

TRANSPOREON

From Gut Feelings to Data-Driven Decision Making:

How to Unlock New Value in
Transportation Management



”
In God we
trust; all others
must bring
data.

It is a great quote, widely attributed to the famous engineer and management consultant, W. Edwards Deming.¹ This simple phrase implies that even though you can be a trustworthy person, your opinion, your experience, your gut feelings are not enough to validate important decisions or actions. You also need to provide data – that is, facts and statistics.

There is substantial research showing how leaders across many industries are leveraging data and analytics to differentiate themselves from the competition and achieve higher levels of business performance. For example, in his January 2006 Harvard Business Review article, “Competing on Analytics,” Thomas H. Davenport writes:

”Organizations are competing on analytics not just because they can – business today is awash in data and data

¹ <https://www.oxfordreference.com/view/10.1093/acref/9780191866692.001.0001/q-oro-ed6-00019739>

crunchers – but also because they should. At a time when firms in many industries offer similar products and use comparable technologies, business processes are among the last remaining points of differentiation. And analytics competitors wring every last drop of value from those processes.”²

In a follow-up book (also titled “Competing on Analytics”) published in 2007, Davenport and co-author Jeanne G. Harris profile how various leading companies “are using new tools to identify their most profitable customers and offer them the right price, to accelerate product innovation, to optimize supply chains, and to identify the true drivers of financial performance.”³

Yet, 15 years later, it seems like many companies are still laggards when it comes to competing on analytics and data-driven decision-making.

According to the annual BI & Analytics survey conducted by the Business Application Research Center (BARC), 58% of the BI users they surveyed say “their companies base at least half of their regular business decisions on gut feel or experience, rather than on data and information.”⁴

The survey also revealed that **“the most commonly cited reason for not using information or data as the basis for decision-making was that the relevant information was not available** [cited by 50% of respondents]...The quality of data, cited by 40% of respondents, is the second most common barrier to data-based decision-making.”⁵

² <https://hbr.org/2006/01/competing-on-analytics>

³ <https://www.amazon.com/Competing-Analytics-New-Science-Winning/dp/1422103323/>

⁴ <https://bi-survey.com/business-decisions-gut-feel>

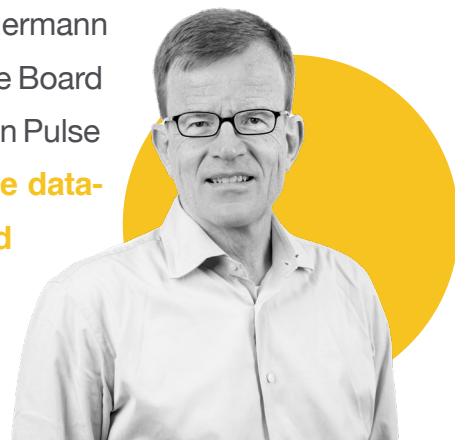
⁵ <https://bi-survey.com/decision-making-no-information>

⁶ <https://hbr.org/2018/02/big-companies-are-embracing-analytics-but-most-still-dont-have-a-data-driven-culture>

Shifting to a data-driven culture has been a slow process for many companies, as Davenport highlights in a 2018 Harvard Business Review article titled, “Big Companies Are Embracing Analytics, But Most Still Don’t Have a Data-Driven Culture.” Reflecting on the results of an annual survey conducted by NewVantage Partners on how executives in large corporations view data, Davenport writes:

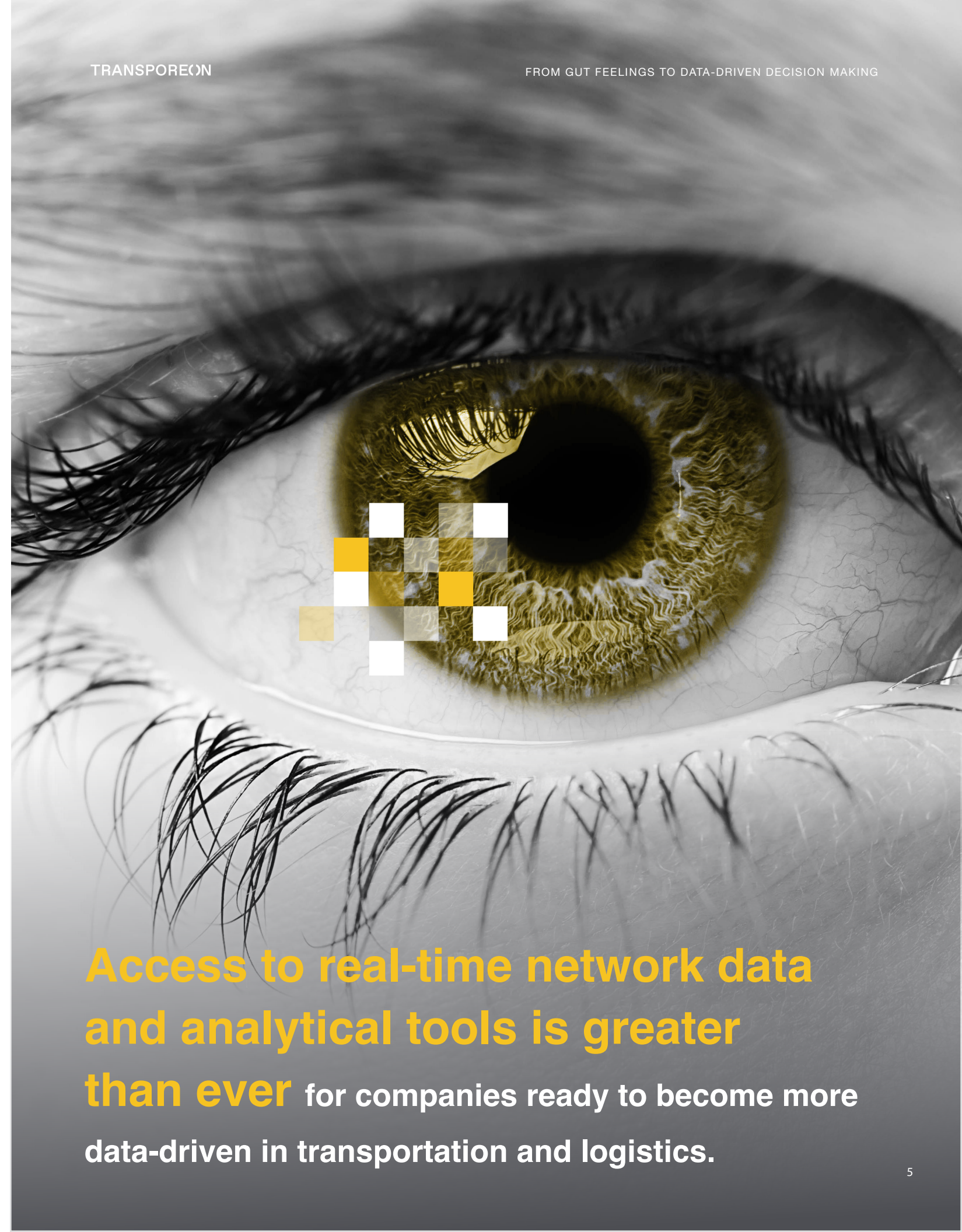
“Another important and continuing issue is the slow speed with which these established firms make the shift to a data-driven culture. Virtually all respondents (99%) say their firms are trying to move in that direction, but only about one-third have succeeded at this objective. This gap appears every year in the surveys, and the level of success hasn’t improved much over time. Clearly firms need more-concerted programs to achieve data-related cultural change.”⁶

The COVID-19 pandemic and its ripple effects across supply chain processes have revealed the shortcomings of not having a data-driven culture. “The biggest lesson learned over the past two years is that there are things we should have done earlier, but now it’s evident they need to be done,” said Hermann Ude, former CEO of DHL Global Forwarding and Member of the Board of Deutsche Post AG, as quoted in Transporeon’s Transportation Pulse Report 2022. “In particular, **logistics needs to become more data-driven to achieve smarter and more efficient utilization and allocation of capacity**, for example.”⁷



