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Elevating transportation and logistics value: The impact of Intelligent Operations

Introduction

The transportation and logistics (T&L) sector is reporting higher revenues, profits, and employee productivity following investments in workflow optimization. Organizations are adding technology in warehouses, last-mile, and other logistics operations to support traceability and transparency across the supply chain.

To understand how workflow improvements translate to growth at established organizations, Oxford Economics and Zebra Technologies surveyed over 200 T&L decision-makers from around the world, then applied econometric analysis to their responses to measure business performance. Our research focused on several key workflows—including inventory management and control, delivery and field operations, and loading and unloading freight—and found significant returns on investment.

Intelligent operations integrate advanced technologies like AI, automation, and data with human expertise to optimize business processes.

T&L organizations that focused on improving inventory management and control, for example—a vital area where many respondents have made meaningful progress in recent years—reported, on average, higher top- and bottom-line impacts over the last year compared to those that did not, including 3.4-percentage-point higher revenue growth and 2.2-percentage-point higher profitability.[1]

In addition to inventory management, this report focuses on delivery and field operations, a key workflow identified by respondents as needing improvement. We also conducted in-depth interviews with industry leaders that show intelligent operations having a broad impact, both within the sector and across the entire supply chain—the complex, interdependent system spanning manufacturing, T&L, and retail organizations—in which they play a central role.

In fact, organizations across the entire supply chain reporting meaningful workflow improvements saw, on average, 2-percentage-point higher revenue growth and 1.7-percentage-point higher profitability than peers over the last year.

1. The percentage-point differences show the average gap in revenue growth and profitability between organizations that made meaningful improvements to inventory management and control and those that did not, based on our analysis of the survey data.

Transportation and logistics organizations are looking for ways to optimize workflows

Business priorities for our survey respondents start with increasing profitability and return on investment. Organizations have found that upgrading workflows with new technologies and processes to create intelligent operations helps deliver those results. “We are always striving to get more automation, one for the accuracy and two for the speed,” says one general manager at a global industrial machinery company. That translates into customer benefit. Technology upgrades across a vast heavy plant manufacturing parts warehouse, for example, should help an automaker using those parts to meet its own goals. “My priorities are keeping the production lines flowing with tiny to huge parts,” says the general manager.

Respondent organizations are spending an average of two-thirds of their IT budgets on devices, software, and other technologies used to automate workflows. Their definitions of workflow automation vary, a reflection of different needs and priorities across the sample: by far the most common responses, selected by 42% and 43% respectively, were the use of digital technologies to streamline workflows and eliminate manual tasks, and the use of technological solutions from hardware to software to improve productivity and efficiency. A smaller group, about 9%, sees automation as the use of advanced analytics and AI/ML to optimize decision-making and operational performance, while only 5% chose robotics and other machines to replace human labor.

To get the most value out of technology investments, organizations will need to significantly improve their data management capabilities. Three-quarters of respondents say data analysis is performed only in select areas or remains limited and siloed at their organizations, with only 20% reporting more advanced capabilities like automated process for data management across multiple business functions or the use of AI for organization-wide insights.

Better data management is essential to achieving further workflow digitization over the next three years, especially in priority areas like improving operational efficiency (48%), better understanding of supply chain issues and opportunities (37%), happier customers (34%), and enhancement of inventory accuracy and management (34%).

Some of the top barriers to improving workflows involve dealing with change, including the high cost of training or upskilling workers (selected by 41% of respondents) and difficulty upgrading or integrating with legacy technology (36%). Pressure to modernize despite these challenges will remain intense for years to come, says the director of operations strategy and transformation at a large European postal service. “What do we need to be able to do to keep up with our competitors’ capabilities?” he says. “And what do we need to do to respond to changing dynamics in our industry?”

Fig. 1: T&L organizations are focused on warehouse orchestration, last-mile routing, and customer experience

Q. Which three of the following business goals are your top priorities for the next three years? Top five responses shown.

Intelligent operations elevate business outcomes

Within the T&L sector, a large majority of warehouses and distribution centers (DCs) report meaningful improvements to their inventory management workflows over the last two years, with only shipping and loading cited more often. Their gains include faster operational speed, greater supply chain visibility, and higher staff satisfaction. But progress is less pronounced in the field, especially for routing time, driver-level visibility, and productivity.

Even organizations with more advanced intelligent operations should have significant opportunities remaining to improve core workflows. Mobile computers, RFID, barcode scanners, and predictive analytics are among the technologies expected to drive the most progress toward faster operational speed, higher labor productivity, and other key needs. Surveyed T&L organizations that have meaningfully optimized their workflows over the past two years noted, on average, a 21% improvement in employee productivity during that time.

