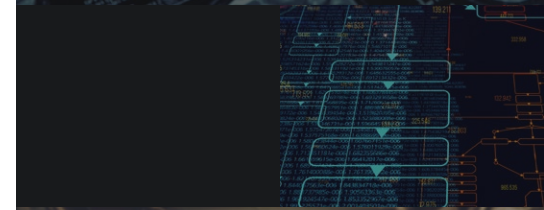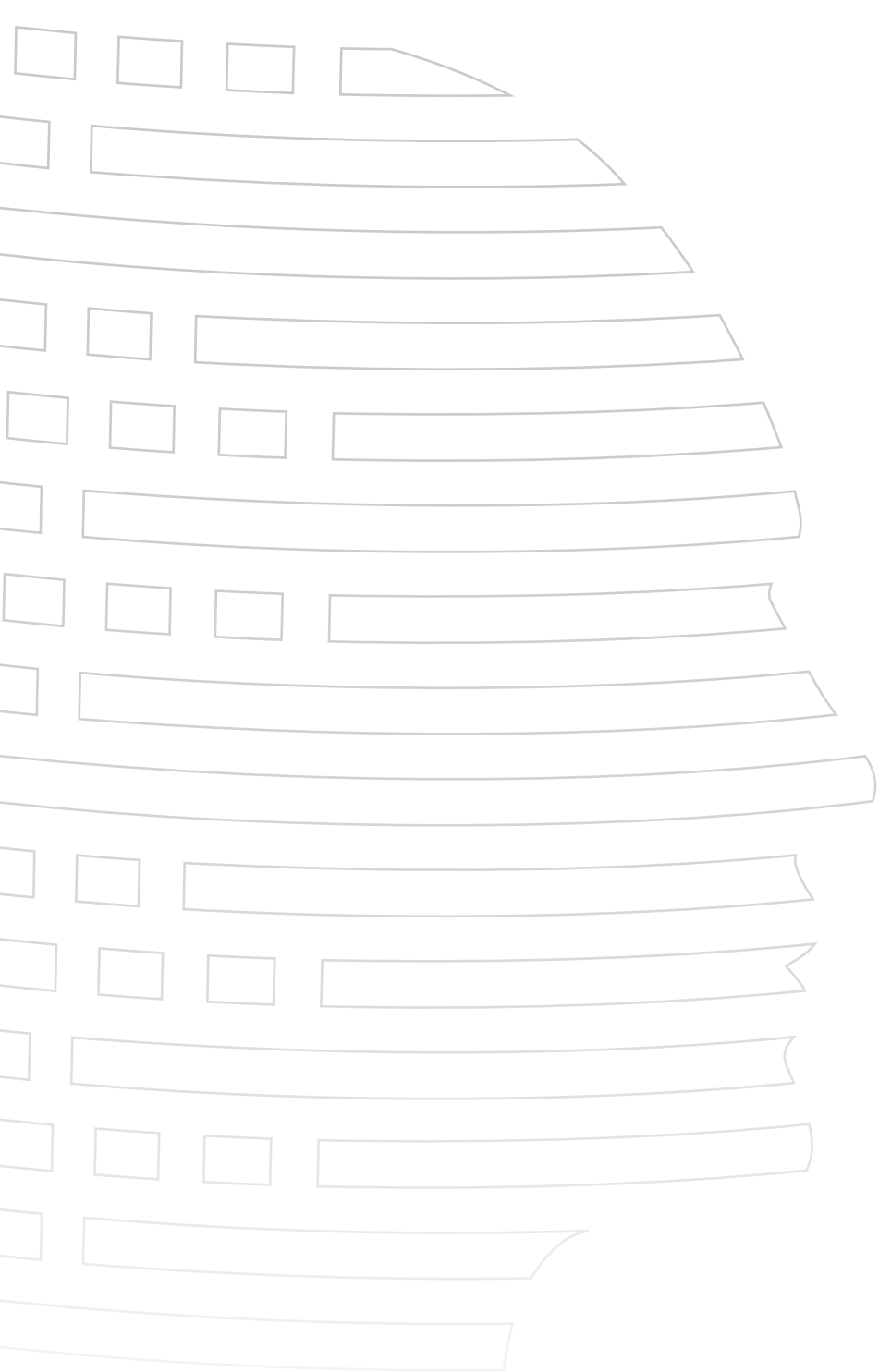# Technology + Humanity:

Striking the Balance in Your Business

Original research featuring responses from shippers and carriers

Table of Contents

About Martec

Founded in 1984, The Martec Group is a global strategic intelligence and market research firm with locations in North America, Europe, and Asia. Their research and insight helps to power some of the toughest decisions across a broad range of industry verticals. In addition to this study with Coyote, Martec has deep experience in the transportation space, having previously conducted original research for several other industry leaders.

The rise of automation is rapidly redefining the nature of work — and the transportation industry is no exception. Many technologies are already having a significant impact on the market (artificial intelligence, the Internet of Things, cloud computing), while others loom on the horizon, promising even greater transformation (self-driving vehicles, blockchain).

Eighty-six percent of respondents in the *Logistics 2030*[1] study from Auburn University's Center for Supply Chain Innovation believe upgrading technology will be their most pressing priority over the next decade. Increased automation is inevitable, but what exactly that will mean for the future of the industry is far less certain.

Supply chain professionals need to learn how to embrace change, adapt to new technology, and make automation work to their benefit. That is easier said than done. How do we effectively integrate automation into supply chain operations? Where do we need human expertise and where is technology more efficient?

To help answer these pressing questions, Coyote teamed up with Martec, a third-party market research firm, to conduct an independent study involving leaders from 200 shippers and 150 carriers. Martec gathered insights from directors, vice presidents, and executives representing a variety of industries, modes, and business sizes.

This report dives into the results of the original research and examines how other industry leaders are balancing technology with human expertise.
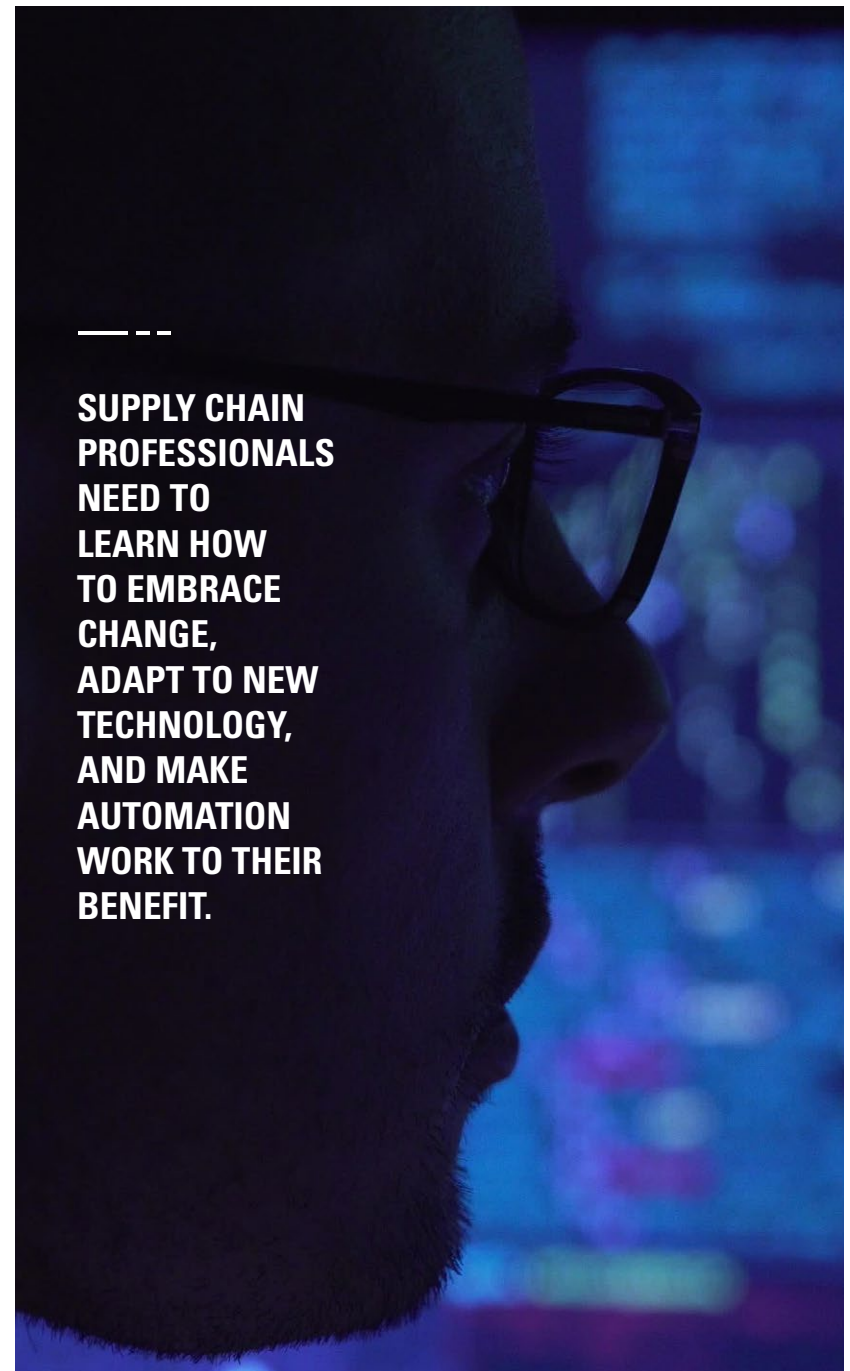
SUPPLY CHAIN PROFESSIONALS NEED TO LEARN HOW TO EMBRACE CHANGE, ADAPT TO NEW TECHNOLOGY, AND MAKE AUTOMATION WORK TO THEIR BENEFIT.

