

A WHITE PAPER IN PARTNERSHIP WITH



# The Future of Freight Is Connected: AI, Optimization, and the Power of Networked Logistics



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# Introduction

The landscape of transportation management is rapidly evolving, shaped by advances in technology and the increasing complexity of supply chains. FreightWaves partnered with Blue Yonder, a leader in digital supply chain transformations, to survey shippers, carriers, and other logistics intermediaries on data management and visibility, software pain points and limitations, and inefficiencies in inbound logistics.

The survey aimed to capture a comprehensive snapshot of the current transportation

management ecosystem, which is currently undergoing a massive shift due to adoption of AI-powered optimization and visibility networking. Blue Yonder is at the forefront of this shift, particularly with its Cognitive Solutions for Execution: Transportation Management Solution (TMS). This white paper delves into the insights gained by industry shareholder responses and the ways in which Cognitive Solutions can enhance planning speed and agility while accelerating inventory turnover.

## ► SURVEY OVERVIEW

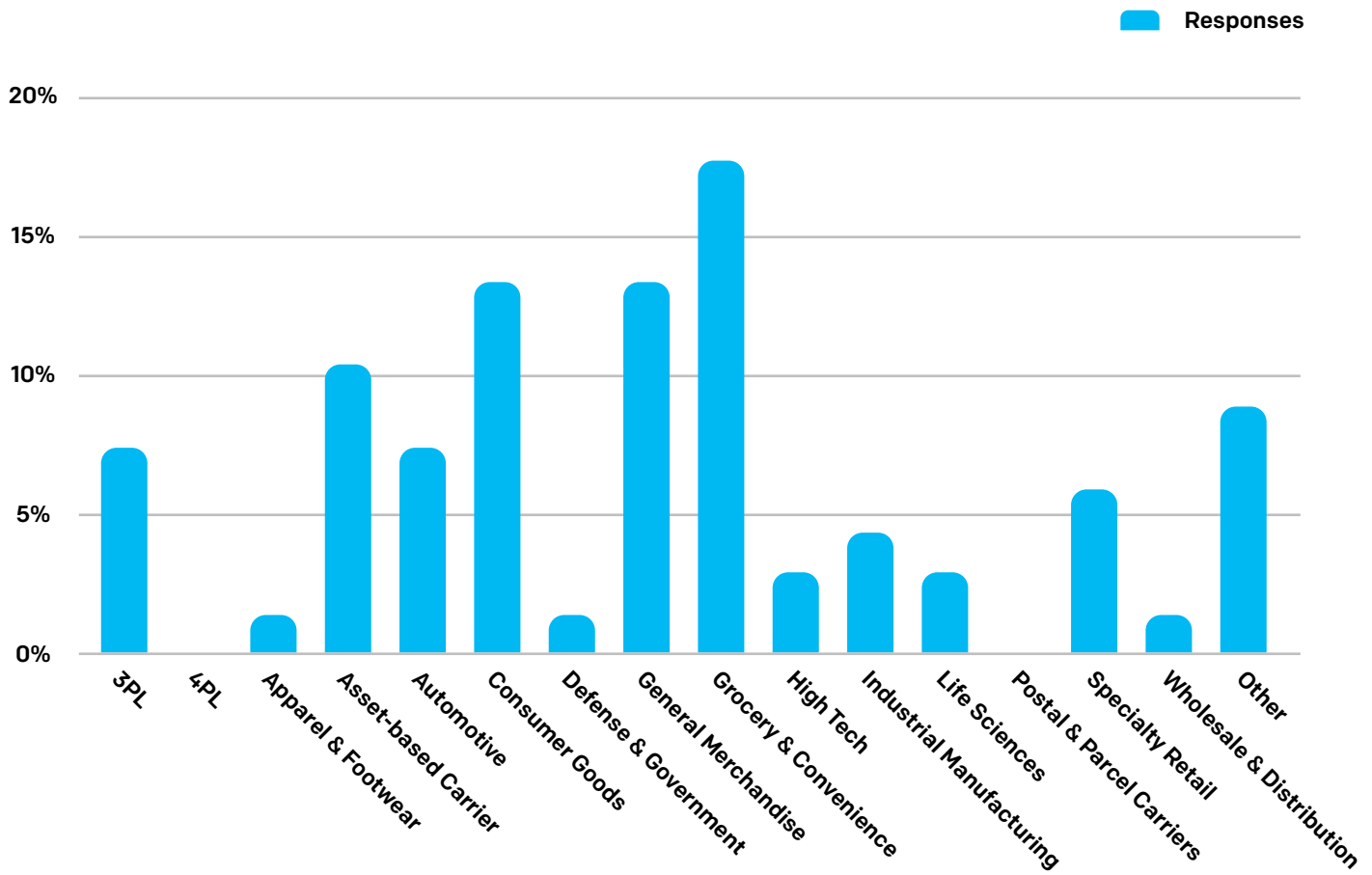
Participants included a balanced cross-section of the supply chain professionals, with a significant representation from asset-based carriers (35.82%) and shippers, including both manufacturers and retailers (31.34%). This distribution ensures that the findings reflect the perspectives of those most directly engaged in freight movement and logistics operations.

It isn't surprising that asset-based carriers are most involved in this discussion, given that carriers often feel the direct impact of operational challenges. The input of carriers and shippers

tends to be especially valuable when it comes to shifts in logistics. The analysis of the survey, as a consequence, heavily reflects perspectives from those who directly move or produce freight.

Third-party logistics providers (3PLs) made up just under 12% of responses, while freight brokers accounted for about 9%. Interestingly, only 1.49% of respondents identified as 4PLs, suggesting that this model remains relatively niche. Finally, the "Other" answers included produce manufacturers, company owners, importers, global logistics consultants, and dispatchers.

