

RXO

Supply Chain Automation in a **Post-COVID World**

How to Balance **People & Technology**
in Logistics Operations

ABSTRACT

Supply chain automation is not a new topic — the digital transformation of the logistics industry has been underway for years.

Over the past decade especially, shippers and carriers have rapidly integrated new technologies, creating a more efficient, connected industry.

Just when the pace of change felt like it could not get any faster, the outbreak of COVID-19 forced supply chain professionals into a whole new world of digital adoption. Though the global pandemic is not over, it has already left its mark on logistics operations.

Technology is undeniably playing a bigger role than ever before, but the pandemic also highlighted the need for human expertise.

Though uncertainty remains, one thing is clear: for companies to meet the ever-increasing demands for faster, cheaper shipping, they must find the right balance between automation and people.

To better understand how shippers and carriers are integrating technology in their operations today, and where they are investing for the future, RXO conducted an in-depth research study in 2019.

In 2021, we revisited this crucial topic, getting fresh insight to find out how the last two years have changed their views, strategy and execution.

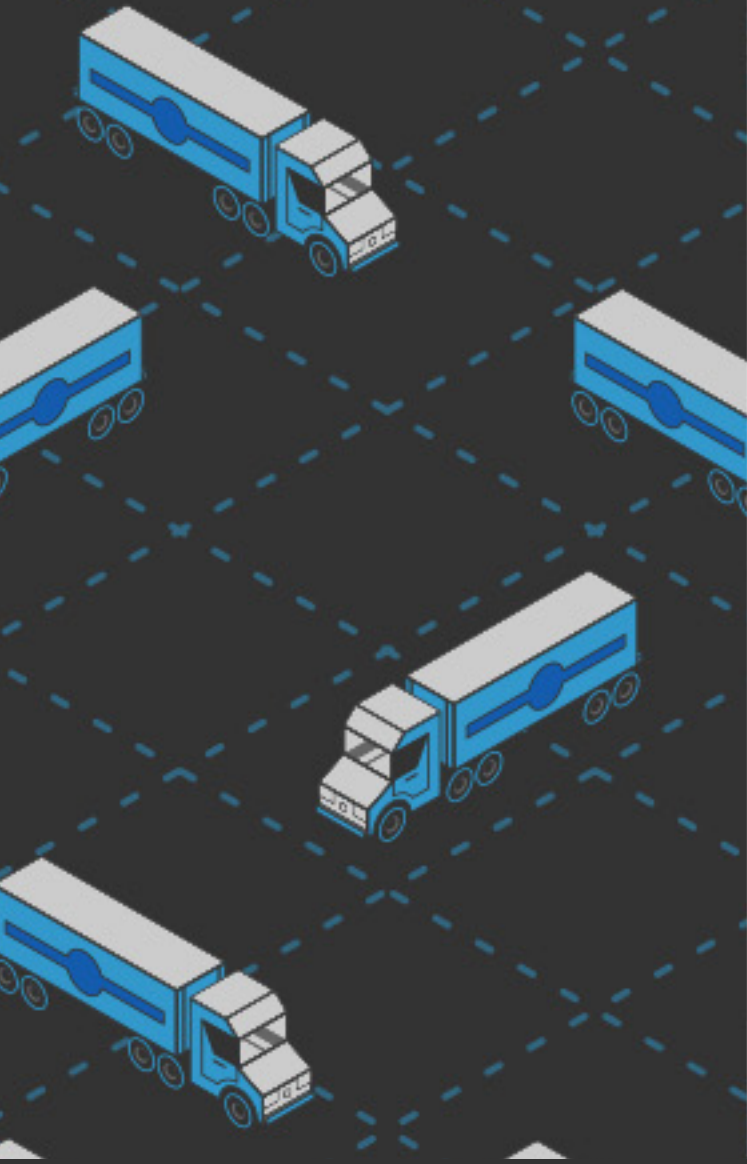
This report details original research that will help companies as they seek to strike a balance between human expertise and automation in their own supply chain.



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Supply Chain Automation
in a **Post-COVID World**

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Shipper Results & Insights

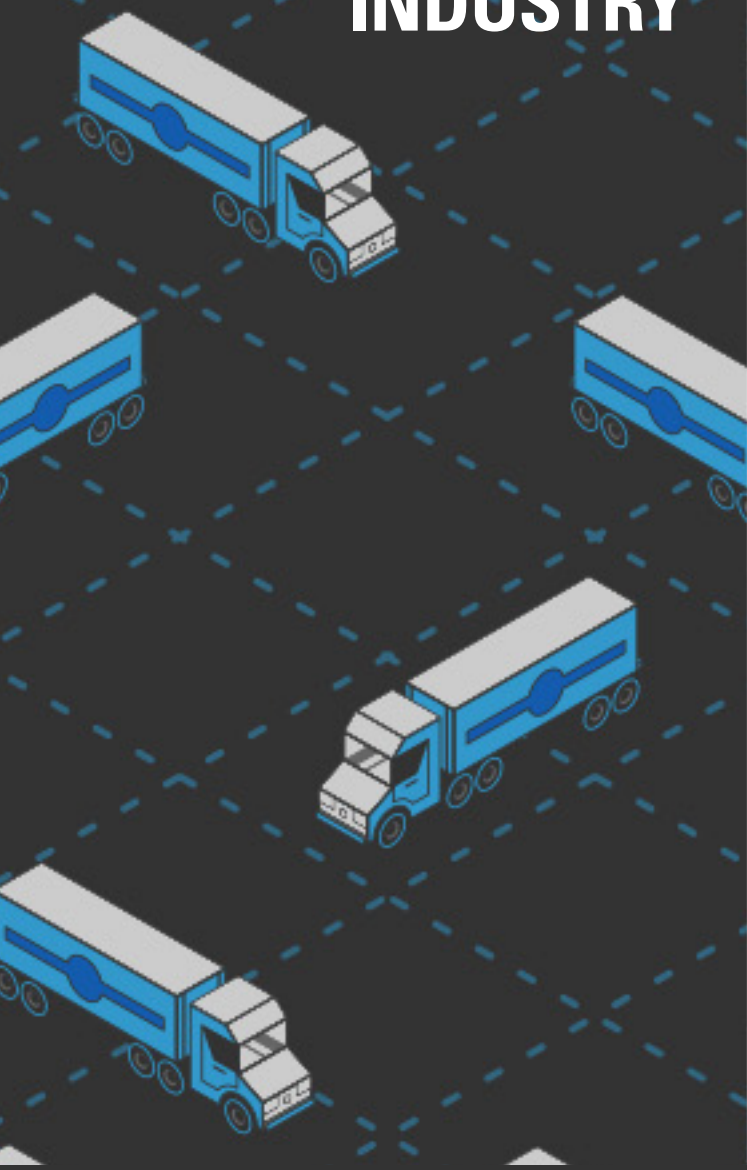
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8 Key Takeaways from the Research

**DIGITAL
TRANSFORMATION,
COVID-19 &
THE LOGISTICS
INDUSTRY**



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**Automation. Machine learning.
Digital transformation. Big data.**

It is easy to write these off as buzzwords, but for modern logistics professionals, these concepts have a very real impact on operations.

Every business, regardless of size or industry, has to integrate technology into their supply chain. That was true in 2019, and now — after months of remote work and social distancing — technology’s impact is more apparent than ever.

But it is only part of the equation.

Although the pandemic forced digital transformation in a way we never thought possible, it also underscored the need for people. Amidst the mass exodus from offices, it was logistics professionals — from supply chain directors to owner-operators — that adapted their businesses, seemingly overnight.

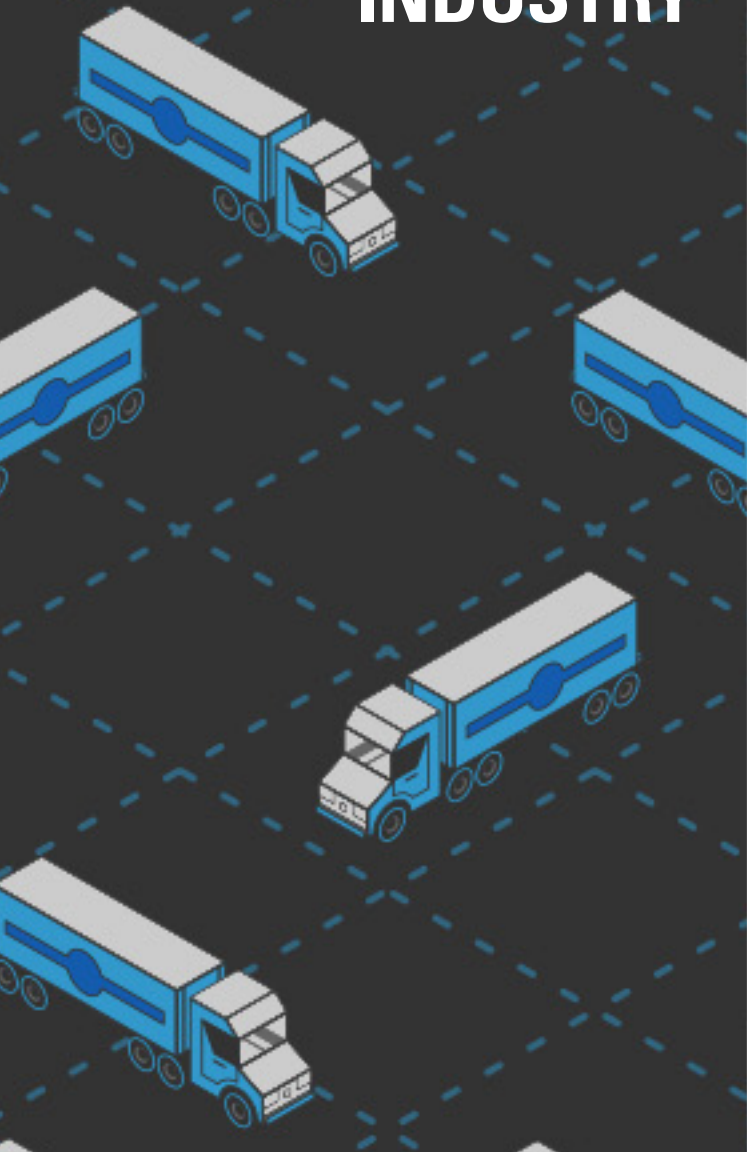
This adaption has created lasting impacts, accelerating automation in some areas, while walking it back in others.

To put it plainly: every supply chain needs to strike the right balance between technology and human expertise to survive.

Not enough automation, and you cannot keep up with the competition. Not enough expertise, and your digital investments will go to waste.

Unfortunately, the right balance is a moving target, and striking it is easier said than done, but relying on insights from industry peers is a great place to get started.

**DIGITAL
TRANSFORMATION,
COVID-19 &
THE LOGISTICS
INDUSTRY**



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Getting Answers from Hundreds of Logistics Leaders

*Where should I automate? When should I hire?
Can I invest? Can I afford not to?*

In 2019, we asked these questions to hundreds of logistics professionals and published their insights in an original research study.

In 2021, we asked them again.

How did a year of Zoom calls and social distancing impact their strategy?

This global report dives into the latest results from over **800** supply chain and transportation decision makers.

Find out how today's business leaders are balancing technology and human expertise, and how the COVID-19 pandemic changed their approach.



We still need people in shipping operations. People can problem solve and help manage risks, especially during periods of uncertainty — for instance, the first COVID-19 national lockdown.

Director/Manager of Procurement
UK Shipper
\$200 million to \$799 million

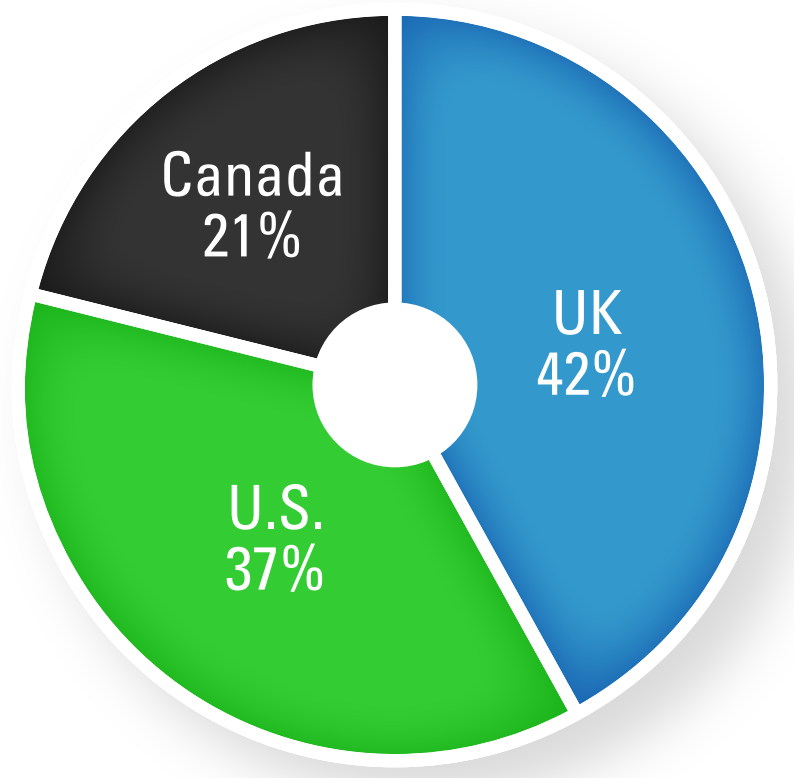
**DIGITAL
TRANSFORMATION,
COVID-19 &
THE LOGISTICS
INDUSTRY**



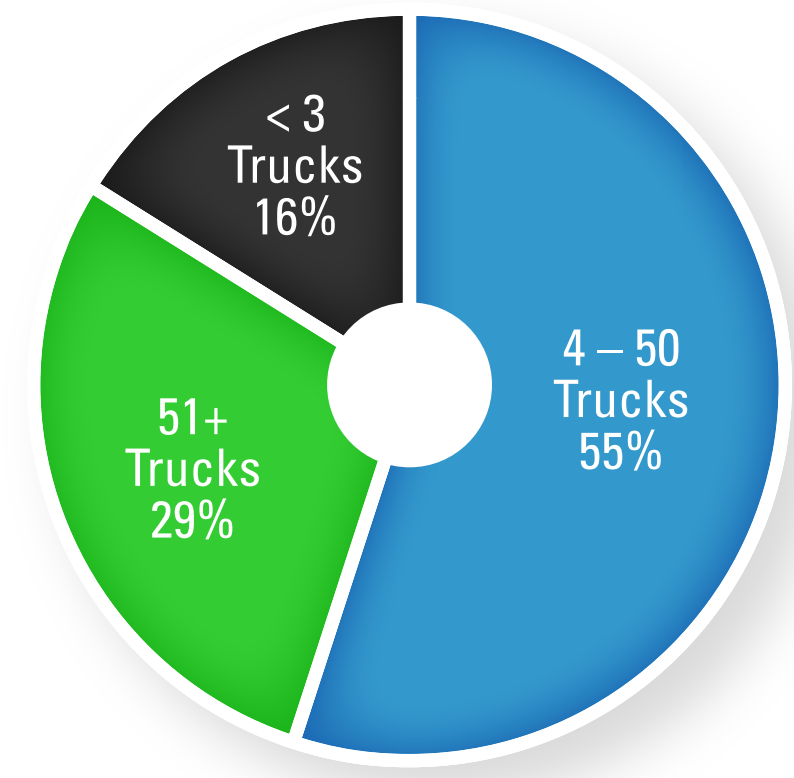
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CARRIER RESPONDENT DEMOGRAPHICS N = 361

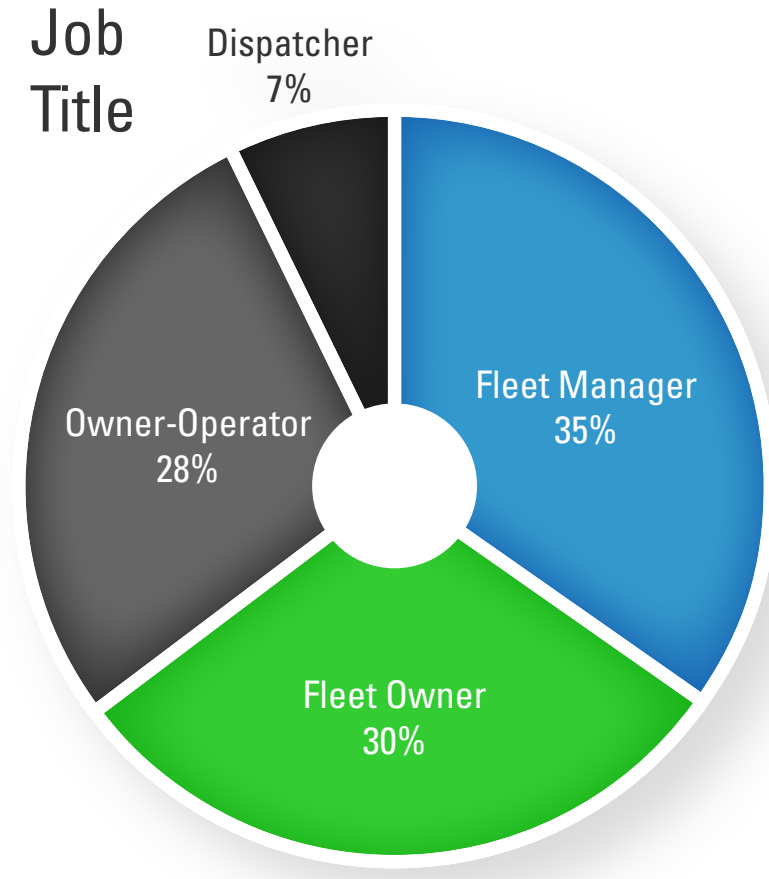
Country



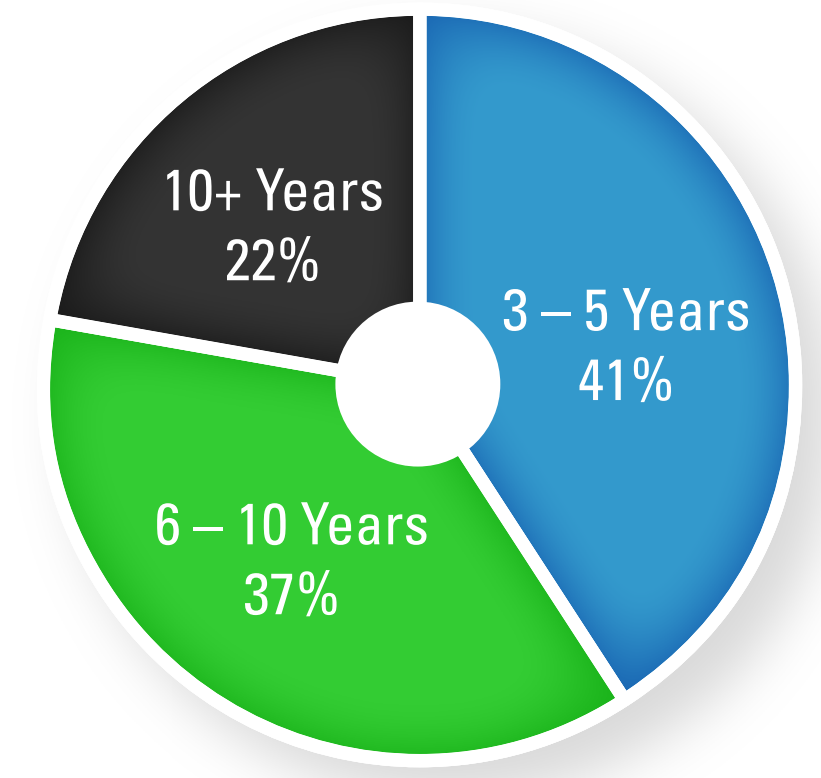
Fleet Size



Job Title

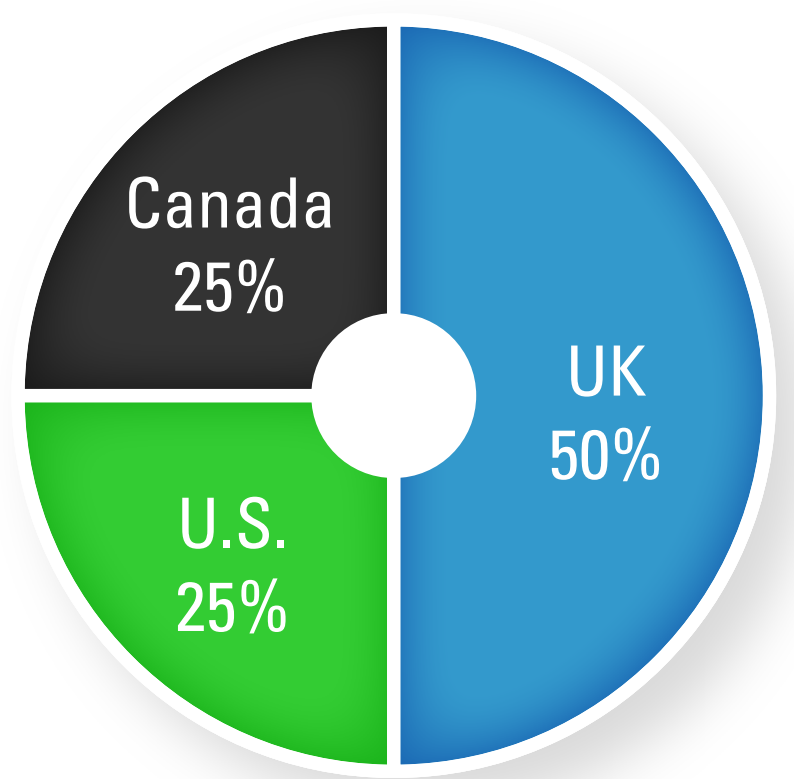


Seniority

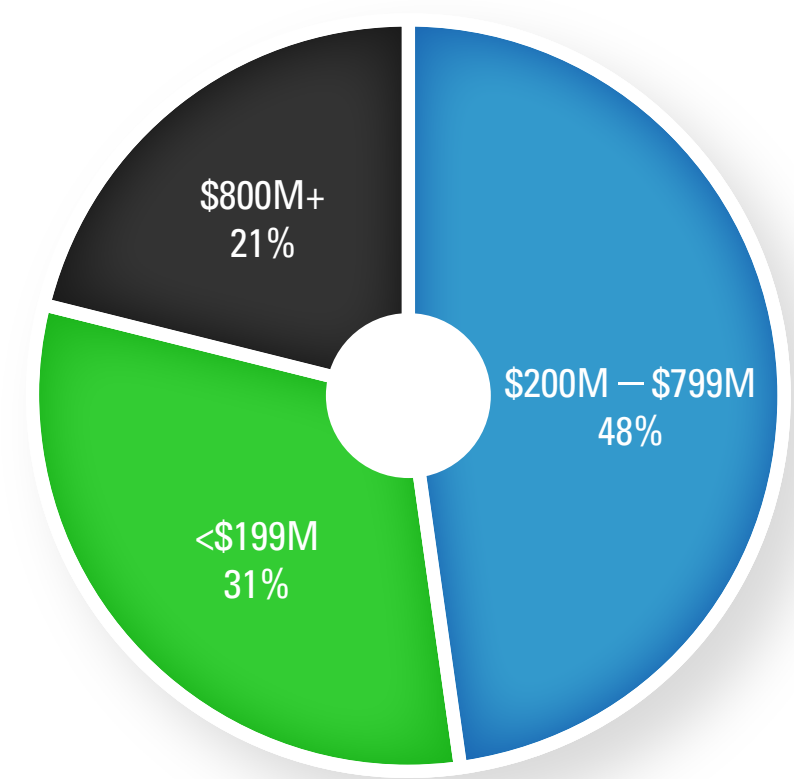


SHIPPER RESPONDENT DEMOGRAPHICS N = 502

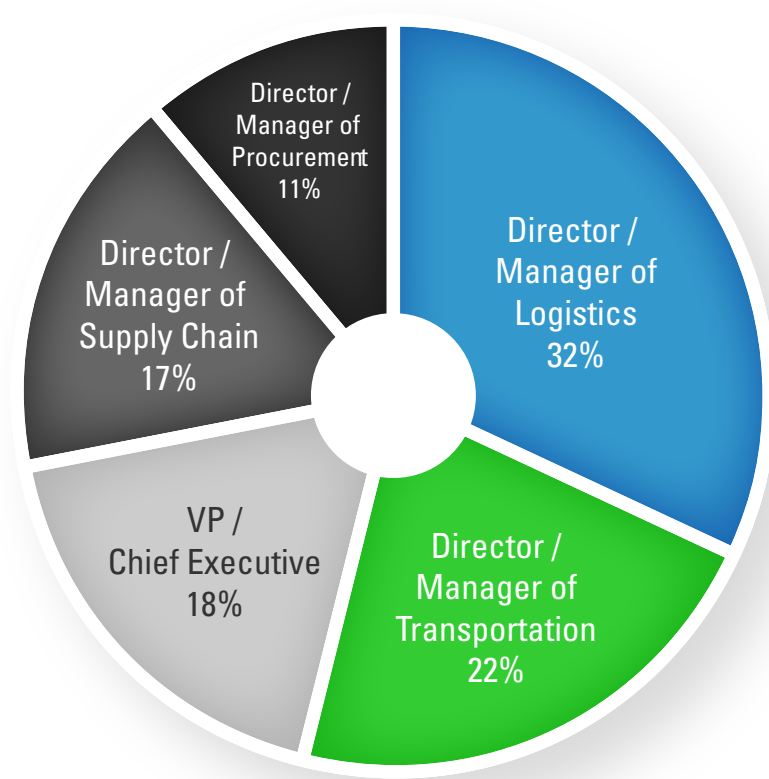
Country



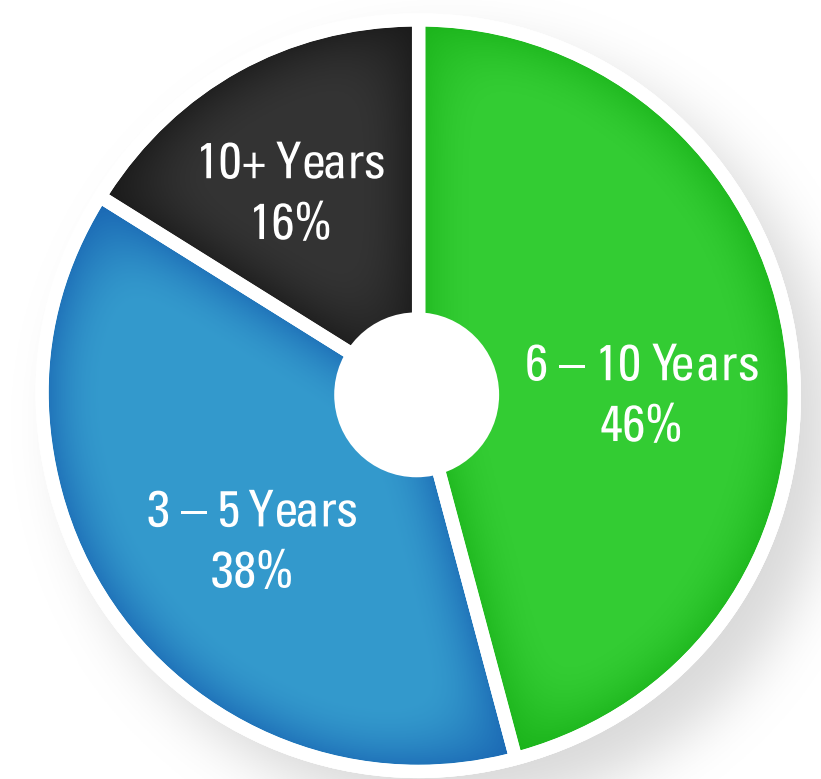
Business Size (by Revenue)



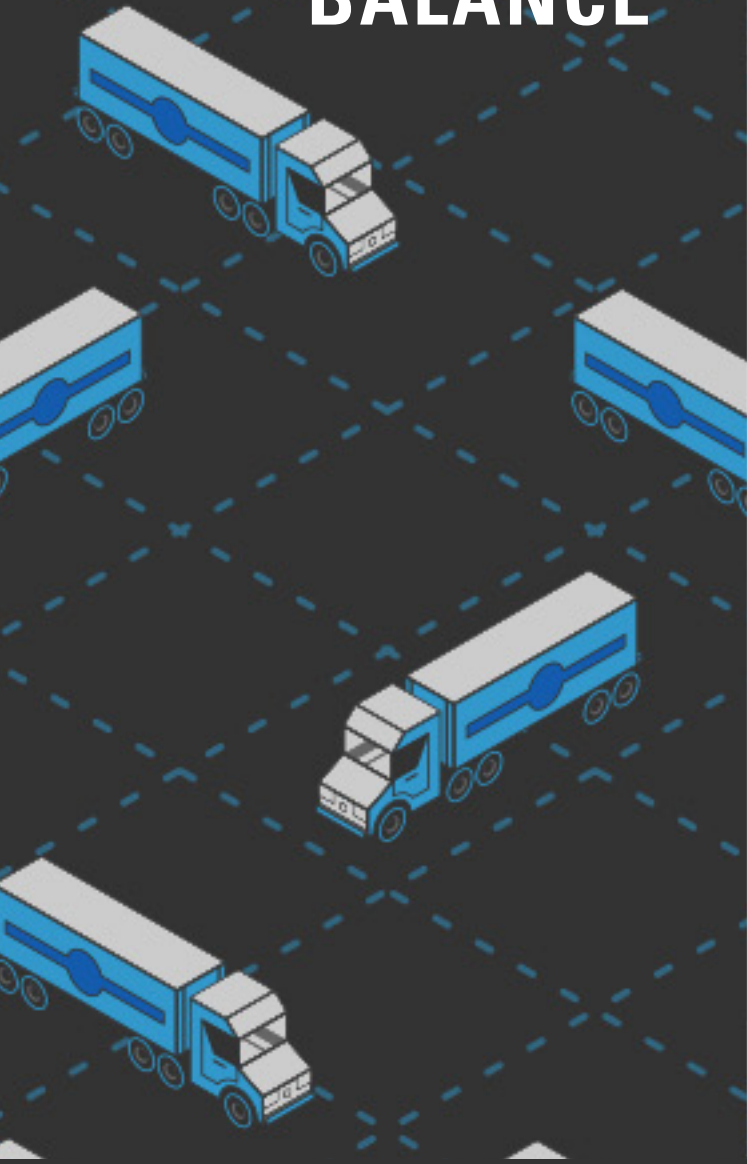
Job Title



Seniority



**TECHNOLOGY
VS. HUMANITY:
HOW COVID-19
CHANGED THE
BALANCE**



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In 2019, we asked hundreds of industry professionals to give their ideal balance between technology and people in supply chain operations.