1. Auburn University Center for Supply Chain Innovation, "Logistics 2030, Navigating the Disruptive Edge (Year 1 Report)." *CSCMP Supply Chain Quarterly*, April 2019, pp. 3,6, 14.

Uncharted Territory

Every day, machines become more prevalent in nearly every facet of the workforce. According to The World Economic Forum's *Future of Jobs 2018*[2] report, that trend will continue. In 2018, 29% of existing work duties were completed by machines. By 2022, that figure will increase to 42%.

But technology is not replacing the need for humans. Rather, it is changing what humans actually do. Though the report forecasts a loss of 75 million jobs due to automation by 2022, it also predicts a simultaneous gain of 133 million new jobs.

The trend holds true for the supply chain and transportation industries. While there is rampant fear that jobs are being automated, the reality is that tasks are being automated and the way we work is changing.

In fact, there is an increasing need for human skills to perform both traditionally "human" tasks and to effectively leverage new technology. Specifically, there is a growing need for logistics expertise.

According to the *Logistics 2030*[1] study, 89% of respondents expect transportation to become a company priority by 2030, yet 94% believe they do not currently have the development programs necessary to attract and retain the supply chain talent they will need.

As our industry continues its rapid growth, experience and knowledge of how to integrate technology within supply chain operations will be essential.

With the logistics industry moving so fast, how can professionals keep up and get ahead?

BY 2022

— **75M**
CURRENT JOBS

+ **133M**
NEW JOBS
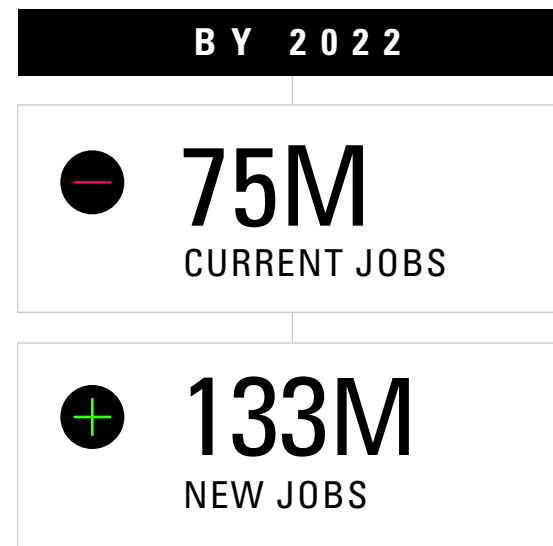
THE REALITY IS THAT TASKS ARE BEING AUTOMATED AND THE WAY WE WORK IS CHANGING.

1. Auburn University Center for Supply Chain Innovation, "Logistics 2030, Navigating the Disruptive Edge (Year 1 Report)." *CSCMP Supply Chain Quarterly*, April 2019, pp. 3,6, 14.

2. World Economic Forum, "The Future of Jobs 2018 Report", September 17, 2018. pp 8.

Finding Balance in Transformation

To remain competitive in a changing world, companies big and small recognize that they will need to modernize their supply chains. That does not only mean bigger and better technology — it also means more, and more skilled, people.

In our study, we asked shippers and carriers to identify the ideal balance of technology and humanity in their supply chain; not a single respondent wanted exclusively humans or technology. Across the board, shippers and carriers opted for a combination.

The overarching message was clear: they need both.

What They Told Us

DIR / MGR OF LOGISTICS FROM $200M - $799M SHIPPER — 30% / 70%

"Technology is here to help the human element. It should be used for some work, but not relied on to do it all. Humans need to run the company, including looking over stats that the technology creates."
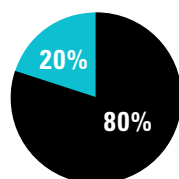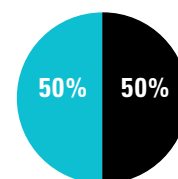
DIR / MGR OF PROCUREMENT FROM $800M+ SHIPPER — 80% / 20%

"Technology supports everything related to day-to-day operations. Client interaction and strategy is still better with human capital."

**VP / CHIEF EXECUTIVE** FROM $200M - $799M SHIPPER — 50% / 50%

"Since everything is integrated now, it's really an even split of what is needed from technology and humans. Technology should provide help in monitoring while humans should be in charge of working with clients and setting up future goals."
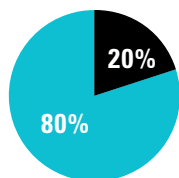
OWNER/OPERATOR FROM < 3 TRUCK CARRIER — 20% / 80%

"We were thinking of using more technology to be able to reduce costs, but we aren't sure what's the best. Basically, all the tasks in the company are handled by humans."
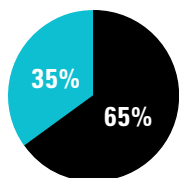
DISPATCHER FROM < 3 TRUCK CARRIER — 65% / 35%

"Technology can create more accurate revenue forecasts, which provide the business a boost. Plus, the tasks handled by humans sometimes result in unexpected delays."
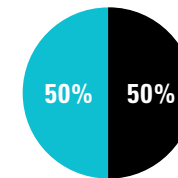
FLEET OWNER FROM 4-50 TRUCK CARRIER — 50% / 50%

"We use technology for monitoring the overall performance of the firm. We use humans for ensuring customer satisfaction by arranging the required services on time and planning for the enhancement of the business."

Though individual responses varied by company size, business type, and level of seniority, the research revealed a broad consensus. On average, **shippers and carriers have a similar ideal for the optimal tech-to-human ratio in supply chain operations.**

60+40
Living in the +

Shippers and carriers agree: the optimal balance is 60% of tasks handled by technology and 40% of tasks handled by humans. Results were relatively consistent across business sizes, but larger shippers and carriers cited using a higher percentage of technology.