+21%

Average increase in employee productivity for T&L organizations implementing workflow improvements

Workflow gains at scale—what they could mean for the top 20 T&L organizations

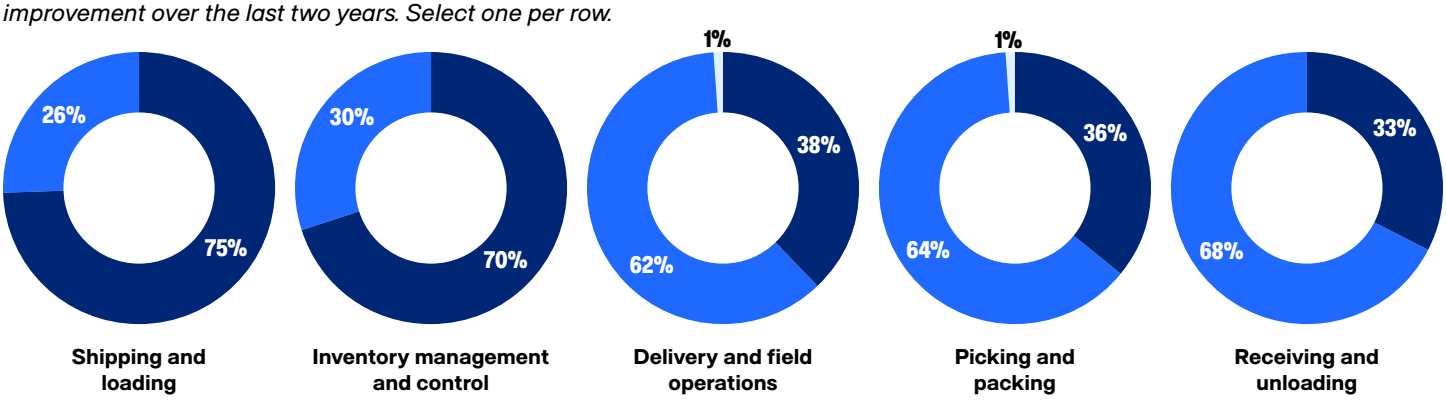
If the top 20 T&L organizations in the Forbes Global 2000 list—who collectively generated $1.0 trillion in revenue in 2024—were to achieve meaningful improvements in their workflows, they could potentially see an aggregate increase of $23.7 billion in revenue and $1.1 billion in profits.[2]

That translates to an average of $1.2 billion in higher revenue (a 2.3% uplift) and $53 million in added profit per T&L organization.

These estimates are based on patterns observed in our survey, which included T&L organizations of all sizes. The findings are applied to the top 20 T&L organizations in the Forbes Global 2000 list and assume similar relationships hold. While these figures are not predictive or causal, they provide a useful indication of the potential scale of benefits for major T&L organizations.

Fig. 2: Inventory management in warehouses and DCs had big gains over delivery and field operations

Q. For each workflow that applies to your organization, select if its improvement is necessary or if it has already seen meaningful improvement over the last two years. Select one per row.



Note: Percentages may not sum to 100% due to rounding

2. We considered the top 20 companies within the 'Transport' industry listed in the Forbes Global 2000 list. Forbes. "Global 2000: The World's Largest Public Companies." Forbes, July 10, 2025. https://www.forbes.com/lists/global2000/.

Deep dive: Intelligent inventory management boosts operational speed and efficiency

Improving inventory management and accuracy remains a leading business priority for warehouses, even after recent progress in that area. Organizations reporting meaningful changes over the last two years are most likely to note increased operational speed, improved inventory and order accuracy, higher staff retention and satisfaction, and better supply chain visibility, each selected by over one-third of respondents.

A range of technologies have been deployed to optimize inventory management, with tablets, mobile computers, and RFID technologies most important to driving improvements. The same trio tops the list of essential technologies for future progress. These are the critical tools for enabling intelligent operations across transportation and logistics workflows.