The average result was remarkably consistent across business size and type:

60% technology, 40% people.

In 2020, billions of people around the world had a sudden, unavoidable change in their relationship between these two forces.

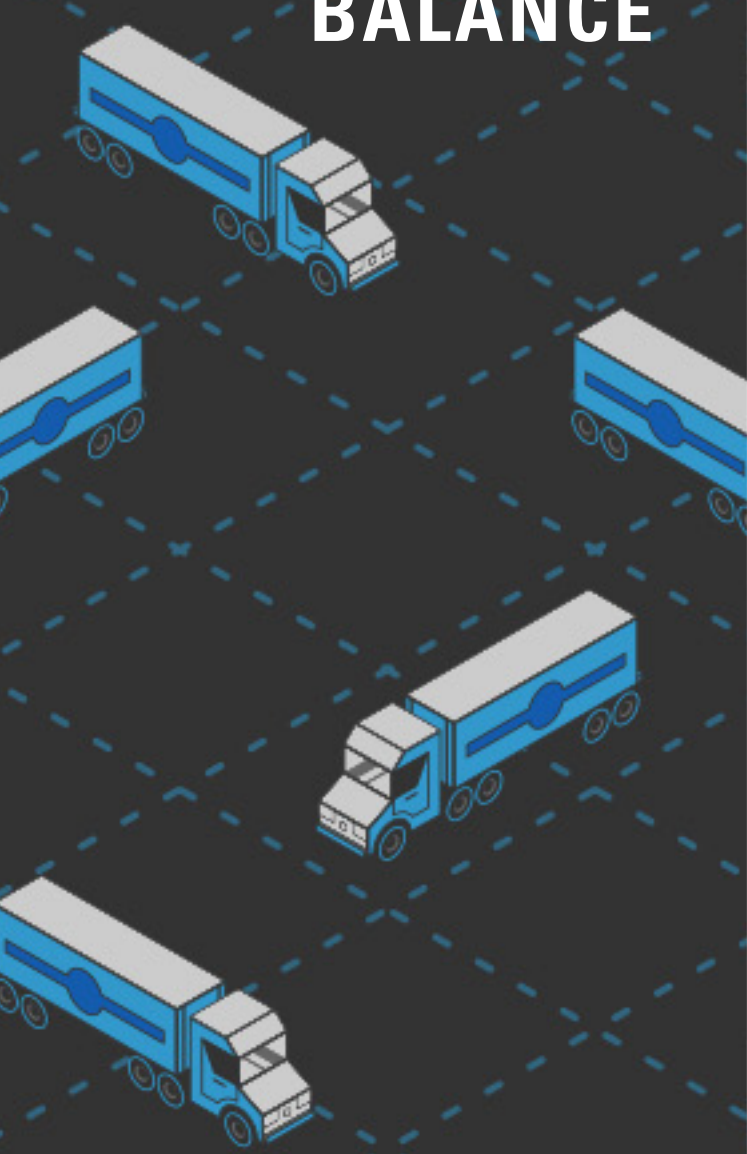
More technology — from video calls to new apps that promoted social distancing — and less interaction with people.

With such an incredible global trend pushing digital adoption, surely the balance would move further towards technology, right?

Not quite.

We actually saw a decrease in preference for technology and a greater reliance on people.

**TECHNOLOGY
VS. HUMANITY:
HOW COVID-19
CHANGED THE
BALANCE**

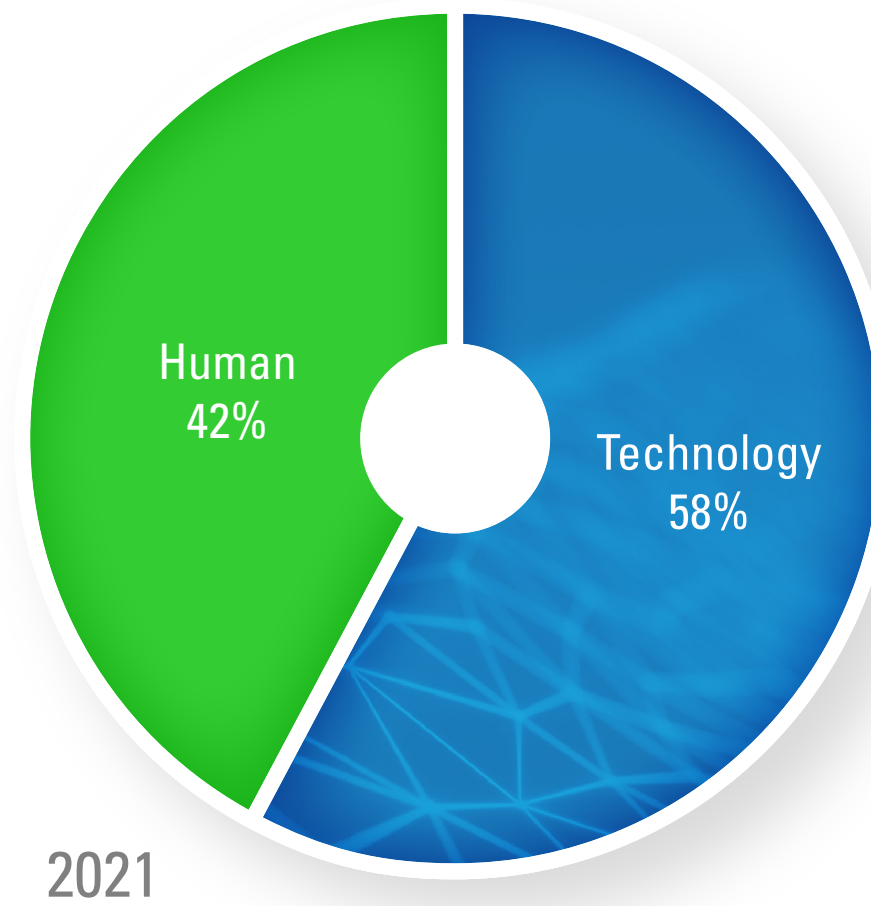
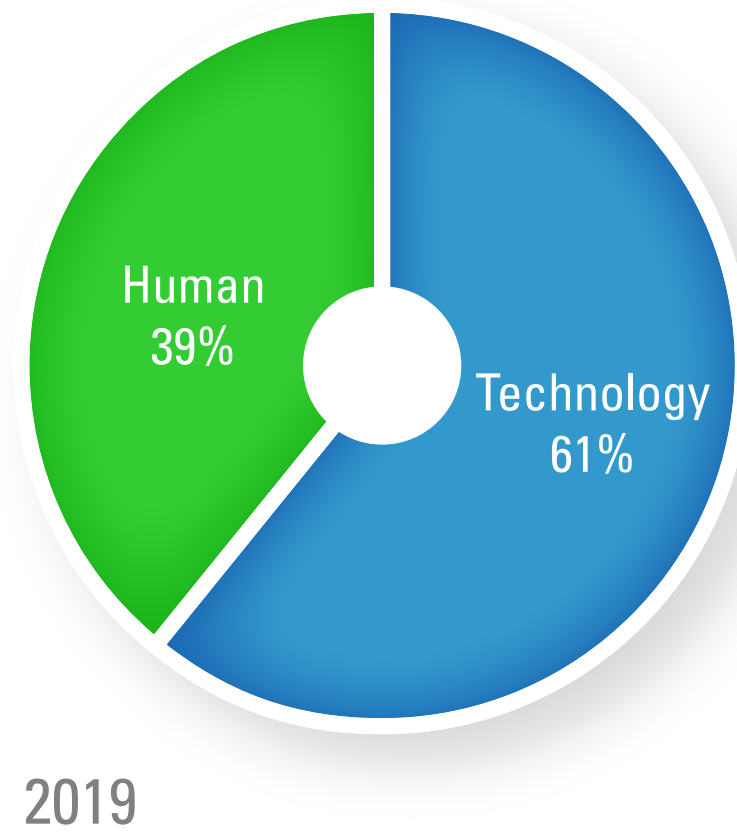


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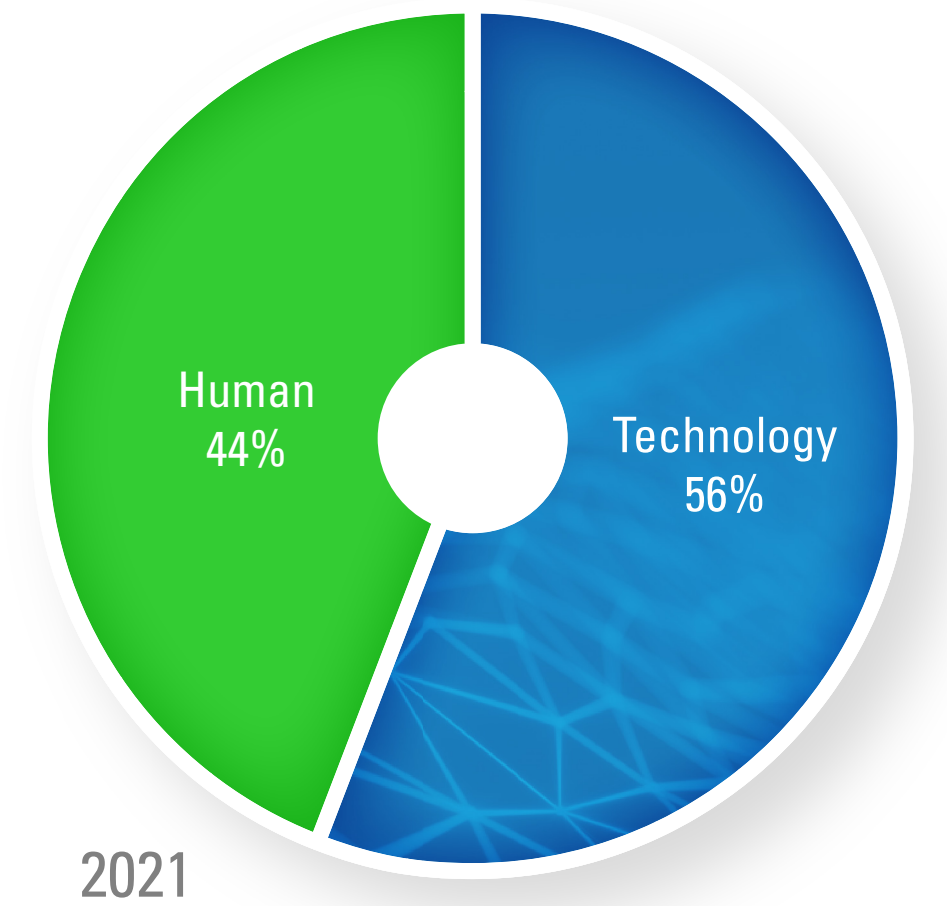
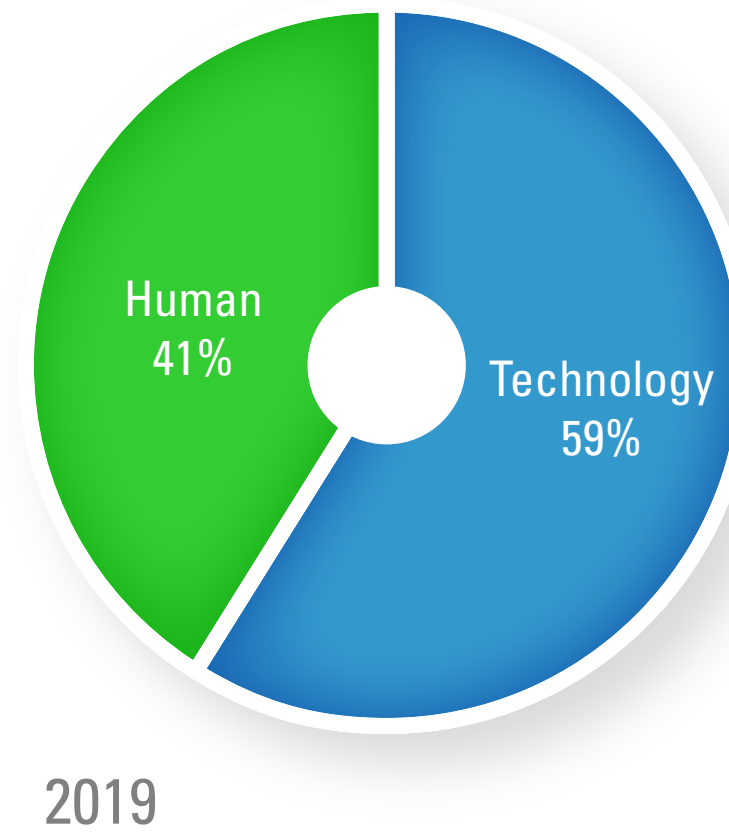
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in a **Post-COVID World**

The Ideal Balance between **Technology & Humanity: 2019 vs. 2021**

SHIPPERS



CARRIERS

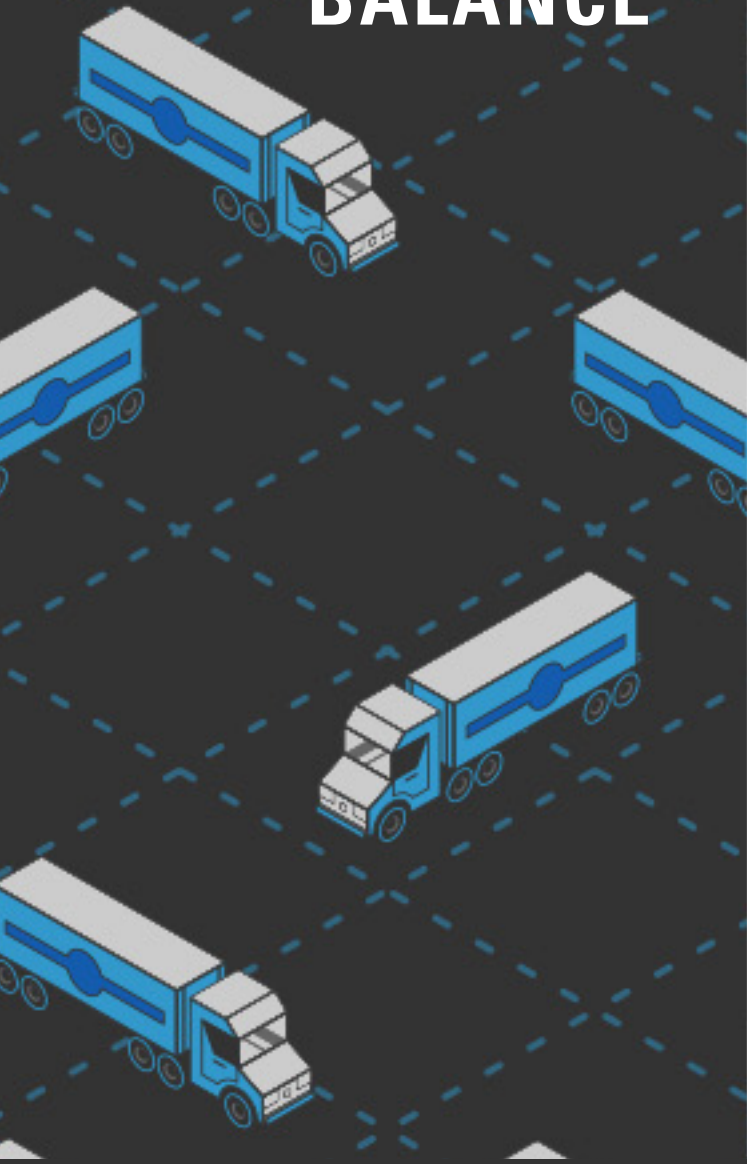


A 3% decline may not seem like a huge difference, but considering recent trends, even a slight shift away from technology is a resounding call from supply chain leaders that people are still a critical part of logistics.

In fact, the number of shippers relying on core supply chain technology platforms actually decreased by an average of 20%.

Q: Considering all of the tasks involved in your supply chain and logistics, what would you say is the perfect balance between the percent handled by technology and the percent handled by humans?

**TECHNOLOGY
VS. HUMANITY:
HOW COVID-19
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A Universal Call for Both Technology & Human Expertise

The results are clear: logistics and supply chain leaders do not want automation or people — **they want both.**

This is not only true in certain regions or with certain business sizes or types. The ideal balance was remarkably similar for shippers and carriers, for small and large companies, in the U.S., Canada and the UK.

There were only two demographics — both carrier — that strayed outside of the roughly 60% technology / 40% human split:

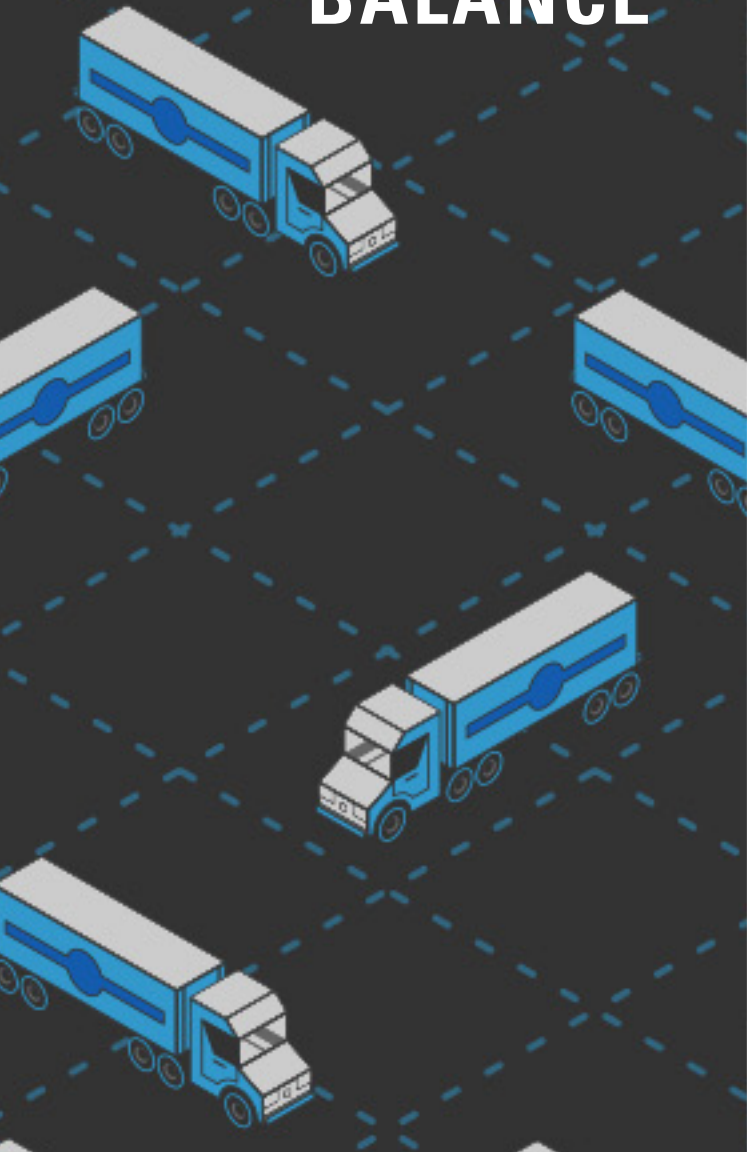
U.S. carriers with fewer than three trucks had a preference of 42% technology and 58% human interaction, making them the only group who favored a majority human.

Canadian carriers with four trucks or more had a preference of 69% technology and 31% human, making them the only group who favored more than 60% technology.

Even these two groups were not true outliers; just slightly more inclined towards people and technology, respectively.

Regardless of any business's specifics, if their strategy doesn't include a healthy blend of the two, it is out of sync with industry trends.

**TECHNOLOGY
VS. HUMANITY:
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Humans in the right roles are still better than technology. Technology should be a tool that people use, not the overall system.

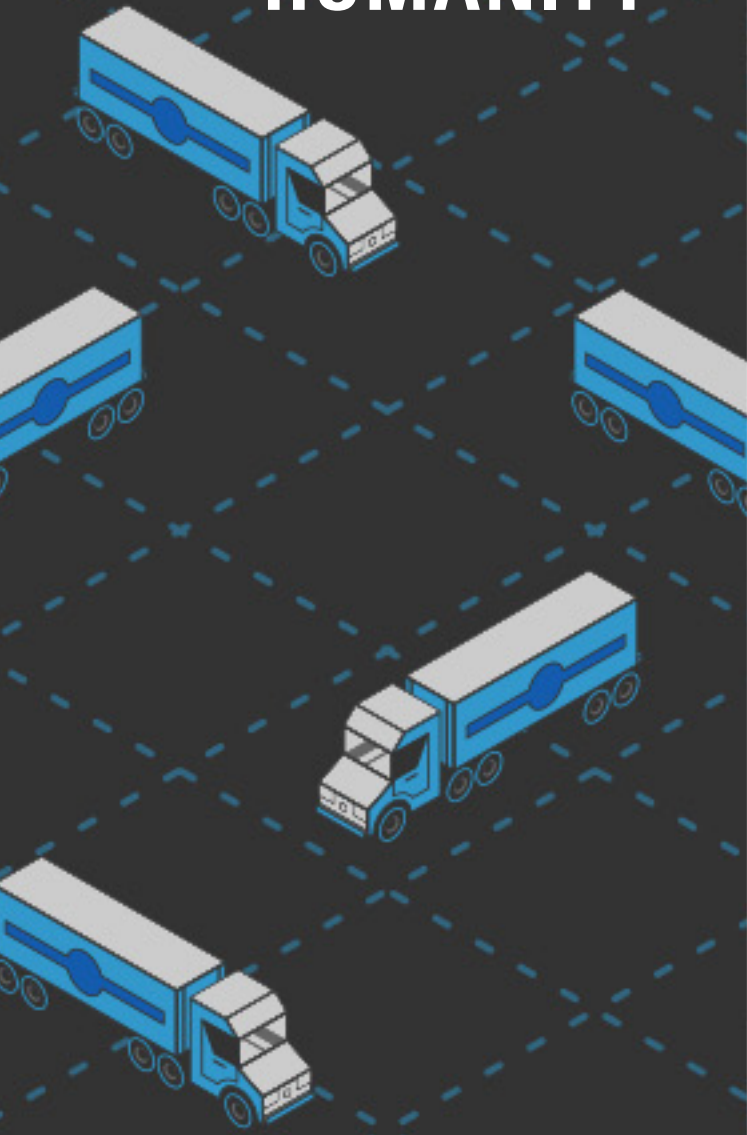
Director/Manager of Transportation
Canadian Shipper
Less than \$199 million

“

People are core to the transportation industry — there are so many unknown variables and constant unforeseen issues and delays. People are the key to building and maintaining long-term relationships. They give a competitive advantage over strictly technology and numbers.

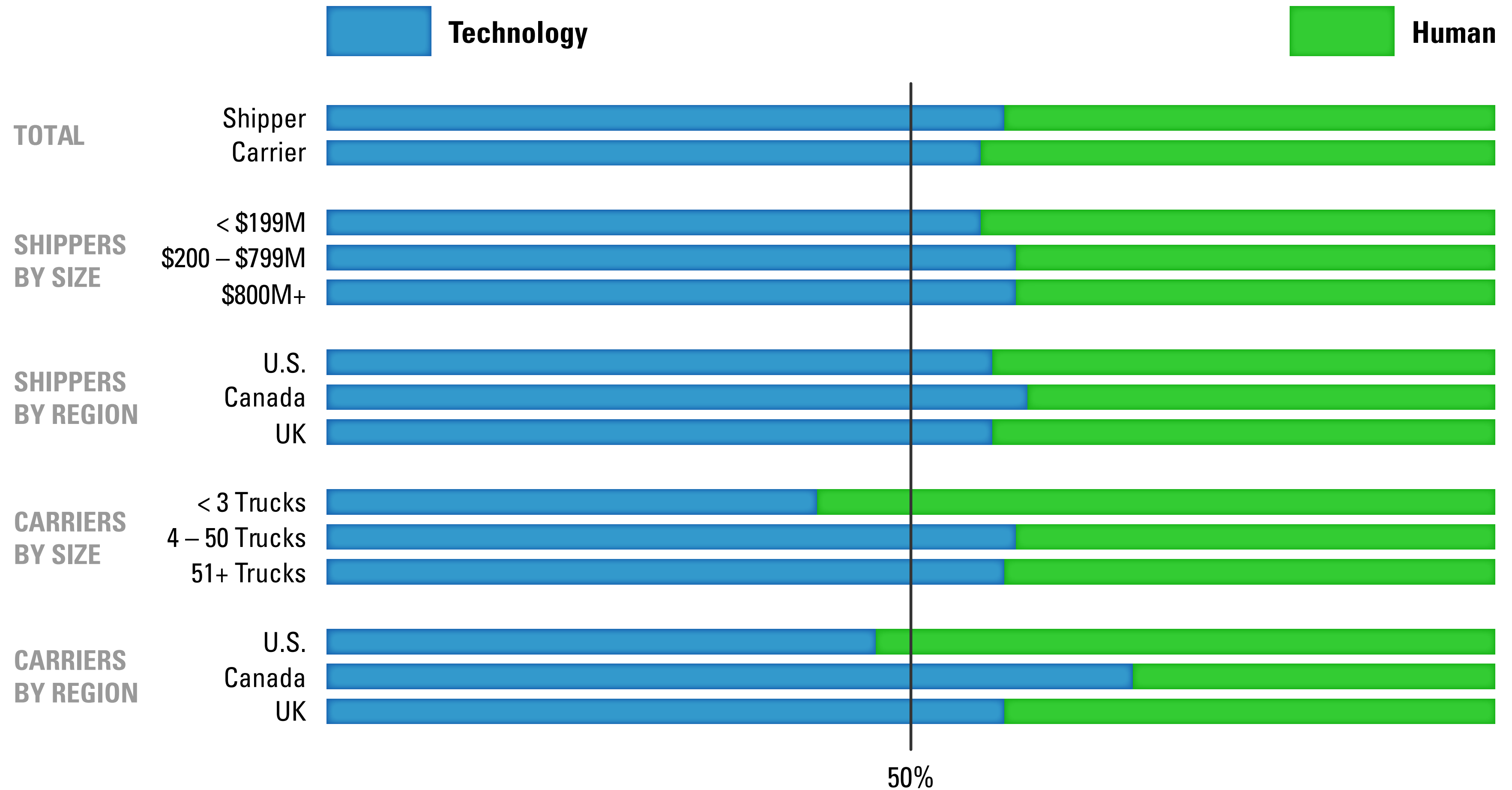
Fleet Owner
U.S. Carrier
4 – 50 trucks

**THE IDEAL
BALANCE
BETWEEN
TECHNOLOGY &
HUMANITY**



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Q: Considering all of the tasks involved in your supply chain and logistics, what would you say is the perfect balance between the percent handled by technology and the percent handled by humans?

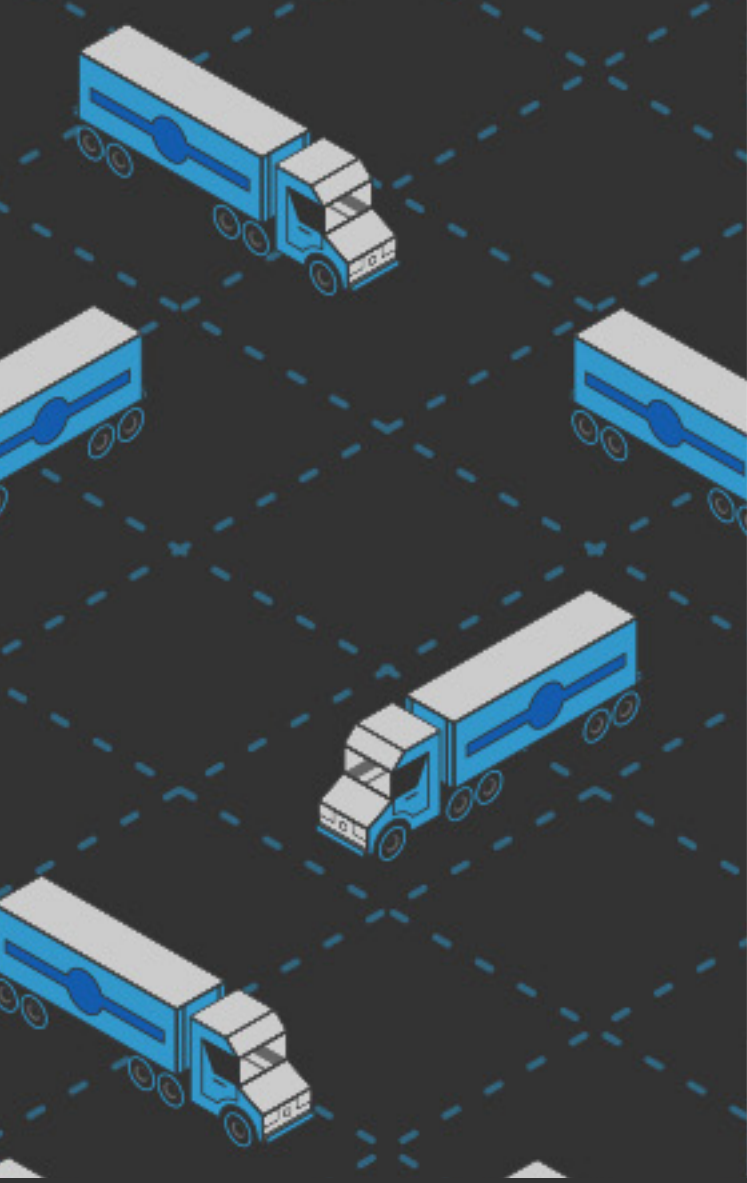
Although the COVID-19 pandemic forced rapid digital transformation, both shippers and carriers relied, on average, 3% more on human expertise than in 2019.

Takeaway #1

Technology is critical to execute a modern supply chain — it is over half the equation — but when things get complicated, it is people that will think, adapt and react to keep businesses agile in volatile times.

NEXT
Shipper Results & Insights

**SHIPPER
RESULTS &
INSIGHTS**



Shipper Results & Insights

The past year was the most challenging environment to ship freight — ever.

Supply chains fragmented, and in many cases, totally shattered.

Demand has surged, plummeted, and surged again. Freight rates have been on a roller coaster. Raw material prices have fluctuated.

Brexit and the USMCA went into effect. The ports became congested.

The labor market has been difficult to manage, and there is a shortage of drivers.

All that, and we haven't even mentioned maintaining workforce safety in manufacturing and shipping locations.