## WHAT INDUSTRY DOES YOUR ORGANIZATION PRIMARILY SERVE?



The breakdown of industry verticals highlights the diversity of organizations represented in the survey, but also shows some clear concentrations. Grocery and convenience came in as the top vertical at 17.91%, reflecting the sector's heavy reliance on consistent logistics performance and its sensitivity to supply chain disruptions, especially in perishable goods. Consumer goods and general merchandise followed closely at 13.43% each, underscoring how core retail and fast-moving product categories continue to drive a large portion of logistics activity.

Automotive accounted for 7.46%, a significant showing given the industry's complex, global supply chains. Similarly, industrial manufacturing,

life sciences, and high tech, though smaller shares individually, add important perspectives from industries where supply chain reliability is directly tied to production continuity or regulatory compliance.

Notably, apparel and footwear, wholesale and distribution, and defense and government each saw minimal representation at just 1.49%. While these sectors play important roles in the broader logistics ecosystem, they were not primary voices in this survey. The "Other" category, nearly 9%, signals additional niche sectors such as construction, produce (leafy greens), fuel transportation, aerospace manufacturing, and specialty materials (resin, chemicals).

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## ► INBOUND LOGISTICS MANAGEMENT

The current landscape of inbound logistics management reveals a fragmented approach across organizations, with companies employing diverse strategies based on their resources and complexity needs. Survey results show an even split between traditional manual coordination methods (45.31%) and more advanced networked TMS platforms (45.31%), indicating the industry is in a transitional phase. Nearly a third of respondents utilize standalone TMS solutions or rely on third-party logistics providers (29.69% each).

The fact that 12.5% admitted to having limited visibility into inbound logistics is telling. This lack of transparency can lead to higher costs, inefficiencies, and service disruptions. Inbound logistics management remains highly fragmented, with organizations balancing between legacy manual processes and more advanced, network-enabled technologies.

Organizations are experimenting with different models rather than converging on a single best practice. That type of diversity in approaches reflects the varying maturity levels and investment capabilities across different companies, with some still dependent on spreadsheets, emails, and phone calls while others embrace technology-enabled solutions and real-time visibility across supply chain partners.

The survey responses reveal several critical challenges that organizations face in managing their inbound logistics effectively. Manual processes emerge as a dominant theme, with respondents citing "too many manual touches," extensive manual planning requirements, and the need for significant manual effort to coordinate each step of the process. Data management and visibility issues represent another major challenge, with companies struggling with manual data entry

## WHERE DO YOU SEE THE BIGGEST GAPS OR INEFFICIENCIES IN YOUR INBOUND LOGISTICS TODAY?

- The process is too manual, and does not allow for optimization of routes or rates.
- Each step of the process requires a significant amount of manual effort to coordinate and oversee.
- Coordination between ocean carriers and inland logistics
- Automation/information share with shippers/receivers

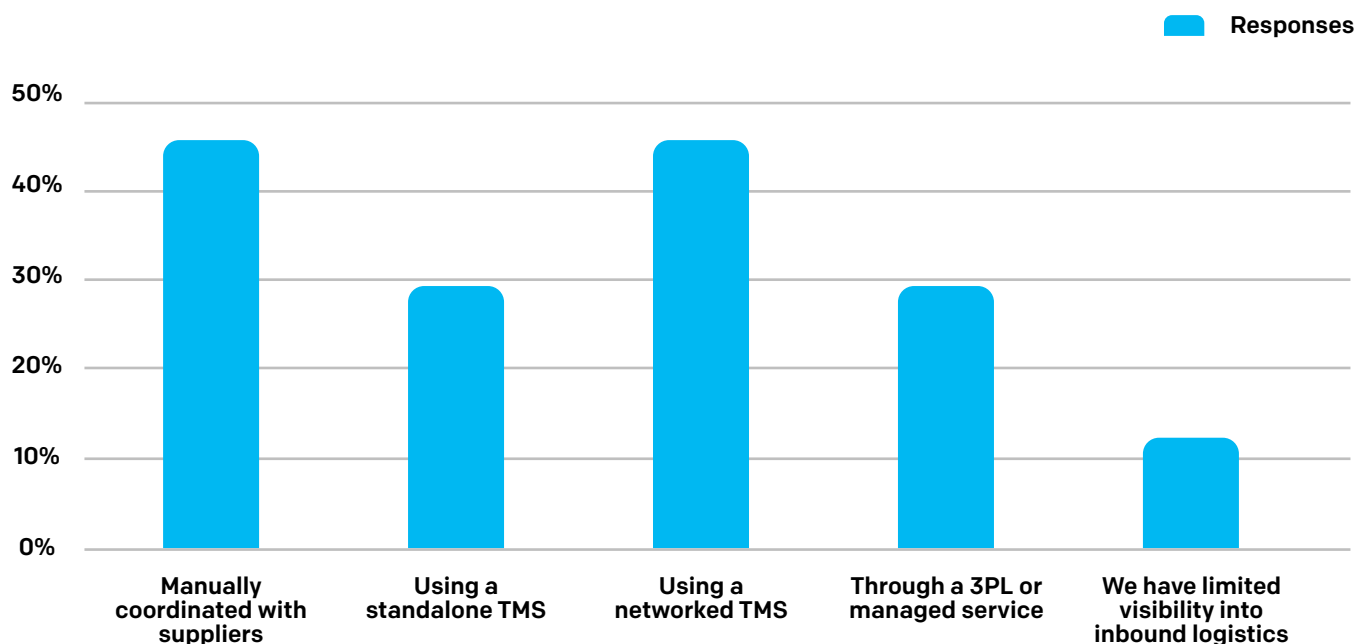
into TMS, lack of EDI connections between ERP and TMS, and insufficient real-time visibility into shipments and manufacturing operations.

External factors also create substantial difficulties, including geopolitical issues like tariffs that hamper forecasting ability, unrealistic service expectations from receivers, and coordination problems between ocean carriers and inland logistics providers. Specialized requirements (such as cold chain monitoring, empty container management, and rail carrier information transparency) also add layers of complexity that many organizations struggle to address systematically.