Though the 60% + 40% balance was overwhelmingly common, no supply chain insight is universal. As shippers and carriers look to strike the right balance of technology and human expertise, they must first consider the complexities of their own businesses.

What systems are in place? What about personnel? Or more simply — what's working and what isn't?

Find out where you stand.

Take our interactive shipper or carrier quiz.

SHIPPERS

Tasks handled by technology

Tasks handled by humans

TASKS HANDLED BY HUMANS

39%

61%

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

< $199 MILLION $200-$799 MILLION $800+ MILLION

SHIPPER SIZE   N = 200

CARRIERS

Tasks handled by technology

Tasks handled by humans

TASKS HANDLED BY HUMANS

41%

59%

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

< 3 TRUCKS   4-50 TRUCKS   51+ TRUCKS

CARRIER SIZE   N = 150
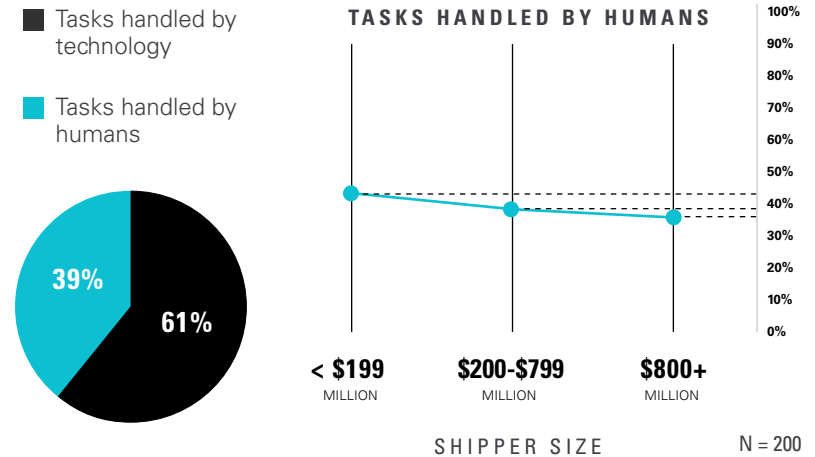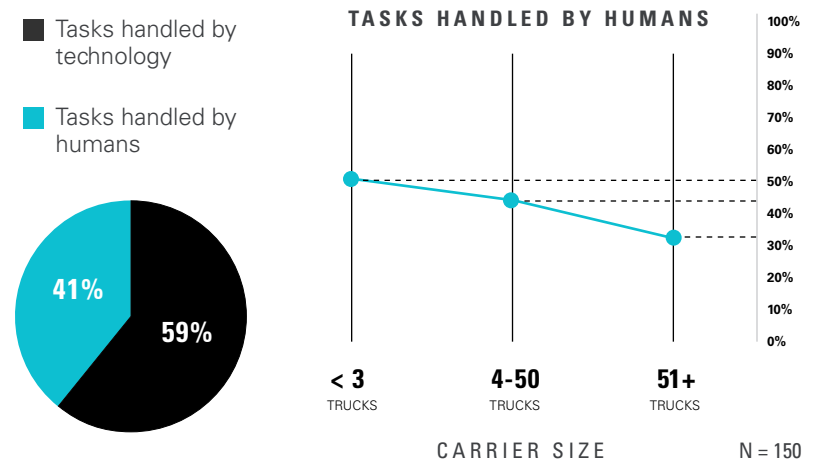
Q: Considering all of the tasks involved in your supply chain, what is the ideal balance between the percentage of tasks handled by technology and the percent handled by humans?

Shipper Results & Insights

Identifying & Prioritizing Challenges

When determining where to invest limited resources, prioritizing by biggest business challenges is a good place to begin.

For instance, 31% of shippers in our study chose "keeping up with the latest technology solutions and demands" as a top challenge. That may signify a lack of specialized talent dedicated to supply chain analytics. 30% of shippers chose "lack of shipment visibility" as a top challenge, which could mean insufficient transportation management and tracking technology.

Though there were some slight favorites, there was a lot of parity across challenges. Each shipper's situation is unique. Every business must determine their own biggest areas of need.
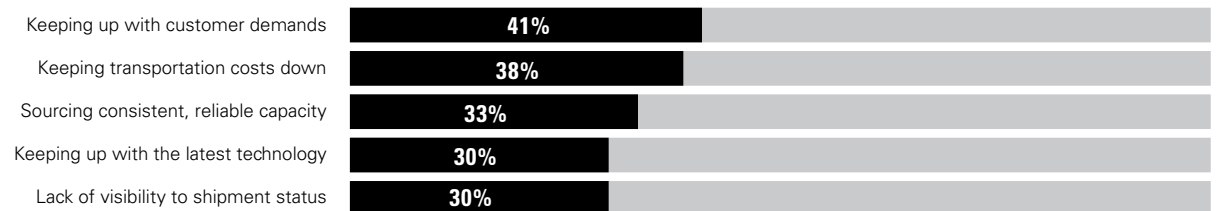
TOP SHIPPER CHALLENGES BY BUSINESS SIZE

■ % of shippers that ranked task as a top 3 challenge

< $199M SHIPPERS

Keeping up with customer demands	41%
Keeping transportation costs down	38%
Sourcing consistent, reliable capacity	33%
Keeping up with the latest technology	30%
Lack of visibility to shipment status	30%

$200M-$799M SHIPPERS

Access to a person when I have issues	40%
Keeping up with customer demands	37%
Keeping transportation costs down	36%
Lack of visibility to shipment status	33%
Keeping up with the latest technology	32%

$800M+ SHIPPERS

Access to a person when I have issues	41%
Sourcing consistent, reliable capacity	36%
Better understanding of my own supply chain	34%
Keeping up with customer demands	33%
Keeping up with the latest technology	30%

Q: Which of the following are your biggest shipping & logistics challenges? Rank the top three.
N = 200

Investing in People to Build Relationships

When asked whether they prefer technology interaction, human interaction, or both across 13 different supply chain tasks, over two-thirds of shippers preferred human interaction or both in almost every category.

That's a powerful reminder that, regardless of automation, human expertise is crucial in every facet of the supply chain.

A few areas were clear winners for people, specifically tasks that involved communication. This was especially true among mid-sized shippers.

—— --

"I THINK THAT CUSTOMER INTERACTION AND COMMUNICATION WILL NOT BE REPLACED BY TECH."

Director/Manager of Logistics
$200M-$799M shipper

VALUE TASK PERFORMED BY HUMANS

■ < $199M ■ $200M-$799M ■ $800M+

Communication
with 3PL/ vendor

Communication
with customer

Q: For each of the following tasks, select where you value people (humans), technology, or both to achieve the optimal results.