⁶ <https://hbr.org/2018/02/big-companies-are-embracing-analytics-but-most-still-dont-have-a-data-driven-culture>

⁷ <https://www.transporeon.com/en/reports/pulse-report-2022>

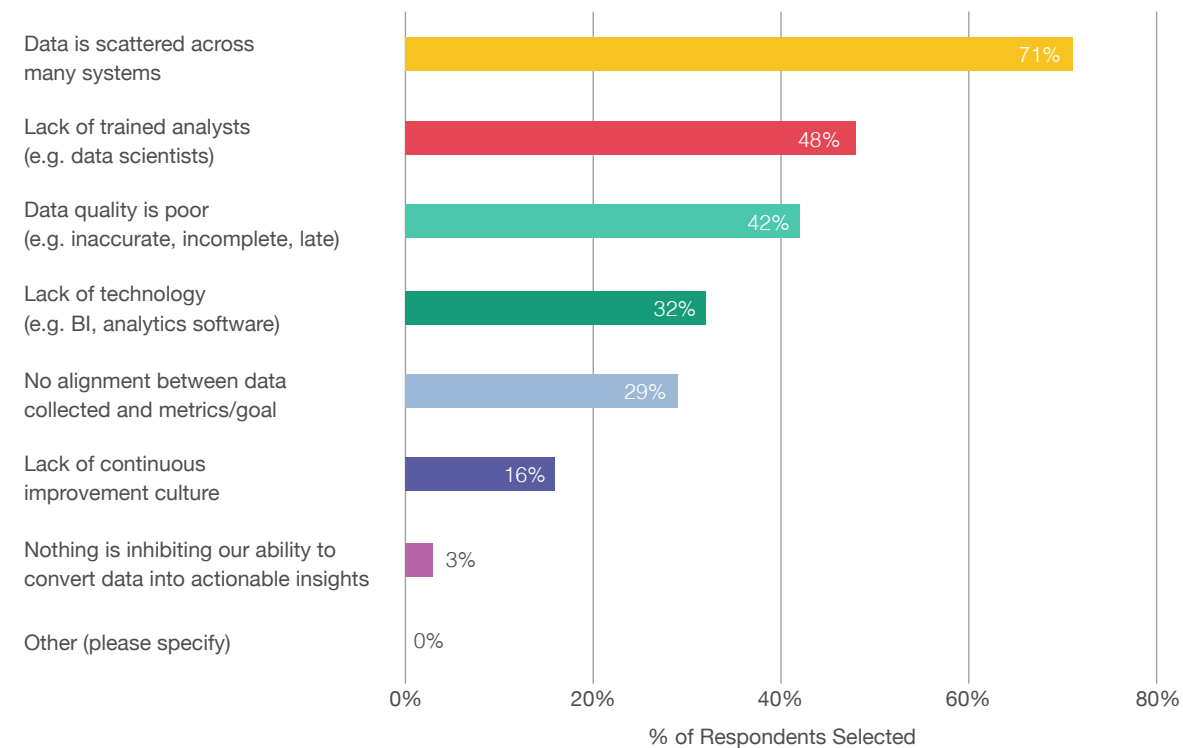


Access to real-time network data and analytical tools is greater than ever for companies ready to become more data-driven in transportation and logistics.