The inefficiencies identified in the survey responses point to fundamental systemic

issues that extend beyond individual company operations. Information fragmentation appears as a critical inefficiency, with rail carriers maintaining proprietary status on shipment information and creating last-minute availability notifications that increase storage charges and operational costs. The lack of automation and information sharing between shippers and receivers creates bottlenecks, while supplier-managed routings often result in suboptimal cost and service outcomes. Resource utilization inefficiencies are evident in concerns about empty miles, equipment management, and driver retention challenges that affect overall network optimization. Perhaps most significantly, the inability to leverage data effectively for decision-making and forecasting represents a fundamental inefficiency, with

## HOW DO YOU CURRENTLY MANAGE YOUR INBOUND LOGISTICS?



organizations making decisions based on personal preference rather than data-driven insights. These inefficiencies collectively suggest that while technology solutions exist, the industry has not

yet achieved the integration and standardization necessary to optimize inbound logistics operations across the supply chain ecosystem.

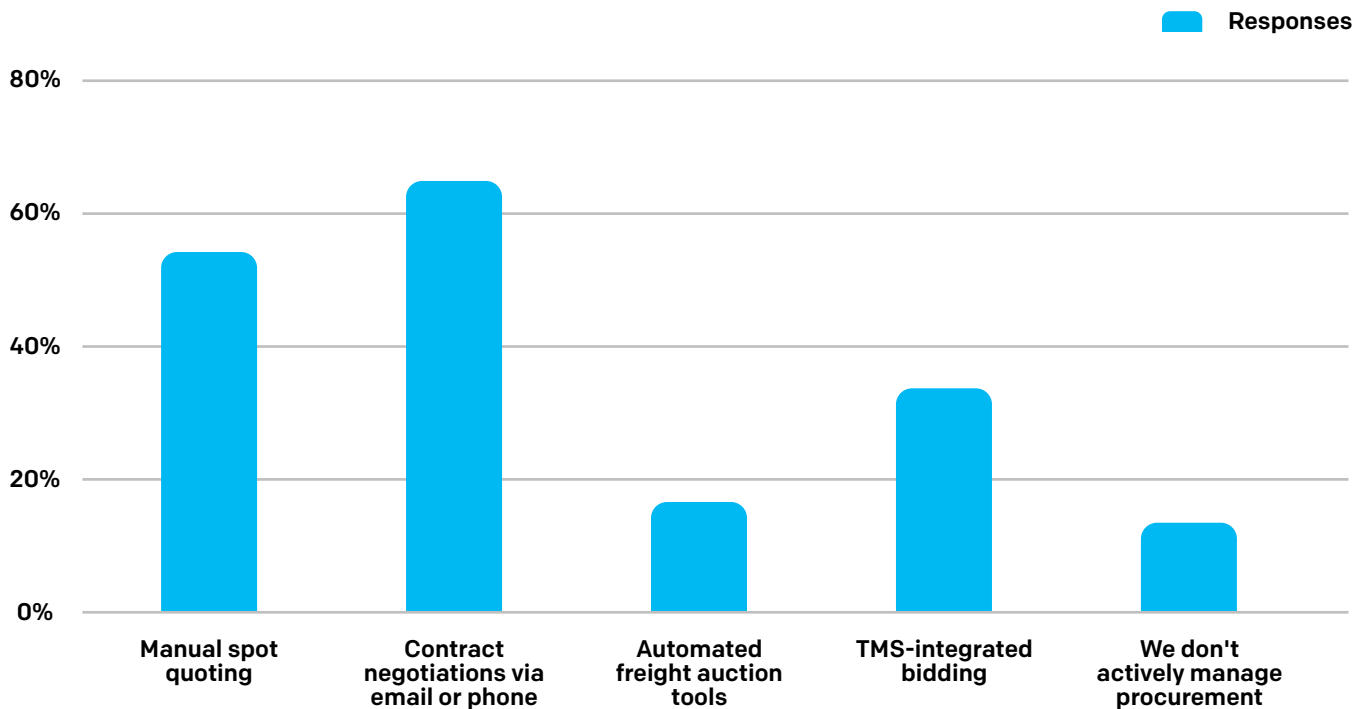
## ► FREIGHT PROCUREMENT PRACTICES & OPPORTUNITIES

The freight procurement landscape today reflects an industry caught between established practices and emerging digital transformation opportunities. While many organizations continue to rely on traditional methods such as email negotiations and manual processes that have served the industry for decades, there is growing recognition that these approaches may not adequately address the complexities and speed demands of modern supply chains.

Simultaneously, the concept of collaborative, network-wide procurement platforms is gaining

attention as a potential solution to enhance transparency and market responsiveness. These platforms promise to create shared environments where carriers and shippers can interact more dynamically, potentially transforming how freight capacity is sourced and managed across supply chain networks. However, the industry's appetite for such innovation remains mixed, with organizations weighing the potential benefits against concerns about implementation complexity, data sharing, and integration with existing systems.

### HOW DOES YOUR ORGANIZATION APPROACH FREIGHT PROCUREMENT TODAY?



Traditional methods still dominate freight procurement, even as digital tools continue to emerge. A clear majority, 65.15%, reported using contract negotiations conducted over email or phone, while 54.55% rely on manual spot quoting. These approaches reflect long-standing industry practices but also highlight inefficiencies, as they often lack transparency, scalability, and the ability to adapt quickly to market shifts.