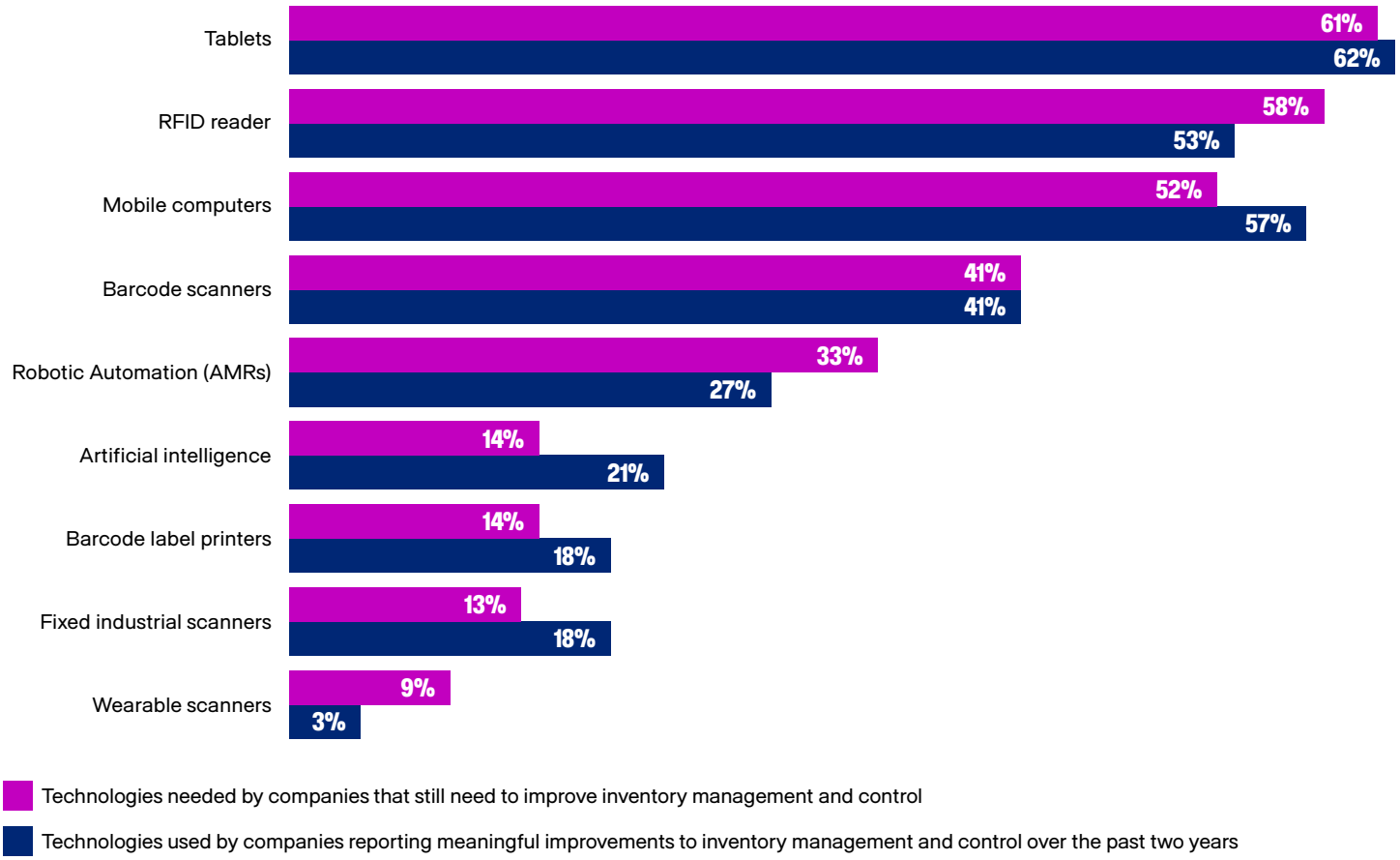
Physical tools to gather data are necessary but not sufficient to create true intelligent operations, which involves putting data to work. A senior director of operations at a global transport and logistics company uses the example of a metric called aged item reporting, which provides a real-time log of how long received items have been in a warehouse.

"We're using that reporting to push our scheduling department, to say we've got to get these things out, these are the oldest items," he says. The company also reaches out to customers to schedule delivery, or if enough time elapses, return items to the seller. "We have to clear this inventory."

Warehouses that improved inventory management reported, on average, 3.4-percentage-point higher revenue growth and 2.2-percentage-point higher profitability over the last year compared to those that did not make meaningful improvements in this area. For the typical organization represented in our survey (see methodology and demographics on page 10), this translates to a potential $25.3 million uplift in revenue and $1.3 million in higher profits.

Fig. 3: Frontline tools in demand for inventory management and control

*Q. Which of the following technologies are or were most important to achieving improvements for your **inventory management and control** workflow? Select two or more.*



Deep dive: Delivery and field operations upgrades increase speed and visibility

A strong majority say delivery and field operations workflows need improvement but have not seen meaningful progress in the past two years. Most respondents aim to reduce routing time (68%) and gain full visibility into each truck, driver, and delivery (66%). "If you multiply this over time and across the whole organization, the savings in fuel, reduced accidents, and efficiencies in the actual delivery, that's real money you save in a thousand different small instances," says the operations director of the global transport and logistics firm.

The technologies most needed to gain these improvements include predictive analytics (selected by 69% of respondents), mobile computers with barcode readers (66%), and tablets (53%). Deployment expectations are advancing for artificial intelligence, with one-third saying it is among the most important tools needed to improve delivery and field operations, while just 21% said improvements in the past two years were AI-powered.

Organizations that improved delivery and field operations reported, on average, 2.3-percentage-point higher revenue growth over the last year compared to those that did not make meaningful improvements in this area. For the typical organization represented in our survey (see methodology and demographics on page 10), this translates to a potential $17.1 million uplift in revenue.

These organizations credit technologies including mobile computers with barcode readers (70%) and predictive analytics and mobile barcode label printers (54% each) with driving improvements to delivery and field operations. The most-cited benefits included reductions in routing time (66%) and full visibility of each truck, driver, and delivery (44%), followed by proof of delivery and reduced stop time (both chosen by over one-third of respondents).