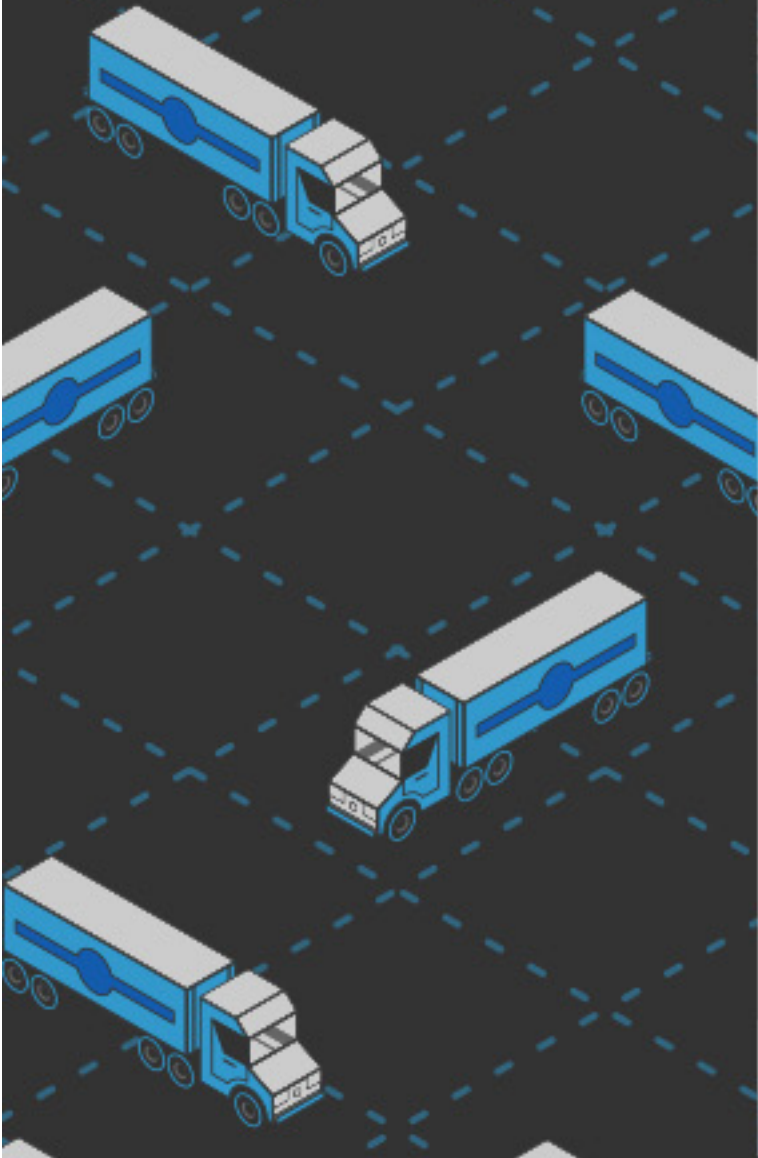
How did all that factor into shippers' responses?

Let's dive into the results to learn their biggest challenges, where they invested in automation and where they prefer people, and how they're using the technology tools they have.

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TOP SHIPPER CHALLENGES



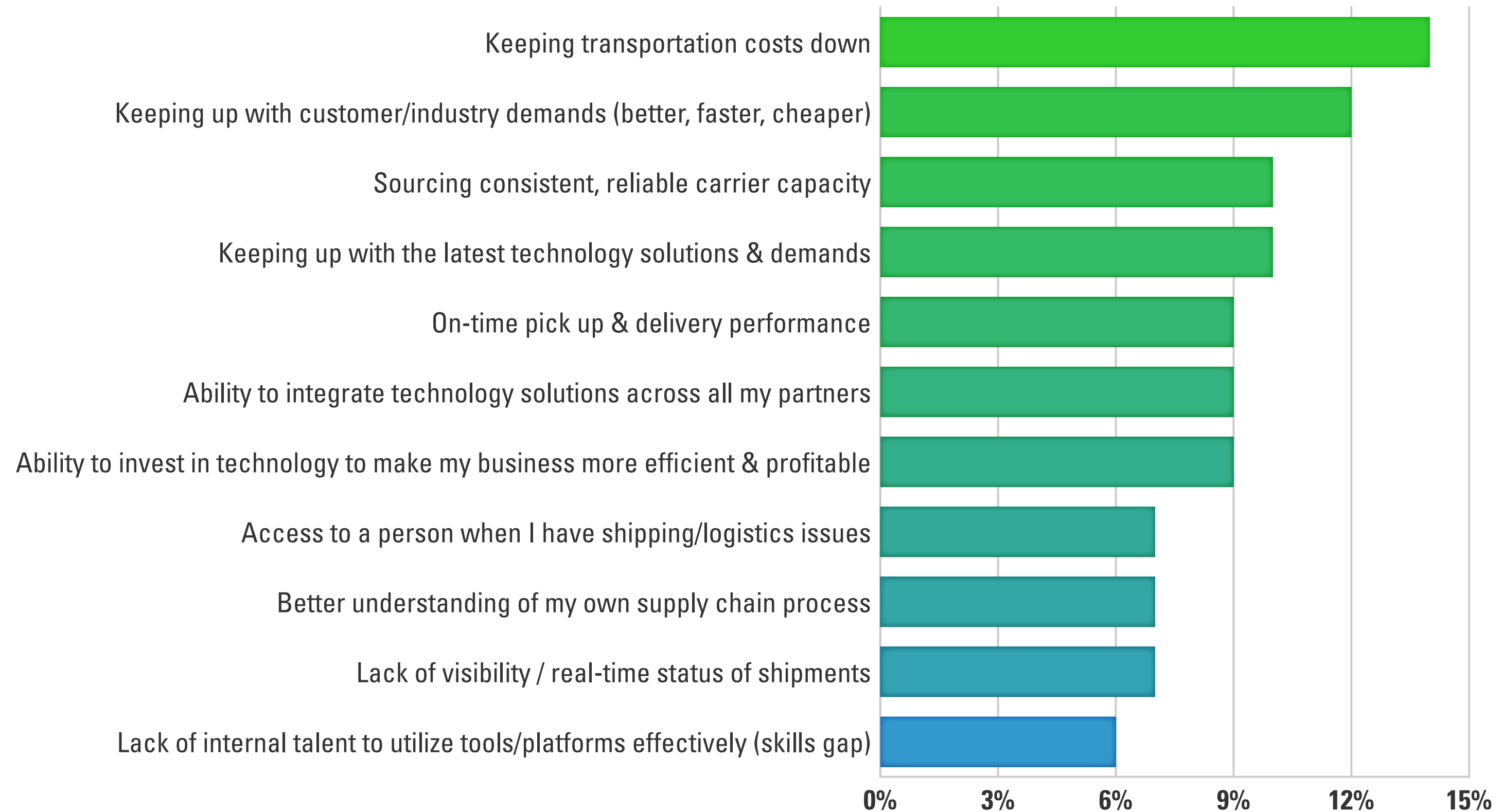
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What Are Shippers' Top Challenges?

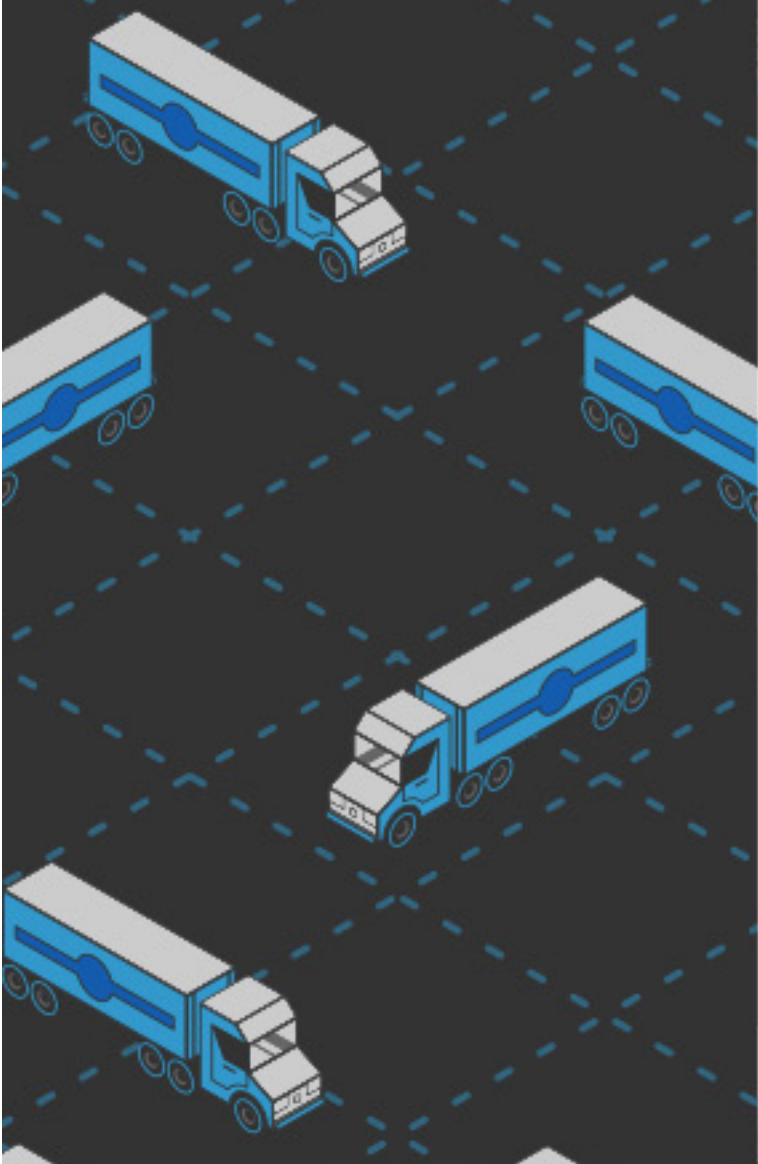
Setting aside the unique difficulties brought on by the pandemic, shipping freight was already becoming more difficult and complex. Though the industry has never been more connected, the pressures on supply chains have never been higher.

Before we look at how supply chain leaders are using people and technology to meet these challenges, it is helpful to establish what their top challenges are.



Q: Which of the following are your biggest challenges with respect to shipping and logistics?

TOP SHIPPER CHALLENGES



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There was no runaway favorite — across 11 different challenges, the difference between the top and bottom choice was only 8% — but two did stand apart from the rest: keeping transportation costs down and keeping up with customer demands.

This trend was consistent, with these two appearing in the top three for every shipper demographic across size and region.

It comes as no surprise. Shippers today are under incredible pressure to deliver fast-and-free. This expectation is not limited to e-commerce shippers — it ripples across every facet of the supply chain, including business-to-business (B2B) companies.

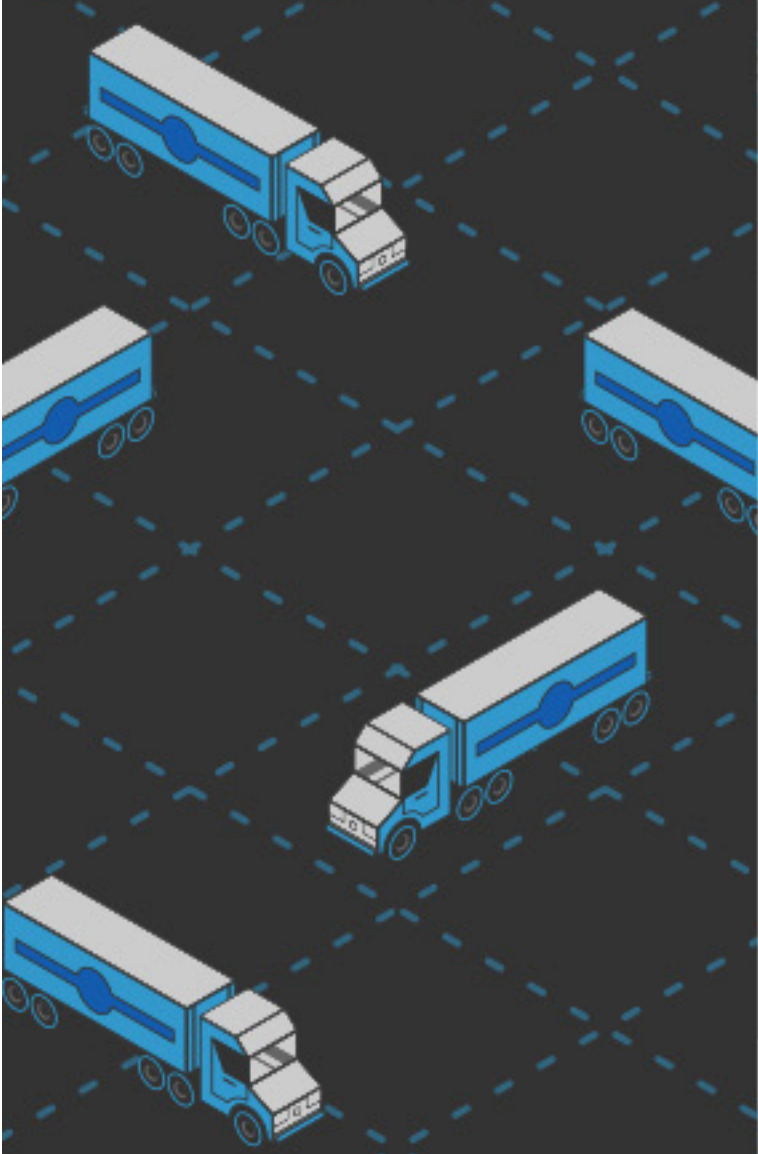
Market conditions during the pandemic only amplified these challenges. Businesses that slowed down had to cut costs to combat falling revenue, while others that surged could barely keep up with demand.



The deadlines we're facing keep getting tighter and tighter due to high demand in areas of the economy where our customers operate. We have less time to construct and model our product while still meeting the customer's delivery date.

Director/Manager of Procurement
U.S. Shipper
Less than \$199 million

TOP SHIPPER CHALLENGES



How did the top challenges compare to the 2019 survey results?

In 2019, the top challenge was sourcing consistent, reliable capacity followed by keeping transportation costs down.

Though sourcing consistent, reliable capacity was still a top three challenge in the latest survey, it did slip down the list.

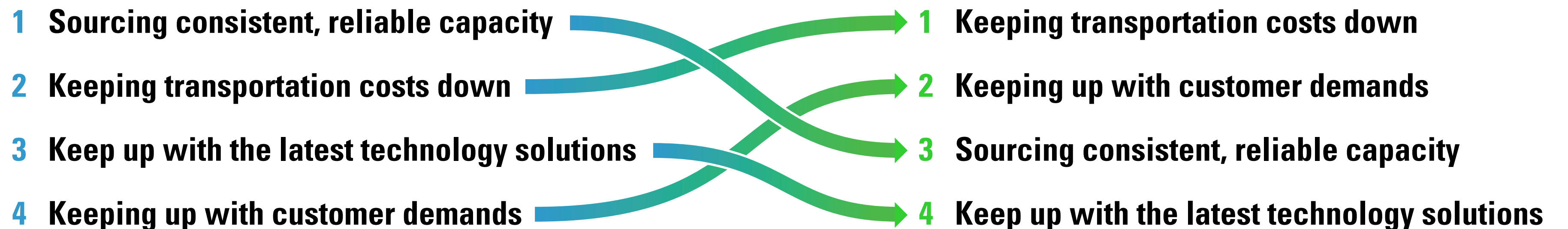
This is likely a product of where we are in the **truckload market cycle**. In 2019, at least in North America, shippers were coming off a very tight carrier market in 2018 where carrier capacity was limited and volatile, which likely influenced their choice. Though the second half of 2020 and 2021-to-date **have also been tight carrier markets**, it's been a mixed bag with shippers as to whether or not they have consistent freight to move.

Overall, the challenges have not changed much — with the top four staying the same — only the order shifted slightly.

TRENDS IN SHIPPER CHALLENGES

2019

2021



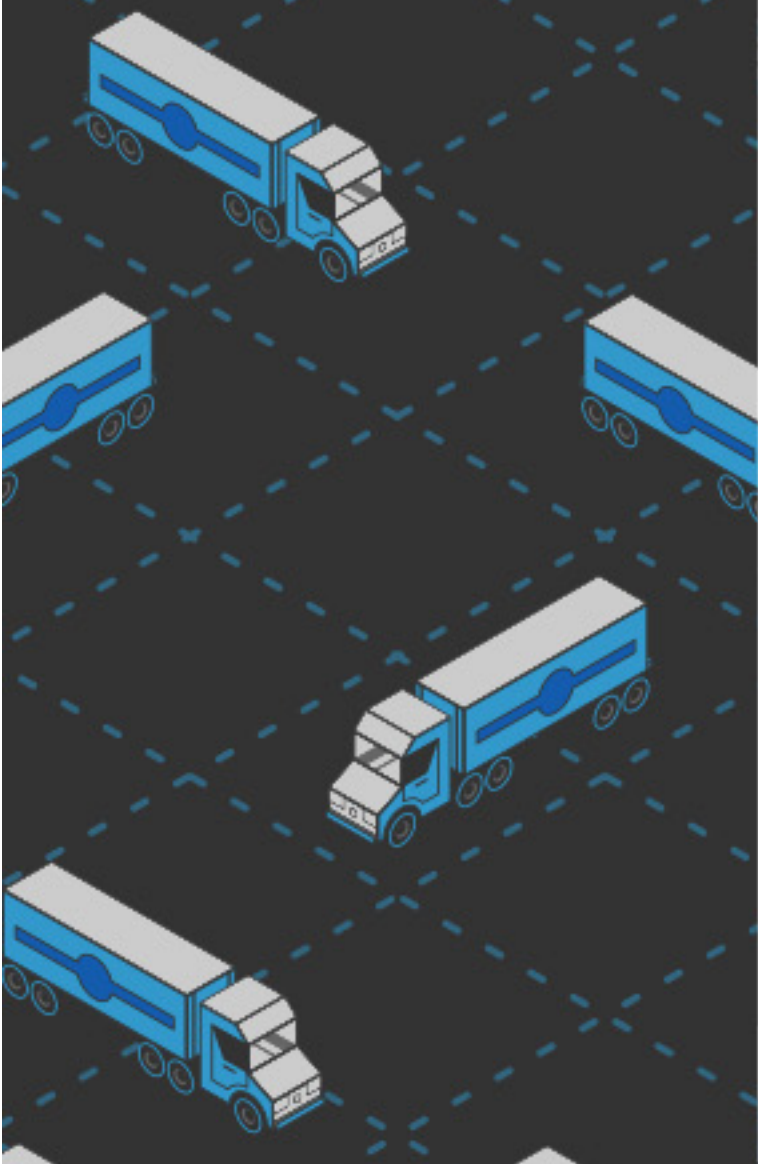
Shippers ranked *keeping transportation costs down* and *keeping up with customer demands* as the top two challenges.

Takeaway #2

The pandemic amplified existing pressures for businesses to deliver fast-and-free, and they are looking to technology, their people and their providers to help them keep up.

NEXT
Supply Chain Automation

TRENDS IN SUPPLY CHAIN AUTOMATION



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Supply Chain Automation
in a Post-COVID World

Workforce Automation: How Shippers Are Using Technology in Their Supply Chains

Shippers are struggling with rising costs and rising customer demands.

To help solve for both, and to build a supply chain capable of competing in the COVID-19 era, shippers are turning to technology in their operations.

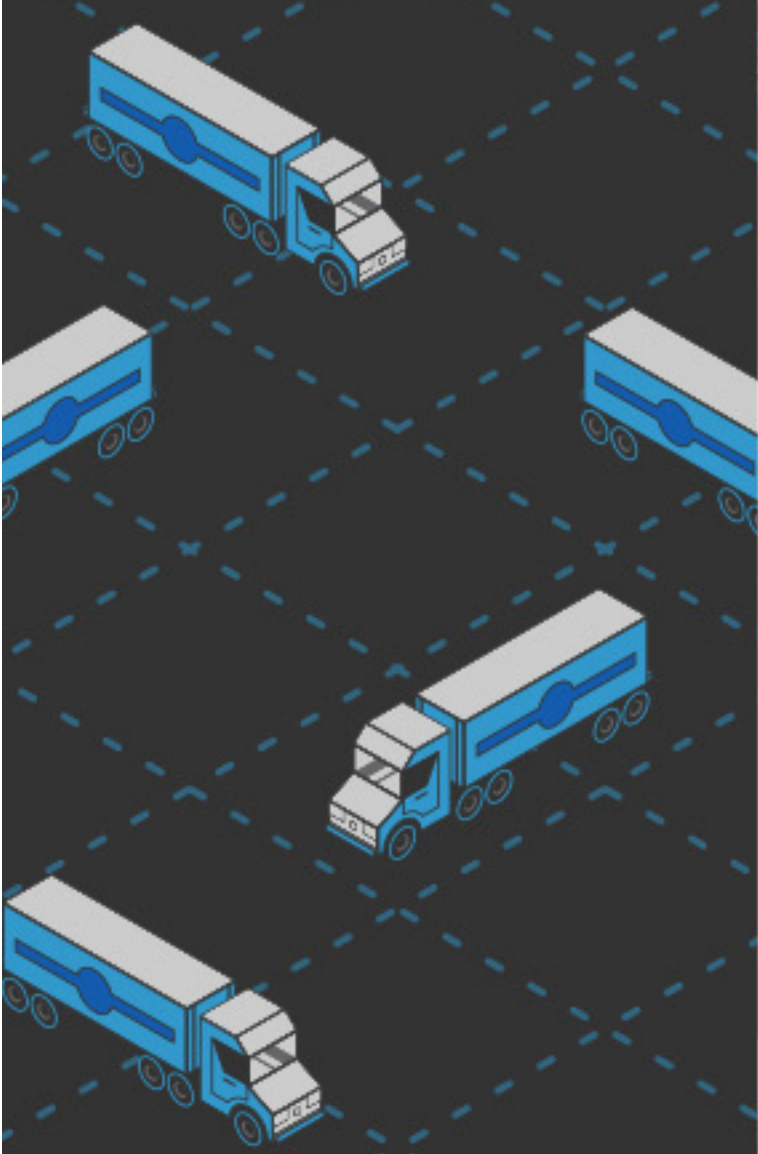
But they aren't automating everything. Though many digital-first companies give the impression that technology alone is the key to better supply chain operations, that isn't entirely true.

The results prove that total automation is not even the goal.

While advancements in automation offer many benefits, technology alone is not enough to create a truly competitive shipping operation — there are many areas where people excel, or a combination of the two works best.

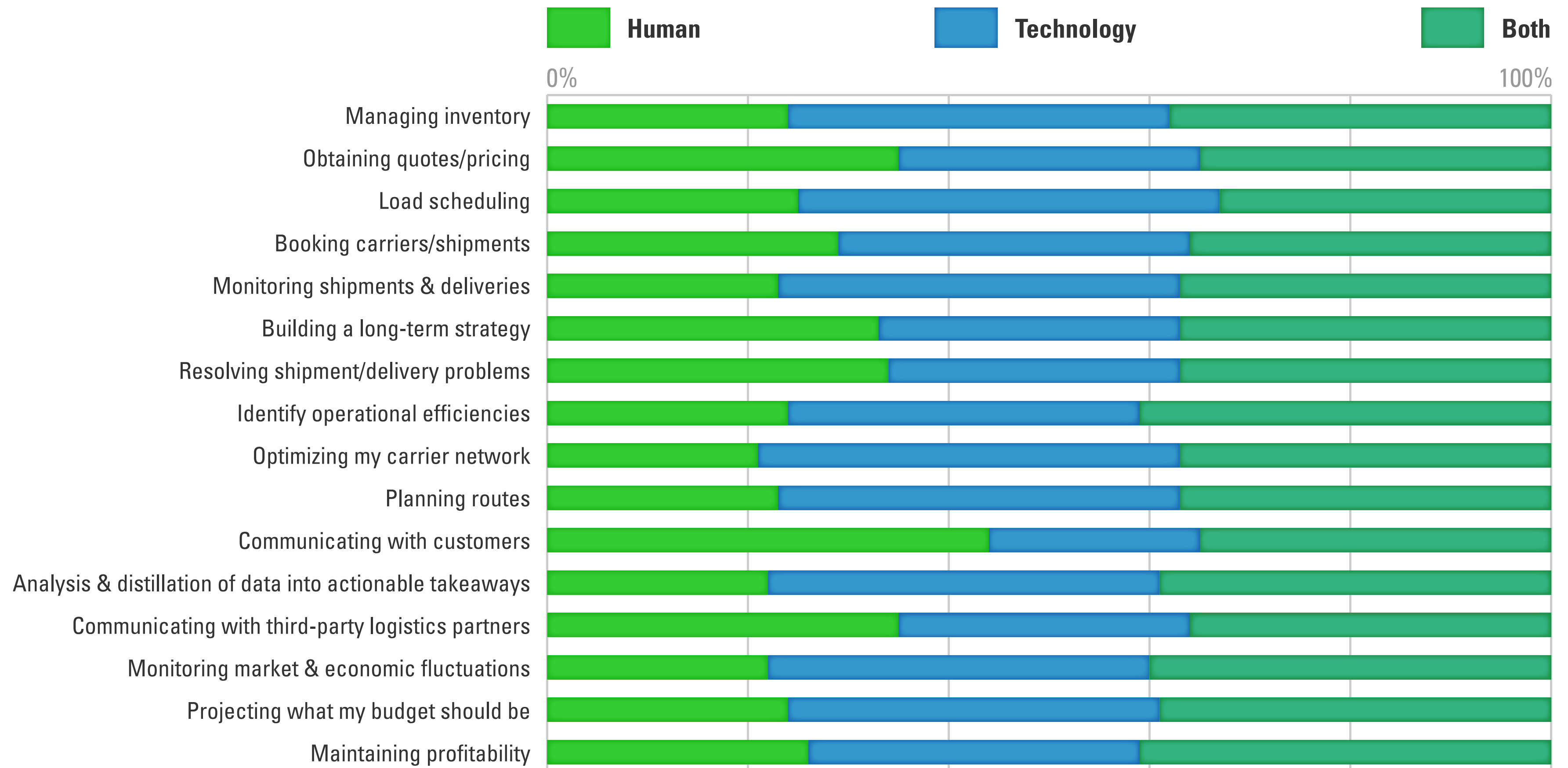
To get a clearer view of how shippers are actually applying automation to their own businesses, we asked respondents to identify where they prefer people, technology, or a combination across 16 different supply chain functions.

TRENDS IN SUPPLY CHAIN AUTOMATION



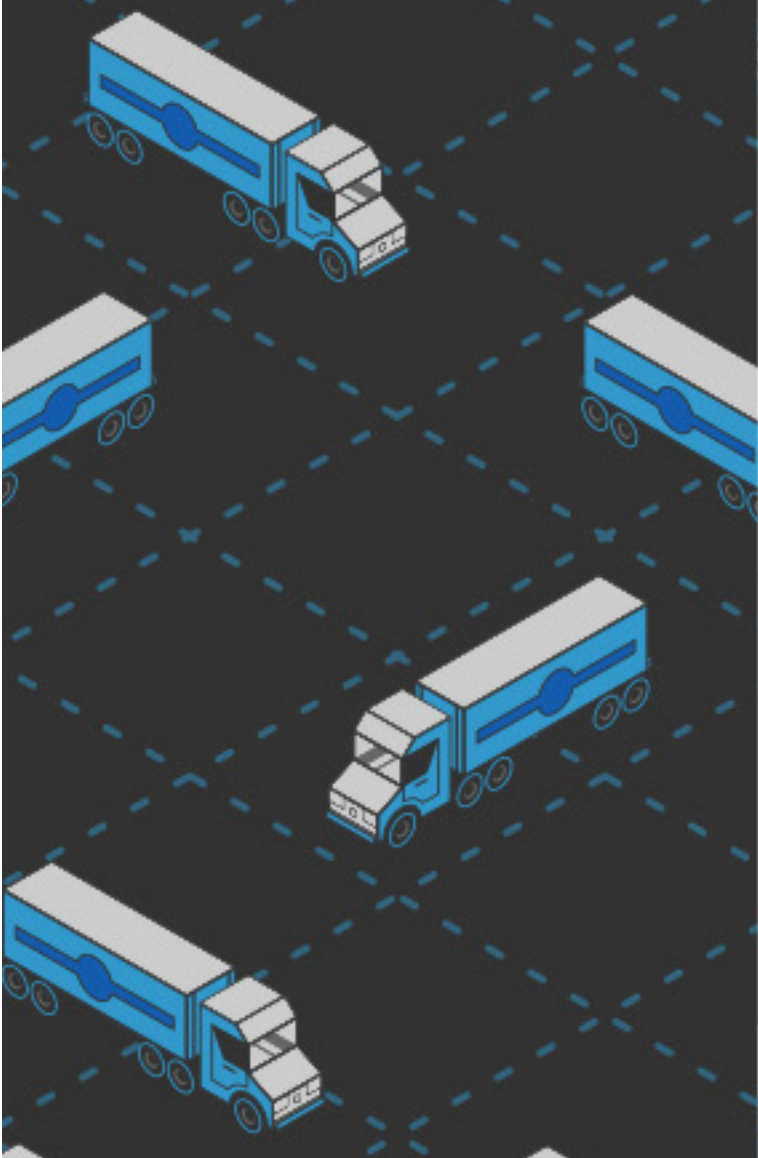
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PEOPLE VS. TECHNOLOGY VS. BOTH ACROSS 16 SUPPLY CHAIN TASKS



Q: For optimal results in each of the following tasks, do you value the work being done by people, technology or both?

TRENDS IN SUPPLY CHAIN AUTOMATION



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in a Post-COVID World

Though every task had at least 20% of respondents preferring an all-digital solution, there were some areas where shippers placed a higher emphasis on automation.

Shippers found the greatest benefit automating network optimizations. With supply chains getting more complex and intricate, technology can do a more efficient job combing through massive data sets in real-time, running scenario analysis and finding chokepoints.



Humans help with much of our supply chain, but technology can pick up the more detailed, smaller jobs so our people can work more on innovation.