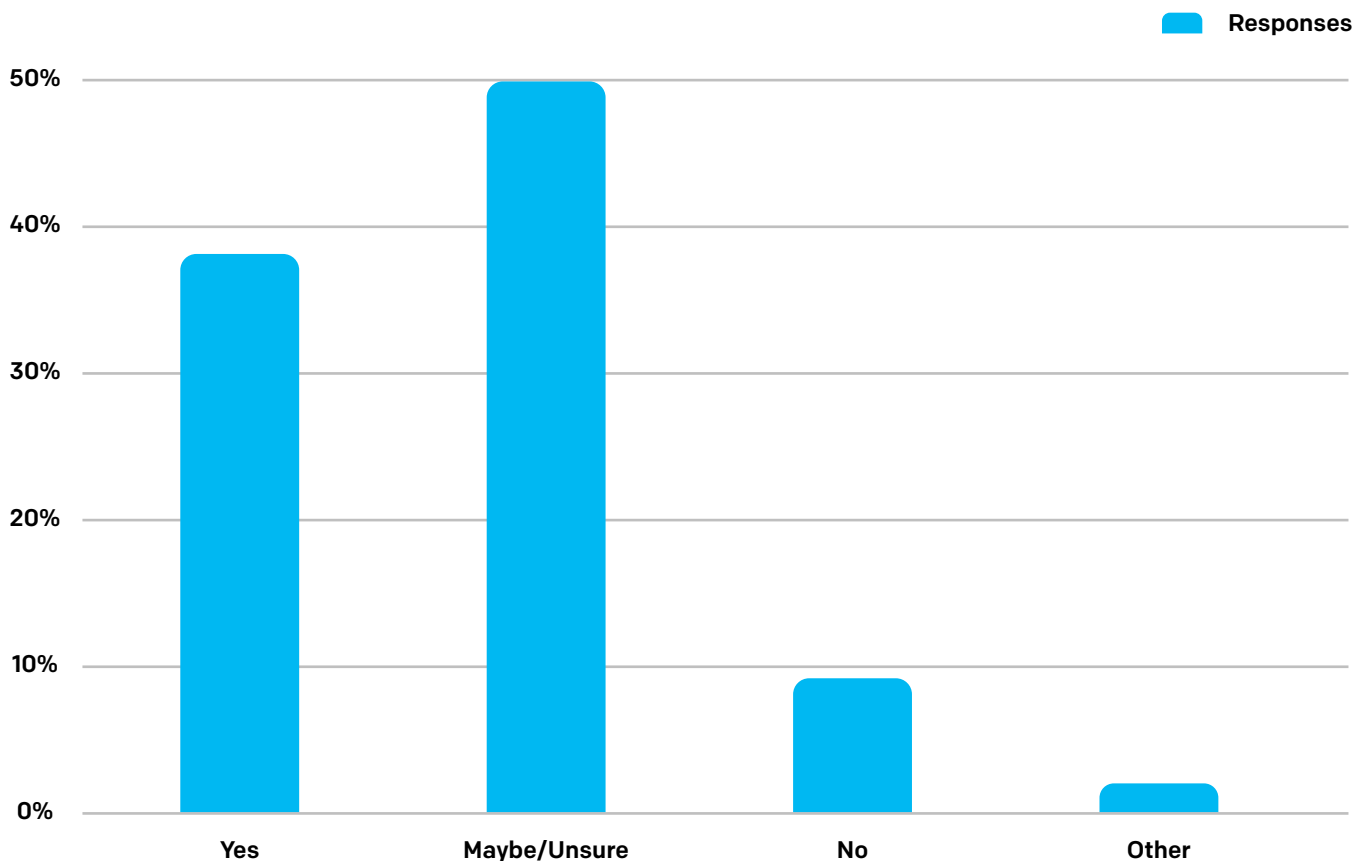
At the same time, more modern solutions are gaining traction. One-third of respondents (33.33%) said they use TMS-integrated bidding, showing that technology-enabled procurement is starting to establish a foothold. Automated freight auction tools, while still less common at 16.67%,

represent another step toward digitization and efficiency, suggesting that adoption is building gradually but has yet to reach widespread levels.

Interestingly, 13.64% admitted that they do not actively manage procurement. For these organizations, freight may either be handled entirely by partners such as 3PLs or procurement simply isn't prioritized strategically, which could leave cost savings and efficiency gains untapped.

The data reflects a procurement landscape in transition. Traditional methods still dominate, but the steady rise of integrated and automated tools points to a growing shift toward digital procurement strategies.

## WOULD YOU BENEFIT FROM A NETWORK-WIDE FREIGHT PROCUREMENT CAPABILITY WHERE CARRIERS AND SHIPPERS INTERACT ON A SHARED PLATFORM?



There is cautious optimism about the value of a network-wide freight procurement platform. Half of respondents (50%) answered “Maybe/Unsure,” indicating that many organizations are still evaluating its practicality, potential benefits, and how it might integrate with existing processes. This uncertainty could stem from concerns around adoption, data transparency, or the complexity of coordinating multiple parties on a single platform.

Meanwhile, 37.88% of respondents said “Yes,” signaling a clear interest from a significant portion of the survey base. These organizations likely recognize the potential efficiencies, cost savings, and market visibility that a shared platform could

provide, particularly in managing spot and contract rates more dynamically.

A smaller group, 9.09%, said “No,” suggesting that for some organizations, either their current procurement processes are sufficient, or they may be wary of new technology adoption.

A network-enabled procurement capability could gain traction, but adoption will require demonstrating tangible value, building trust among carriers and shippers, and ensuring seamless integration with existing TMS and operational workflows.

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## ► TRANSPORTATION & MOVEMENT CHALLENGES

