customer.



AI-driven robotics are transforming the physical work of warehousing. Built on key advances in robotics, engineering, and physical AI, Vulcan is Amazon's first robot with a sense of touch. (Courtesy Amazon)

4. AI in warehousing: The smart warehouse

The warehouse is arguably the stage of the supply chain where AI is currently making the deepest and most tangible operational impact.

As e-commerce growth has amplified pressure for faster fulfilment, lower error rates and greater flexibility, warehouses have become a critical battleground for competitive differentiation – and AI has become the primary tool for gaining an advantage.

As long ago as 2023 (an aeon in terms of the development of AI!), McKinsey reported that 56% of businesses had already integrated AI into at least one operational function^[10]. In warehousing, this integration is creating 'smart warehouses': facilities where machines, processes and products are connected in ways that enable optimisation at a speed and scale impossible for human managers alone.

Demand forecasting and inventory optimisation

AI algorithms analyse historical data, market trends and external factors to generate accurate demand forecasts, enabling warehouses to anticipate demand shifts and make well-informed procurement and inventory decisions.

Systems can detect seasonal patterns – such as back-to-school, Halloween and Christmas – and forecast item demand with enough accuracy to prevent both under- and over-stocking. An AI-powered warehouse management system can alert managers to out-of-stock risks before they materialise in the customer order or on the shelf.

Robotics, automation and dynamic slotting

AI-driven robotics are transforming the physical work of warehousing. Autonomous mobile robots (AMRs) navigate warehouse aisles using AI rather than pre-programmed routes, adapting in real time to changing environments, locating items, and performing picking, sorting, and packing with high speed and precision. AI-driven algorithms continuously suggest optimised item placement based on demand patterns. For example, they can recommend that high demand or time sensitive items be positioned closer to packing and dispatch areas to reduce picking times and improve throughput.

As just one example of the increasingly sophisticated use of AI within warehousing, Amazon first introduced Vulcan, a robot that is neither numb nor dumb, at its Delivering the Future event in Dortmund, Germany, in 2025. Built on key advances in robotics, engineering, and physical AI, Vulcan is Amazon's first robot with a sense of touch. This technology can help significantly reduce breakages and increase picking speeds.^[11]

Predictive maintenance is a further critical application. By monitoring real-time sensor data from conveyors, forklifts and automated systems, AI identifies anomalies in heat, vibration and throughput that signal pending equipment failures. Preventive maintenance work orders can be raised before breakdowns occur, minimising costly downtime and extending equipment lifetimes.

Visibility, safety and sustainability

Computer vision, RFID (radio frequency identification) integration, and IoT (Internet of Things) sensor networks provide real-time visibility into every area of a warehouse – monitoring asset locations, inventory levels and operational bottlenecks. AI enhances worker safety by determining when and where machines should operate versus human workers and even by recommending ergonomic practices: for example, by flagging that heavy items should not be placed at overhead height, reducing the risk of injury. In terms of sustainability, AI systems manage

energy consumption dynamically: dimming lights in unoccupied zones and adjusting heating and cooling based on real-time activity. Such technology contributes to meaningful reductions in electricity usage across large warehouse facilities.

No pAI, no gAI

There's little doubt that the upsides of using AI in warehousing outweigh the negatives. However, there is still quite a lengthy list of issues that need to be addressed when adopting AI in distribution centres and warehouses for the first time.

- Only 16% of logistics and supply chain organisations say they are unlikely to adopt AI within five years, but many remain hesitant due to concerns about data quality, technical complexity, workforce adoption and the difficulty of demonstrating short-term ROI.^[12]
- The effectiveness of machine learning depends entirely on the quality of input data; biased or incomplete data produces unreliable outputs.
- Integrating AI with legacy warehouse management systems can require significant IT investment.
- Employees who fear displacement must be actively supported through training and transparent communication about the technology's role alongside them, not in place of them.



The evolution of autopilot systems illustrates how AI is changing the role of the mariner. The Yara Birkeland, the world's first fully electric and autonomous container ship, has been in commercial operation in Norway since early 2022. (Courtesy Yara)

5. AI in maritime shipping: Navigating a smarter sea

The maritime sector is undergoing one of the most significant technological transformations in its history. AI is redefining how ships are operated, maintained, and navigated. This change is being driven by the dual imperatives of operational efficiency and sustainability. The maritime AI market, valued at £4.13 billion in 2024, is projected to grow at a compound annual rate of 23% over the next five years.^[13] In 2025, 420 organisations adopted AI technologies in maritime shipping, up from 276 in 2023.

Route optimisation and weather forecasting

Traditional route planning relied on static schedules and accumulated nautical knowledge. AI systems now analyse vast data sets, including historical route performance, real-time weather conditions, fuel pricing and port congestion, to dynamically identify the most efficient and cost-effective voyages.

IBM, in collaboration with NASA, has released an open-source AI foundation model called Prithvi WxC, trained on 40 years of historical weather data, designed to provide maritime-grade weather forecasting with precision previously available only to the largest operators.