Director/Manager of Transportation

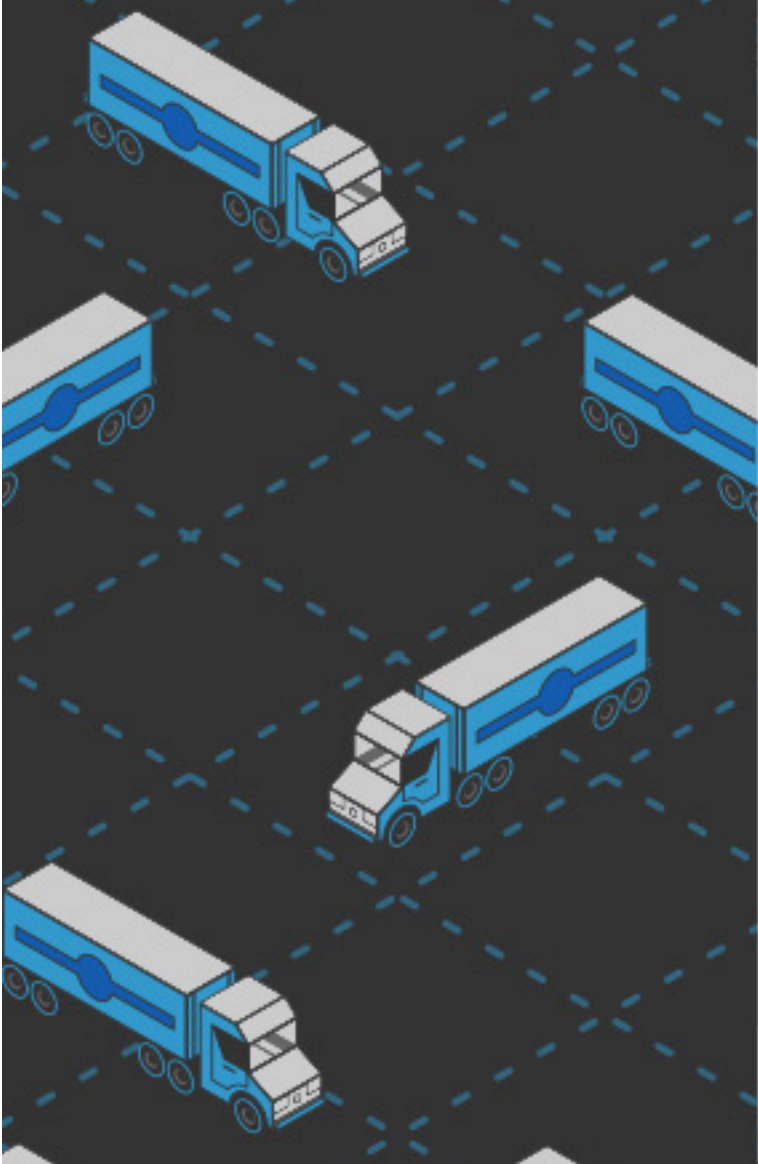
U.S. Shipper

\$200 million to \$799 million

TOP TECHNOLOGY TASKS

1. Optimizing carrier networks
2. Monitoring shipments and deliveries
3. Planning routes
4. Load scheduling
5. Analysis & distillation of data into actionable takeaways

TRENDS IN SUPPLY CHAIN AUTOMATION



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Trends in Supply Chain Automation: What's Changed Since 2019?

It's true that overall ideal balance between technology and human expertise shifted towards people over the past two years (3% to be exact).

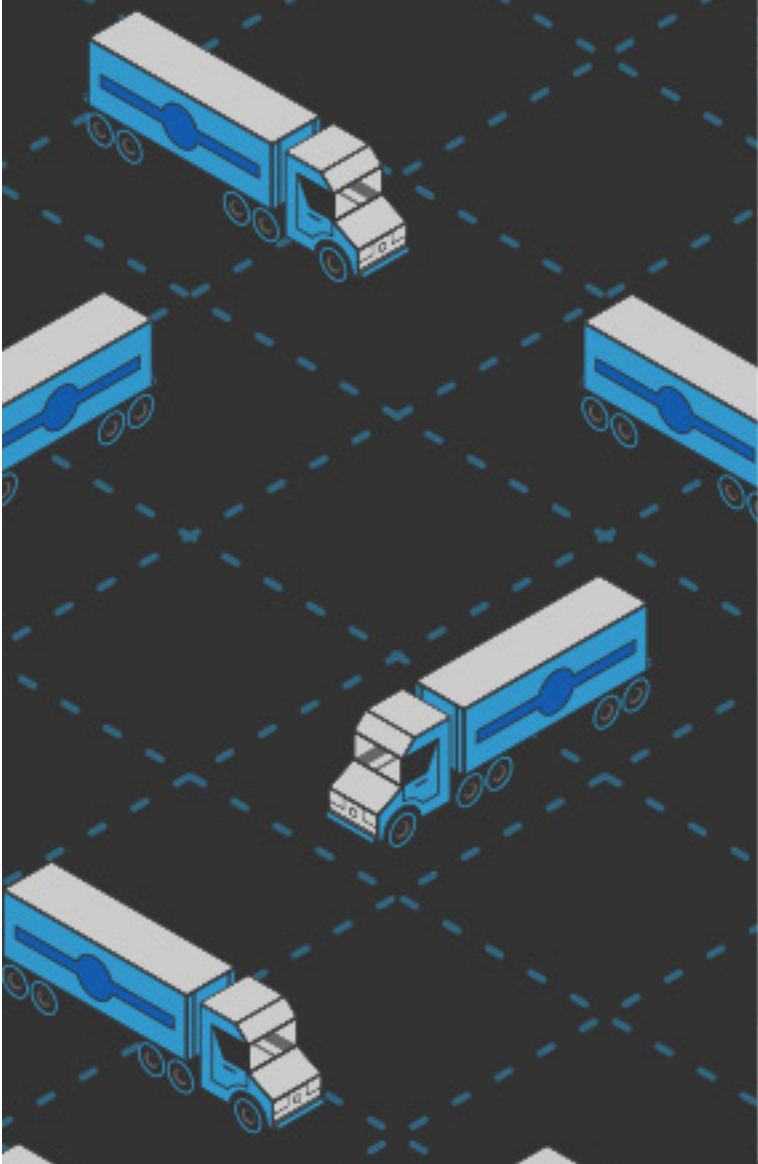
That said, when we take a closer look at how shippers are actually executing each task, it's clear that technology is still playing a major role.

In the most recent survey, we added three additional supply chain tasks (16 total, compared to 13 in 2019). Of the 13 tasks that were included in both surveys, 10 trended up in their balance towards technology.

Only two actually decreased:

- *Managing inventory* (0.5% decrease)
- *Communicating with customers* (2.0% decrease)

TRENDS IN SUPPLY CHAIN AUTOMATION



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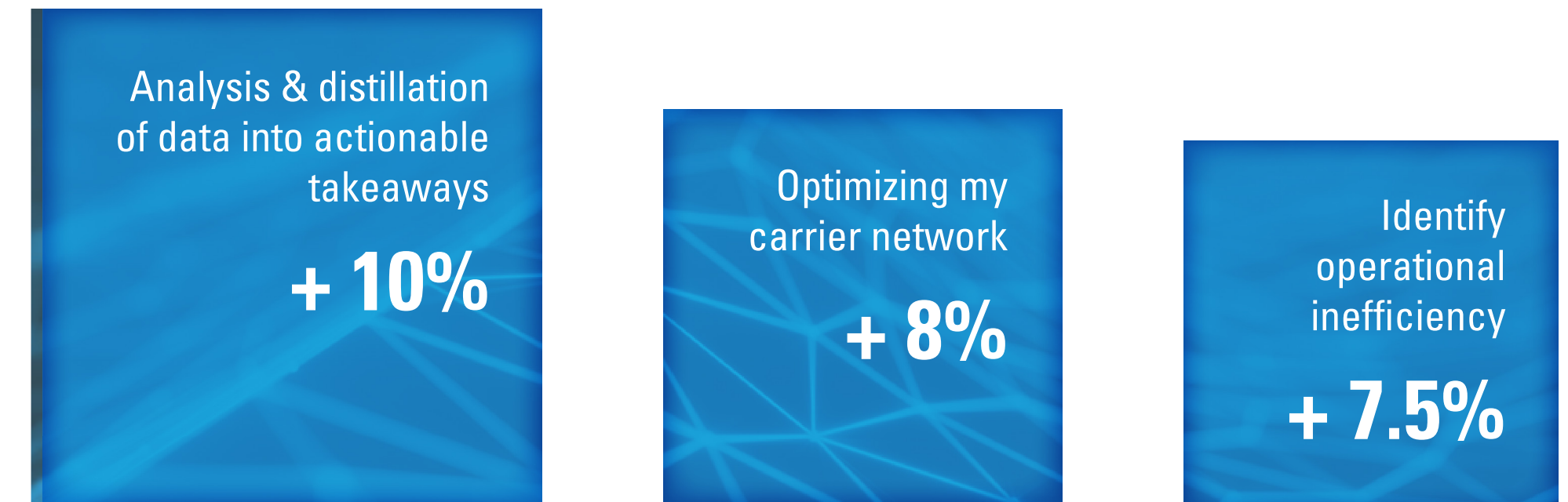
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There were three tasks that saw the biggest increase towards technology, and all of them are related to processing the massive amounts of data collected in a complex modern supply chain.

As machine learning continues to grow more sophisticated, shippers are finding greater efficiencies using technology to package data up in a digestible way.

What supply chain leaders actually do with those insights is still very much dependent on people, as well as people interacting with technology.

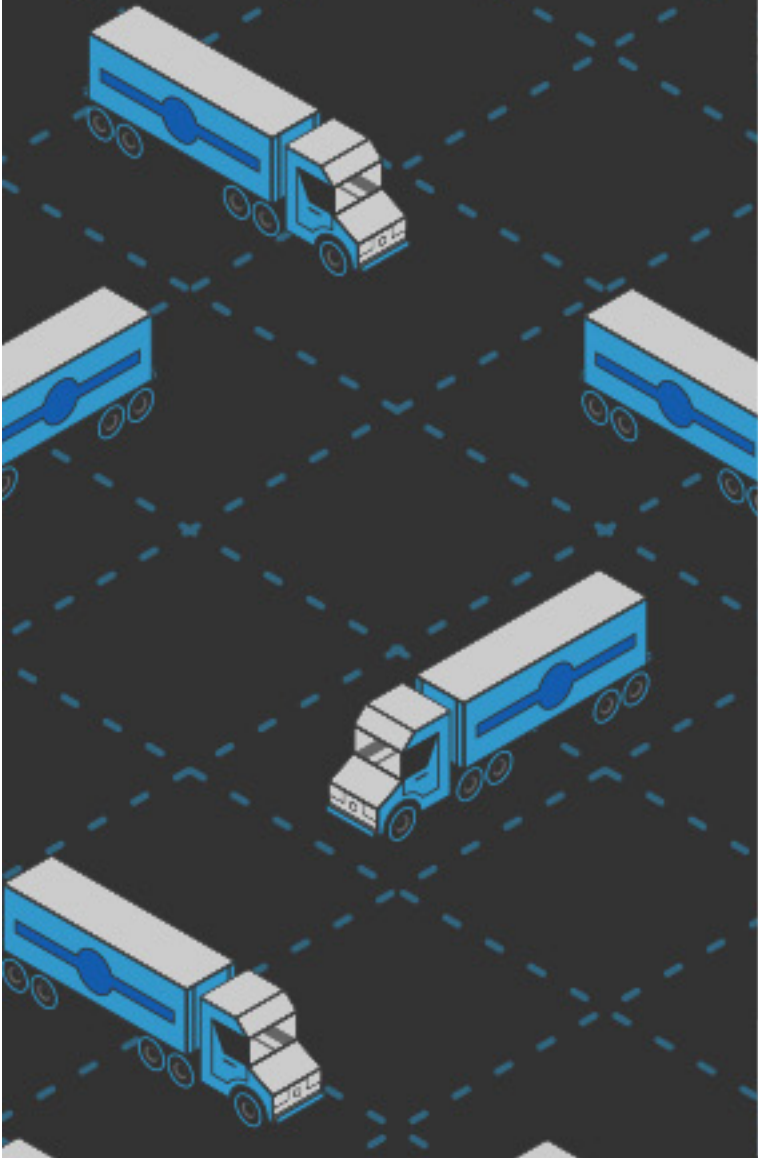
TOP TECHNOLOGY TASKS



Most data processing requires a large number of repeated calculations, which are well-suited to be solved by technology.

Director/Manager of Transportation
U.S. Shipper
\$200 million to \$799 million

WHERE PEOPLE FIT IN



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Where Do People Fit into Supply Chain Operations?

The constant influx of technology can feel overwhelming. Indeed, keeping up with the latest technology was respondents' fourth-ranked challenge.

It begs the question: how do humans fit into the modern supply chain?

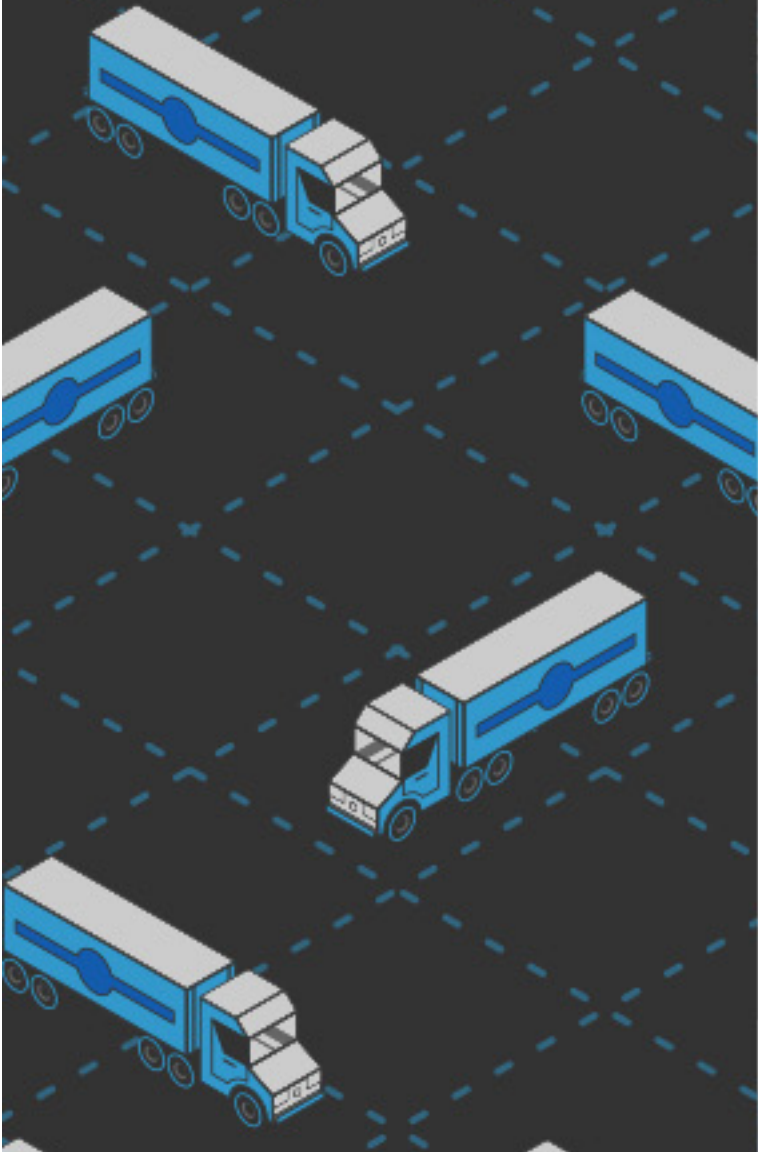
If the last year was any indicator, people aren't going anywhere — currently, the demand for more logistics expertise and labor outstrips the supply.

No matter how many digital tools you buy, you need people to run them.

And when things go wrong, you need logistics experts ready to problem solve.

There were a few tasks where people really shone; similar to the 2019 results, communication was the clear winner for human interaction.

WHERE PEOPLE FIT IN



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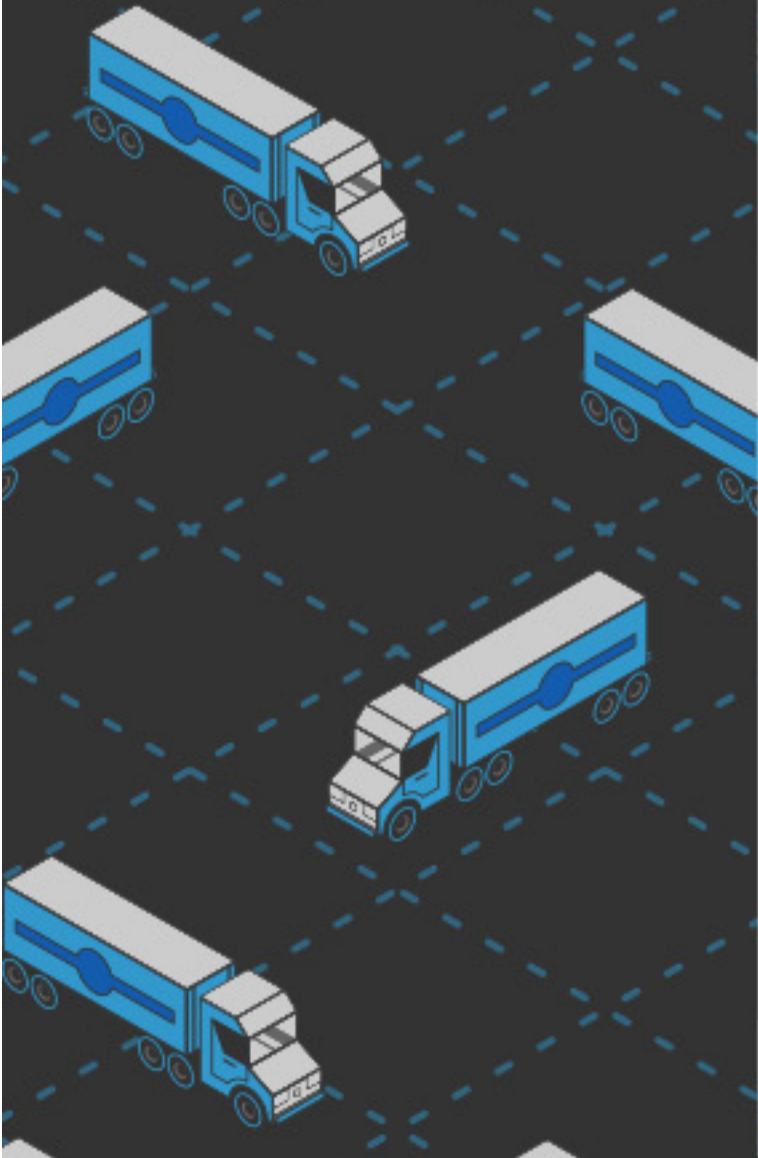
Often times, human interaction is the most efficient and direct way to deal with things. Usually, it's what our clients expect.

VP/Chief Executive
UK Shipper
Less than \$199 million

TOP PEOPLE TASKS

1. Communicating with customers
2. Communicating with logistics partners
3. Obtaining quotes & pricing
4. Resolving shipment/delivery problems
5. Building a long-term strategy

WHERE PEOPLE FIT IN



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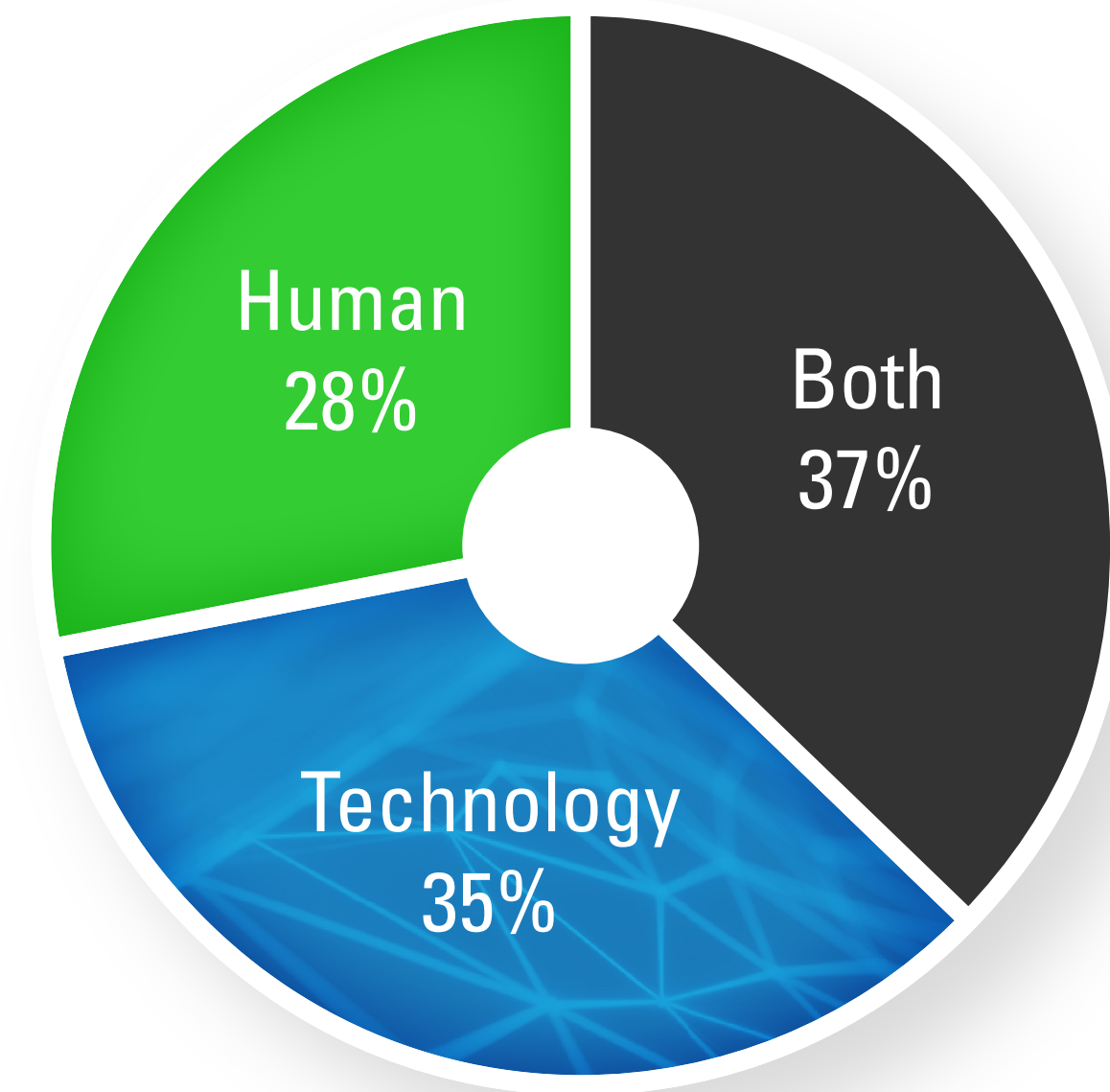
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Though technology features prominently across all 16 tasks, it is far from dominant — there isn't a single task where a majority of respondents think a tech-only solution works best.

In fact, there isn't a single task where a majority of respondents agreed on anything — the most selected answer was communicating with customers at 45%.

The results show that there is no consensus on the absolute best way to approach the balancing act.

Averaging all tasks together, shippers' preference for people, technology or both was roughly split into thirds, with both being the biggest group.



When **averaging** the results across 16 supply chain tasks, shippers are most likely to use human interaction combined with technology for optimal results.

WHERE PEOPLE FIT IN

Trends in Human Expertise: What's Changed Since 2019?

Though the communication with customers and 3PLs remained the top two people tasks, they did lose a lot of ground compared to the 2019 survey results.

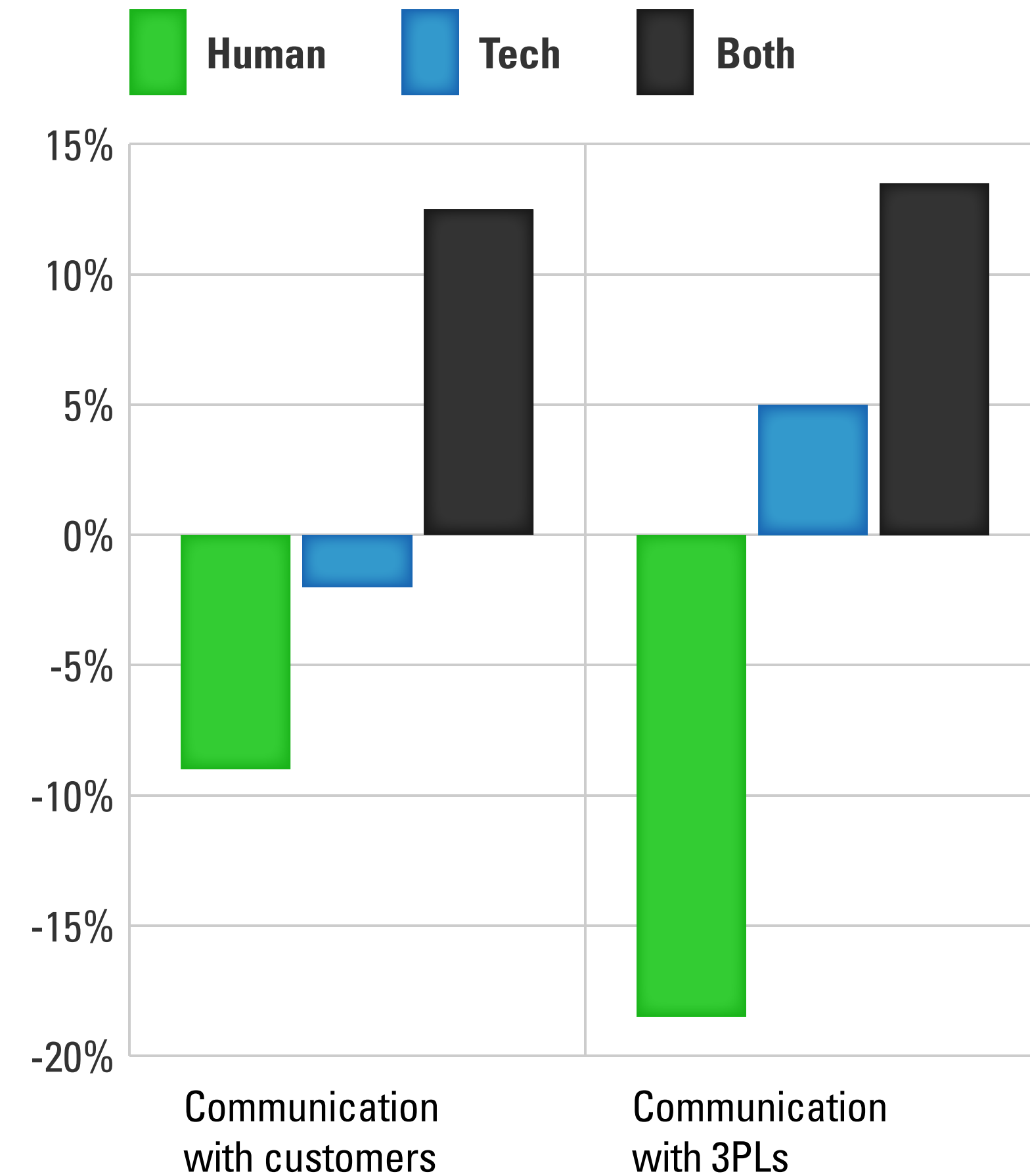
But the preference didn't dramatically shift to technology only, but a combination.

The shift to a more virtual working environment didn't completely replace people, it mostly boosted the need for omni-channel communication abilities.

Shippers are more comfortable using technology to manage relationships, but there still needs to be a person.

SHIPPERS ARE STARTING TO AUTOMATE COMMUNICATION — BUT STILL NEED A PERSON

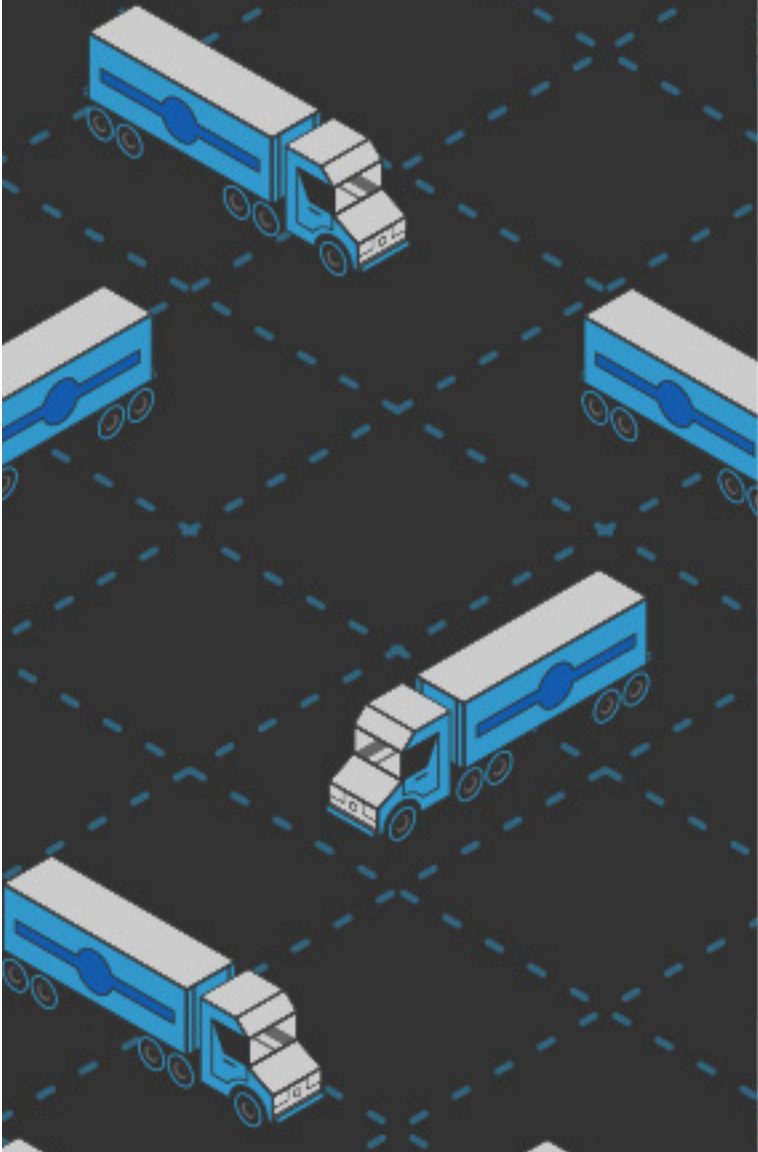
2019 VS. 2021 RESULTS



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in a Post-COVID World

WHERE PEOPLE FIT IN



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Supply Chain Automation
in a Post-COVID World

Though the use of technology is increasing across a variety of supply chain tasks, over half of the 13 tasks in the 2019 survey saw an increase in the desire for people too.

The preference for human expertise in managing inventory increased the most (12.5%) — managing inventory was the number one overall technology task in 2019.

In fact, several top technology tasks from 2019 actually shifted towards people.

This is perhaps a correction for an over-reliance on technology to manage complex tasks. Though many processes surrounding quoting, load scheduling and booking can be improved with technology, freight shipping is inherently complicated, making them tough to fully automate.