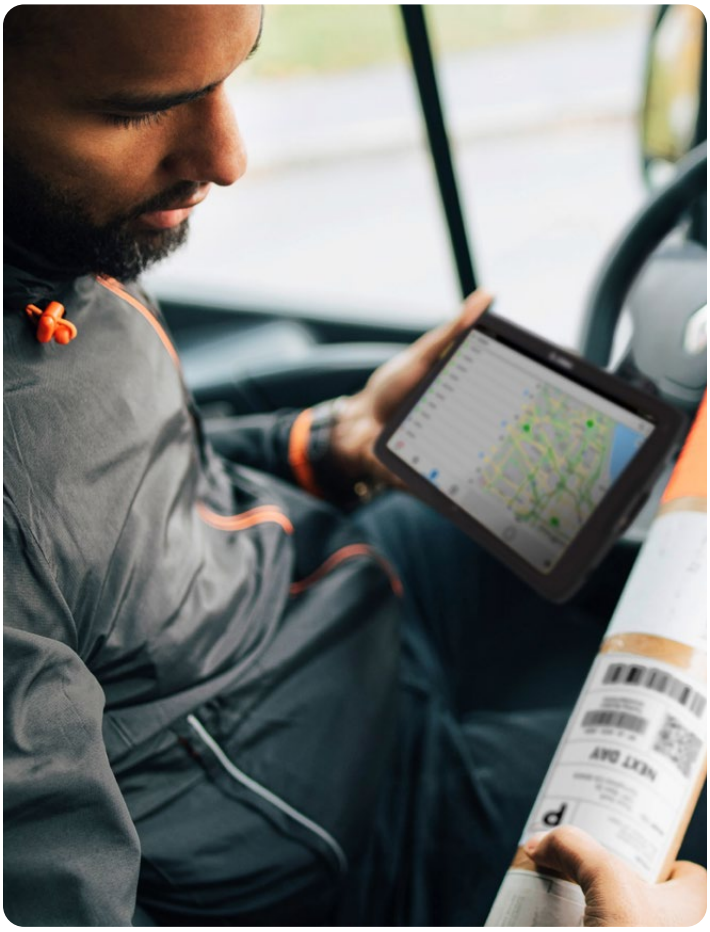
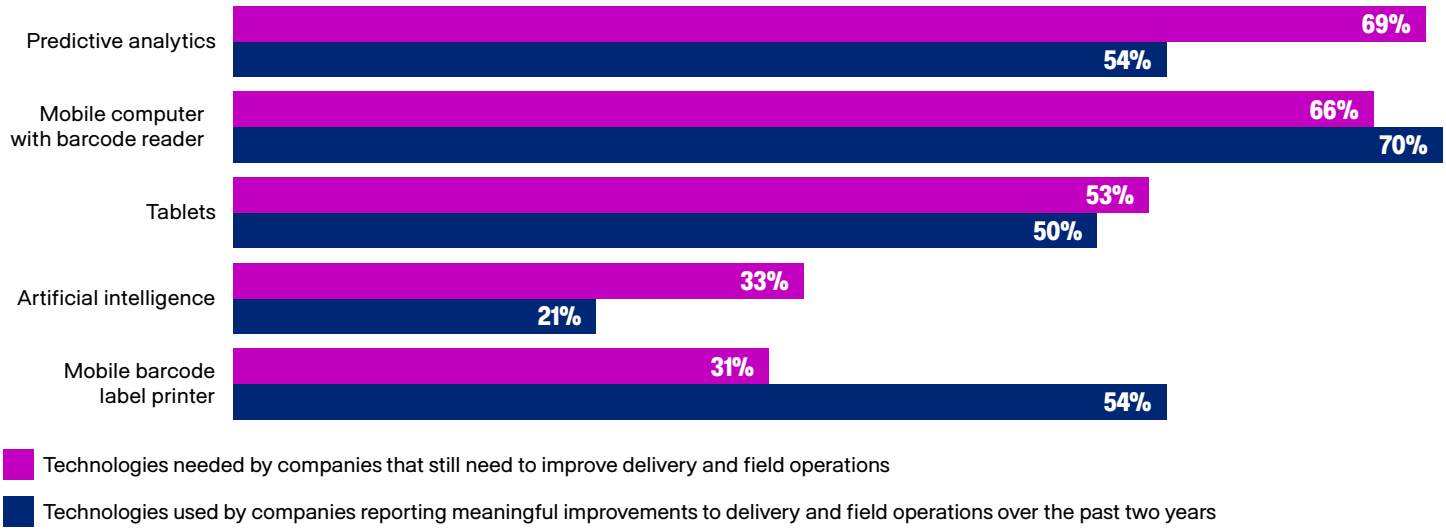


Fig. 4: Predictive analytics and mobile devices are key for delivery and field operations, but AI is gaining traction

*Q. Which of the following technologies are or were most important to achieving improvements for your **delivery and field operations** workflow? Select two or more.*



Large T&L organizations are taking advantage of scale

The components that define intelligent operations are more advanced at the very large organizations in our survey population than at large and mid-sized organizations—a pattern we have seen many times in our technology research over several years.