N = 200

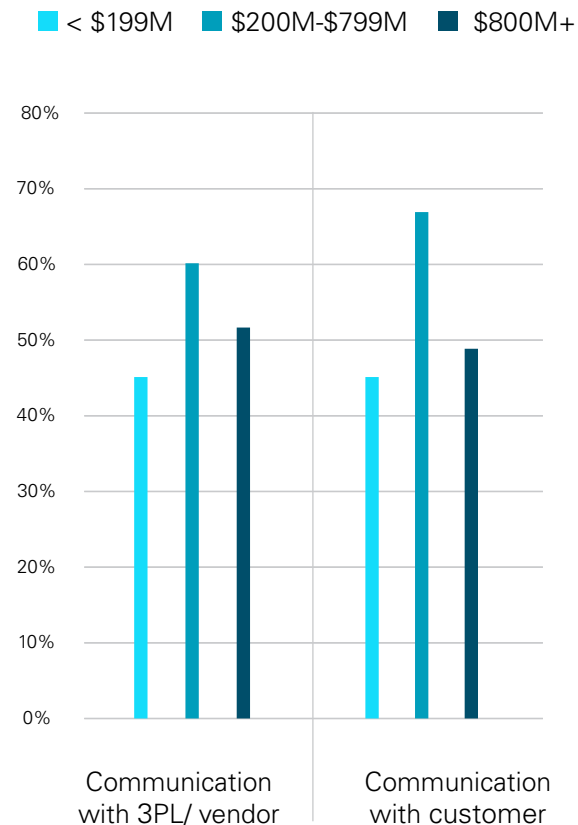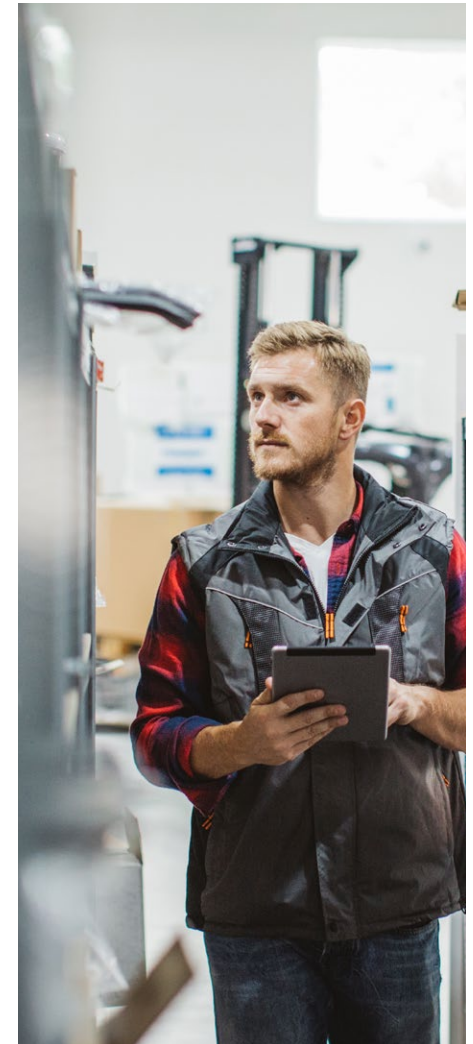# Where Shippers Want More Human Expertise

Shippers confirmed that they prefer human interaction for tasks that involve relationship building and a high degree of communication. The survey also asked shippers to identify other areas where a human expert would be beneficial.

These are areas where shippers need assistance, but do not currently have value-adding personnel in place to drive improvement. Supply chains striking the optimal balance of technology and human expertise likely have dedicated resources focused on these tasks.

— — --

"SOME THINGS REQUIRE THE PERSONAL ATTENTION OF A LIVE HUMAN BEING WHO CAN UNDERSTAND WHEN PROBLEMS NEED TO BE RESOLVED IN A DIFFERENT WAY."

Director/Manager of Logistics
$200M-$799M shipper

EXPERT HELP WISH LIST
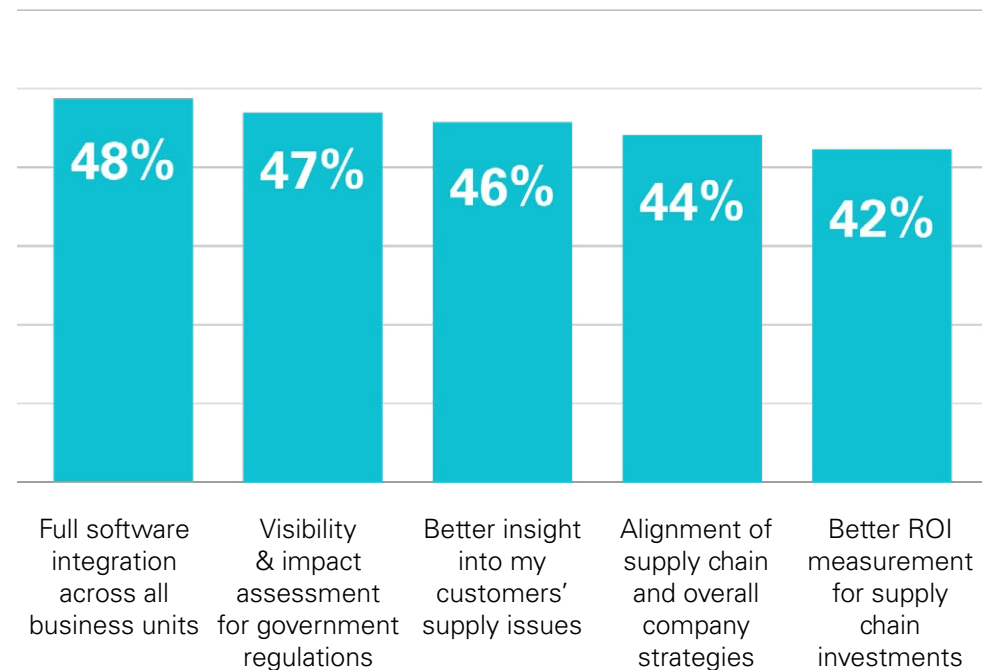
■ % of shippers that ranked in the top 3

48%	**47%**	**46%**	**44%**	**42%**
Full software integration across all business units	Visibility & impact assessment for government regulations	Better insight into my customers' supply issues	Alignment of supply chain and overall company strategies	Better ROI measurement for supply chain investments

Q: What do you wish an expert could help you with that you can't answer on your own today? Rank the top three.

N = 200

Investing in Technology to Streamline Operations

While human expertise, or a combination of technology and human expertise, led the results, there were tasks where technology solutions were more prominent.

For shippers, those tasks included managing inventory, planning, scheduling and booking shipments, and obtaining quotes.

— — – –

"WAREHOUSE INVENTORY TECHNOLOGIES LET US UNDERSTAND HOW BEST TO MANAGE THE STORAGE COSTS OF HOLDING A PRODUCT."

Director/Manager of Logistics
< $199M shipper

BALANCE OF WORK PERFORMED BY TECHNOLOGY VS. HUMANS (%)

■ Human Interaction ■ Technology Interaction ■ Both

< $199M SHIPPERS

Task	Human	Technology	Both
Planning routes	23%	33%	44%
Load scheduling	17%	31%	52%
Booking carriers/shipments	22%	39%	39%
Obtaining quotes/pricing	14%	39%	47%
Managing inventory	17%	41%	42%

$200M-799M SHIPPERS

Task	Human	Technology	Both
Planning routes	36%	31%	33%
Load scheduling	17%	33%	49%
Booking carriers/shipments	25%	25%	49%
Obtaining quotes/pricing	39%	17%	44%
Managing inventory	13%	28%	59%

$800M+ SHIPPERS

Task	Human	Technology	Both
Planning routes	21%	36%	43%
Load scheduling	18%	39%	43%
Booking carriers/shipments	20%	41%	39%
Obtaining quotes/pricing	21%	39%	39%
Managing inventory	7%	49%	44%

Q: For each of the following tasks, select where you value people (humans), technology, or both to achieve the optimal results.

N = 200

Determining Key Technology Platforms

Shippers use a variety of software platforms in many ways, but a vast majority of them — regardless of size — use some core software components in their operations.

The larger the shipper, the more likely that they use all four of these enterprise platforms.

Transportation Management System (TMS) was the only tool used more by smaller shippers than mid-sized (albeit only 1% higher). It was also the biggest usage jump from mid-sized to larger shippers — at the $800M+ level, a TMS is not a luxury, but a necessity.

BEING OPEN TO NEW OPTIONS.

47%

of the respondents using one of these platforms are exploring alternative solutions.

KEY TECHNOLOGY PLATFORMS

■ Currently using   ■ Not currently using, but considering   ■ No plans to use

< $199M SHIPPERS

RFP management/eSourcing platform	83% / 14%
Transportation management system	89% / 9%
Warehouse management system	83% / 13%
Fleet management system	84% / 11%

$200M-799M SHIPPERS

RFP management/eSourcing platform	96% / 4%
Transportation management system	88% / 12%
Warehouse management system	86% / 13%
Fleet management system	90% / 9%

$800M+ SHIPPERS

RFP management/eSourcing platform	95% / 5%
Transportation management system	98%
Warehouse management system	92% / 8%
Fleet management system	97%

Q: What key technology platforms are you currently using or considering in the near future?