Collision avoidance and autonomous navigation

Advanced AI navigation systems integrate data from radar, GPS and Automatic Identification Systems (AIS) to detect nearby vessels, predict their movements, and autonomously adjust a vessel's course to prevent collisions – even in low visibility or congested waters. SEA.AI uses camera technology combined with AI to alert crews to surface objects that conventional radar or AIS might miss: such as unsignalled craft, floating debris, kayaks, or persons overboard. These real-time detection capabilities represent a qualitative leap in navigational safety.

The evolution of autopilot systems illustrates how AI is changing the role of the mariner. MADBrain, developed by Madintec, is an AI-powered autopilot that continuously optimises a vessel's course based on real-time data such as speed, position, wind conditions, and wave patterns, learning from each voyage to improve its performance over time.

The promise of fully autonomous ships – vessels that navigate and dock themselves, using sensors and large data sets to avoid damage and delays – is edging closer to commercial reality, with the potential to reduce crew costs, lower fuel consumption, and improve safety concurrently.

As just one example, the Yara Birkeland, the world's first fully electric and autonomous container ship, has been in commercial operation in Norway since early 2022. It transports fertilizer on an 11-nautical-mile route between Herøya and Brevik, replacing 40,000 diesel truck journeys annually. As of May 2025, it had already completed over 250 voyages.^[14]

Predictive maintenance

AI-driven predictive maintenance enables maritime operators to anticipate equipment failures before they cause disruptions. Sensors monitor engine health, temperature and system pressure continuously, with AI models detecting early warning patterns that allow maintenance teams to intervene before a breakdown grounds a vessel.

Smart containers and cargo optimisation

AI is being applied to cargo loading and optimisation, using advanced algorithms to analyse cargo weight, volume, vessel capacity and stability in order to determine the most efficient loading configuration. Smart containers, equipped with IoT sensors, monitor for environmental changes and door openings in real time, providing live alerts on cargo condition. This is critical for pharmaceutical, perishable or high-value shipments where temperature excursions can render an entire consignment unusable.

The trust challenge

Despite the technology's maturity, a significant trust barrier remains. Crew members are naturally wary of ceding critical decisions to AI systems they do not fully understand.

Stena Line addressed this by repositioning its AI system, dubbed 'Captain's AI', as an intelligent assistant rather than an autonomous decision-maker, supporting the captain's judgement rather than attempting to replace it.^[15] This reframing proved effective in increasing onboard acceptance, and the principle it embodies applies across every sector examined in this paper: AI works best when it augments rather than supplants human expertise.



Air cargo terminals are increasingly adopting autonomous robots and intelligent sorting systems. Westwell's autonomous electric tractor, dubbed the Q-Tractor, has commenced official operations at Hong Kong International Airport. [Courtesy Westwell]

6. Putting the AI into Air freight

Air freight has entered its technology moment. A sector that once relied on spreadsheets, manual tracking and reactive problem-solving is now driven by real-time data, machine learning and intelligent automation. The transformation mirrors what retail and e-commerce are already experiencing: a fundamental reimagining of processes to meet rising speed and reliability expectations at global scale.

Predictive analytics and disruption resilience

Every shipment moving through the global air freight network generates enormous volumes of data from flight schedules and weather conditions to customs processing times and warehouse activity.

AI-powered predictive analytics is transforming how that data is used. Instead of reacting to disruptions after they occur, operators can now anticipate delays before they happen. Whether the cause is severe weather, airport congestion or a sudden

demand spike, intelligent systems proactively adjust routing, reallocate capacity and optimise shipment flows in real time; creating a meaningfully more resilient network.^[16]

Dynamic route optimisation and fuel efficiency

AI has moved air freight route planning from static scheduling toward dynamic, real-time optimisation. Systems process weather conditions, air traffic data and operational constraints simultaneously, and can instantly recommend alternative routes when disruptions occur; minimising delay while maintaining efficiency. AI-driven analysis of optimal flight speeds and altitudes reduces fuel consumption, lowering both operating costs and carbon emissions. By analysing demand patterns, air freight operators can better align capacity with shipment volume, reducing bottlenecks during peak periods and ensuring efficient use of expensive cargo space.

Predictive maintenance in the air

Operational reliability is critical in air freight, where delays create cascading effects across global supply chains. Modern cargo aircraft are equipped with advanced sensors that continuously monitor engine health, temperature and system pressure. AI models analyse this data to detect early warning signs of potential issues, enabling maintenance teams to intervene before problems cause groundings. The result is fewer last-minute cancellations, more consistent schedules and improved on-time delivery performance.

AI-powered virtual assistants and chatbots provide customers with around-the-clock support, proactively alerting them to weather issues, customs delays, or other disruptions before these translate into missed deadlines. For freight forwarders managing SME clients, AI is compressing complex manual tasks such as rate comparisons, documentation and ETA predictions into automated workflows that require a fraction of the time and expertise previously needed.

Ground automation and cargo handling

AI-driven innovation in air freight isn't confined to the air – it has also, if you'll forgive the contradiction, taken off on the ground. Cargo terminals are increasingly adopting autonomous robots and intelligent sorting systems that move, organise and process shipments with high speed and precision.