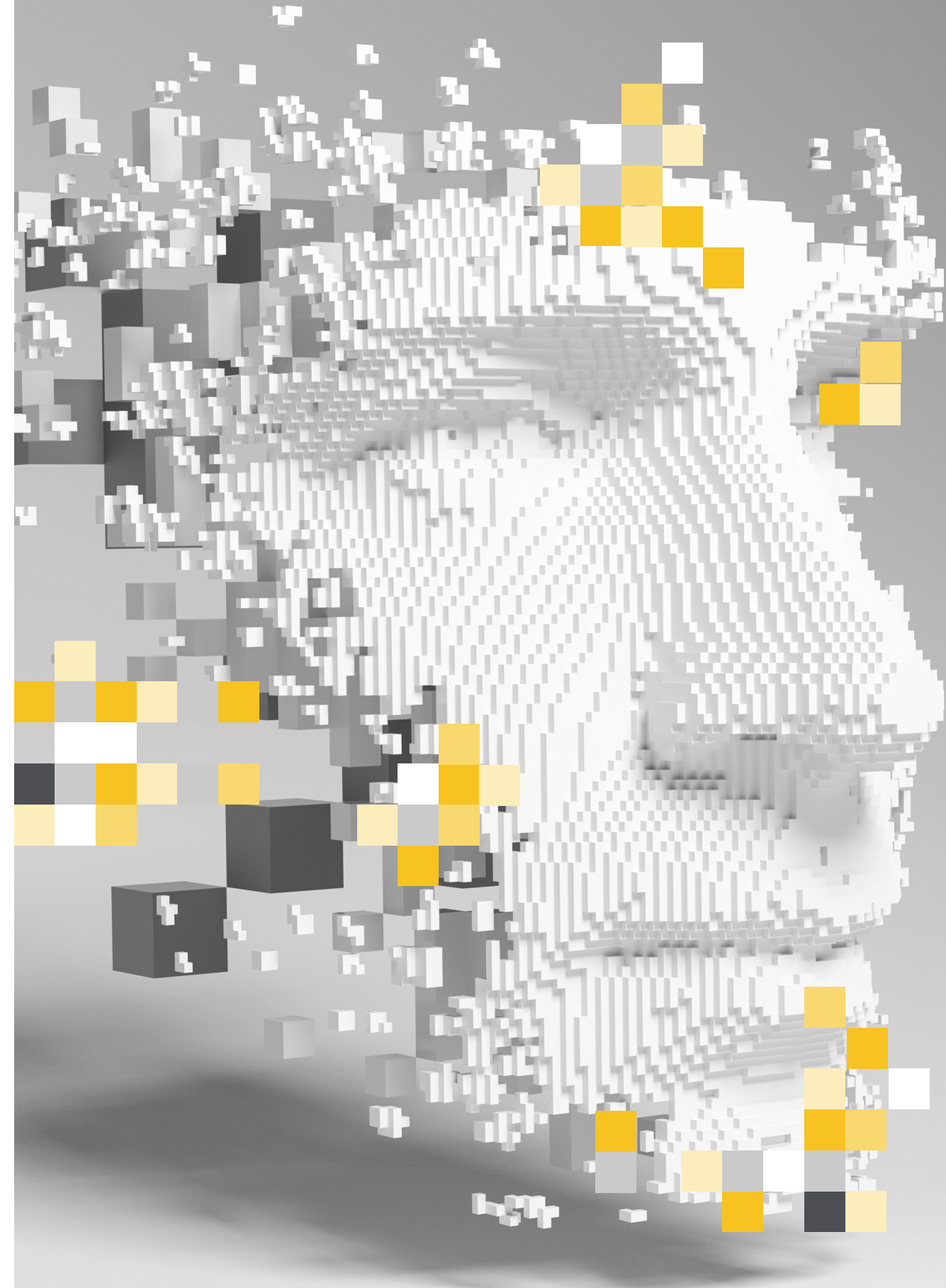
A Foundation for Data-Driven Decision Making

Historically, aside from the cultural shift required, one of the biggest challenges to enabling data-driven decision making in transportation has been aggregating data from many disparate sources. In a June 2021 survey of Indago members (a research community of supply chain and logistics practitioners from manufacturing, retail, and distribution companies), 71% of the respondents selected “Data is scattered across many systems” as the biggest factor inhibiting their ability to convert data into actionable insights.⁸

What are the biggest inhibiting your ability to convert data into actionable insights? Select 1-3 factors.