N = 200
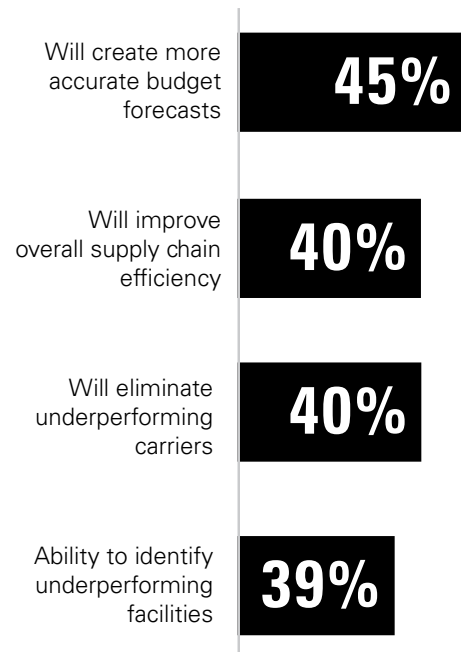
Technology Insights

Expectations

Here are the top reasons driving shippers to invest in new technology solutions.

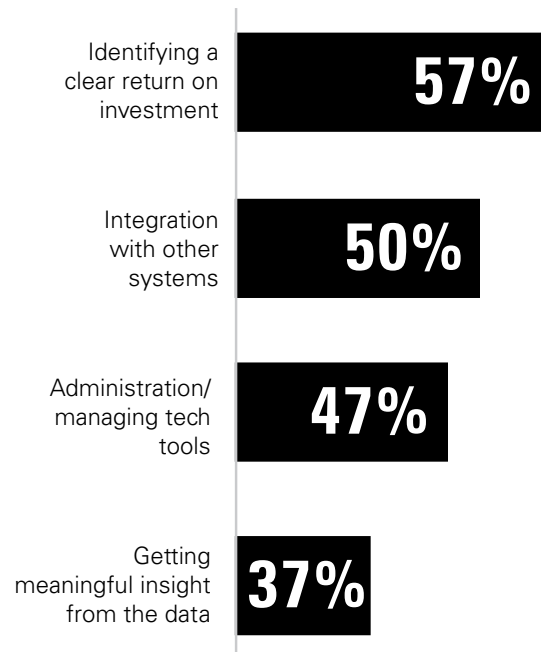|	
Will create more accurate budget forecasts	**45%**
Will improve overall supply chain efficiency	**40%**
Will eliminate underperforming carriers	**40%**
Ability to identify underperforming facilities	**39%**

Q: For the technology platforms you plan to adopt, what are your expectations? Select up to 3.

N = 200

Challenges

Innovative technology doesn't mean everything is simple. Here are the biggest challenges shippers faced with their tech solutions.

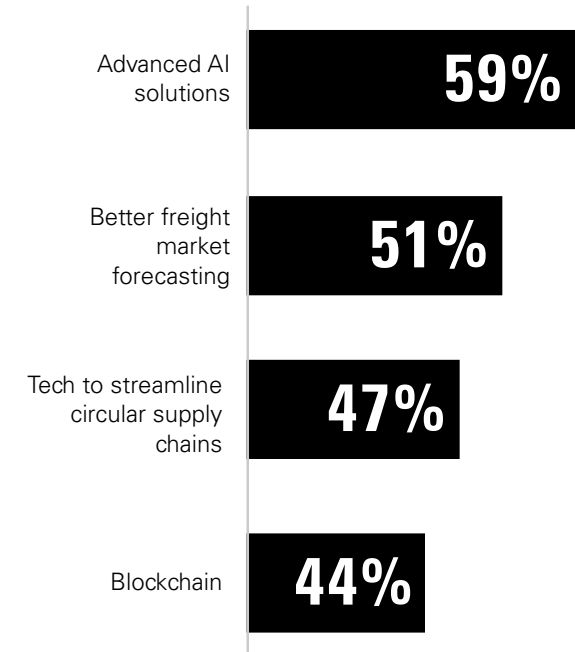|	
Identifying a clear return on investment	**57%**
Integration with other systems	**50%**
Administration/ managing tech tools	**47%**
Getting meaningful insight from the data	**37%**

Q: What are the biggest challenges when evaluating supply chain technology platforms that you are using or considering purchasing? Select up to 3.

N = 200

Wish List

Every day, new advancements bring new possibilities. Here are the developing technologies that excite shippers the most.

Advanced AI solutions	**59%**
Better freight market forecasting	**51%**
Tech to streamline circular supply chains	**47%**
Blockchain	**44%**

Q: What technology solution do you wish for that does not readily exist today? Select up to 2.

N = 200

Integration of Technology + People

Though some shippers showed an affinity for human-only or technology-only interaction for a few tasks, on average, *both* was the most consistent choice. A combination of technology and humanity was the top preference for 11 out of 13 supply chain tasks.

Shippers of all sizes overwhelmingly agreed that supply chain technology is not a nice-to-have but a necessity. They cannot empower their people to compete in today's world without it.
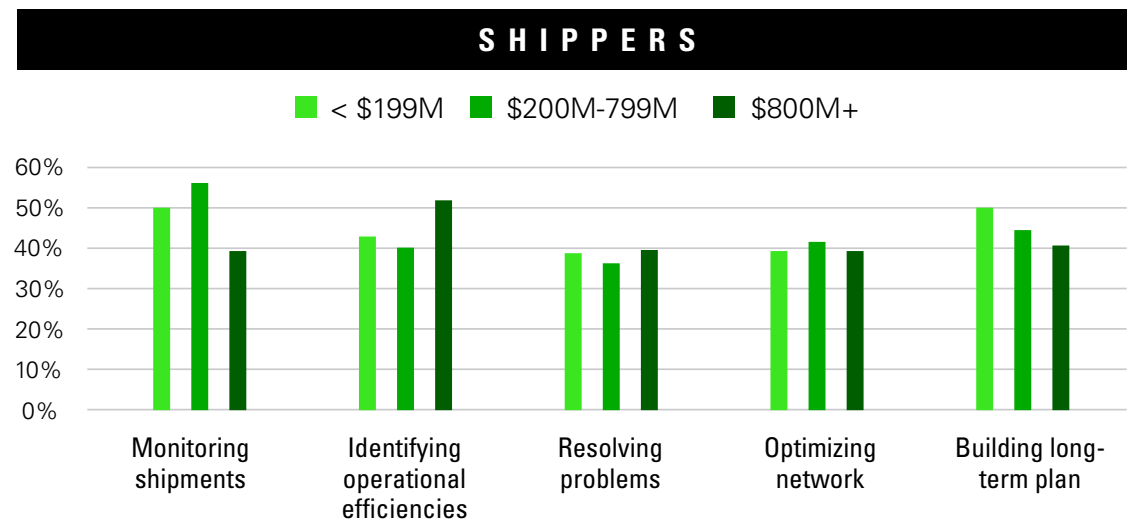
"I VALUE A GOOD BALANCE OF BOTH HUMANS AND TECHNOLOGY. TECHNOLOGY GIVES YOU THE RAW NUMBERS, INSIGHTS, AND HELPS HUMANS FOCUS ON LARGER ISSUES."

Director/Manager of Logistics
$800M+ shipper

VALUE WORK PERFORMED BY A COMBINATION OF BOTH

SHIPPERS

■ < $199M ■ $200M-799M ■ $800M+

Q: For each of the following tasks, select where you value people (humans), technology, or both to achieve the optimal results.