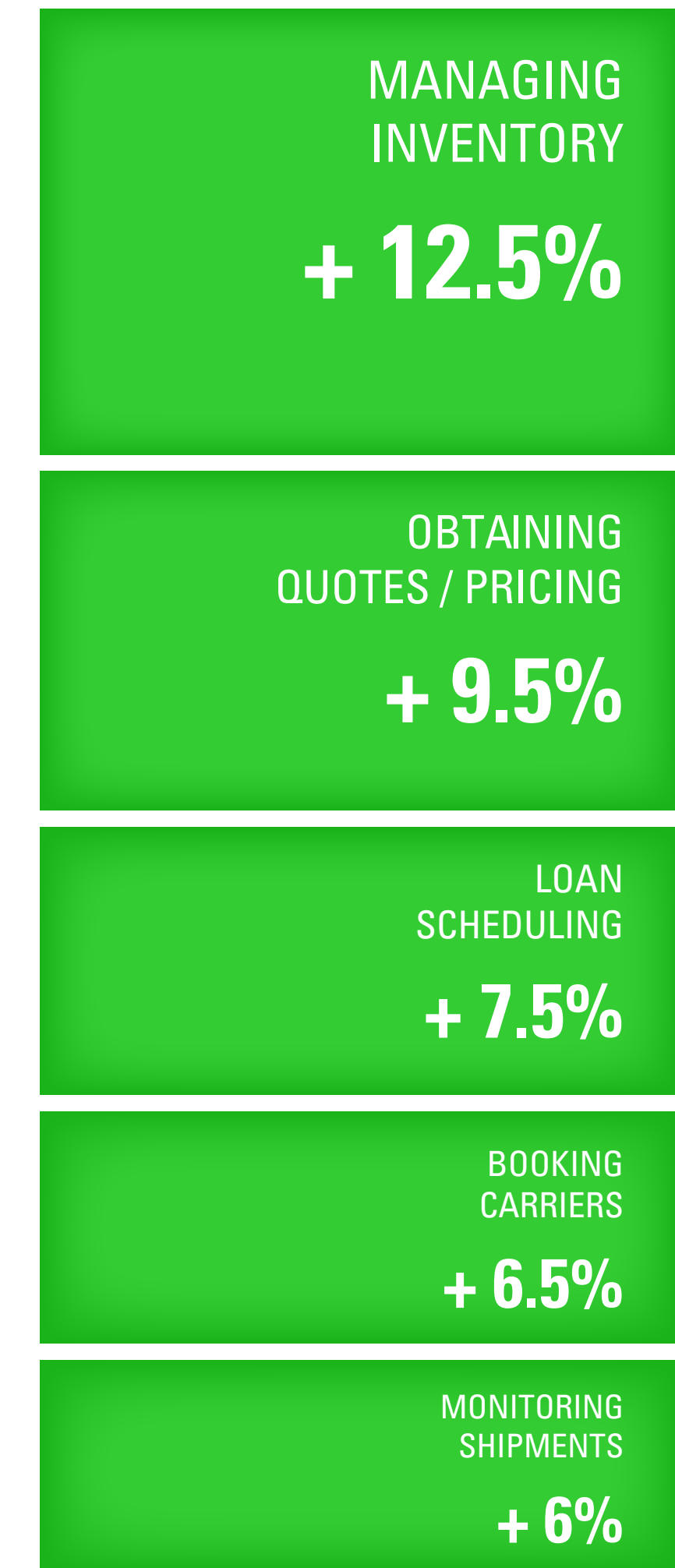


As much as we need technology, the humans still need to pull the strings.

Director/Manager of Transportation
UK Shipper
Less than \$199 million

BIGGEST PEOPLE GAINS: 2019 VS. 2021

Where shippers wanted more human expertise.



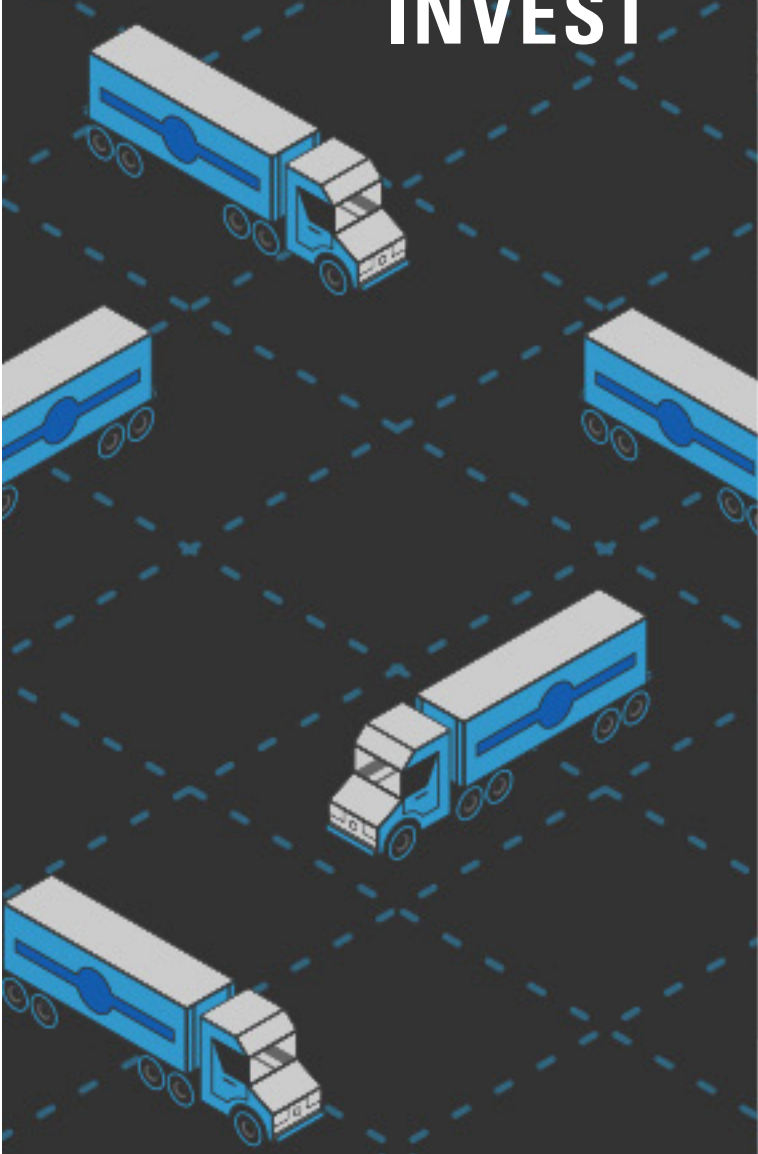
When asked whether people, technology or a combination gets the optimal results across 16 core supply chain tasks, on average, supply chain leaders opted for at least some level of human interaction **65% of the time.**

Takeaway #3

As supply chains get more complex and technology gets more advanced, automation takes on a bigger role, but people are still incredibly important to a well-functioning network. Look for the balance, both in your own network and in your providers.

NEXT
Where Shippers Invest

CORE TECHNOLOGY PLATFORMS: WHERE TO INVEST



How Shippers Are Investing in Technology

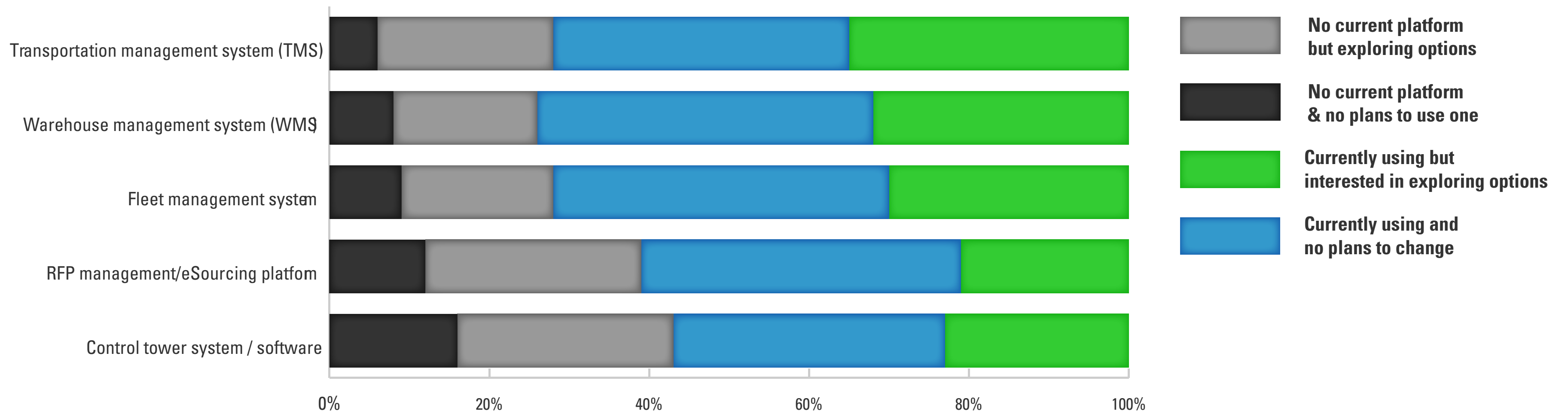
We know shippers' biggest challenges, and where in their supply chain they prefer technology, but exactly what technology are they using? How are they spending their budgets to automate?

Looking at the results overall, a warehouse management system (WMS) was the most essential platform, with 75% of respondents currently using one, and another 18% exploring options.

A transportation management system (TMS) was a close second at 72% of respondents using and another 22% exploring options.

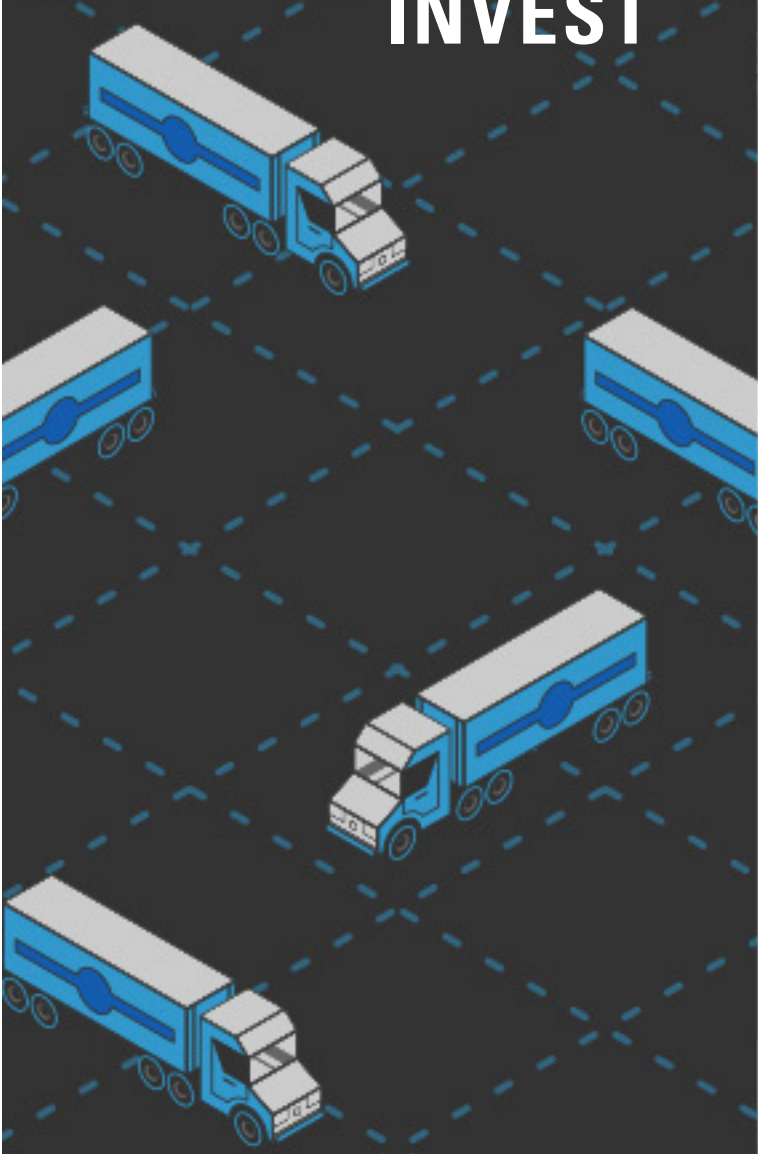
The least utilized platform was a control tower system at 57%, but 26% of respondents are exploring options.

CORE SUPPLY CHAIN TECHNOLOGY PLATFORMS



Q: Which of the following technology platforms do you use?

**CORE
TECHNOLOGY
PLATFORMS:
WHERE TO
INVEST**



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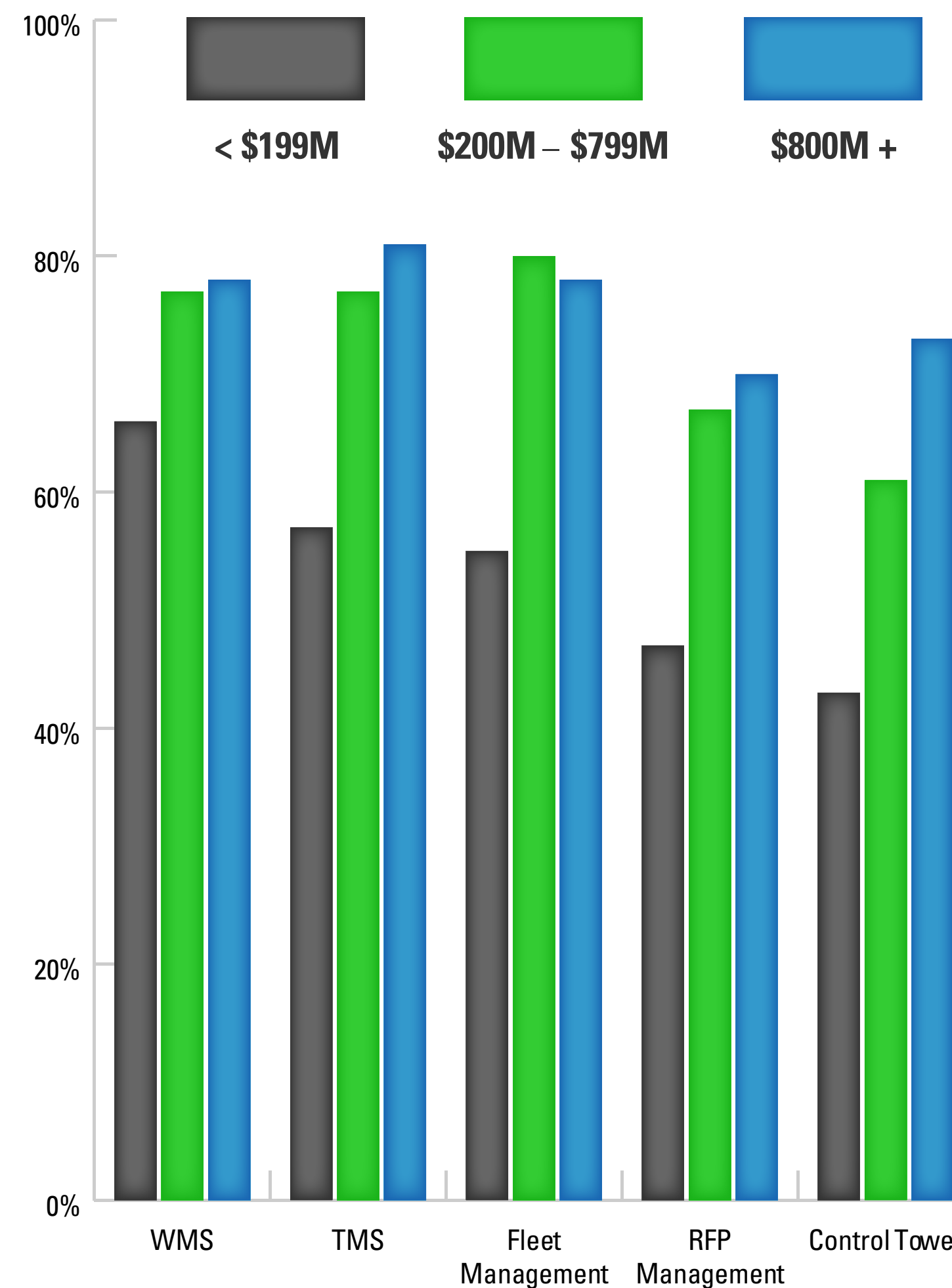
But technology needs — and budgets — are very different for smaller businesses compared to global enterprises.

As the volume of shipments and level of network complexity ramps up, so too does the need for more efficient systems.

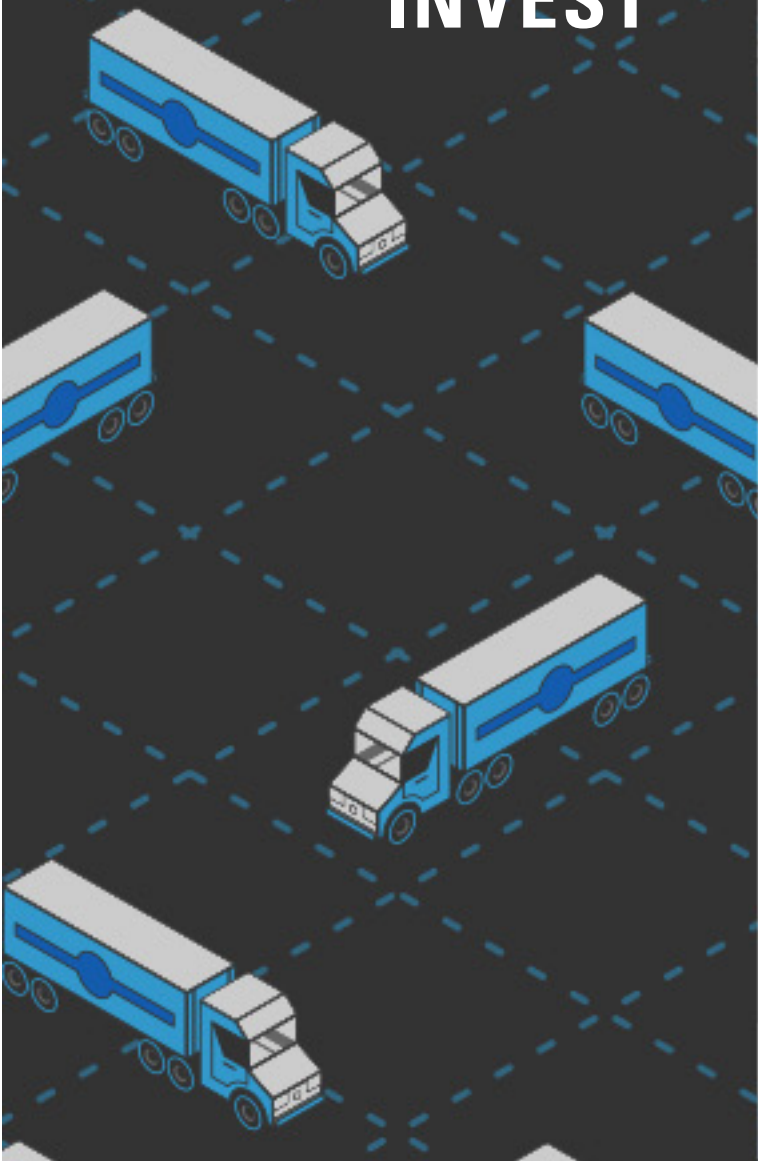
Small shippers tend to keep it simple. They have the largest portion of respondents not using these platforms, but when they do invest, a WMS was the most common. They are also the most curious, with an average of 25% considering new tools.

Mid-sized and large shippers have a fairly similar approach to technology platforms, but large shippers are the most likely to use a control tower (73% of respondents) and the only group to have a TMS as the most-used platform (81% of respondents).

**CORE SUPPLY CHAIN TECHNOLOGY
PLATFORMS: BY BUSINESS SIZE**



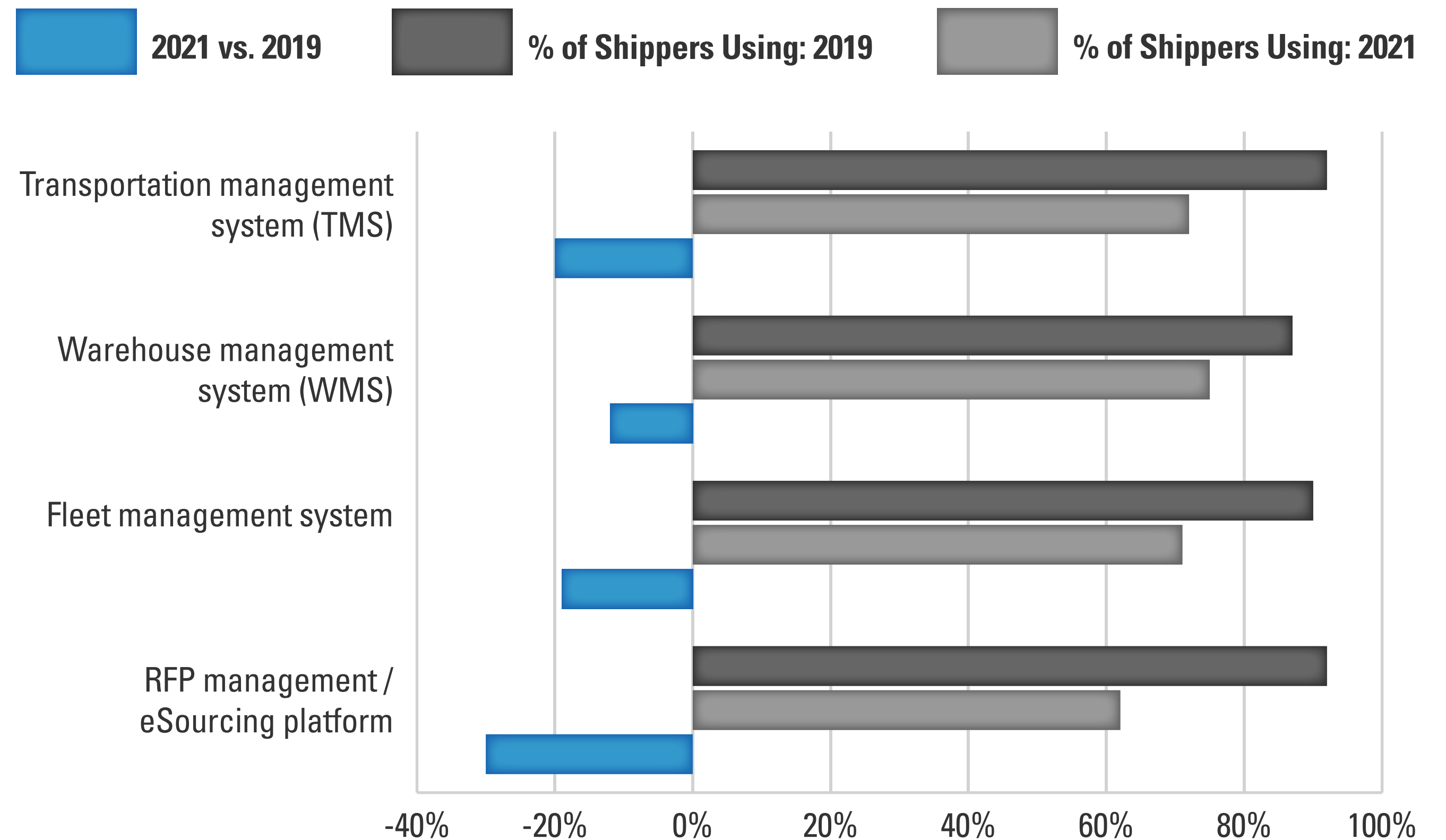
CORE TECHNOLOGY PLATFORMS: WHERE TO INVEST



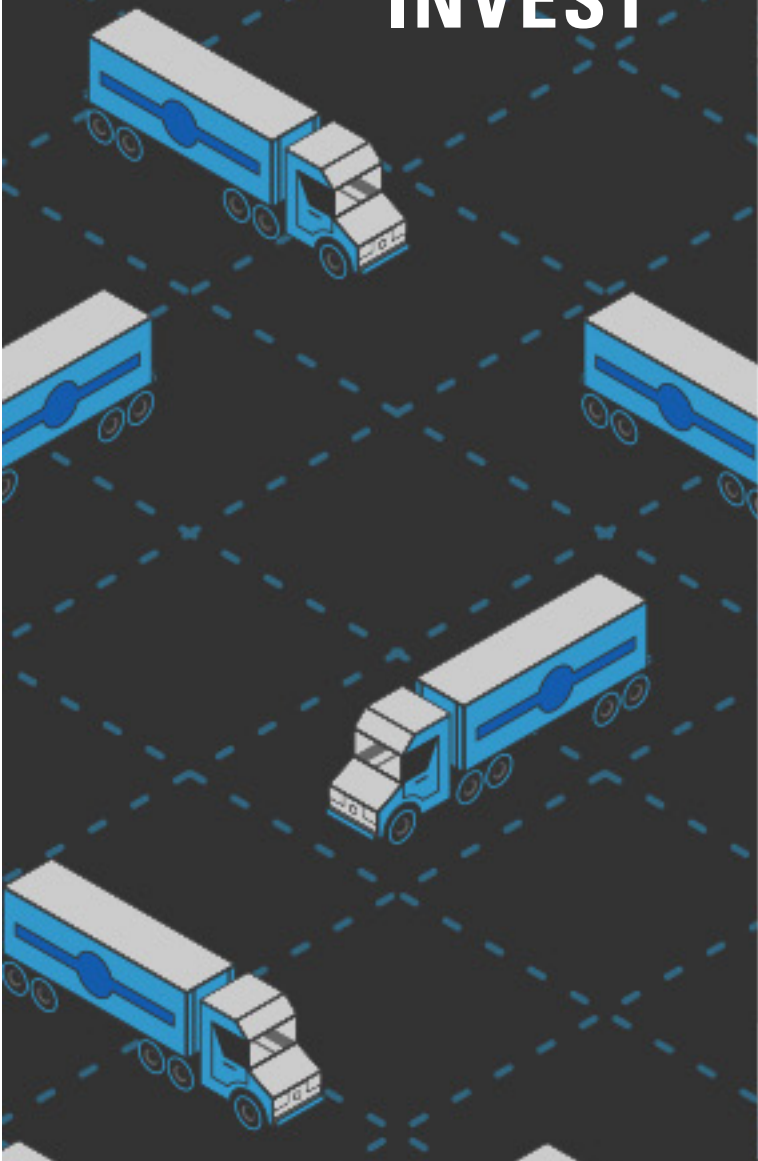
How Does This Compare to 2019?

There was a significant drop in the percentage of shippers using these core technology solutions, which reflects the overarching trend that businesses are more frequently looking to people, not full automation.

SHIPPERS ARE LESS LIKELY TO USE CORE TECHNOLOGY PROGRAMS



CORE TECHNOLOGY PLATFORMS: WHERE TO INVEST



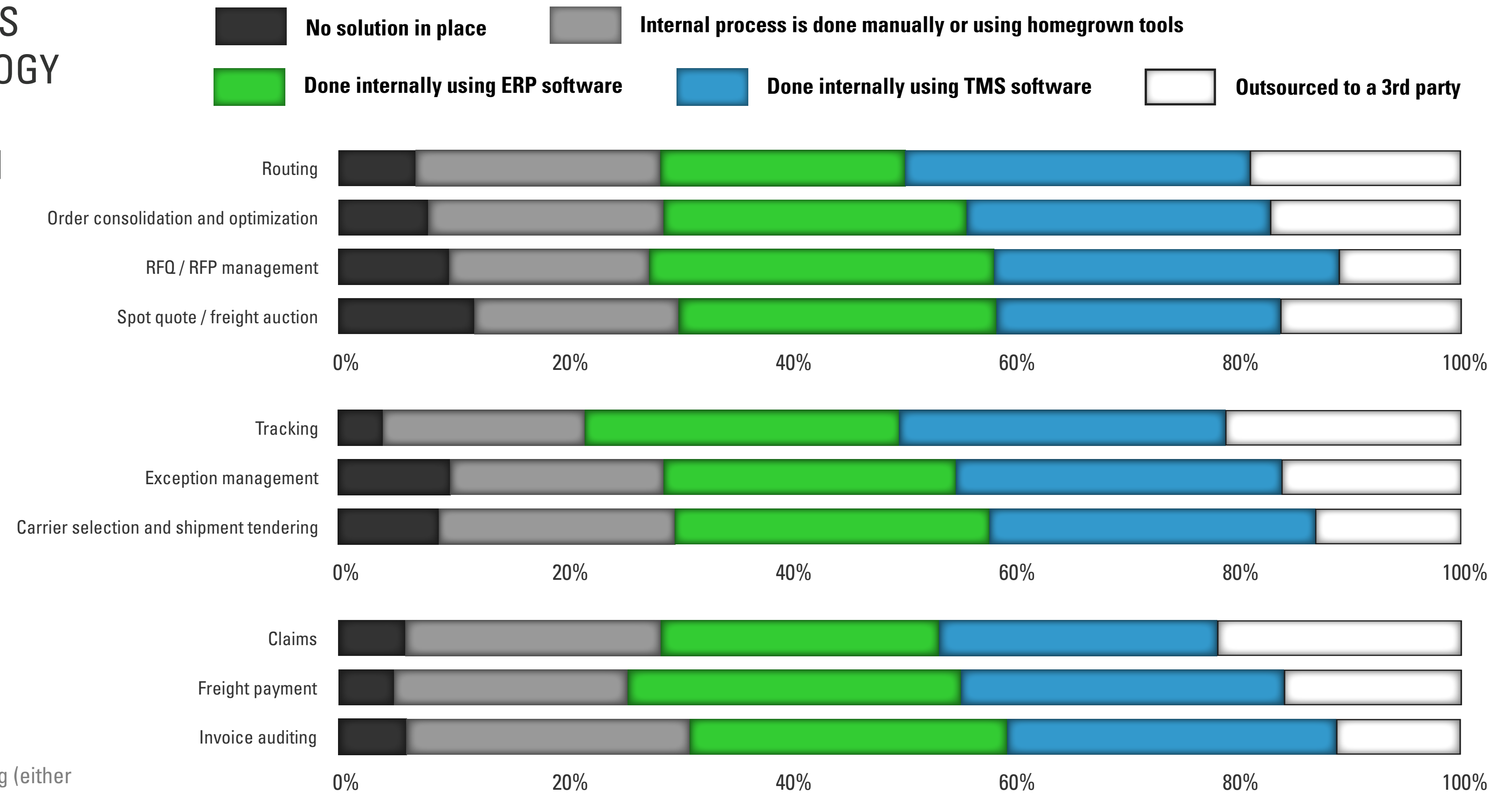
Supply Chain Automation in a Post-COVID World

How Shippers Are Using Their Digital Tools

Buying a supply chain technology platform is just the start — how do shippers actually use them across different areas of supply chain operations?