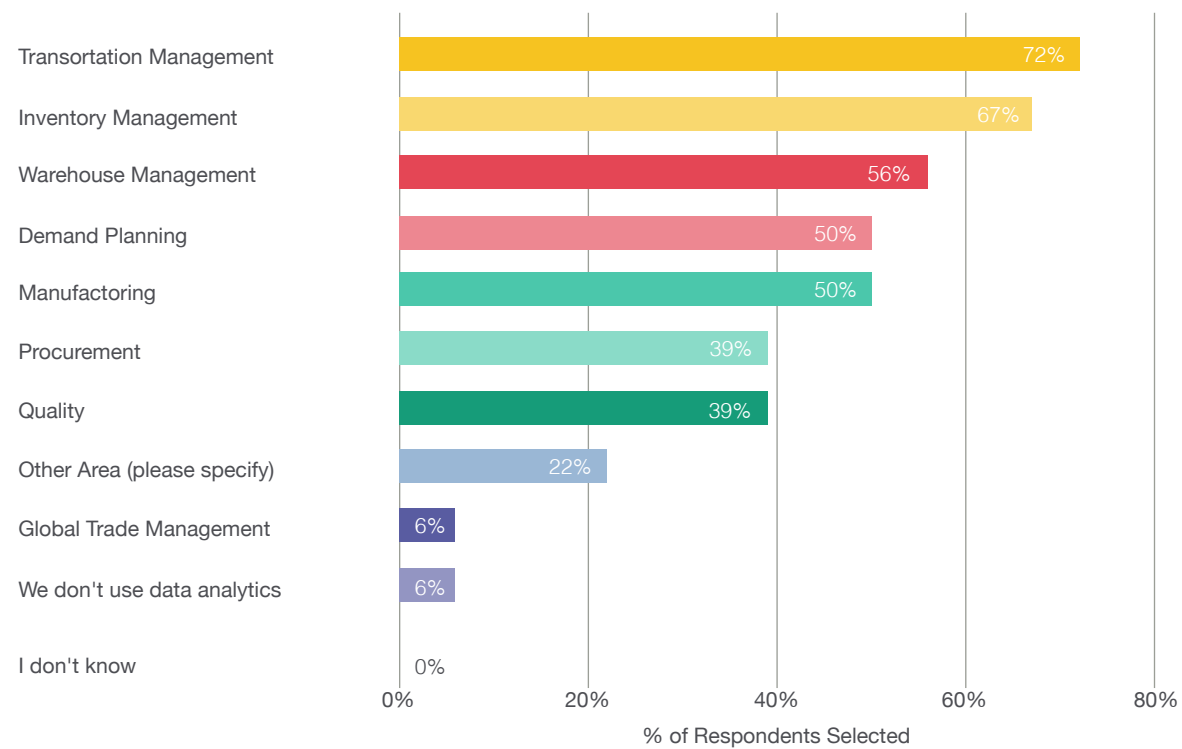
⁸ “Leveraging Data in Transportation & Logistics,” Indago survey, June 2021



“Supply Chain and Logistics is one of the largest users of data in a company,” commented an Indago supply chain executive member. “The data comes from at least a half dozen tools that don't talk to each other which makes compiling and using the data difficult and sometimes a bit suspect.”⁹

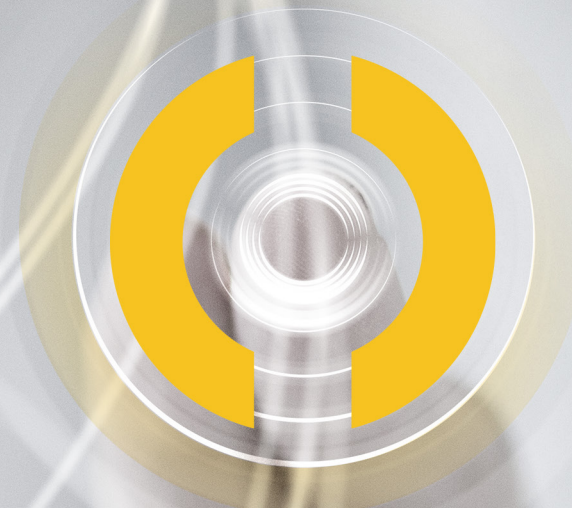
Yet, when companies are able to overcome that hurdle, **transportation tops the list of where to unlock business value.** In an October 2019 survey, Indago members were asked, “In what supply chain or logistics areas have you been able to utilize data analytics to implement the quickest change or improvement in your organization?” 72% of the respondents selected Transportation Management.¹⁰

In what supply chain or logistics areas have you been able to utilize data analytics to implement the quickest change or improvement in your organization? Please select all that apply.