N = 200

Carrier Results & Insights
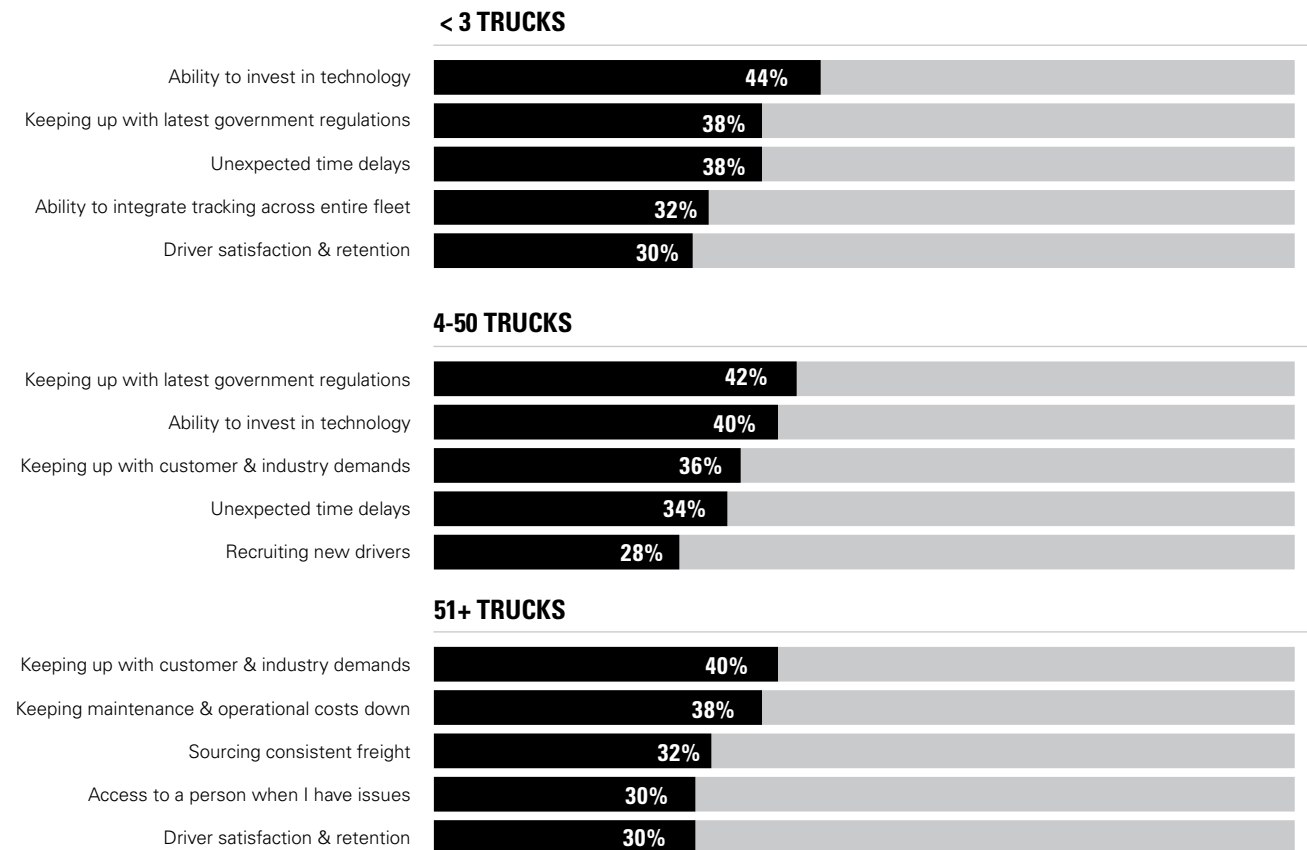
Identifying & Prioritizing Challenges

When determining where to invest their limited resources, carriers can start by prioritizing their biggest business challenges.

For instance, 37% of carriers chose "keeping up with government regulations" as a top challenge. That likely signifies a lack of human expertise dedicated to keeping the fleet up to date on all things DOT.

Though there were some slight favorites, there was a lot of parity across challenges. Each carrier's situation is unique. It may not be feasible to bring a human, technology, or combined solution, but carriers that know their biggest pain points can at least make a start.

TOP CARRIER CHALLENGES BY BUSINESS SIZE

■ % of responses that ranked as a top 3 challenge

< 3 TRUCKS

Ability to invest in technology	44%
Keeping up with latest government regulations	38%
Unexpected time delays	38%
Ability to integrate tracking across entire fleet	32%
Driver satisfaction & retention	30%

4-50 TRUCKS

Keeping up with latest government regulations	42%
Ability to invest in technology	40%
Keeping up with customer & industry demands	36%
Unexpected time delays	34%
Recruiting new drivers	28%

51+ TRUCKS

Keeping up with customer & industry demands	40%
Keeping maintenance & operational costs down	38%
Sourcing consistent freight	32%
Access to a person when I have issues	30%
Driver satisfaction & retention	30%

Q: Which of the following are your biggest shipping & logistics challenges? Rank the top three.

N = 150

Investing in People to Improve Relationships

Similar to shippers, over two-thirds of carriers felt that nearly every business task required either total or partial human interaction to achieve the best results. Carriers also heavily favored humans for communications and relationship management. Interestingly, while mid-to-large sized shippers placed more value on humans than smaller shippers, the opposite is true with carriers.
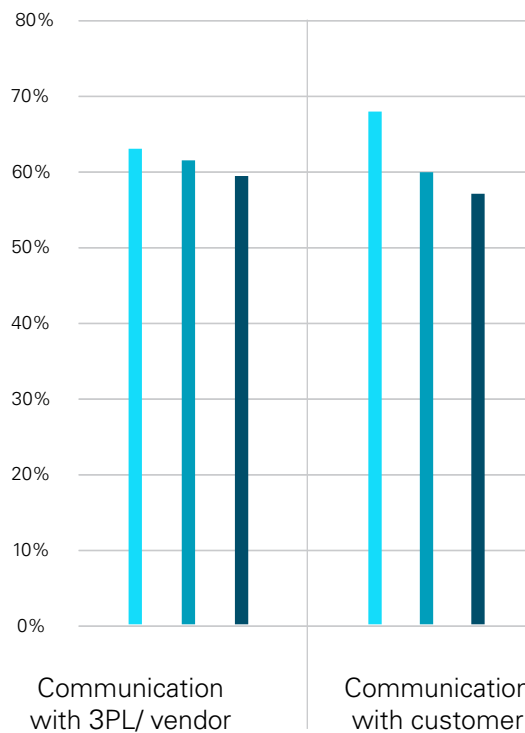
— — -

"CUSTOMERS REALLY VALUE BEING ABLE TO INTERACT WITH KNOWLEDGEABLE HUMAN BEINGS ABOUT THE ISSUES THEY ARE FACING."

Dispatcher,
51+ truck carrier

VALUE TASK PERFORMED BY HUMANS

■ < 3 Trucks ■ 4-50 Trucks ■ 51+ Trucks

Communication with 3PL/ vendor
Communication with customer

Q: For each of the following tasks, select where you value people (humans), technology, or both to achieve the optimal results.

N = 150

Where Carriers Want More Human Expertise

Carriers confirmed that they prefer human interaction for tasks involving relationship building and a high degree of communication. The survey also asked carriers to identify other areas where a human expert would be beneficial.