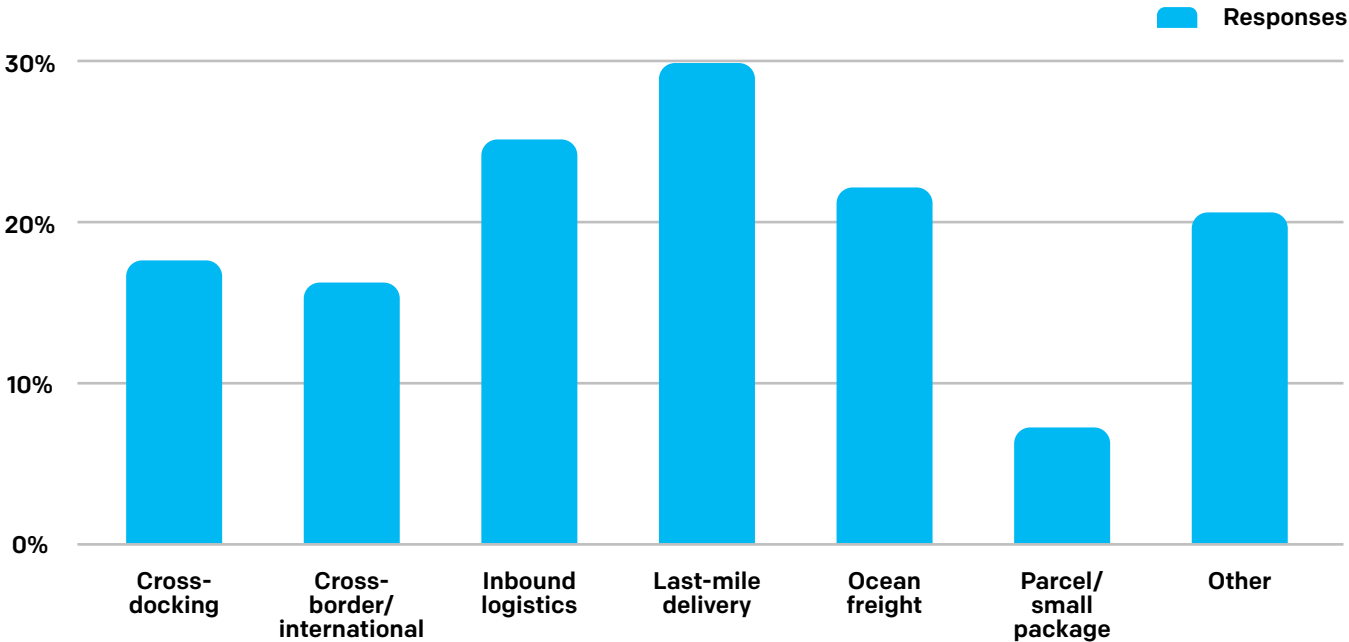
Transportation execution presents unique complexities when organizations must coordinate across multiple external partners, each with their own systems, priorities, and operational constraints. The challenge intensifies as supply chains become more interconnected and customer expectations for speed and reliability continue to rise, forcing companies to navigate an increasingly complex web of carrier relationships, supplier dependencies, and logistics service providers.

These external collaborations often expose gaps in visibility, communication breakdowns, and misaligned incentives that can significantly

impact service levels and costs. Organizations must balance the need for operational flexibility with the desire for predictable, efficient execution, all while managing relationships with partners who may have competing priorities or limited technological capabilities.

Understanding where these collaborative pain points are most acute (and which transportation modes present the greatest execution challenges) has become critical for organizations seeking to optimize their supply chain performance and maintain competitive advantage in today's demanding marketplace.

# WHAT ARE THE MOST CHALLENGING TYPES OF MOVEMENTS FOR YOUR ORGANIZATION WHEN COLLABORATING WITH EXTERNAL PARTNERS (E.G., CARRIERS, SUPPLIERS)?



The responses to this question reveal where organizations feel the most pressure when coordinating with external partners, and last-mile delivery clearly stands out as the biggest challenge at 29.85%. This aligns with broader industry trends, as last mile is often the most complex, costly, and customer-facing leg of the supply chain. Inbound logistics was the second-highest response at 25.37%, reflecting the ongoing struggles many companies face in synchronizing supplier schedules, production timelines, and transportation availability.

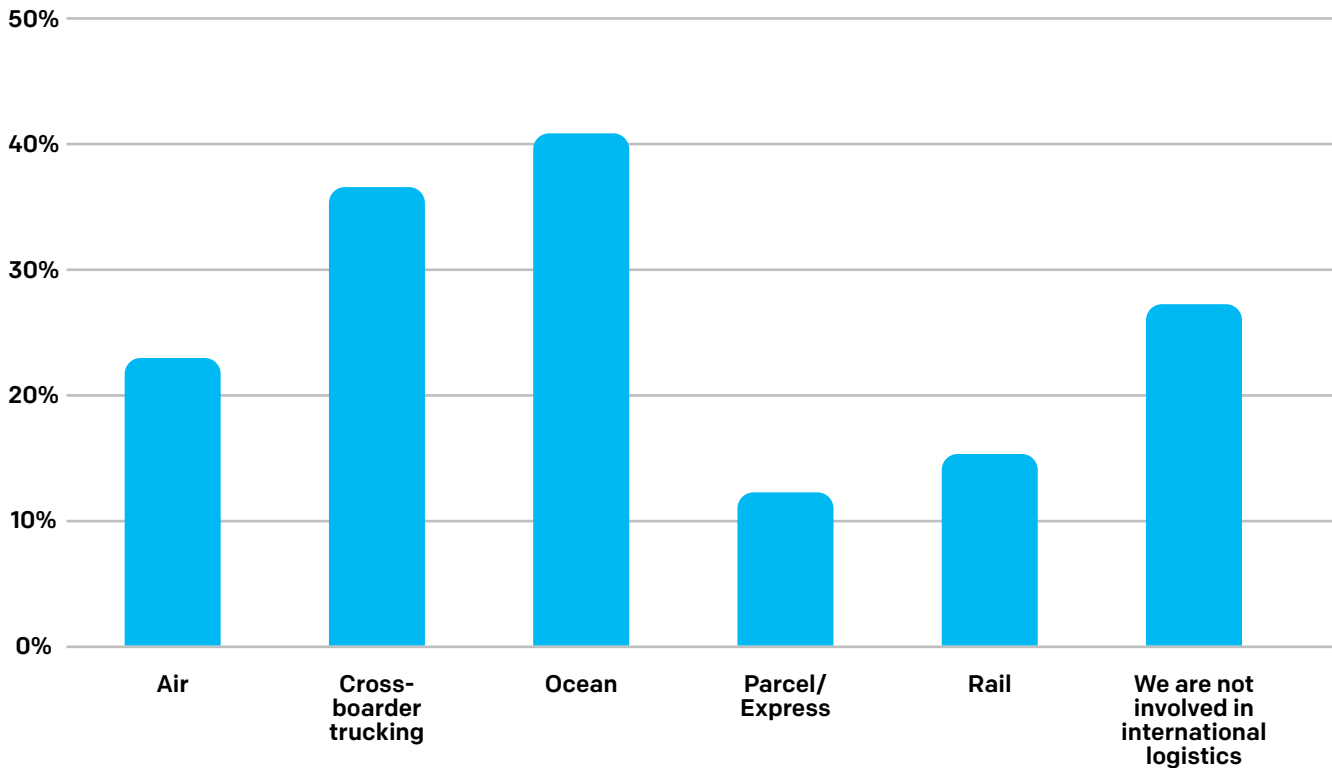
Ocean freight, at 22.39%, also ranked high, which is consistent with the volatility this mode has faced in recent years due to capacity constraints, geopolitical issues, and rate instability. Cross-docking and cross-border/international