Automated ground vehicles are being introduced within cargo facilities to move freight more efficiently between zones. For example, the Shanghai-based AI company Westwell's self-developed autonomous electric tractor, dubbed the Q-Tractor, has commenced official operations at Hong Kong International Airport, providing automated loading and transport services for baggage and cargo handling, accelerating HKIA's smart airport plans.^[17]

The resulting ground logistics systems support faster end-to-end delivery by compressing turnaround times between flights and reducing the manual labour intensity of cargo handling.

Visibility and customer experience

Customers increasingly expect not just location data but real-time insight into cargo condition, handling status and predicted delivery windows. Advanced tracking technologies, including IoT sensors and digital monitoring platforms, now make this possible: with live data on temperature, handling conditions, and transit status available across multiple checkpoints.

SUPPLY CHAIN



The next frontier is agentic AI: systems that do not merely provide recommendations but take autonomous actions across complex supply chain workflows. (Copyright iStock)

7. AI and the supply chain: where is it going next?

The integration of AI across supply chains is not a destination, it is a trajectory. The applications described in this report represent the current state of a technology that is evolving rapidly, and the next decade will deepen and accelerate every trend already visible today.

Agentic AI and autonomous decision-making

The next frontier is agentic AI: systems that do not merely provide recommendations but take autonomous actions across complex supply chain workflows.

Rather than alerting a planner to a disruption and offering options, an agentic system will reroute the shipment, adjust inventory levels, notify affected parties and update downstream production schedules, all without human intervention.

This shift will compress response times from hours to seconds for a broad range of operational decisions, fundamentally changing the role of the supply chain professional from operator to strategist and exception manager.

Putting the AI into sustainability

Sustainability pressures will accelerate AI adoption in reverse logistics and circular supply chains. AI systems that can predict product return volumes, optimise reverse freight routing, assess components for reuse or recycling and dynamically price secondary inventory will become standard infrastructure for companies with ambitious ESG (environmental, social and governance) commitments. In warehousing, AI-driven energy management such as dynamic lighting and HVAC (heating, ventilation and air conditioning) based on activity patterns, is already delivering measurable reductions in carbon footprint, and these capabilities will mature and become widely accessible.

Digital twins and scenario simulation

Digital twin technology – detailed virtual models of physical supply chain infrastructure – will converge with AI to allow operators to simulate disruption scenarios, test operational changes and optimise network design before committing real resources.^[18] A logistics operator will be able to model the impact of a port closure, a regulatory change in a key market or a sudden demand shift, and test contingency strategies in a virtual environment before the crisis materialises in the real world. This capability transforms supply chain planning from reactive to genuinely proactive.

Geopolitical risk and adaptive sourcing

AI is already being used by air freight operators to analyse news feeds and social media for early signals of geopolitical risks such as trade conflicts, political instability and labour disputes and is generating contingency responses.^[19] This capability will extend across all supply chain tiers. Systems that continuously monitor suppliers for financial distress, regulatory non-compliance or ESG risk will allow companies to shift sourcing proactively rather than reactively. This will mark a fundamental change in the philosophy and practice of procurement.

The readiness gap

The central challenge for the next phase of AI adoption is not technological, it is organisational. Many firms still operate with legacy systems, batch-processed data, and manual workflows that are incompatible with the real-time data flows that AI requires. Addressing the readiness gap means investing in automation and digitisation at the operational level before attempting to layer AI on top. Mobile data capture, connected sensors, cloud-based management systems and rigorous data quality governance are not merely enabling technologies, they are prerequisites for effective AI deployment.

The workforce dimension is equally critical. AI will not replace supply chain professionals; it will transform what they do. The firms that capture the greatest

value from AI will be those that invest in upskilling their people in data literacy, AI system management and analytical thinking, alongside their technology platforms. Those that treat AI as a back-office efficiency tool, without investing in the human capability to work alongside it, will underperform relative to those that treat it as a strategic transformation programme.

Conclusion

Artificial intelligence is not coming to supply chains; it has arrived, and is already reshaping every node in the network. From predictive analytics in air freight to autonomous robots in warehousing, from real-time last-mile routing to AI-assisted navigation on the open sea, the transformation is broad, deep and accelerating. The supply chain sector is tracking almost identically with manufacturing in its adoption profile, and the next wave of adoption, already visible in the data, will bring further step-changes in capability.

The supply chains that will lead their industries in five years' time are those making the foundational investments today: in data quality, in digital infrastructure, in workforce capability and in the governance frameworks needed to ensure AI is deployed responsibly. Those that treat AI as a strategic priority, rather than an incremental efficiency tool, are building competitive advantages that will compound over time.

The question is no longer whether to put the AI into supply chains. It is how quickly and how effectively.



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AI is transforming the supply chain from end to end

From warehouses and delivery routes to shipping, freight and global trade, AI is making supply chains faster, smarter and more resilient. This report explores what is changing now, and what comes next.

27.1% of UK transport & storage firms now use AI

10% saving in logistics costs through AI routing

95% accuracy in shipment volume forecasting

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