Very large organizations were more likely than their smaller counterparts to note improvements in a range of workflows, including inventory management and delivery and field operations. But they continue to struggle in key areas like receiving and unloading.

We defined the categories as:

- **Very large organizations:** $10 billion or more in revenue
- **Large organizations:** $1 billion to $9.9 billion in revenue
- **Mid-sized organizations:** $100 million to $999.9 million in revenue

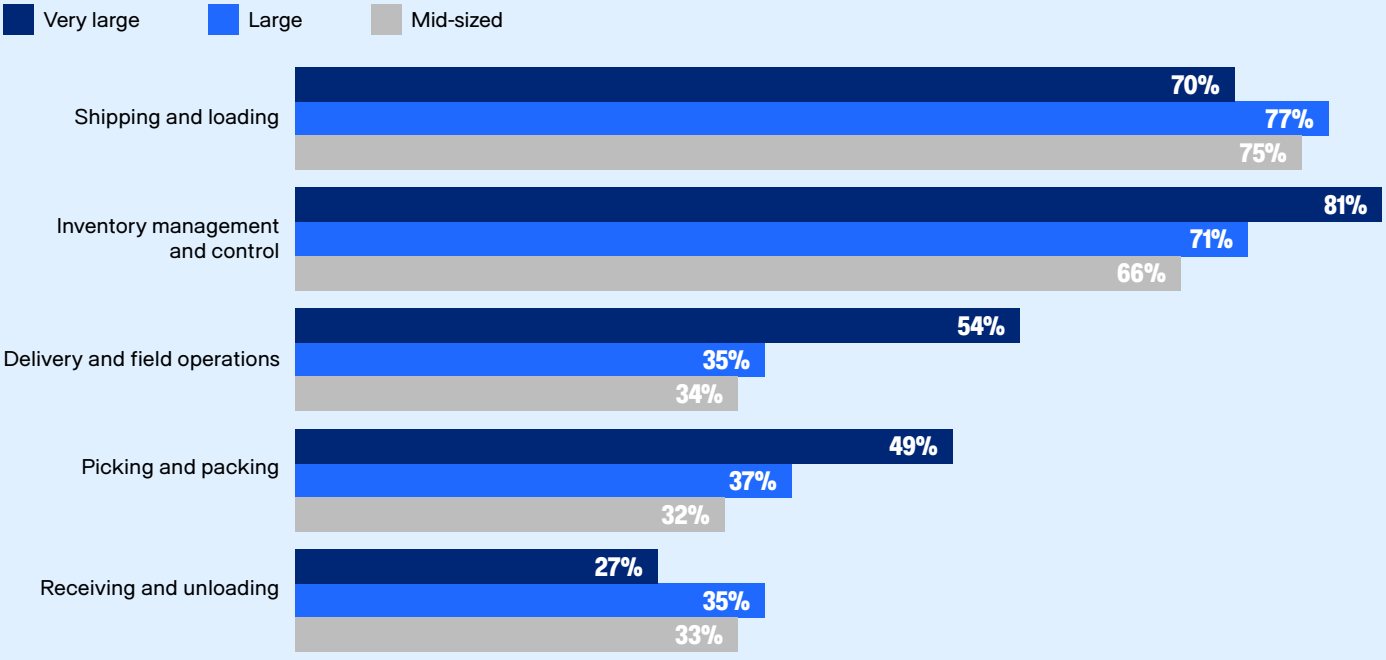
Data management processes are one area where size differences stand out. Very large organizations are far more likely than large organizations to say they have a fully integrated environment with sophisticated analytics and AI-driven insights across the business (35% vs. 8%) or well-defined, integrated processes and apply analytics across multiple key functions (41% vs. 23%); no mid-sized organizations selected either of these categories, with 96% of this group saying they have more limited data-management capabilities, tools, and scope.

Given their greater focus on data, it makes sense that very large and large organizations are much likelier than mid-sized organizations to say data security and privacy are a leading barrier to workflow improvements. Very large organizations are less likely than the other groups to cite executive support or alignment as a major issue, while mid-sized organizations are more likely to struggle with scalability. Large organizations see great challenges in finding skilled workers than their bigger and smaller peers.

Respondent organizations of all sizes selected as top business goals increased profitability and ROI, and improved productivity and efficiency. Sometimes, says the general manager of the industrial machinery company, balancing those goals can be a challenge. “Driving profitability while improving safety and efficiency isn’t just a balancing act—it’s a strategic necessity. The challenge lies in aligning innovation with execution, without compromising either.”