movements were also cited by significant portions of respondents, at 17.91% and 16.42% respectively. Interestingly, parcel and small-package shipments were seen as the least challenging, at just 7.46%. This suggests that while parcel volume has exploded with e-commerce, most organizations have adapted to these flows with technology and standardized processes. The 20.90% citing “Other” list factors like “Hot Shot loads,” being forced to scale up, collections, cold chain integrity, call and demand loads, LTL, inbound and outbound temperature control, retail deliveries and OTIF compliance, consolidations, high cost runs that have tolls, and communication.

Overall, the data shows that final-mile execution and upstream visibility remain the toughest hurdles.

## WHICH MODES OF INTERNATIONAL MOVEMENT ARE MOST CRITICAL TO YOUR BUSINESS? (SELECT ALL THAT APPLY)

■ Responses



Given that 40.91% of participants selected ocean freight, it would be reasonable to conclude that it's considered the most critical mode of international movement. This result reflects the continued dominance of ocean shipping in global trade, particularly for bulk goods and high-volume movements where cost efficiency outweighs speed. Due to the importance of regional trade flows, cross-border trucking followed closely at 36.36%. In markets like North America, cross-border activity between the U.S., Canada, and Mexico is central to many supply chains.

22.73% of respondents cited air freight, despite the fact that it's more expensive. This aligns with industries that require speed or temperature-sensitive handling, such as high tech, automotive,

and life sciences. Rail, at 15.15%, remains less common but still relevant for certain long-haul or intercontinental corridors, such as Asia-to-Europe land routes. Parcel and express, though widely used for e-commerce, were only noted by 12.12% of respondents, suggesting they are less critical for the bulk of international B2B shipments represented in the survey.

Notably, more than a quarter of respondents (27.27%) reported not being involved in international logistics at all, underscoring that while global trade is vital for many, a significant share of organizations remain focused on domestic operations. Overall, the results highlight ocean and cross-border trucking as the backbone of international movement for most respondents.

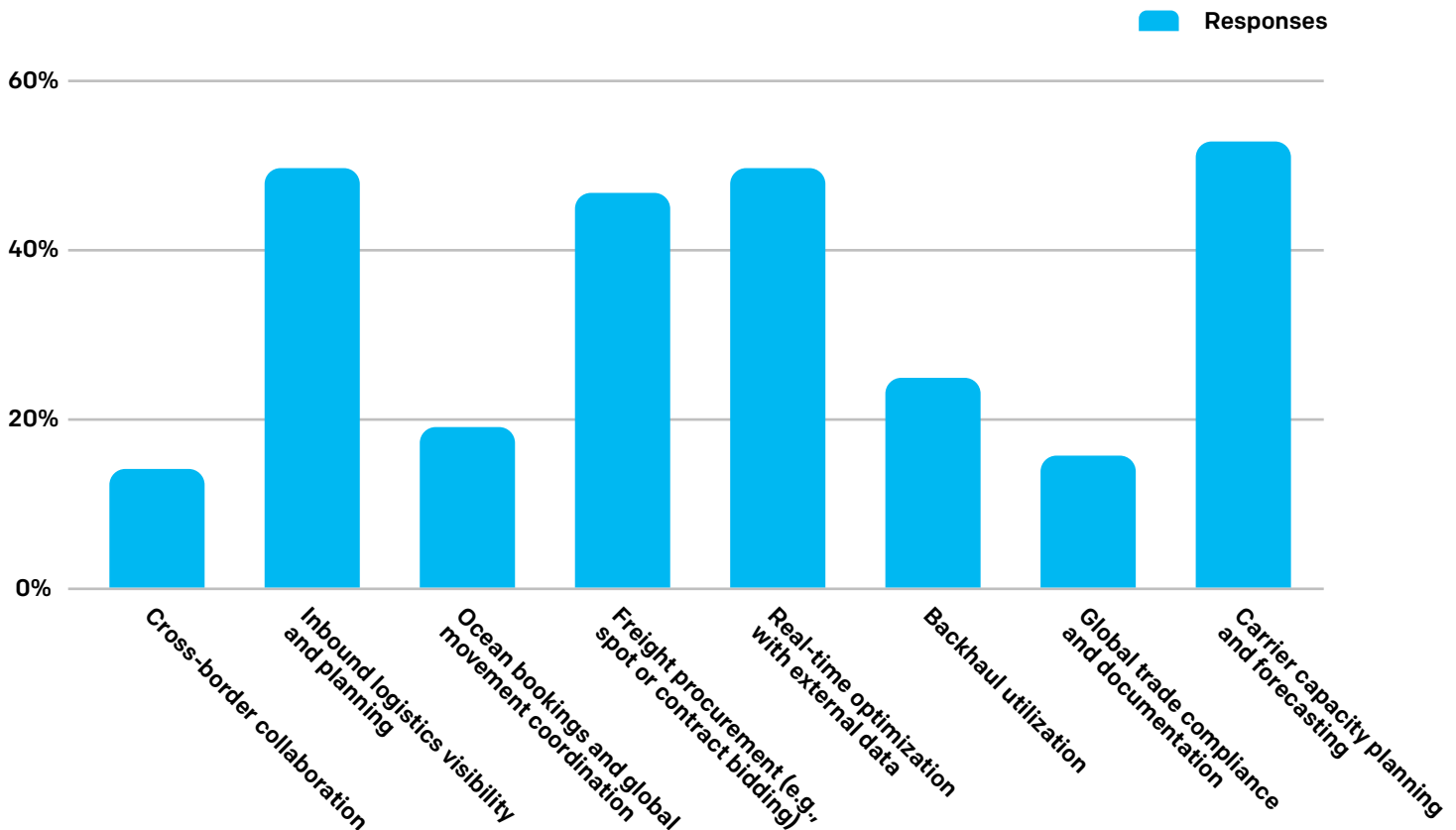
## TECHNOLOGY ADOPTION & FUTURE READINESS