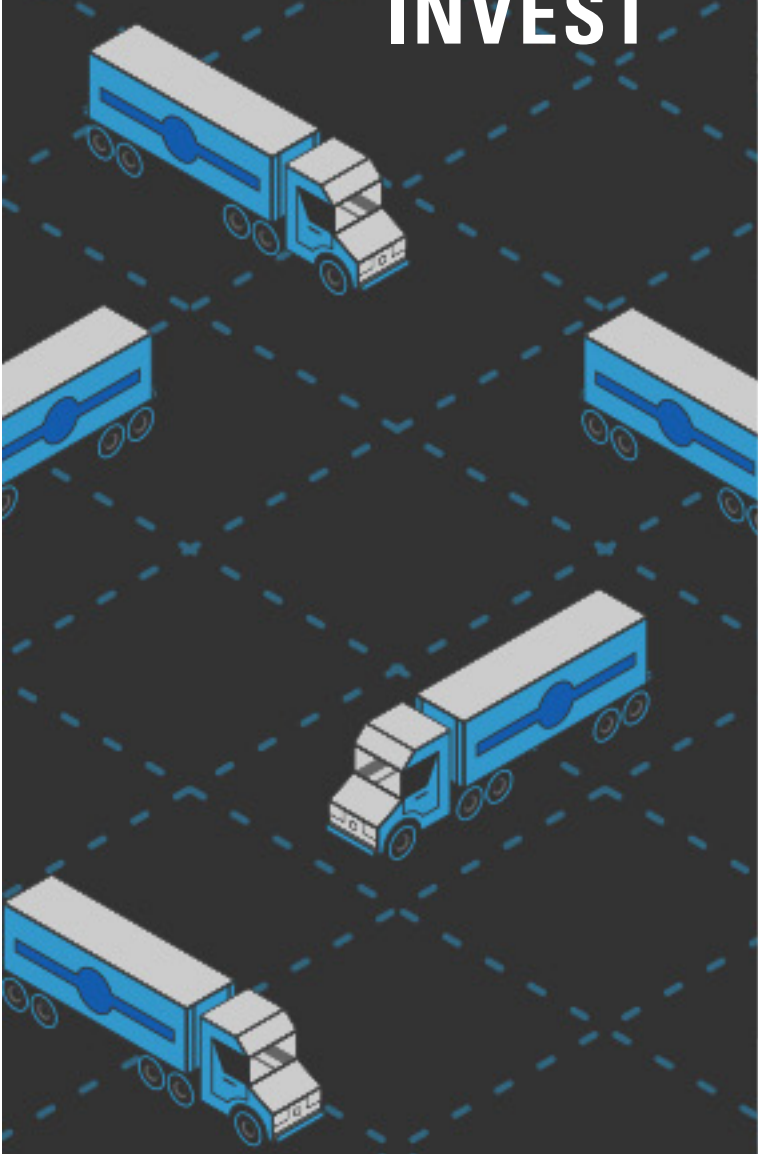
There is no clear consensus for how to apply digital tools to any of these functions; some respondents use a TMS, others use an ERP (enterprise resource planning), some build homegrown solutions, and some outsource completely or just go without any digital solution.

HOW SHIPPERS USE TECHNOLOGY ACROSS 16 SUPPLY CHAIN FUNCTIONS



Q: What tools are you using (either internal or outsourced), or considering using in the next 3-6 months?

CORE TECHNOLOGY PLATFORMS: WHERE TO INVEST



Though shippers took different approaches across each function, we did identify a few trends.

Looking at an average across all of these supply chain functions, shippers are the most likely to rely on their TMS, while less than 10% of shippers have no solution at all.

Many shippers opt not to buy a tool, with over 20% developing their own process in-house, and another 16% outsourcing completely.

MOST LIKELY TO HAVE A TECHNOLOGY SOLUTION:

Tracking
(96% of respondents)

MOST MANUAL OR HOMETGROWN SOLUTION:

Invoice auditing
(25% of respondents)

MOST LIKELY TO USE AN ERP:

RFQ & RFP management
(31% of respondents)

MOST LIKELY TO USE A TMS:

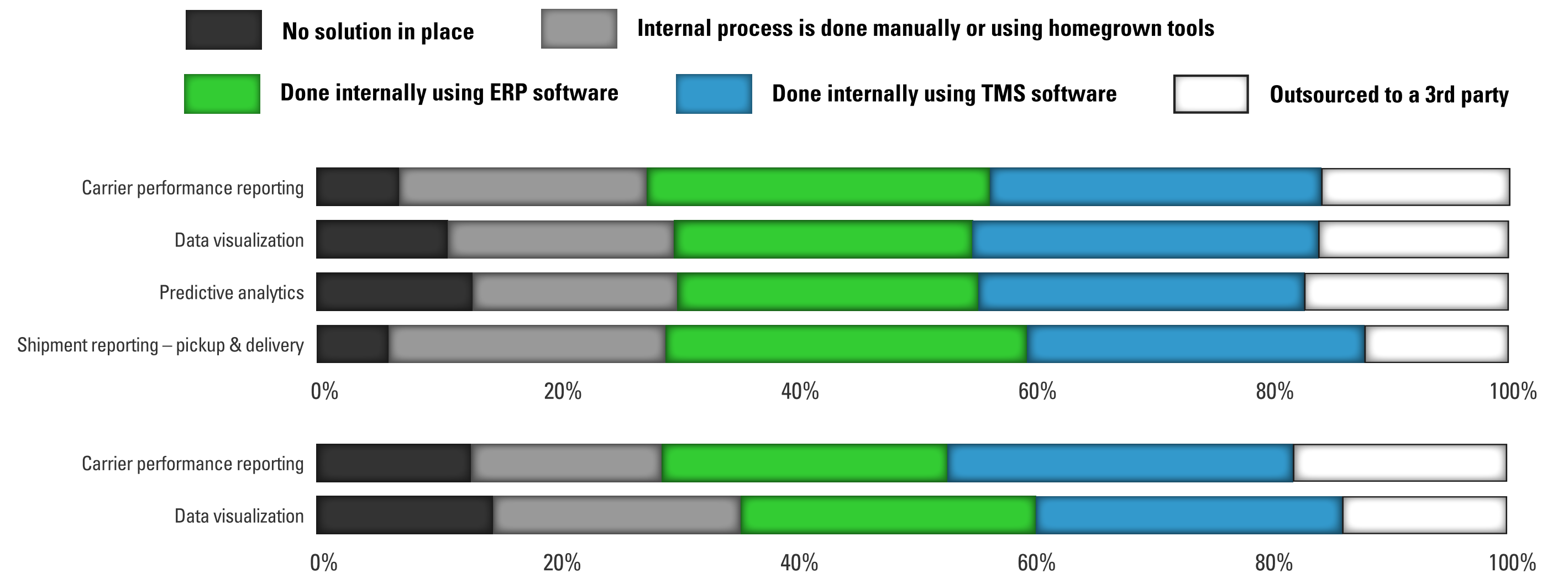
RFQ & RFP management and Routing
(tie, 31% of respondents)

MOST LIKELY TO OUTSOURCE:

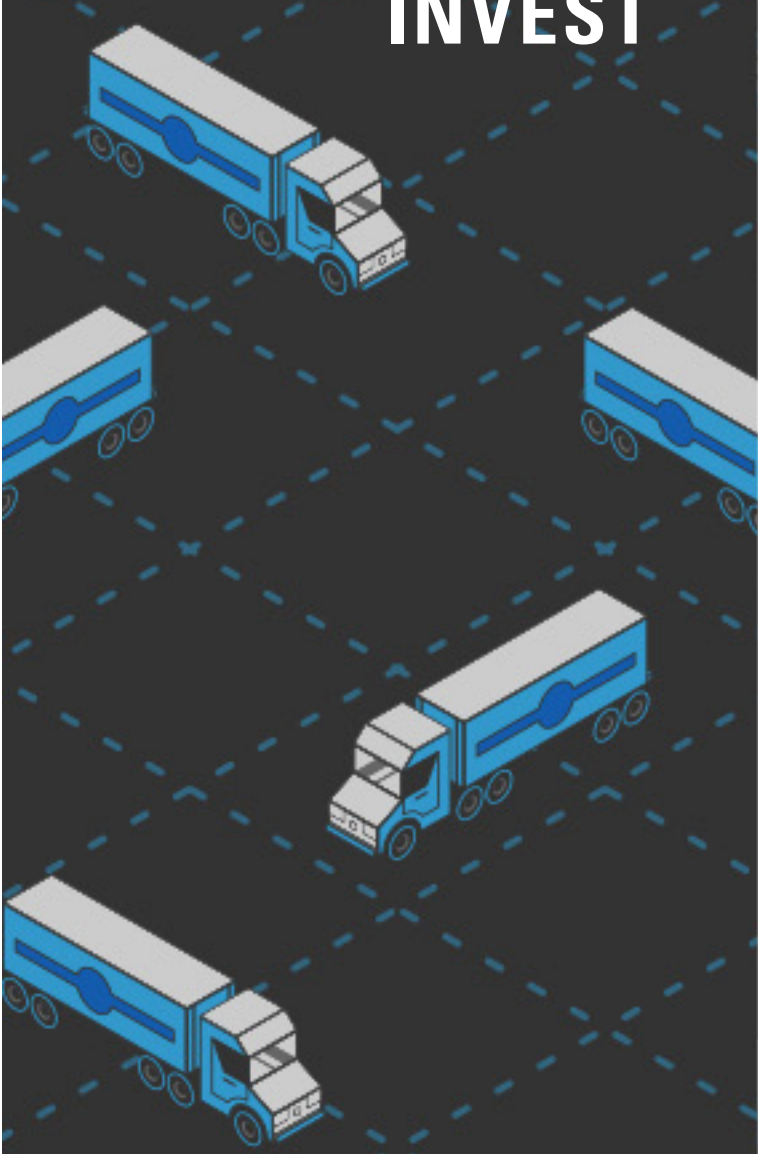
Claims
(22% of respondents)

LEAST LIKELY TO OUTSOURCE:

RFQ & RFP management and Invoice Auditing
(11% of respondents)



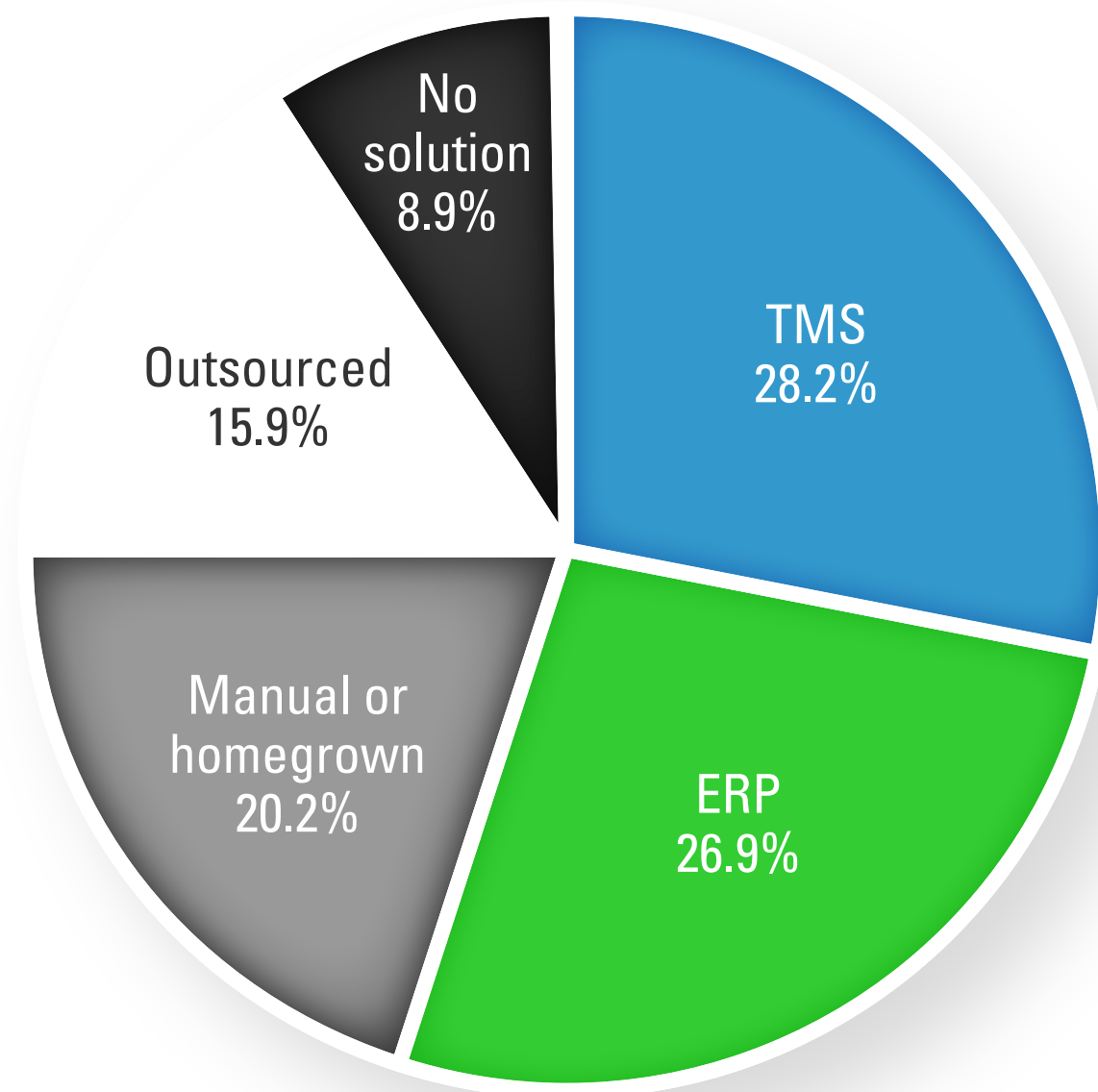
**CORE
TECHNOLOGY
PLATFORMS:
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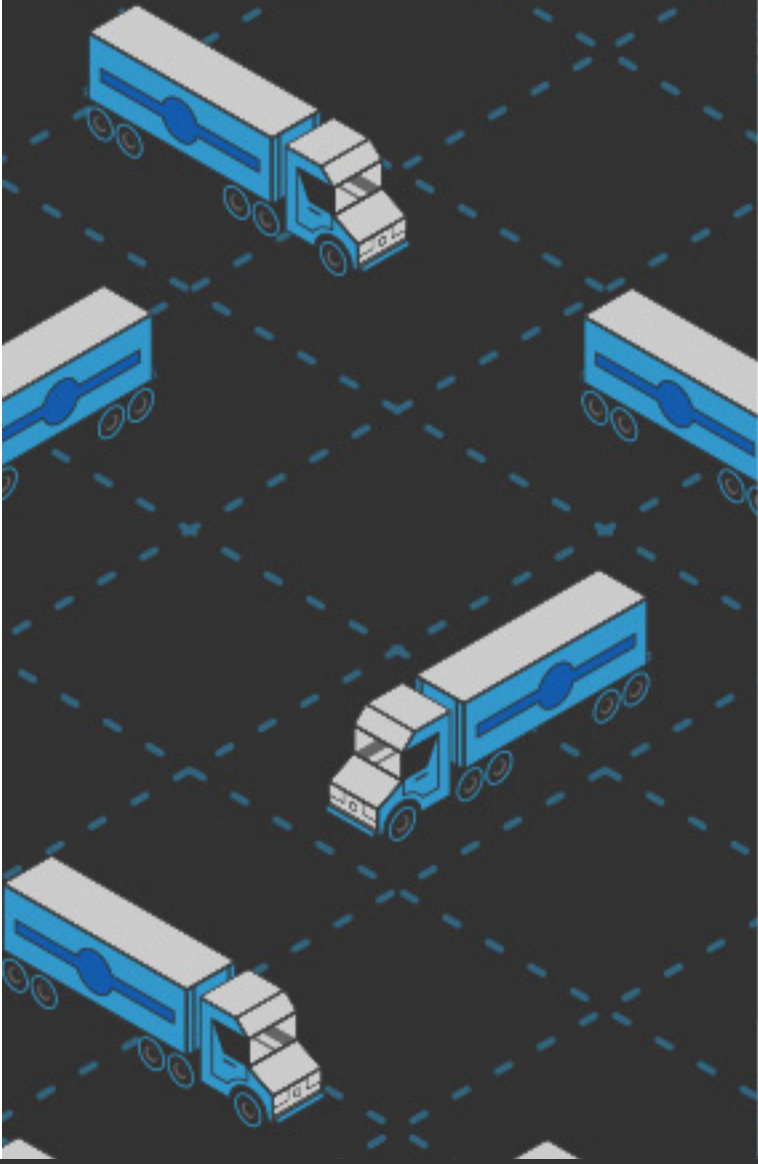
**HOW SHIPPERS USE TECHNOLOGY:
AVERAGE ACROSS ALL FUNCTIONS**



I want to automate the booking process for carriers — it's boring and labour intensive.

Director/Manager of Transportation
UK Shipper
\$200 million to \$799 million

CHALLENGES WITH DATA ANALYSIS



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Big Data, Big Challenges

Though shippers rely on automation to solve some network challenges, the mass integration of supply chain technology does come with its own set of issues, with the most consistent issue being: we have all this data, now what do we do with it?

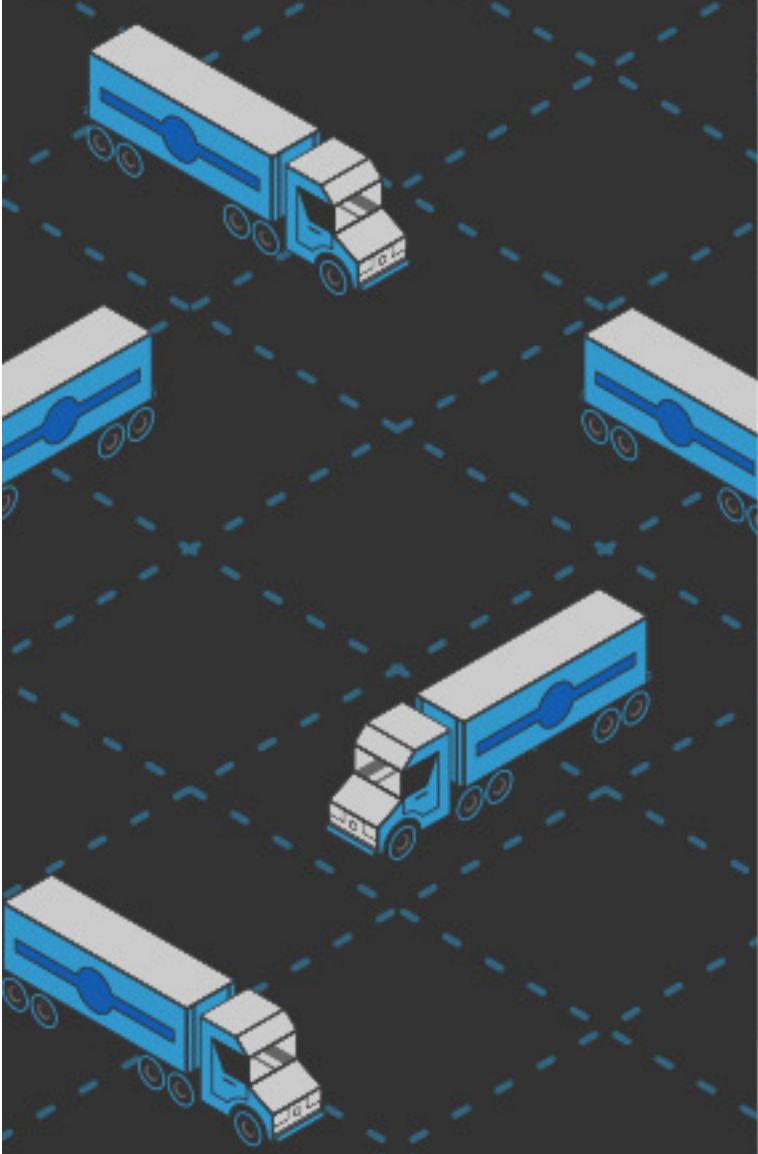
At this point, virtually no business is completely new to the data game.

When asked where they view their business in terms of ability to analyze data, 52% of shippers identified as intermediate, 43% said they were advanced, and only 5% thought they were beginners.

This is particularly true of large shippers — 58% said they were experts.

Despite that degree of data literacy, few shippers have mastered the massive amounts of information created by the modern supply chain; *analyzing the data/getting meaningful insights out of the platforms* was the top challenge shippers are having with their tools.

CHALLENGES WITH DATA ANALYSIS



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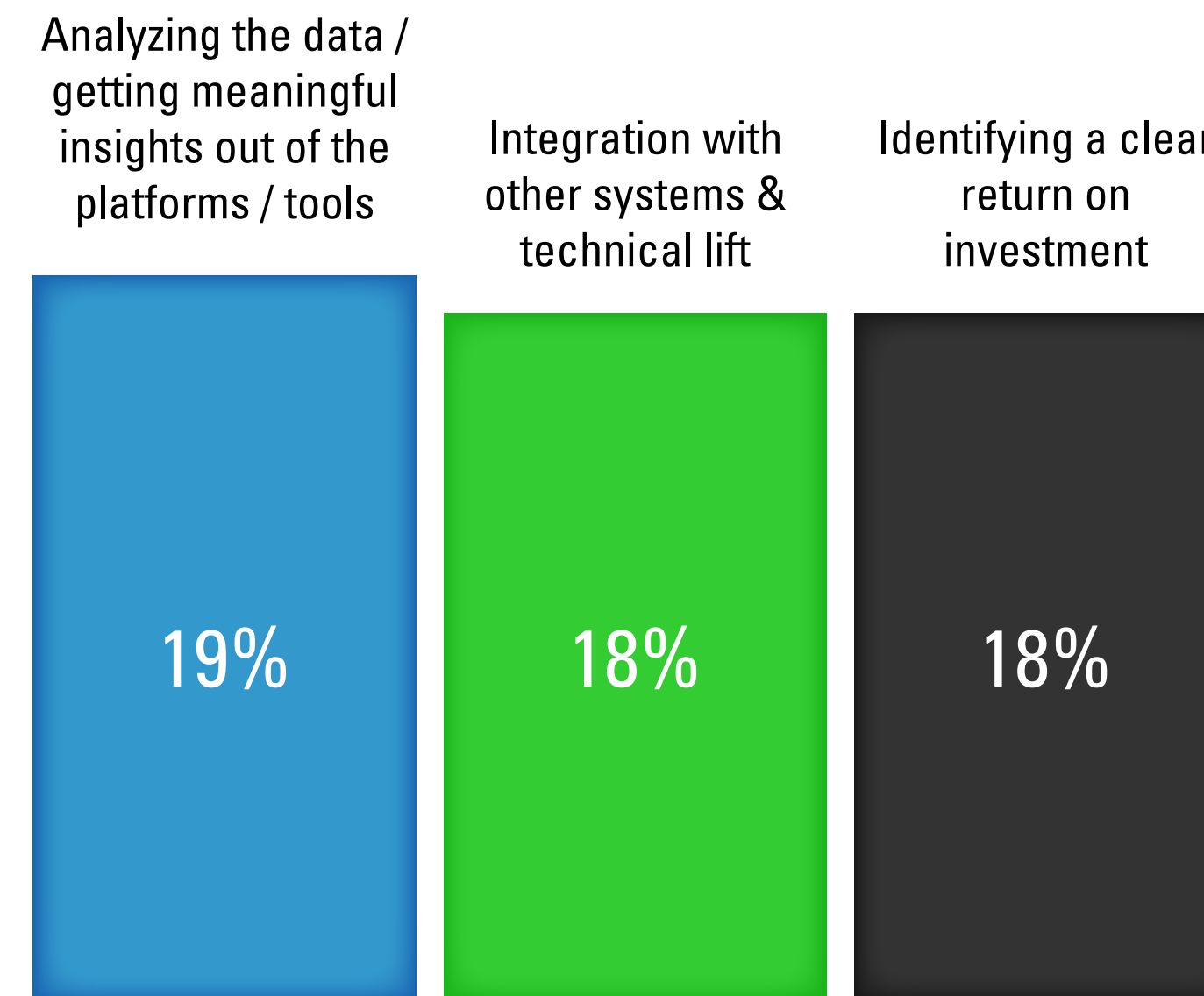
When asked what type of data shippers needed to improve their organizations, over half (53%) said they wanted better operational data, followed by market data (30%) and financial data (16%).

Over half of businesses (52%) are even turning to third parties to get more.



I want to hire a data analyst to train my staff so that they can make better use of all the data output from our network.

VP/Chief Executive
United Kingdom
\$800 million or more



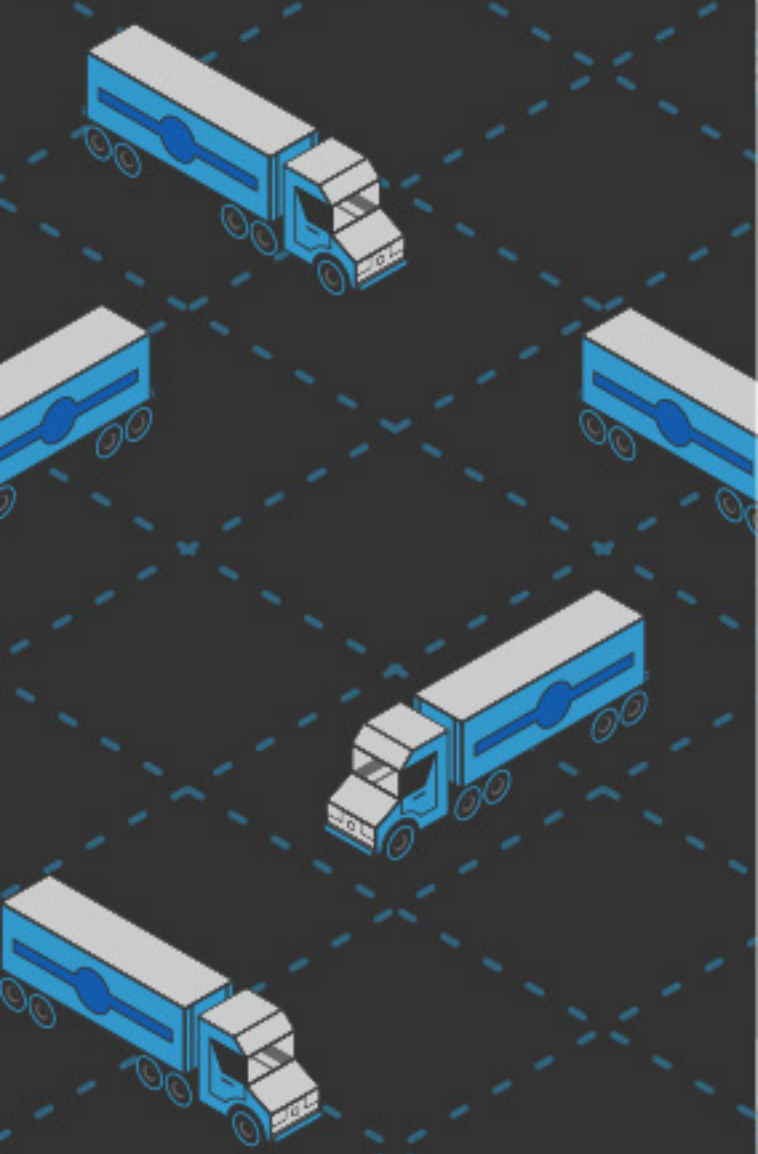
Q: What are your biggest challenges with the supply chain technology platforms that you are using or have evaluated?

95% of shippers think they are intermediate or advanced at data analysis, yet the #1 challenge shippers are having with their technology investment is **getting meaningful insights from data**.

Takeaway #4

Data — and the analysis of it — is a reoccurring theme for modern supply chain professionals. It is both critical to success and a major challenge. If you can't build the competency at your own business, consider outsourcing; 16% of shippers look to outside parties for help.

NEXT
Carrier Results & Insights



Carrier Results & Insights

Like their shipper counterparts, the past year has been the most challenging environment to haul freight.

Demand spiked, then dropped, then spiked again. As intricate networks and supply chains were shattered, it became harder — at times impossible — to maintain a balanced, consistent network.

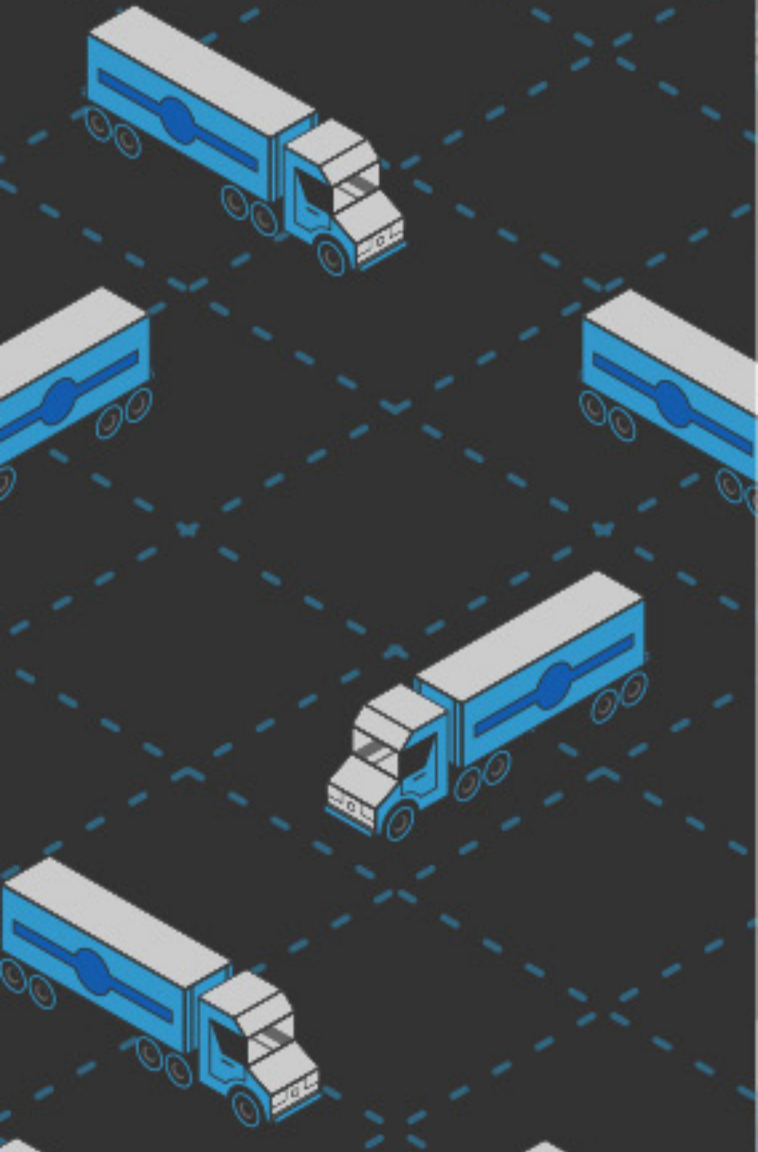
Dispatchers and fleet managers had to go remote, while drivers had to be on the front lines, delivering all the critical supplies we need to survive.