Fig. 5: Very large organizations are ahead of others in improving their inventory management and delivery and field operations workflows

Q. For each workflow that applies to your organization, select if its improvement is necessary or if it has already seen meaningful improvement over the last two years. “Meaningful improvements have been achieved over the last two years” responses shown by organization size.



Progress implementing AI

The mainstreaming of artificial intelligence has come to the T&L sector, where nearly 40% of respondents are using AI tools for demand forecasting and over two-thirds are deploying or piloting them for inventory management. Delivery and field operations workflows are also seeing upgrades from AI: nearly two-thirds are deploying or using the technology for predictive estimated time of arrival, while 57% are doing so for route planning and optimization.

The rapid advancement of AI could help organizations that have been slow to improve workflows catch up to the competition. Still, many are only in the planning stages for key workflows, and some have no plans to implement AI, including over one-quarter who say this for analyzing voice-of-the-customer data. These organizations risk being left behind by competitors already seeing tangible benefits from emerging technologies.

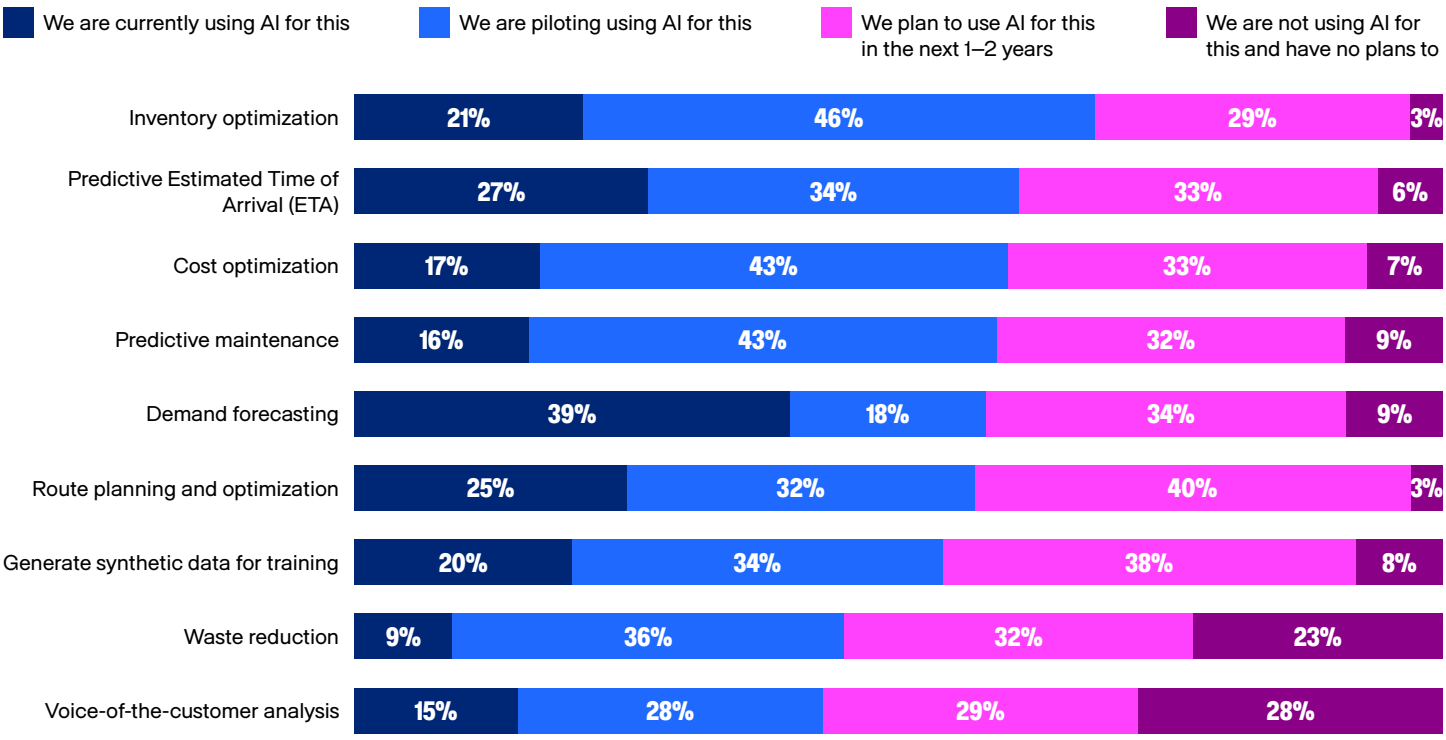
The US-based senior operations director at a global transport and logistics company describes one AI-powered system that is bringing real improvements to frontline operations. Drivers can now get important information on where and how to complete their drop-offs via audio transcription through their earpieces or radios instead of stopping to read instructions (or, worse, checking notes while driving). Early feedback has been positive, although data is still being collected. "If we can finish stops sooner and increase productivity by adding an additional stop—even if it's an additional stop every other day—that's huge," he says.