These are areas where carriers need assistance, but do not currently have value-added personnel to drive improvement. As carriers look to strike the optimal balance of technology to humanity in their fleet, dedicating people to focus on these tasks is a good place to start.
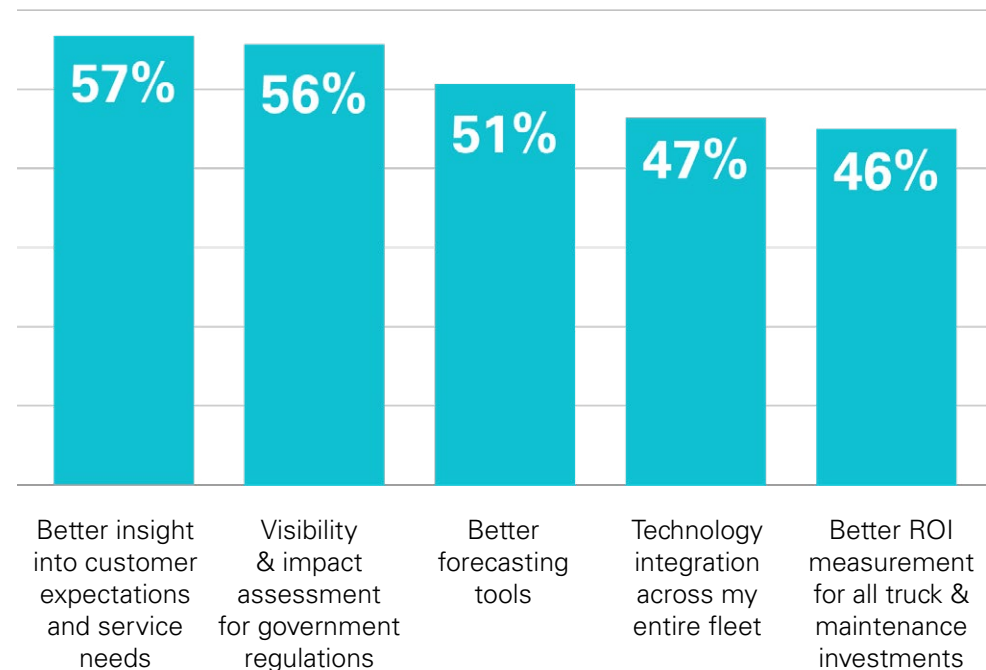
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"TECHNOLOGY WILL NOT BE ABLE TO KEEP UP WITH THE LATEST GOVERNMENT REGULATION. YOU NEED PEOPLE FOR THAT."

Fleet Manager
51+ truck carrier

EXPERT HELP WISH LIST

■ % of shippers that ranked in the top 3

| 57%	56%	51%	47%	46%
Better insight into customer expectations and service needs	Visibility & impact assessment for government regulations	Better forecasting tools	Technology integration across my entire fleet	Better ROI measurement for all truck & maintenance investments

Q: What do you wish an expert could help you with that you can't answer on your own today? Rank the top three.

N = 150

Investing in Technology to Streamline Operations

Once again, carriers had similar preferences to shippers and applied more technology to day-to-day operational tasks surrounding load scheduling, planning, and booking. This was especially true for large-sized carriers.
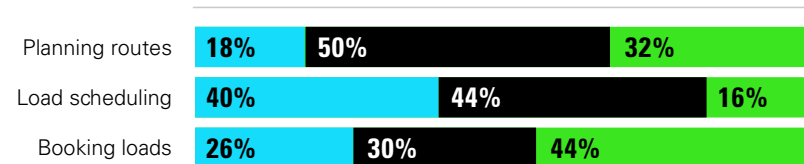
— --

"TECHNOLOGY MAKES FOR A STRONGER BUSINESS BY REDUCING OPERATING COSTS WHILE IMPROVING EFFICIENCY AND CUSTOMER SERVICE."
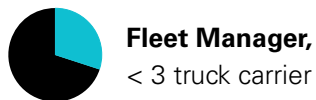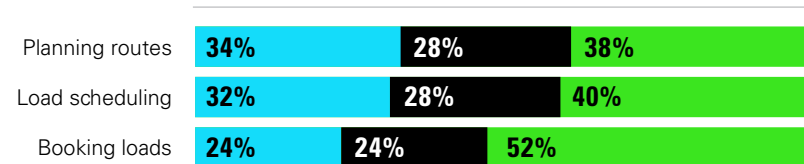
Fleet Manager,
< 3 truck carrier

BALANCE OF WORK PERFORMED BY TECHNOLOGY VS. HUMANS (%)
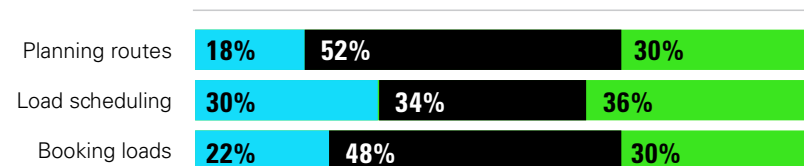
■ Human Interaction   ■ Technology Interaction   ■ Both

< 3 TRUCKS

Task	Human	Technology	Both
Planning routes	18%	50%	32%
Load scheduling	40%	44%	16%
Booking loads	26%	30%	44%

4-50 TRUCKS

Task	Human	Technology	Both
Planning routes	34%	28%	38%
Load scheduling	32%	28%	40%
Booking loads	24%	24%	52%

51+ Trucks

Task	Human	Technology	Both
Planning routes	18%	52%	30%
Load scheduling	30%	34%	36%
Booking loads	22%	48%	30%

Q: For each of the following tasks, select where you value people (humans), technology, or both to achieve the optimal results.

N = 150

Determining Key Technology Platforms

Not all carriers needs to invest in every software platform, but many use these core programs in their operations. This is especially true for larger carriers.
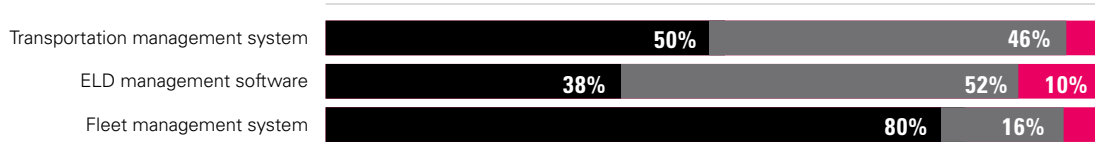
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BEING OPEN TO NEW OPTIONS.

56%

of the respondents using one of these platforms are exploring alternative solutions.

KEY TECHNOLOGY PLATFORMS

■ Currently using   ■ Not currently using, but considering   ■ No plans to use

< 3 TRUCKS

Transportation management system	50% / 46%
ELD management software	38% / 52% / 10%
Fleet management system	80% / 16%

4-50 TRUCKS

Transportation management system	96%
ELD management software	78% / 22%
Fleet management system	98%

51+ TRUCKS

Transportation management system	98%
ELD management software	92% / 8%
Fleet management system	98%