⁹ Ibid

¹⁰ “Supply Chain Data Analytics,” Indago survey, October 2019



“In transportation we use data analytics to understand pricing and use that data to re-negotiate or change behaviors to lessen the expense,” said one Indago respondent. **“We also use data analytics to understand carrier performance and we take that data to them as part of our quarterly business reviews (QBRs) to help them improve their operations.”**

When it comes to transportation data, the primary source for most companies has been their transportation management system (assuming they even have a TMS). However, with traditional on-premise applications, collecting data from many different carriers, logistics service providers, suppliers, and other sources was always a challenge.

Fortunately, as discussed in [“Trust the Network: The Way Forward in Achieving Transportation Desired Outcomes”](#), transportation management systems have evolved from being “inside the four walls” applications to becoming the operating systems of large transportation networks in the cloud. **Today’s transportation management platforms are the business equivalent of Facebook and LinkedIn, industry networks that connect shippers, carriers, logistics service providers, and other stakeholders with each other, enabling them to communicate, collaborate, and execute business processes in more efficient, scalable, and innovative ways.**

As MIT researcher Michael Schrage stated in a December 2013 Harvard Business Review post:

“The more users participate [in a network], the more value (and valuable experiences) can quickly be generated. And the more value created, the more users (and innovative uses) materialize. “That virtuous value cycle simultaneously disrupts and transforms industries worldwide. Value can exponentially increase as costs only marginally grow. This makes the economics of ‘network effects’ combinatorially compelling.”¹²

Among the “value and valuable experiences” created by a network-based transportation management platform is providing companies with a foundation for data-driven decision making. Here are four examples.

¹²⁾ “Who’s Managing Your Company’s Network Effects?”
Michael Schrage, Harvard Business Review, December 2013

Network-based BI and Analytics

Ed Koch, the former three-term mayor of New York City, was famous for always asking “How’m I doin’?” That’s a question that supply chain and logistics professionals ask all the time too. But understanding how you’re doing, especially how your performance compares to others in the industry, has historically been a challenge.

Why? Two main reasons: First, as mentioned earlier, gathering data from many different sources was often difficult and time consuming (and by the time the task was completed, the data was often outdated too). Second, there was no integrated way to compare your performance to others in your industry or the broader market; if benchmark data was available, it was typically provided as a separate data file or a printed report on a monthly or quarterly basis.

With tens of thousands of shippers, carriers, and other trading partners connected to a single platform, processing millions (or billions) of transportation transactions annually, network-based transportation management platforms overcome those two hurdles. However, answering the question “How’m I doin’?” goes beyond collecting an abundance of data. As Clive Humby, a British mathematician, stated in 2006:

“Data is the new oil. It’s valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc. to create a valuable entity that drives profitable activity; so must data be broken down, analyzed for it to have value.”¹³

¹³<https://towardsdatascience.com/is-data-really-the-new-oil-in-the-21st-century-17d014811b88>



In other words, as with oil, **raw data is of minimal value; the true value comes from converting that data into actionable insights for users** – and then facilitating and/or automating the execution of those actions via software platforms and service offerings.

To create value, data also needs context; otherwise, you’re just looking at numbers. As Alissa Lorentz writes in an April 2013 Wired article titled “With Big Data, Context Is a Big Issue”:

“For organizations and businesses to survive today, they have to contextualize their data. Just as a doctor diagnosing a patient with diabetes based on body temperature alone is incorrect, so is making business decisions derived from data out of context. A doctor needs to know about the patient’s age, lifestyle, diet, weight, family history, and more in order to make a probable and guarded diagnosis and prognosis. Contextualization is crucial in transforming senseless data into real information – information that can be used as actionable insights that enable intelligent corporate decision-making.”¹⁴

There are several ways to add context to data. The most fundamental way is to align data with clearly defined Key Performance Indicators (KPIs) linked to desired outcomes and business objectives.