For T&L organizations to make the most of artificial intelligence they will need to invest in their data access, management, and analysis processes—a crucial step toward intelligent operations that lags at many organizations across the sector, especially the smaller organizations in our survey.

AI may also fill automation gaps in jobs where machines still struggle. At the European postal service, for example, the nagging problem of deciphering hard-to-read addresses continues to depend on sometimes overmatched optical character-recognition scanners. "That is where AI really can start to help us fill in some of the blanks," says the senior official. "The next logical step is AI."

Fig. 6: Organizations are leveraging AI to optimize a range of workflows

Q. To what extent is your organization using AI for the following workflows?



Note: Percentages may not sum to 100% due to rounding

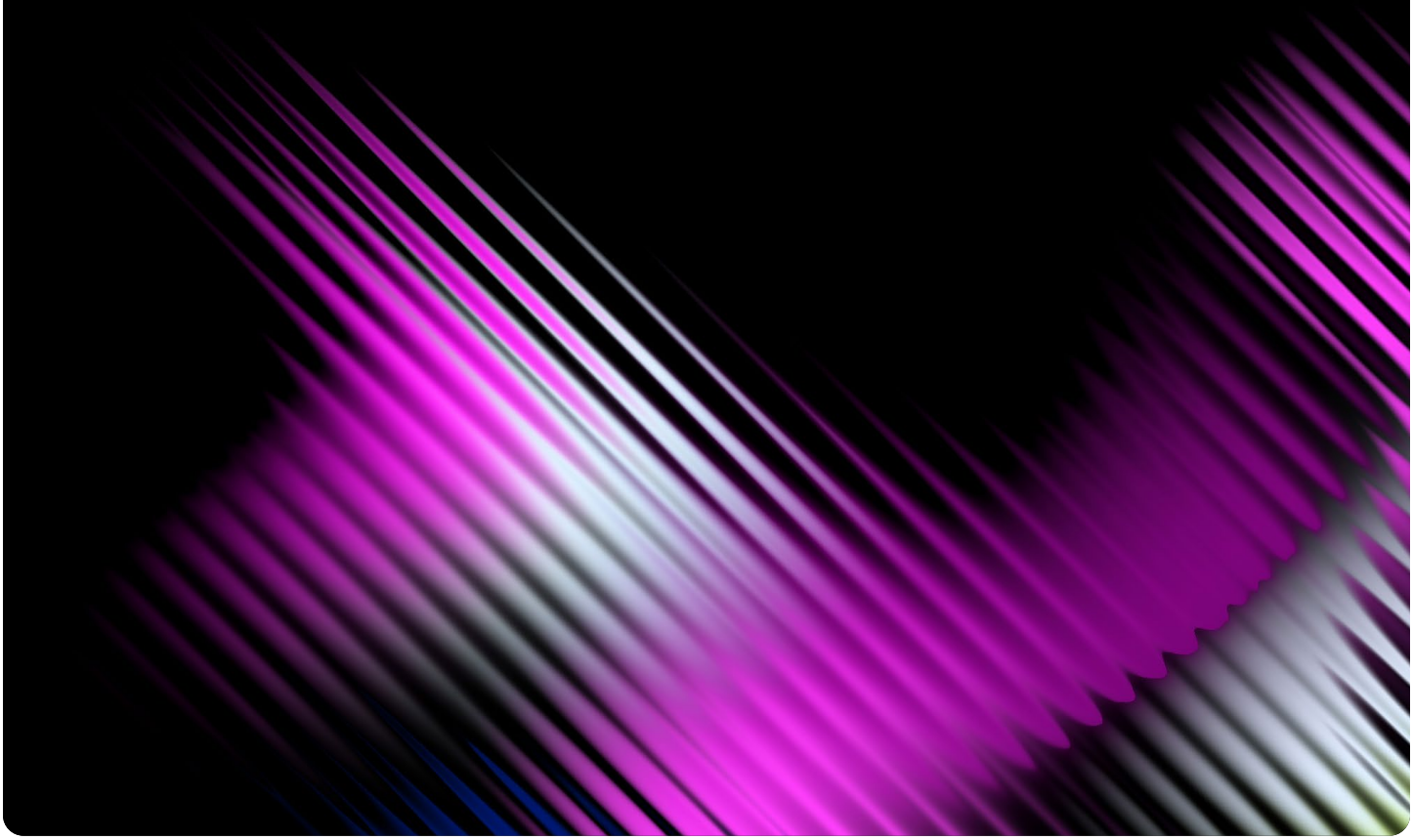
Conclusion

The successful adoption of intelligent operations helps transportation and logistics organizations progress toward their core goals. These include greater supply chain visibility, enhanced customer experience, and better inventory accuracy and management, all contributing to the big-picture focus on efficiency, productivity, profitability, and return on investment.

Most respondents to our survey have realized value from improvements to a spectrum of workflows in recent years. Most also say they have room to improve, both in areas that have seen meaningful progress, like inventory management, and some that need extra attention, like delivery and field operations. Meanwhile newer technologies like artificial intelligence are making a rapid impact, offering laggards a chance to jumpstart their modernization efforts.