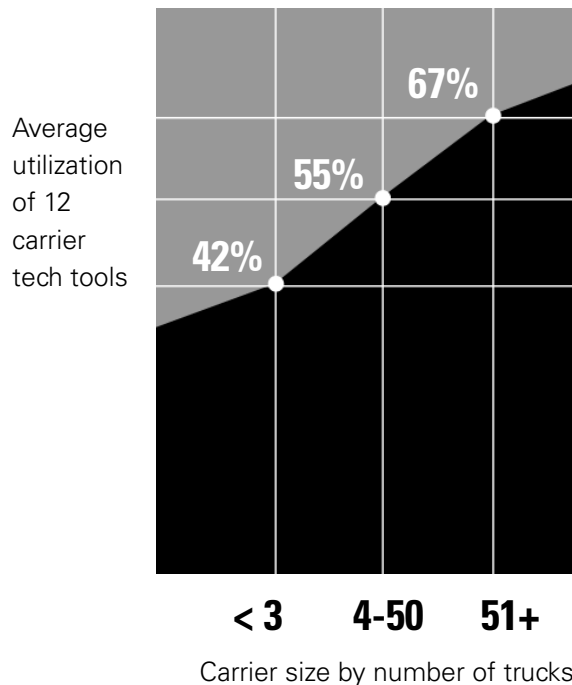**Q:** What key technology platforms are you currently using or considering in the near future?
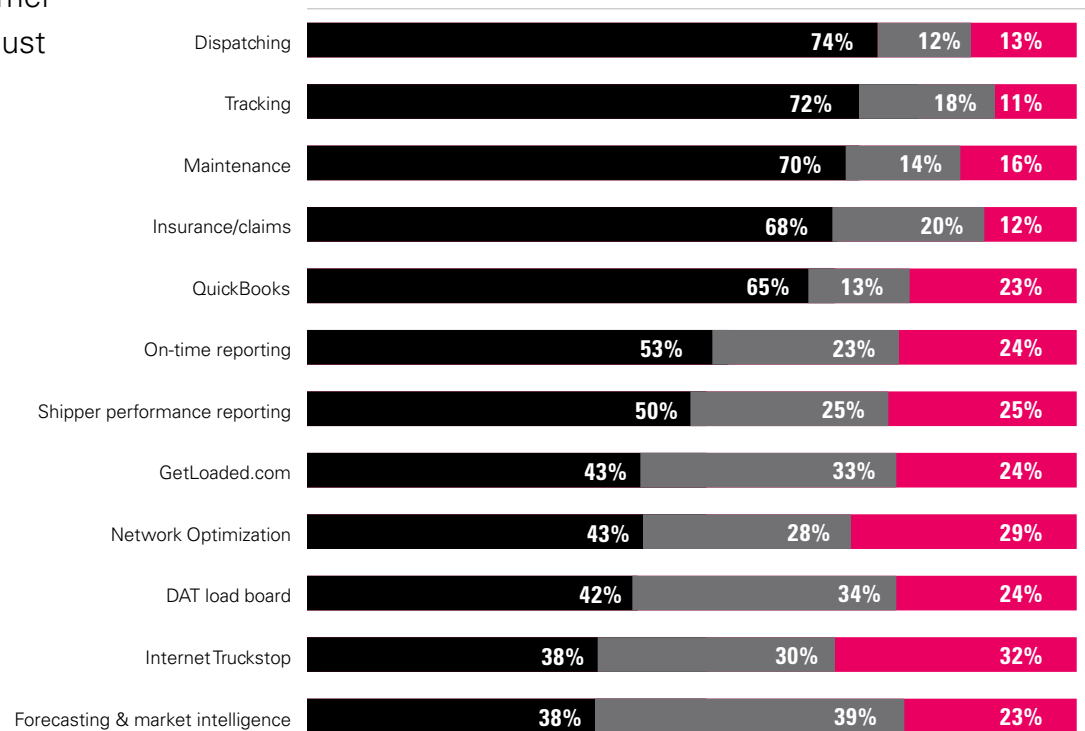N = 150

Adopting the Right Technology Tools

Beyond core ELD, TMS, and fleet management platforms, the survey asked carriers to specify other key areas where they apply technology to their businesses.

Technology tool usage varied significantly by carrier size, with larger carriers using a much more robust blend of technology tools.

Average utilization of 12 carrier tech tools

42%   55%   67%

< 3   4-50   51+

Carrier size by number of trucks

COMMON CARRIER TECHNOLOGY TOOLS

■ Currently using   ■ Not currently using, but considering   ■ No plans to use

Tool	Currently using	Not currently using, but considering	No plans to use
Dispatching	74%	12%	13%
Tracking	72%	18%	11%
Maintenance	70%	14%	16%
Insurance/claims	68%	20%	12%
QuickBooks	65%	13%	23%
On-time reporting	53%	23%	24%
Shipper performance reporting	50%	25%	25%
GetLoaded.com	43%	33%	24%
Network Optimization	43%	28%	29%
DAT load board	42%	34%	24%
Internet Truckstop	38%	30%	32%
Forecasting & market intelligence	38%	39%	23%

Q: What technology tools are you using, or considering in the near future?
N = 150

Integration of Both for Process Improvements

Similar to shippers, on average, *both* was the most consistent choice for carriers across a variety of responsibilities. A combination of technology and human expertise was the top preference for 8 out of 13 carrier tasks.

Carriers of all sizes overwhelmingly agreed that technology is a necessity to succeed. It reduces costs and improves efficiency, allowing their people to focus on more value-adding activities.

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"TO STAY COMPETITIVE IN TODAY'S WORLD, WE NEED TO STAY CURRENT WITH THE CHANGING TECHNOLOGY. BUT HUMANS CAN'T BE REPLACED FOR NEGOTIATIONS AND PROBLEM SOLVING."

Fleet Manager,
51+ truck carrier

VALUE WORK PERFORMED BY A COMBINATION OF BOTH
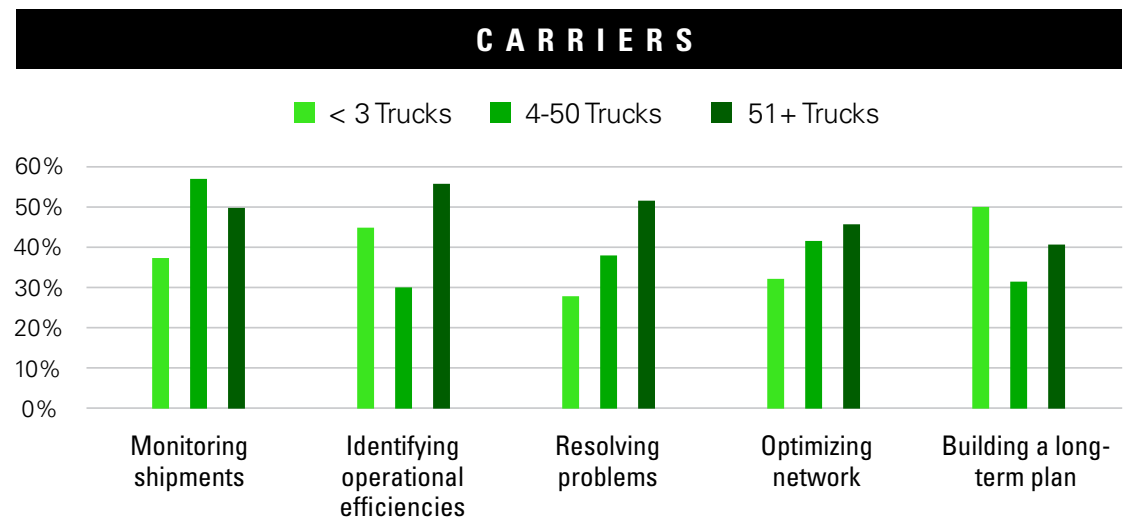
CARRIERS

■ < 3 Trucks   ■ 4-50 Trucks   ■ 51+ Trucks

Q: For each of the following tasks, select where you value people (humans), technology, or both to achieve the optimal results.

N = 150

According to our research, for both shippers and carriers, the **"sweet spot"** is human expertise powered by technology — the two forces working together drive efficiency and improve the entire process.

These are the tasks where "both" was the most dominant:

Monitor
shipments and drivers

Identify
operational efficiencies

Resolve
shipment & delivery problems

Optimize
network

Develop
long-term strategy

Staying competitive in any market requires constant evolution from year-to-year, month-to-month, and in the current climate, sometimes even day-to-day. The optimal technology-to-humanity ratio for any given business in 2019 may shift in 2020 and beyond.

Whether or not this ratio remains constant, the types of technology solutions that supply chain leaders invest in, and the way they deploy their people, will assuredly change.

Regardless of current situation, any viable future strategy must account for investment in both technology and humanity.
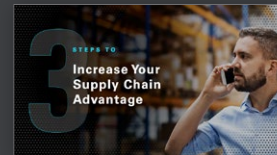
Now that you have a baseline of technology + humanity knowledge, start evaluating where your business is today. Where can technology help you? Where should your people focus their time on value-adding work?

Continue reading our resources for some next steps that can help you find your ideal balance.