As the economy continued to bounce back as lockdowns ended, capacity has gotten tighter. Our proprietary spot market index, the Curve[®], **reached record heights**, and the **driver labor market** continues to be challenging.

How did all that factor into carriers' responses?

Let's dive into the results to learn their biggest challenges, where they invested in automation and where they prefer people, and how they're using the technology tools they have.

TOP CHALLENGES



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What Are Carriers' Top Challenges?

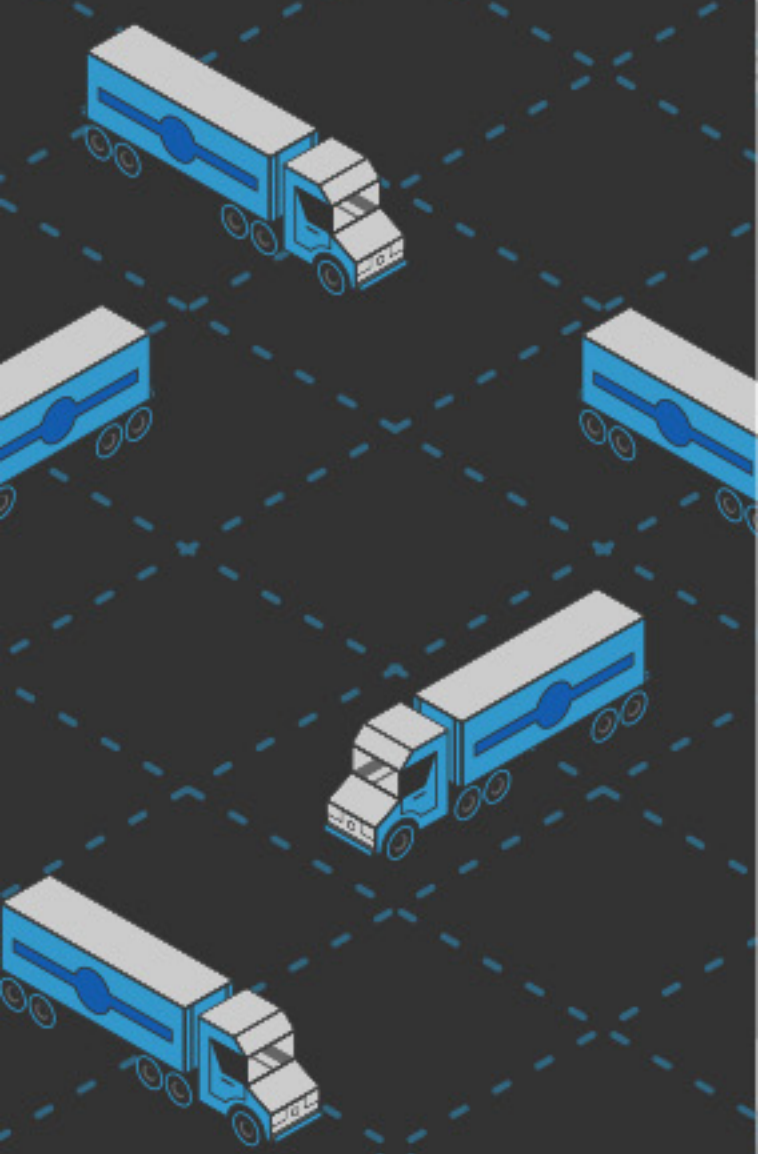
Though carriers serve a different role in the market — the supply to shippers' demand — carriers' top challenges were virtually the same: keeping costs under control and keeping up with customer demands.

This is a great example of how e-commerce pressure for fast-and-free shipping ripples across supply chains: consumers pressure their shippers, who in turn pressure their vendors and carriers.

The pandemic only exacerbated these issues. In early 2020, when demand tanked as lockdowns began, freight was hard to come by. Many carriers parked their trucks, or went out of business altogether. When shipment volumes began to pick up later in 2020, there was less capacity to handle this volume.

Furthermore, shipping patterns were far less consistent than usual, leading to a rise in unexpected time delays, carriers' third overall challenge.

TOP CHALLENGES



How did the top challenges compare to the 2019 survey results?

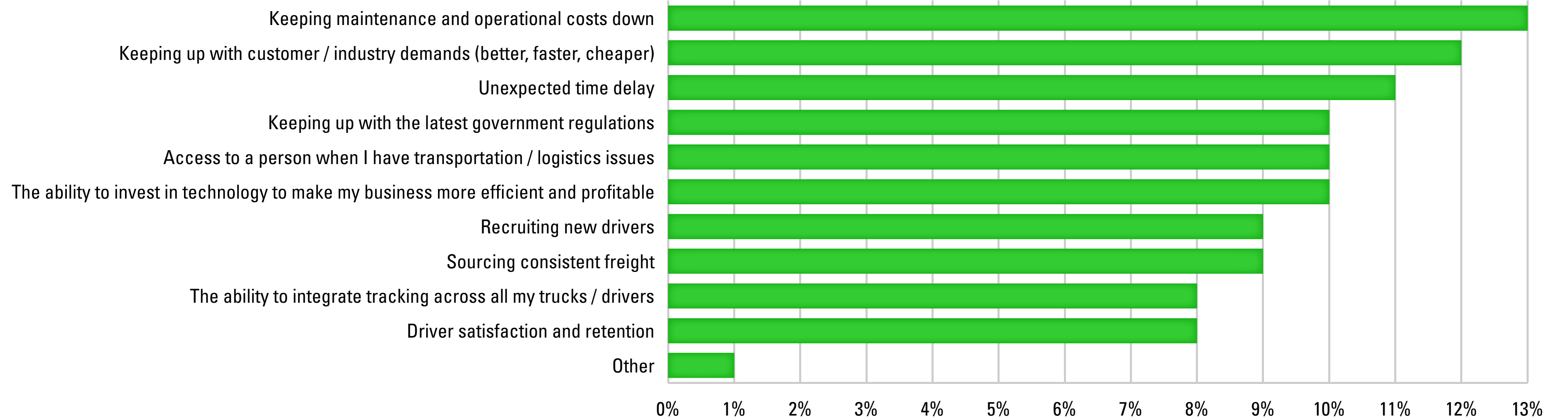
They were similar to 2019, but the order changed slightly, with a greater emphasis on people over technology.

The ability to invest in technology fell back from 3rd overall in 2019 to 6th in 2021.

Access to a person when I have issues was 9th (out of 10) in 2019 — now it's 5th.

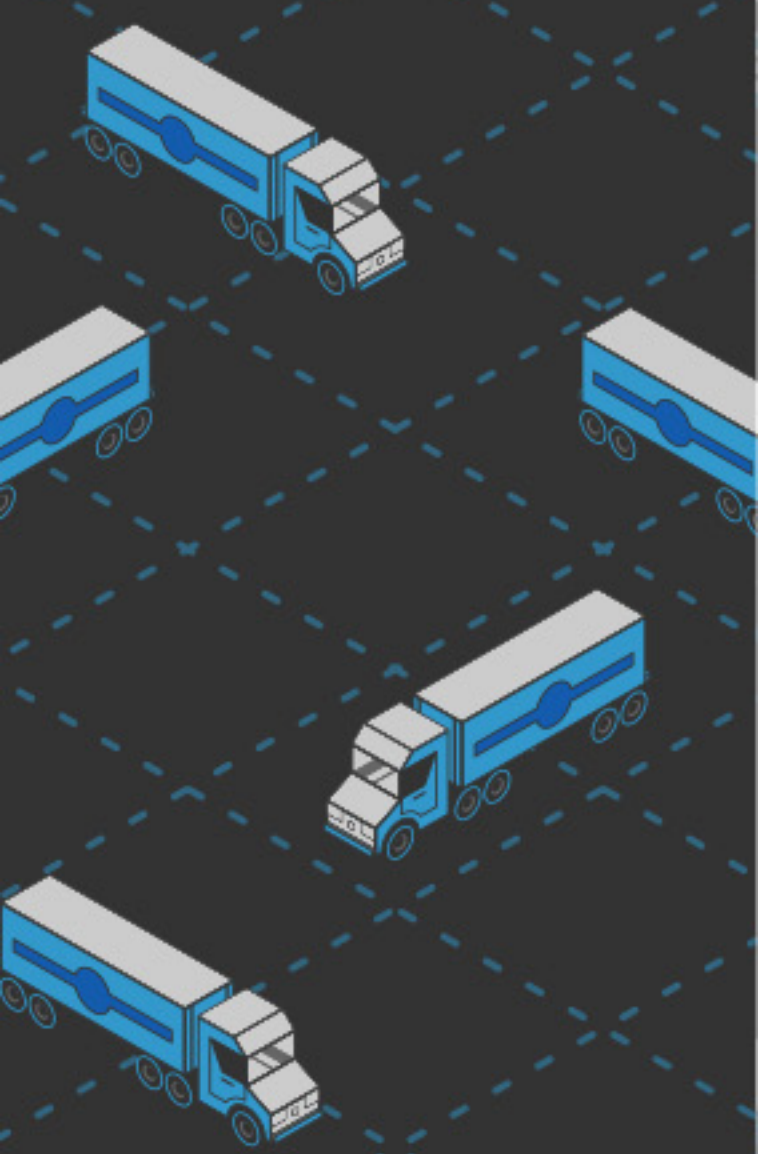
Though not a major shift, it does follow the same trend seen in the ideal overall balance between people and technology, which moved from 59% technology / 41% human in 2019 to 56% technology / 44% human in 2021.

TOP CARRIER CHALLENGES



Q: Which of the following are your biggest challenges with respect to shipping and logistics?

TRENDS IN FLEET AUTOMATION



Supply Chain Automation in a Post-COVID World

Workforce Automation: How Carriers Are Using Technology in Their Fleet

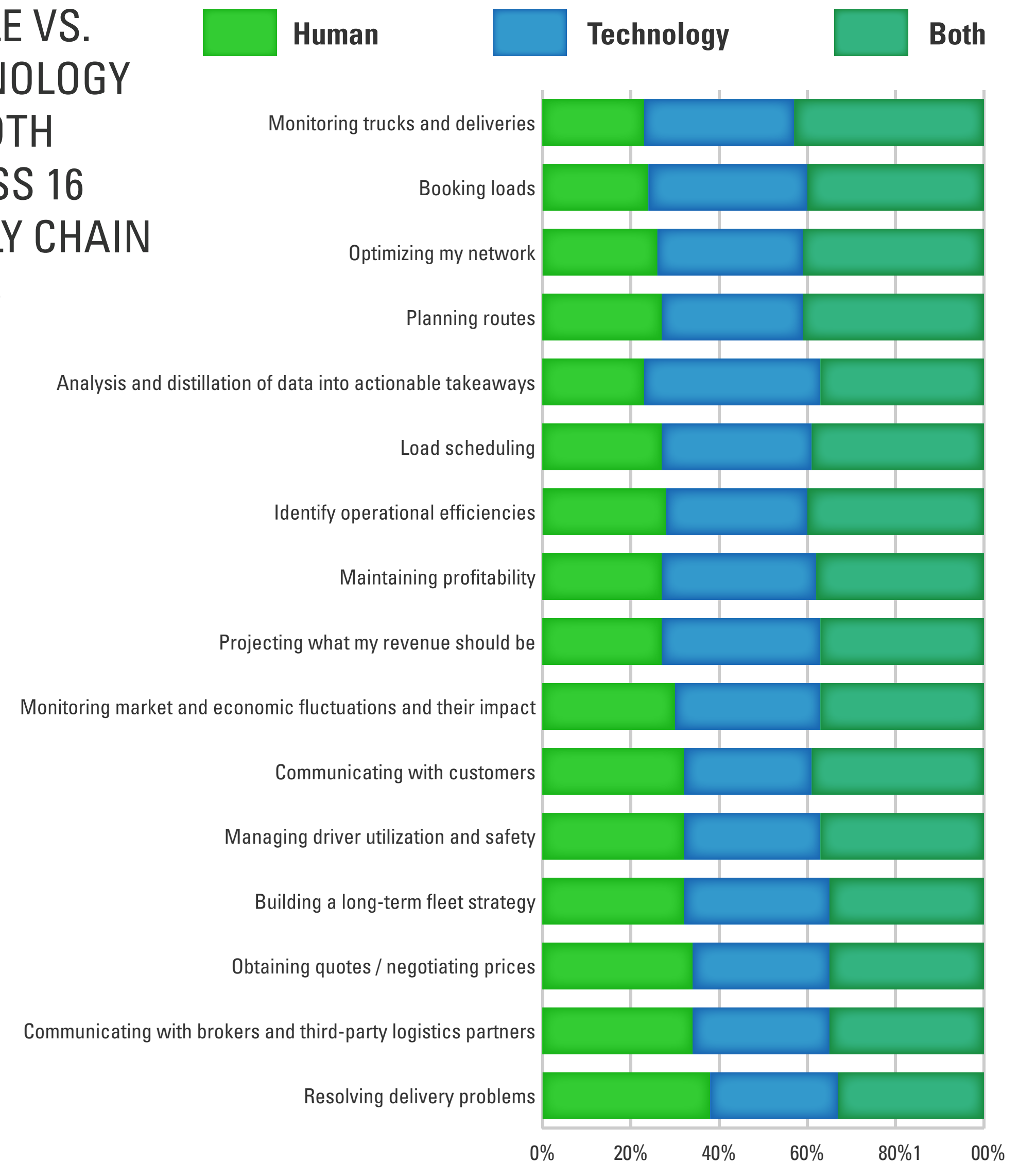
Carriers, like shippers, are trying to control costs and keep up with customer demands, and they are using technology to help.

But they aren't automating everything — there are many tasks where people excel, or a combination of people and technology works best.

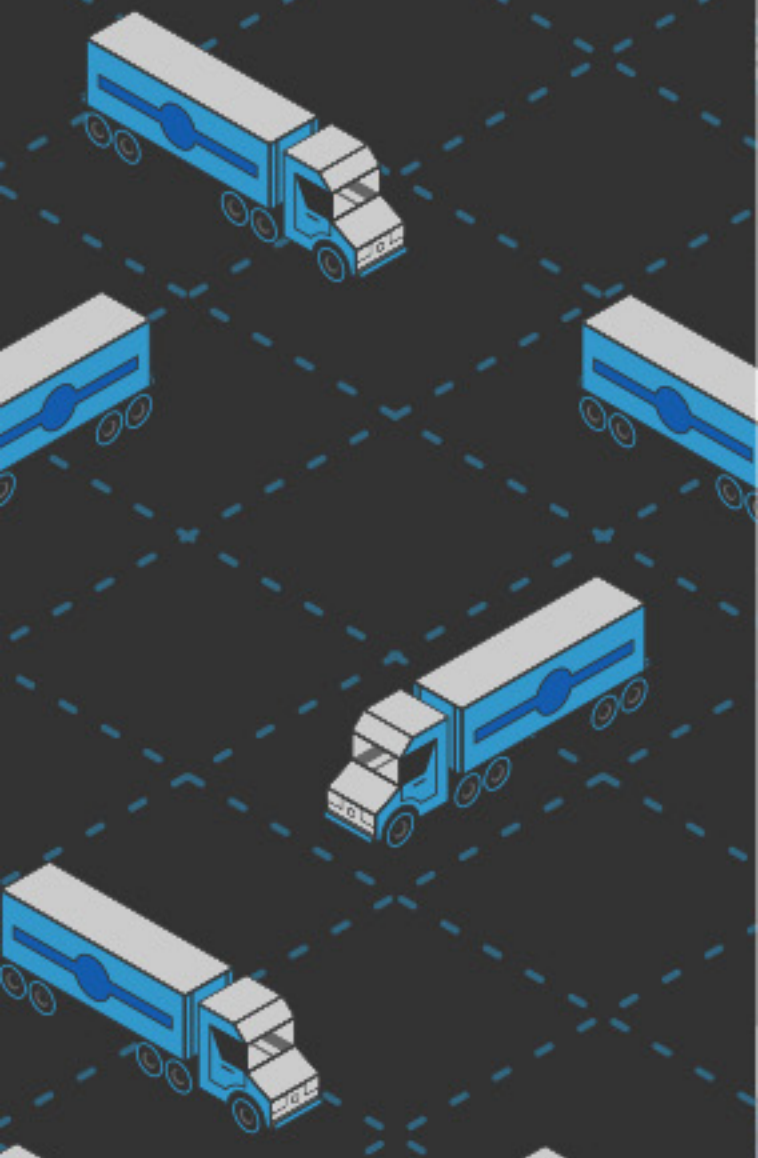
To get a clearer view of how carriers are actually applying automation to their own businesses, we asked respondents to identify where they prefer people, technology, or a combination across 16 different fleet functions.

Though in every task at least 20% of respondents preferred an all-digital solution, there were some areas where carriers tended to prioritize the use of technology.

PEOPLE VS. TECHNOLOGY VS. BOTH ACROSS 16 SUPPLY CHAIN TASKS



TRENDS IN FLEET AUTOMATION



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TOP TECHNOLOGY TASKS

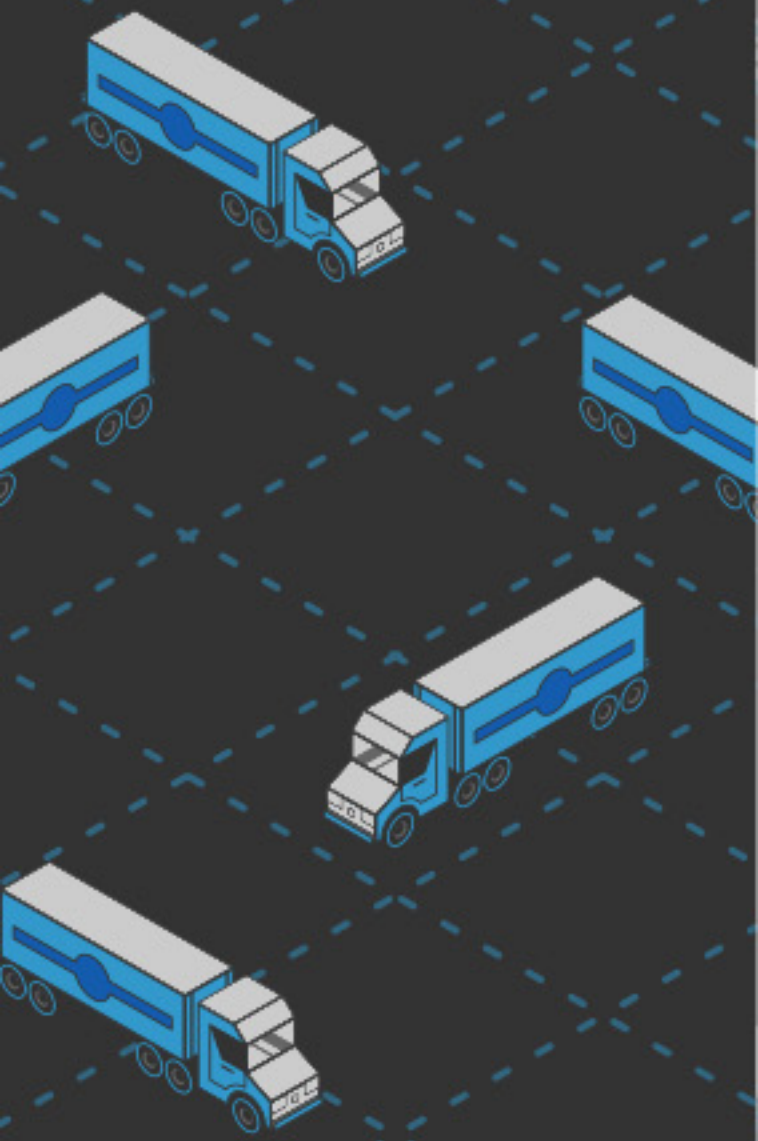
1. Analysis & distillation of data into actionable takeaways
2. Booking loads
3. Projecting what my revenue should be
4. Maintaining profitability
5. Load scheduling

Trends in Trucking Automation: What's Changed Since 2019?

The overall ideal balance between technology and human expertise shifted slightly towards people in the 2021 survey — how does that translate to specific tasks in fleet operations?

We added three additional operations tasks (16 total, compared to 13 in 2019), and of the 13 tasks that were included in both surveys, eight trended up in their balance towards technology.

TRENDS IN FLEET AUTOMATION



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Communication with customers was the biggest technology gain, with communication with 3PLs not far behind. While both shippers and carriers became far more comfortable with digital communication, shippers were more likely to opt for both, while carriers shifted more towards technology only.

Carriers are also finding more benefit using technology to sort through massive amounts of network data and package it up in a digestible way.

What carriers actually do with those insights, and how they apply them to their business, is still very much dependent on people, and people interacting with technology.



We automate data logging. This allows the data to be analysed quickly, easily and frequently by our system.

Fleet Owner
United Kingdom
4 – 50 trucks

BIGGEST TECHNOLOGY GAINS: 2019 VS. 2021

COMMUNICATING WITH CUSTOMERS

+ 13.7%

ANALYSIS & DISTILLATION OF DATA INTO ACTIONABLE TAKEAWAYS

+ 13.3%

IDENTIFY OPERATIONAL EFFICIENCIES

+ 12.7%

COMMUNICATING WITH BROKERS & THIRD-PARTY LOGISTICS PARTNERS

+ 12.3%

BUILDING A LONG-TERM FLEET STRATEGY

+ 11.7%

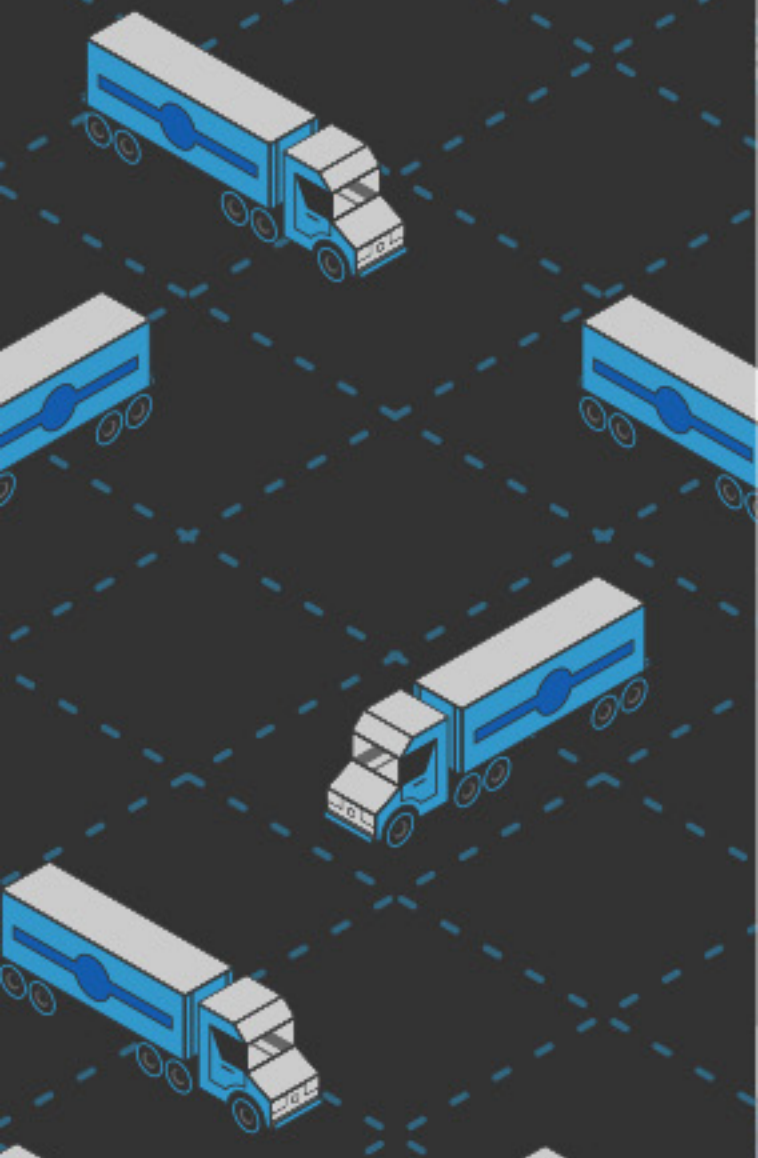
Carriers were most likely to choose analysis and distillation of data into actionable takeaways when asked where technology was most useful, making it **the #1 overall technology task and the biggest increase from 2019.**

Takeaway #5

As modern shipping networks create more data, deciphering it into something that is useful is challenging for shippers and carriers. Both are looking to technology for help, but there is not a consensus on the best way to do it.

NEXT
Where People Fit In

WHERE PEOPLE FIT IN



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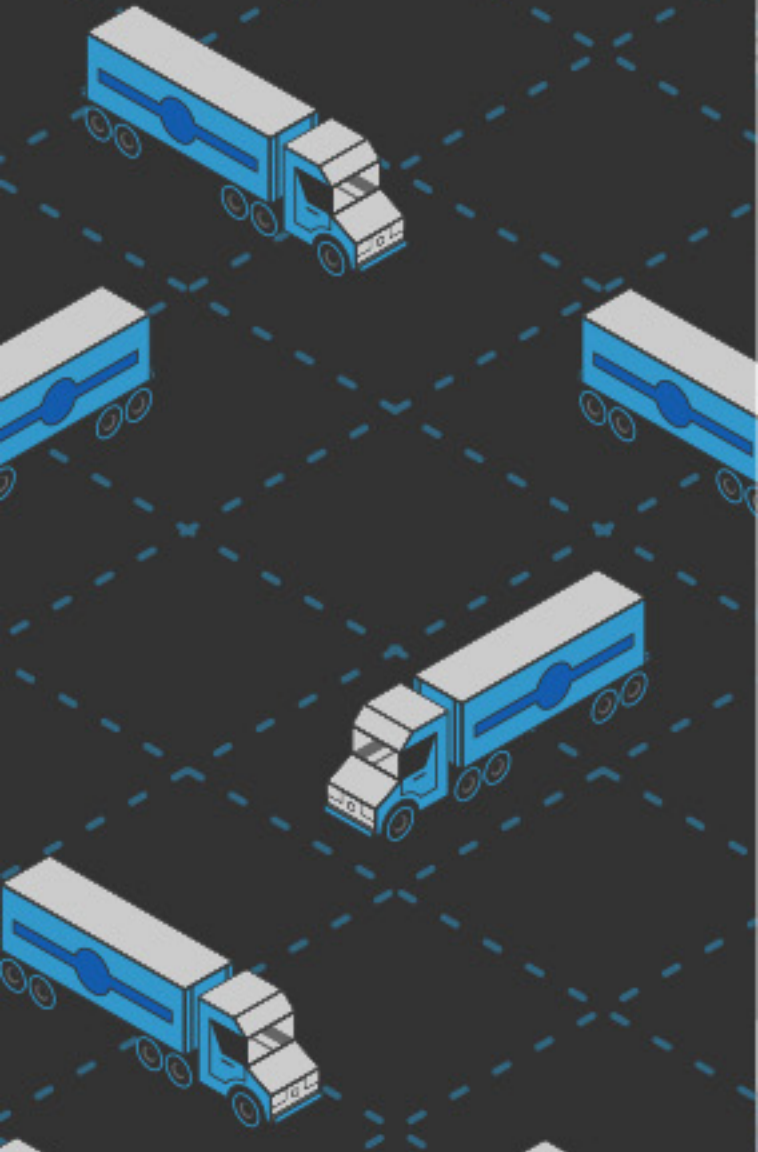
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in a **Post-COVID** World

Where do people fit into carrier operations?

Technology touches almost every part of a modern carriers' business, but people are still a critical component — according to this latest survey, it's even more true now than in 2019.

When hauling freight, things often go wrong, and when they do, carriers want logistics professionals ready to help; resolving delivery problems was the top people task, and communicating with 3PLs was third.

WHERE PEOPLE FIT IN



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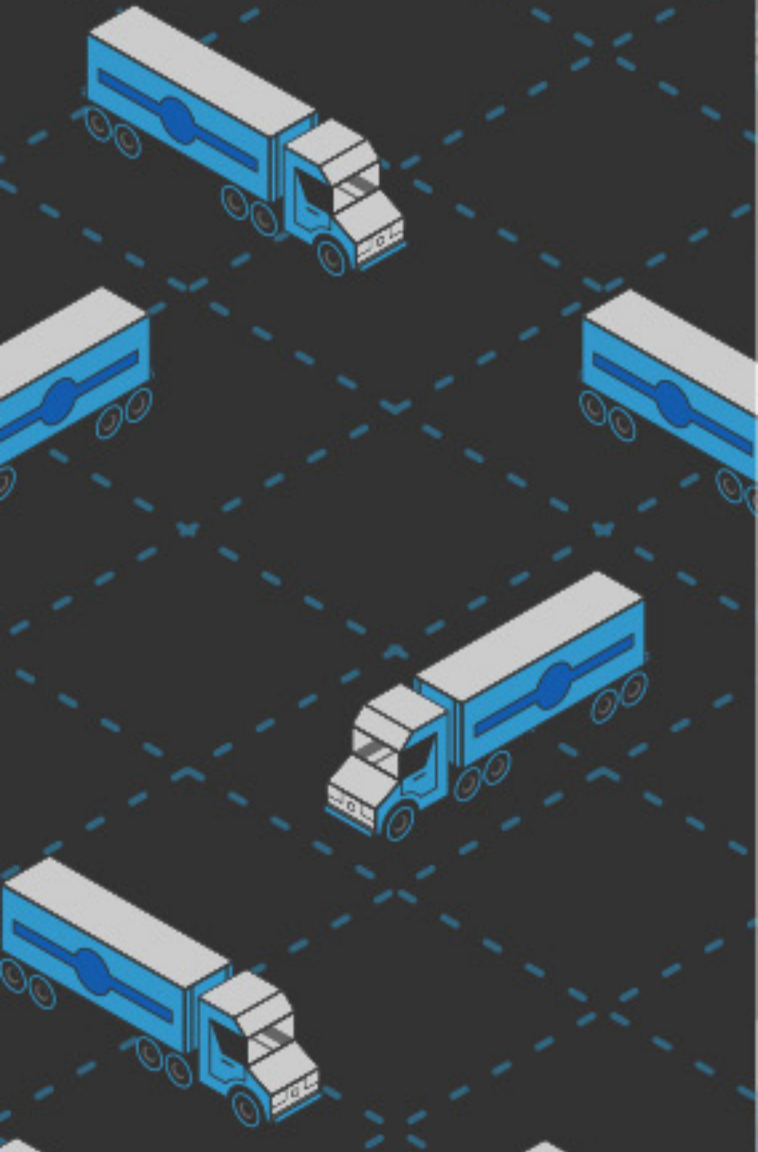
TOP PEOPLE TASKS

1. Resolving delivery problems
2. Load scheduling
3. Communicating with brokers & third-party logistics partners
4. Obtaining quotes/negotiating prices
5. Communicating with customers

Compared to the 2019 study, there were five tasks that actually trended away from technology, with the preference shifting to people or a combination of technology and people.