Key takeaways from our impact analysis and in-depth interviews include the following:

- **Intelligent operations depend on robust data resources and management.** T&L organizations looking to upgrade their legacy systems or invest in advanced technologies like AI need to make sure their data management processes are well defined and integrated across their business. This is key to enabling real-time, connected insights and enhancing data-driven decision-making.
- **Intelligent operations are powered by a combination of devices and software solutions.** T&L organizations that leverage a range of tools such as RFID technologies, mobile computers and tablets, AI, and analytics are better positioned to minimize errors, gain visibility into their workflows, and make better business decisions.
- **Organizations on the workflow optimization journey can benefit from AI.** Most organizations in the T&L sector are piloting or using AI to enhance key tasks and workflows. As the technology continues to mature it will help them meet key goals like supply chain visibility and operational speed.



Methodology and demographics: Reaching T&L firms

In partnership with Zebra Technologies, Oxford Economics surveyed 1,000 senior leaders from the manufacturing, retail, and transportation and logistics sectors to understand how organizations are using hardware and software technologies to improve workflows.

This sample features **212** respondents from the T&L sector, including third-party logistics; retail distribution, fulfillment, or return centers; manufacturing raw material warehouse, work-in-progress storage, or finished goods warehouse; express delivery and courier services; and mail and postal services. Organization sizes vary: 34% of firms surveyed report annual revenues of $100 million to $499.9 million in their most recent fiscal year, while 66% report $500 million or more.

The survey was fielded from April to May of 2025, targeting T&L leaders from the US, Mexico, UK, Germany, India, Japan, and Australia and New Zealand—all of whom are responsible for or involved in decisions around improving operational tasks and workflows. Respondents hold positions at the managerial level or higher in either IT or line of business roles.

To contextualize our survey findings, we conducted in-depth interviews with executives from the sector who shared their experiences optimizing workflows at their organizations.

Oxford Economics then analyzed how reported improvements in business outcomes—such as revenue growth and profitability—correlate with advancements in workflow processes. Using regression analysis, we identified the extent to which specific types of workflow improvements are associated with better business performance, while controlling for factors such as organization size, industry sector, and country of operation.

Dollar values are estimates based on the "typical" organization in our sample—that is, one whose size and performance are close to the middle of the range reported by respondents (i.e., the median). The average percentage-point differences identified in our analysis are applied to this typical organization to estimate the potential indicative revenue and profitability benefits associated with workflow improvements.

While regression techniques help isolate these associations, the findings should not be interpreted as evidence of causation. Rather, they illustrate potential benefits based on patterns in the data. Additionally, the results reflect reported responses from the survey and should not be generalized beyond organizations similar to the typical respondent in our sample.

The figures in the sidebar titled "Workflow gains at scale—what they could mean for the top 20 T&L organizations" are illustrative estimates based on our survey findings. We applied the average percentage point improvements in revenue and profits—reported by organizations that experienced meaningful workflow gains—to the most recent revenue and profit data for the top 20 T&L firms in the relevant Forbes Global 2000 industry categories.[3] This approach provides a simplified estimate of the potential financial uplift these leading T&L organizations might see if they achieved gains comparable to those observed in our survey. These figures are not predictive and should not be interpreted as evidence of causality.

3. We considered the top 20 companies within the 'Transport' industry listed in the Forbes Global 2000 list. Forbes. "Global 2000: The World's Largest Public Companies." Forbes, July 10, 2025. https://www.forbes.com/lists/global2000/.

About Oxford Economics

Oxford Economics specializes in evidence-based thought leadership, forecasting, and economic impact analysis. Our economists use sophisticated analytical models and have access to a rich database of figures, forecasts, and analysis on 200 countries, 100 industrial sectors, and 8,000 cities and regions. Headquartered in Oxford, with offices around the world, we employ more than 600 people, including over 400 economists, industry experts, and business editors. The rigor of our analysis, caliber of staff, and best-of-class global economic models and analytical tools make us a trusted resource for over 2,500 corporations, financial institutions, government organizations, professional service firms, and universities. For more information, visit www.oxfordeconomics.com.

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About Zebra Technologies

At Zebra, we provide the foundation for intelligent operations with an award-winning portfolio comprised of automation, asset visibility, and connected frontline solutions. With operations in +100 countries, we help organizations—including +80% of the Fortune 500—respond faster to change, improve productivity, and empower teams with real-time insights. Together with our partners, we create new ways of working that make everyday life better. Learn more at zebra.com.

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> “In transportation and logistics, a missed scan or delayed handoff doesn’t just slow operations—it impacts the entire business. Intelligent operations give teams the visibility and precision to keep workflows moving, turning small missteps into opportunities for flawless execution.”
>
> *—Joe White, Chief Product & Solutions Officer, Zebra Technologies*

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