The transportation and logistics industry stands at a pivotal moment in the adoption and integration of advanced technologies. Organizations are grappling with both the promises and uncertainties that artificial intelligence and sophisticated TMS platforms present. These technologies have the potential to transform operations, from predictive analytics that can anticipate market disruptions to AI-powered optimization that can dynamically adjust routes and capacity allocation.

While these possibilities generate considerable interest, many companies remain cautious

about implementation timelines and practical applications. The current technological evolution is occurring against a backdrop of increasing supply chain complexity, where the need for real-time decision-making and predictive capabilities has never been greater. Concerns about reliability, integration challenges, and return on investment continue to influence adoption strategies. As organizations evaluate how these emerging technologies might enhance their operational capabilities, they must balance the allure of cutting-edge solutions with the practical realities of their current systems and requirements.

### IN WHICH OF THE FOLLOWING AREAS DO YOU BELIEVE A NETWORK-ENABLED TMS COULD PROVIDE THE GREATEST VALUE? (SELECT YOUR TOP 3)



The responses to this question paint a clear picture of where organizations see the most potential value from a network-enabled transportation management system (TMS). Carrier capacity planning and forecasting ranked highest at 53.03%, reflecting the industry's growing emphasis on predictive capabilities to better match demand with available supply. Given the volatility in both market capacity and rates, the ability to anticipate and secure the right resources is seen as a major advantage.

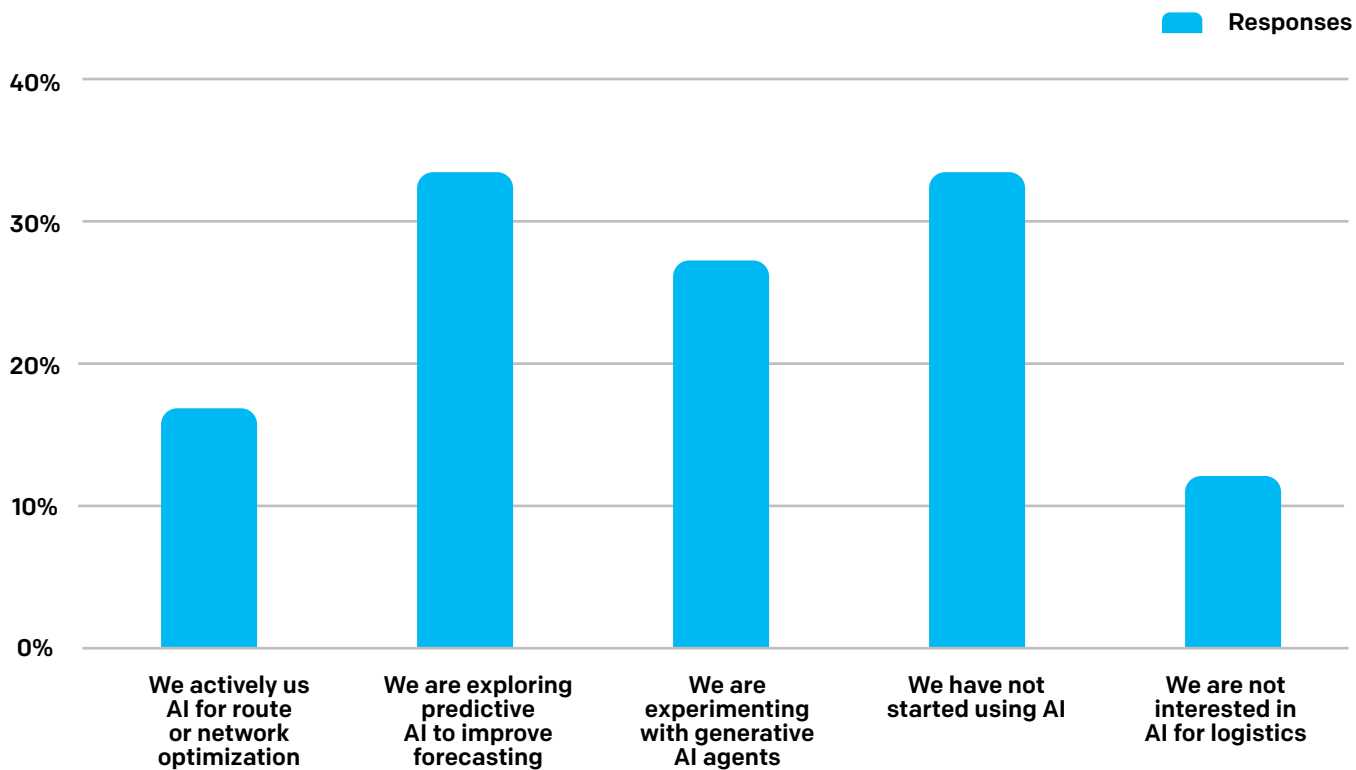
Inbound logistics visibility and planning, along with real-time optimization using external data, tied at 50%. This underscores how critical it has become for organizations to gain end-to-end transparency and use data dynamically, rather than relying solely on static plans. A TMS that can layer

external market conditions, disruptions, or demand shifts into decision-making is viewed as essential for resiliency.