This may be a correction for a technology binge in these areas — planning routes and load scheduling were the #1 and #2 tech tasks, respectively, in 2019, and both saw a movement towards people.

WHERE PEOPLE FIT IN



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in a Post-COVID World

BIGGEST PEOPLE GAINS: 2019 VS. 2021

MANAGING DRIVER
UTILIZATION &
SAFETY

+ 7.3%

MONITORING TRUCKS
& DELIVERIES

+ 4.3%

PLANNING ROUTES

+ 3.7%

LOAD SCHEDULING

+ 3.0%

Looking at the average across all 16 tasks, both took the biggest share, though the distribution was roughly even across people, technology and a combination.

The closest to a majority view was monitoring trucks and deliveries, with 43% of respondents choosing both as the optimal way.

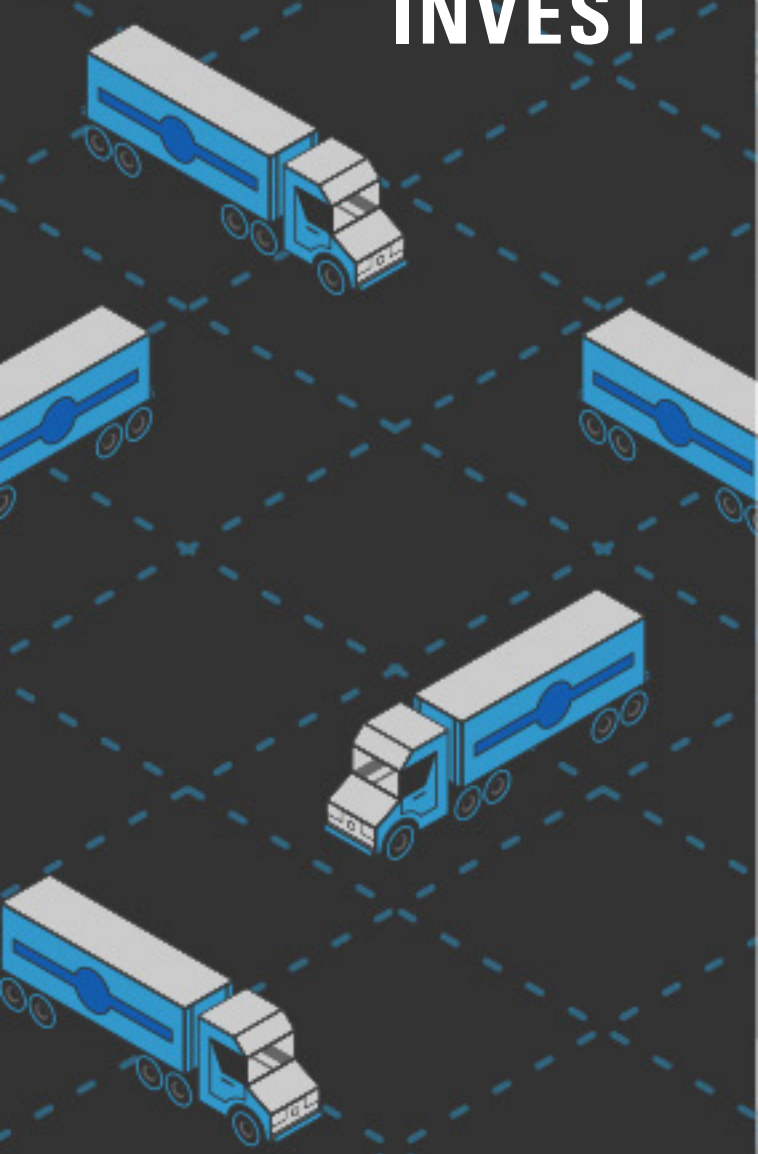
Like shippers, there is no clear consensus on the best way to achieve any task. The most dominant theme is that people still play a major role, **with at least some human interaction required for optimal results an average of 68% of the time.**

“

Technology is important, but labour is indispensable.

Fleet Owner
United Kingdom
51+ trucks

CORE TECHNOLOGY PLATFORMS: WHERE TO INVEST



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in a Post-COVID World

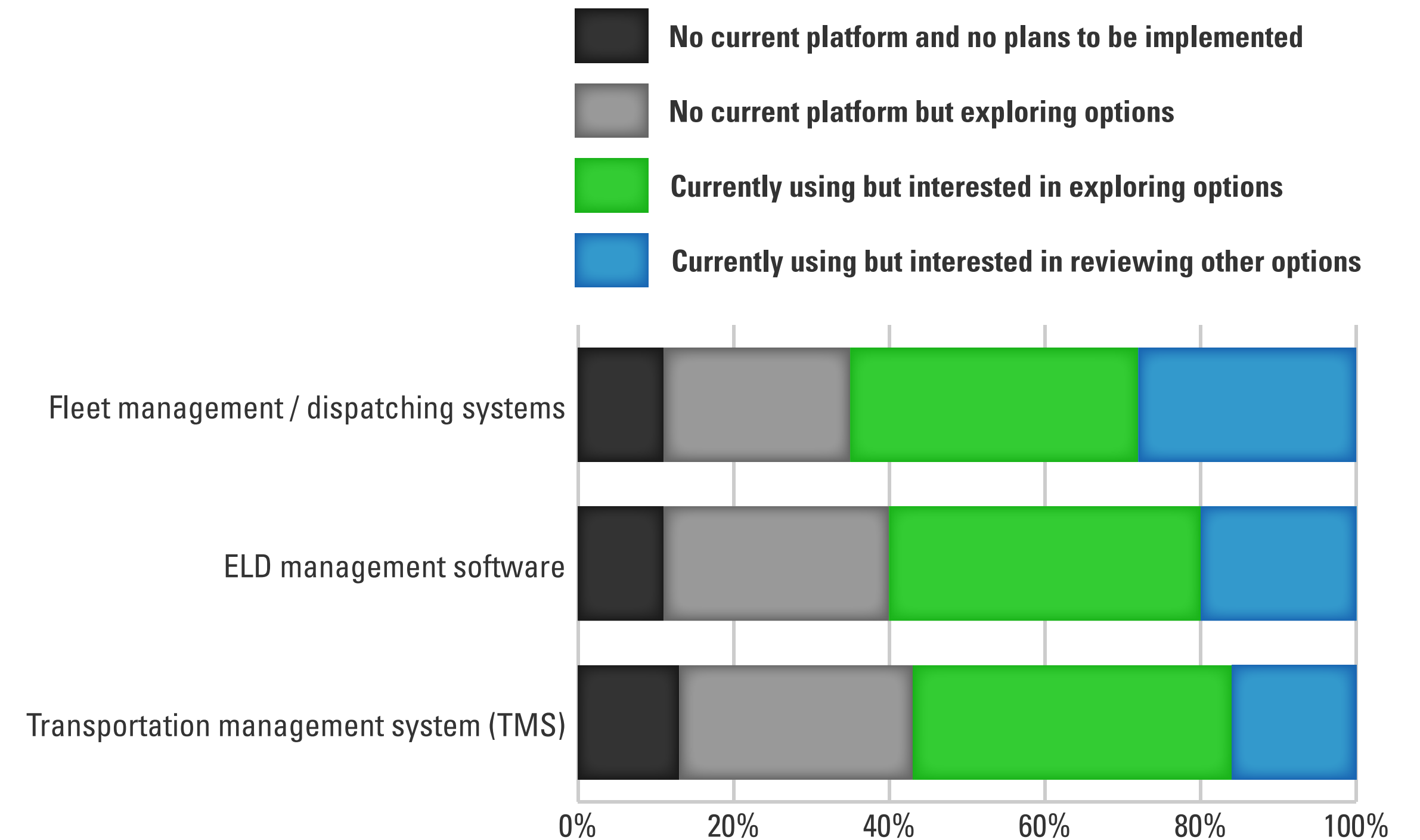
Logistics Technology Tools: How Carriers Are Investing in Technology

Carriers are using technology across almost every area of their business, but what types of digital tools are they using?

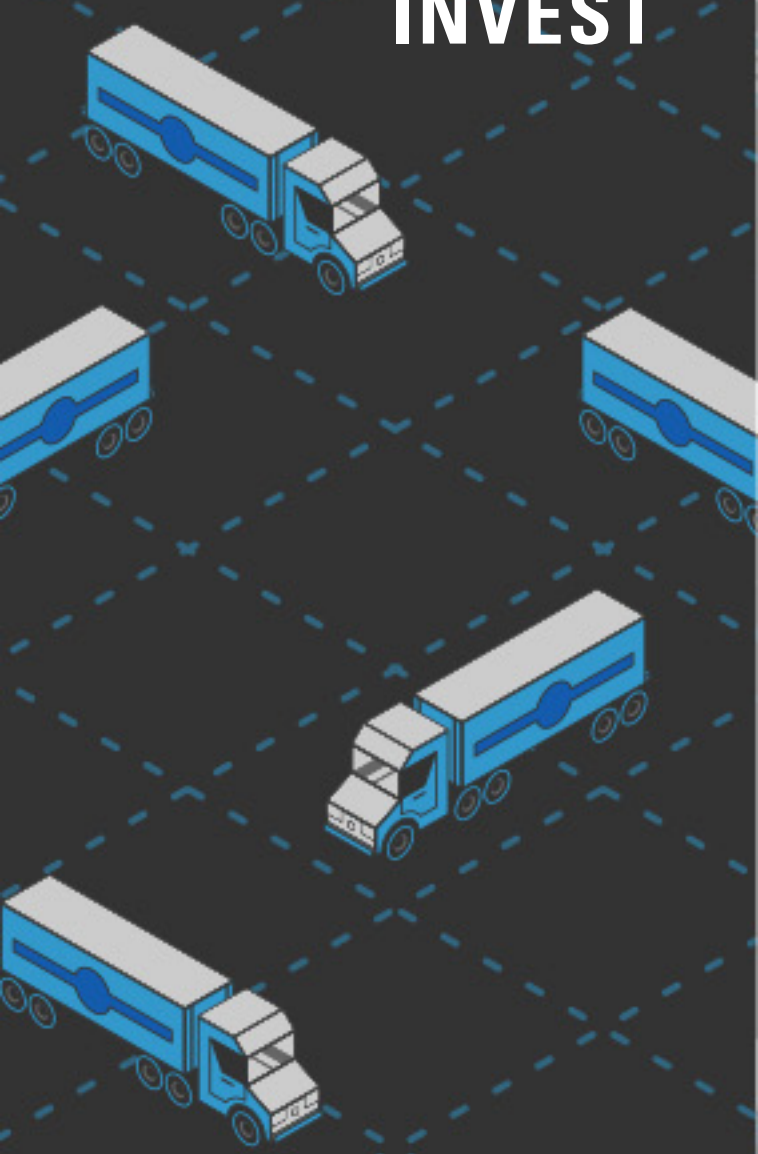
Their second overall challenge when it comes to technology platform was lack of budget — how are carriers allocating their limited resources?

Fleet management and dispatch software proved most essential, with 64% of carriers currently using it and another 24% contemplating a future purchase.

KEY TECHNOLOGY PLATFORMS / SOFTWARE



CORE TECHNOLOGY PLATFORMS: WHERE TO INVEST



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in a Post-COVID World

But technology needs are not the same across all fleet sizes.

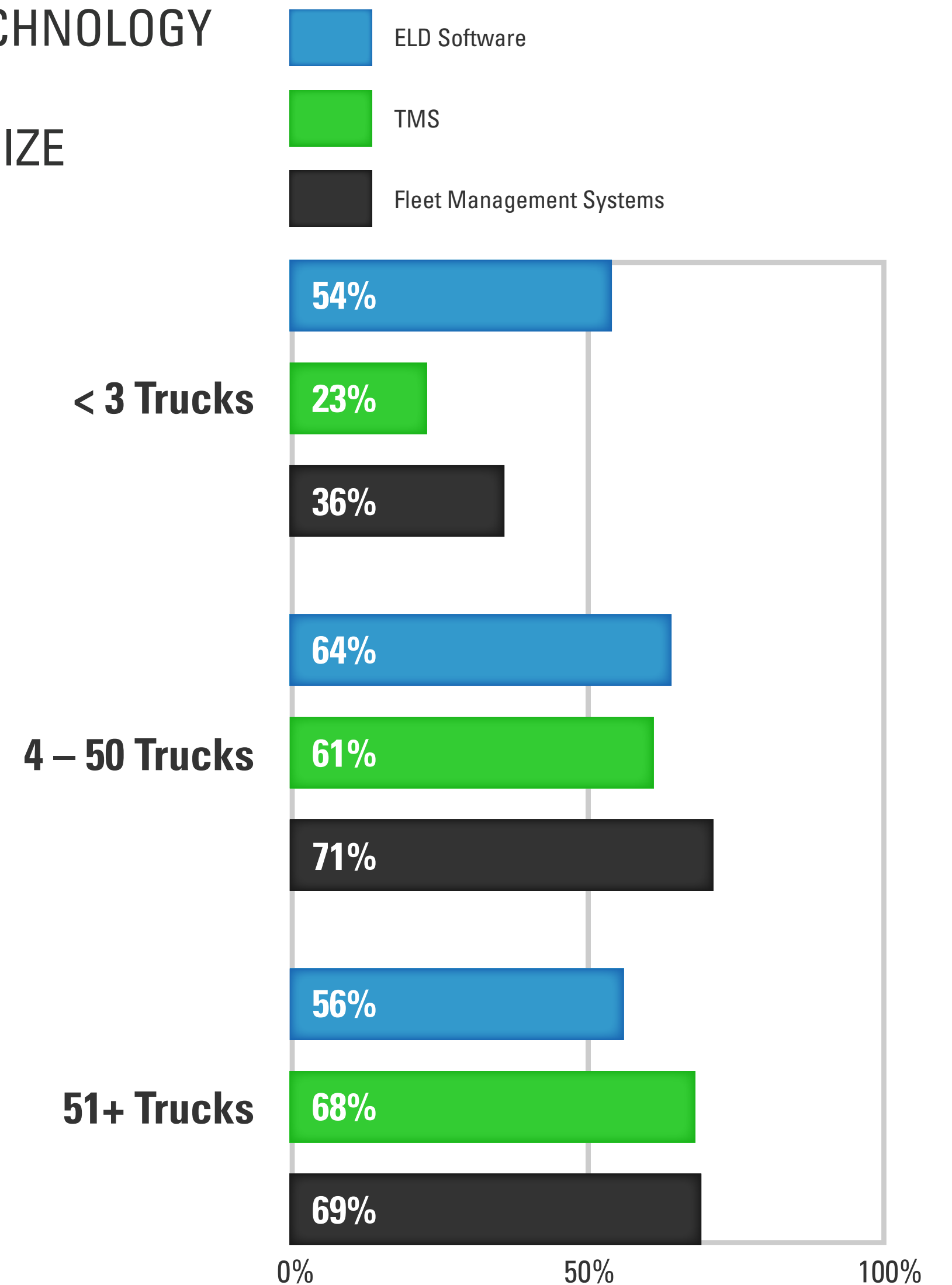
With fewer trucks, fewer employees and less network complexity, many of the smallest carriers had no platforms at all.

Furthermore, many without a solution in place have no plans of adding one, not thinking it necessary for their businesses.

Mid-sized carriers are far more likely to invest in tech systems, and the ones that don't have them are often considering making a purchase. For carriers with four or more trucks in their fleet, less than 10% have no solution and no plans to invest in any of the three.

Larger carriers have similar technology usage but are slightly less likely to invest in ELD software and more likely to have a TMS.

CORE FLEET TECHNOLOGY PLATFORMS: BY BUSINESS SIZE



77% of small carriers do not have a TMS, 64% do not have dispatching software and 46% do not have ELD software.

Takeaway #6

Small fleets and owner-operators do not need to make large investments in technology, especially when many providers offer free digital tools to book and manage freight.

NEXT
8 Key Takeaways

8 TAKEAWAYS

KEY REPORT FINDINGS

8 LOGISTICS TRENDS FOR 2021

Each business will have its own unique needs, priorities and constraints, and these will guide its strategy when balancing human expertise and automation.

Though no two supply chains are exactly alike, we did identify several common themes from the hundreds of logistics leaders we surveyed.

1. HUMAN EXPERTISE IS MORE IMPORTANT THAN EVER.

In 2019, we asked supply chain leaders to give us their ideal balance between technology and human expertise. In 2021, after a year of forced digital transformation from the pandemic, the balance actually shifted 3% towards people.

This trend was true for shippers and carriers of different sizes in different regions.

2. FAST-AND-FREE SHIPPING IS TAKING A TOLL.

Shippers' and carriers' top two challenges were remarkably similar, with keeping costs under control in the top spot, followed by keeping up with customer demands.

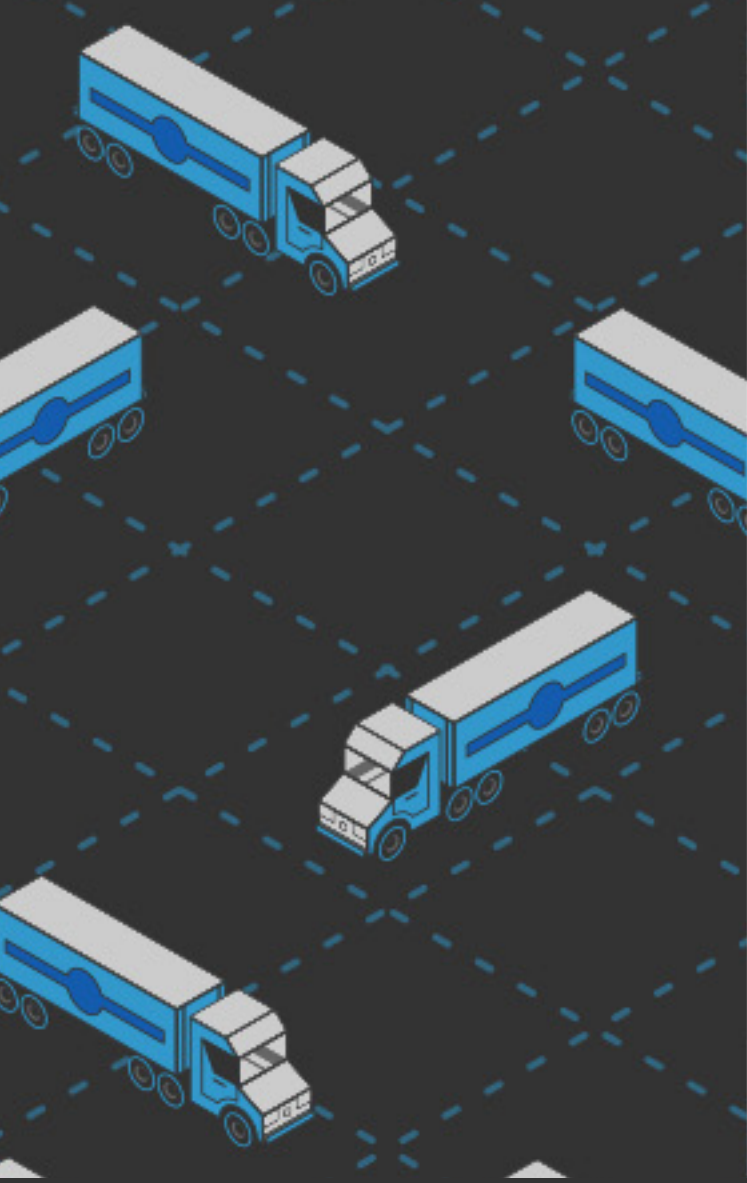
Free, two-day shipping has become the industry standard, and this puts tremendous pressure on supply chains to execute. And it doesn't just impact e-commerce shippers — the expectations spread up the supply chain to carriers and business-to-business shippers.



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in a **Post-COVID World**

8 TAKEAWAYS



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in a **Post-COVID** World

3. IT'S ALL ABOUT BALANCE.

Any supply chain that does not incorporate a healthy balance of digital solutions, combined human expertise from logistics professionals is not going to cut it.

When asked whether people, technology or a combination of the two produced optimal results across 16 different supply chain tasks, 'both' was the most frequently selected choice. This was true for both shippers and carriers, and was the same in 2019 and 2021.

4. OMNI-CHANNEL COMMUNICATION IS THE NEW NORMAL.

In the 2019 study, communication with customers and communication with 3PLs were the top two tasks where respondents preferred people over technology. Though both were still top people tasks in 2021, there were huge shifts away from people and towards technology or a combination.

After a year of remote work, the logistics industry has become much more comfortable with digital communication — but there is still a strong demand for a person when they're needed.

Shipper 2019 vs. 2021

Communication with customers:

People (-9.5%) / **Technology** (-2.0%) / **Both** (+12.5%)

Communication with 3PLs:

People (-18.5%) / **Technology** (+5.0%) / **Both** (+13.5%)

Carrier 2019 vs. 2021

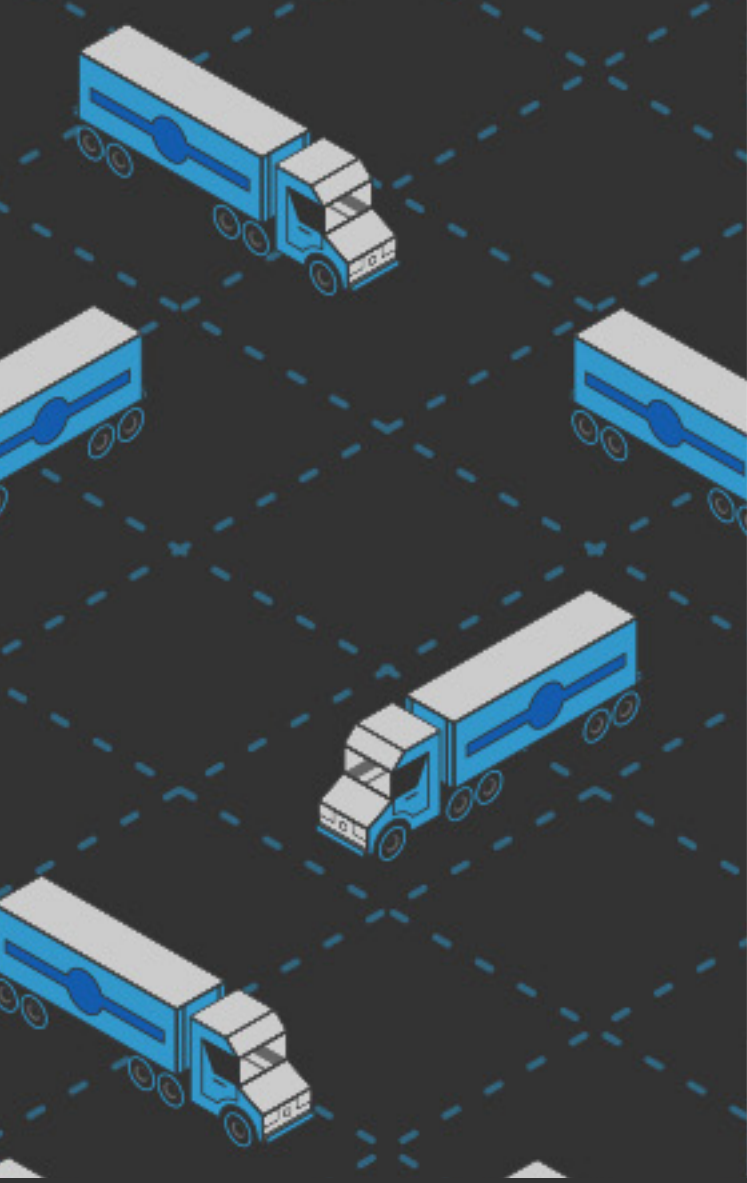
Communication with customers:

People (-29.3%) / **Technology** (+13.7%) / **Both** (+15.7%)

Communication with 3PLs:

People (-27.3%) / **Technology** (+12.3%) / **Both** (+15.0%)

8 TAKEAWAYS



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Supply Chain Automation
in a Post-COVID World

5. THERE'S LOTS OF DATA, AND NOT EVERYONE KNOWS WHAT TO DO WITH IT.

With the influx of technology, supply chains have never been more connected. They have also never thrown off so much information. The ability to track and measure networks is a powerful tool, but shippers and carriers are struggling to make sense of all the information.

Analyzing the data to get meaningful insights was shippers' top challenge when it came to technology platforms.

To help solve this problem, shippers and carriers are turning to more powerful digital solutions.

Shipper 2019 vs. 2021

Analysis & distillation of data into actionable insights:
People (-13.5%) / (Technology +10.0%) / Both (+3.5%)

Carrier 2019 vs. 2021

Analysis & distillation of data into actionable insights:
People (-17.0%) / (Technology +13.7%) / Both (+3.7%)

6. YOU DON'T ALWAYS NEED TO BUY TECHNOLOGY.

While many shippers and carriers have made investments in core technology programs, many have not — this is particularly true for smaller businesses with less complex networks.

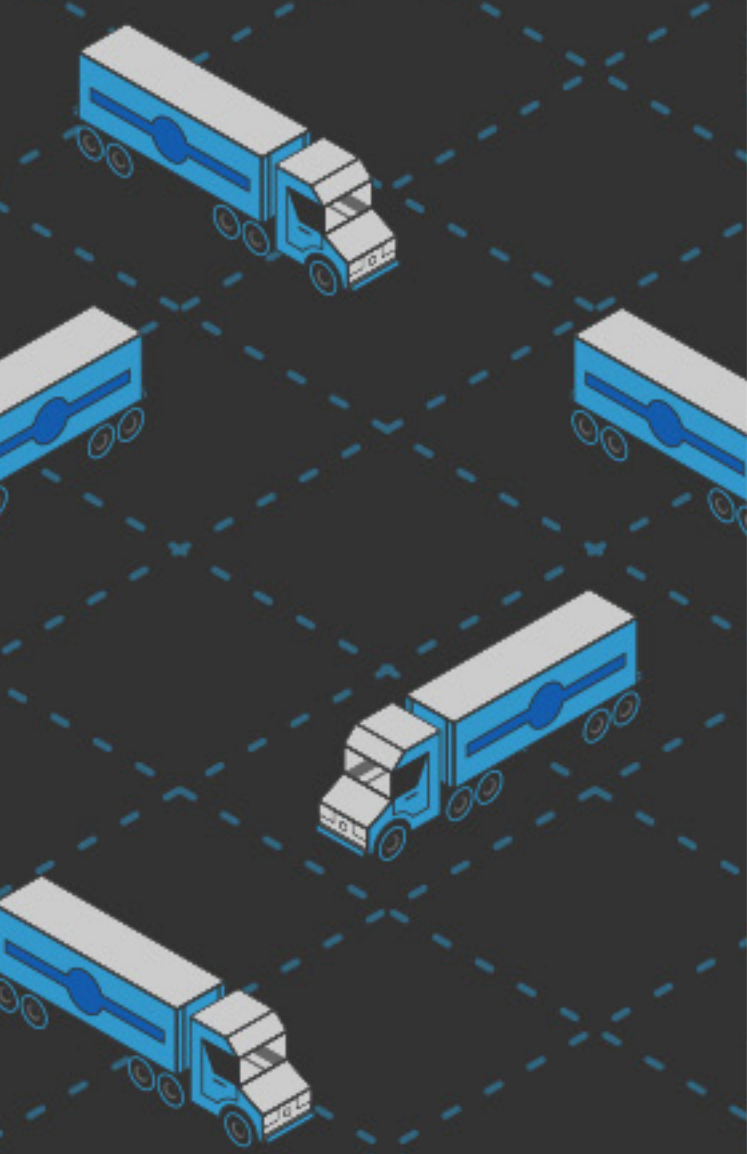
Though a lack of budget to purchase was the top technology challenge for small shippers and carriers, they are able to make do without.

Looking at 16 different areas of supply chain operations, small shippers either have no tech solution in place, or use a manual or homegrown solution 44% of the time.

For small carriers, looking at the average usage of three core technology platforms, 62% do not have any at all.

Many leverage free digital solutions from their 3PL providers to automate without spending their budget.

8 TAKEAWAYS



RXO

Supply Chain Automation
in a **Post-COVID World**

7. IT'S OK TO ASK FOR HELP

With the rate of change getting faster and faster, supply chain leaders are looking outside their organizations for help. On average, shippers are outsourcing 16% of their supply chain tasks to third parties.

Outsourcing is more common as you grow — shippers with over \$199 million in revenue are, on average, 37% more likely to outsource than their smaller counterparts.

Carriers also outsource, albeit less, but still an average of 10% of total tasks.

8. THERE IS NO ONE RIGHT WAY TO BALANCE AUTOMATION AND PEOPLE.

The distribution across people, technology or both across 16 supply chain tasks was — on average — roughly even. Supply chain leaders do not have a consensus on the best approach to balancing automation and people.

There was not a single task where a majority of respondents agreed on the best approach, with the closest being communicating with customers (45% people) for shippers, and monitoring trucks and deliveries (43% both) for carriers.

Conclusion

The COVID-19 pandemic has created the most volatile, challenging environment to ship freight — ever.

It increased the pace of digital adoption throughout the logistics industry at a rate never thought possible.

And yet, despite the influx of technology, we found that global shippers and carriers are craving more human expertise in their supply chain operations than just two years ago.

Technology has become an expectation — to thrive, businesses need to invest in logistics expertise just as much as automation.

As you look to strike a balance in your business, the insights covered in this study can help guide your strategy for the road ahead.

About RXO

RXO (NYSE: RXO) is a leading provider of asset-light transportation solutions.

RXO offers tech-enabled truck brokerage services together with complementary solutions including managed transportation and last mile delivery.

The company combines massive capacity and cutting-edge technology to move freight efficiently through supply chains across North America.

The company is headquartered in Charlotte, N.C.

Visit [RXO.com](https://www.rxo.com) for more information.