Freight procurement followed closely at 46.97%. Shippers, carriers, and intermediaries clearly place value on streamlining the bidding process and ensuring competitive rates while avoiding excess administrative work. Ocean bookings and cross-border collaboration drew moderate interest, while compliance and documentation sat at 16.67%, suggesting these functions, while necessary, may not be the most pressing areas for improvement.

Overall, the data points to a strong appetite for a TMS that can enhance forecasting, visibility, and optimization, three areas that directly impact cost and level of service.

## WHAT IS YOUR EXPECTED LEVEL OF AI CAPABILITY WITHIN YOUR TMS TO SUPPORT LOGISTICS OR TRANSPORTATION MANAGEMENT?



The responses to this question illustrate a supply chain landscape in the early-to-mid stages of AI adoption. A third of respondents (33.33%) are exploring predictive AI to improve forecasting, indicating strong interest in leveraging machine learning to anticipate demand, optimize inventory, and enhance operational planning. Another 27.27% are experimenting with generative AI agents, suggesting organizations are testing AI-driven tools for tasks like automated communication, planning assistance, or decision support.

Only 16.67% reported actively using AI for route or network optimization. Fully operational AI applications are still relatively rare, likely due to the complexity of integration and the need

for clean, reliable data. Meanwhile, 33.33% of respondents have not started using AI at all, which underscores that many organizations are still in the awareness or evaluation stage. A smaller segment, 12.12%, stated they are not interested in AI for logistics, reflecting either satisfaction with current processes or hesitation around technology adoption, trust, or cost.

The findings indicate a growing curiosity and experimentation with AI, particularly for predictive analytics and generative tools, but widespread, operational use remains limited. The industry appears poised for a gradual shift toward more AI-driven decision-making as confidence and technological maturity increase.

## WHAT USE CASE(S) FOR AI OR INTELLIGENT AGENTS ARE MOST COMPELLING FOR YOUR BUSINESS?

- **Route management for oversized loads.**
- **To bridge all of the transportation systems together.**
- **Our clients' ability to forecast predictably with a high level of accuracy**
- **Load building, forecasting, and reporting**
- **Connecting with internal systems and data to manage and resolve exceptions during the shipping process**

### ► VISIBILITY AND DATA MANAGEMENT

A pivotal theme from the survey is the challenge of managing inbound logistics and achieving full visibility across the supply chain. Approximately 50% of respondents highlighted that real-time optimization with external data was crucial, which underscores the need for end-to-end transparency. Being able to dynamically incorporate external market conditions and disruptions into decision-making processes is, of course, essential for maintaining resilience and agility.

Blue Yonder's Cognitive Solutions address these challenges by leveraging predictive and generative AI capabilities. These solutions empower organizations to not only foresee adverse events and shifts in demand but also provide prescriptive pathways for resolution. By integrating these advanced analytics into their operations, transportation leaders can make more informed, timely decisions that enhance efficiency and minimize risk.

The survey also revealed that while traditional methods of freight procurement are still prevalent, there is a growing interest in technology-enabled solutions. More than 33% of respondents have adopted TMS-integrated bidding to streamline procurement processes, and 16.67% are employing

automated freight auction tools. Blue Yonder's Transportation Management Solution facilitates these processes by providing a unified platform for shippers and carriers, enhancing visibility and fostering collaboration.

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## ► THE FUTURE OF FREIGHT WITH COGNITIVE SOLUTIONS

### Enabling Intelligent Operations

At the heart of Blue Yonder's Transportation Management Solution is the ability to support intelligent operations. This is achieved through machine learning algorithms that optimize load planning, routing, and scheduling. By continuously learning from historical data, these algorithms adapt to changing conditions with minimal human intervention, resulting in efficient and seamless execution across complex networks.

### Agility and Scalability

Blue Yonder's Transportation Management Solution is designed for global scale and flexibility, which is critical in today's volatile freight environments. It accommodates the unique requirements of various stakeholders and ensures that all parties are aligned and operating cohesively.

Adaptability is essential for managing the ebbs and flows of demand and supply, especially in industries prone to rapid changes.

### Handling Disruptions with Confidence

One of the standout features of a network-enabled TMS is its capacity to handle disruptions. Whether dealing with sudden changes in market conditions, regulatory shifts, or unexpected operational setbacks, Blue Yonder's system offers real-time,

actionable insights. This includes predictive warnings about potential risks and prescriptive advice on mitigating those risks, allowing businesses to maintain service excellence.

### Carrier Management and Collaboration

Companies previously struggled with disparate systems and inconsistent data from various carriers. By integrating Blue Yonder's network-based Transportation Management Solution, they can unify data and interactions across all parties involved in transportation management. This leads to improved collaboration, streamlined processes, and a single, reliable source of truth.

### Inbound Logistics Optimization

For organizations grappling with limited visibility into inbound freight, Blue Yonder's Transportation Management Solution provides a comprehensive view of all shipments, leveraging pre-ASNs for enhanced planning and optimization. This visibility not only reduces costs but also minimizes disruptions, ensuring that inventory is managed with precision and foresight.

The insights from Blue Yonder's survey and the capabilities of their Cognitive Solutions highlight a pivotal transformation in transportation management. The move towards AI-driven, collaborative, and agile systems represents the

future of the industry. Blue Yonder's Transportation Management Solution is not only keeping pace with this evolution but are actively shaping it, offering businesses the tools they need to thrive in a complex and interconnected world.

The transportation sector stands on the brink of a new era, driven by cutting-edge technology

and cognitive solutions. Blue Yonder, through its innovative TMS and insightful survey, is paving the way for increased efficiency, reduced costs, and enhanced service levels across the supply chain. As organizations navigate these changes, adopting a networked, cognitive approach will be imperative for sustaining competitive advantages and achieving operational excellence.