¹⁴<https://www.wired.com/insights/2013/04/with-big-data-context-is-a-big-issue/>

In the transportation realm, there are numerous KPIs related to operational performance, costs, and service levels – and for a growing number of companies, metrics related to sustainability too. Here is a small sample of common KPIs:

- » On-Time In-Full (OTIF)
- » On-Time Delivery
- » On-Time Arrival
- » Tender Acceptance Rate
- » Transportation Spend by Mode (by Carrier, by Geography, Spot vs. Contract)
- » Demurrage/Detention Fees
- » CO2 Emissions

However, there is another important dimension to context – that is, the ability to compare your KPIs and performance to an external benchmark.

For example, let's say you improve your tender acceptance rate on a given lane from 65% to 80% year-over-year. In isolation, this 15% improvement is a very good achievement. However, if you compare it to a network-wide benchmark based on data from other shippers, you'll see that the overall tender acceptance rate in that lane improved from 70% to 90% year-over-year. So, from that perspective, you are actually performing worse than last year and relative to other shippers.

Another example is carbon emissions visibility. Data around carbon emissions need to be presented within the context of an established standard or framework, such as the Global Logistics Emissions Council (GLEC) Framework and the forthcoming ISO 14083 standard (which will replace the existing European standard EN 16258). This not only enables companies to calculate and track the carbon intensity of their transportation operations in a standardized way, but also allows them to compare their performance to others.

Finally, there is the question of how data and information are presented.

It is very difficult, if not impossible, to identify trends and gain insights by looking at a spreadsheet filled with numbers. Today, a best practice approach is to leverage data visualization. As defined by Tableau, “data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. In the world of Big Data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decisions.”¹⁵

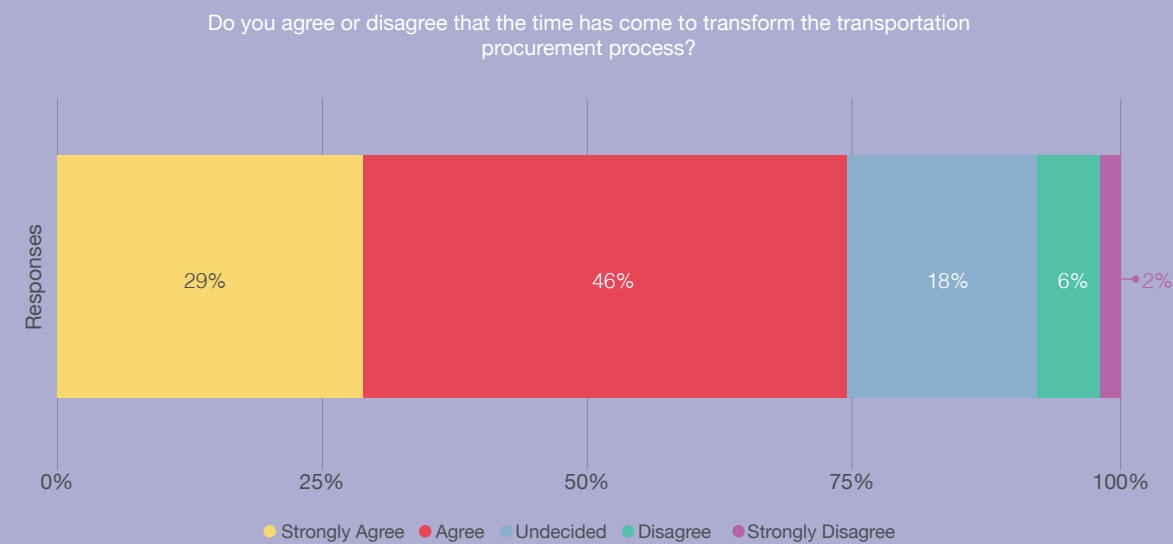
To summarize, one of the key ways that today's network-based transportation management platforms are helping companies become more data-driven is by giving them access to Big Data in transportation, putting that data into context via KPIs and benchmarking metrics, and providing data visualization tools to more quickly identify trends and opportunities for improvement.

¹⁵ <https://www.tableau.com/learn/articles/data-visualization>



Transforming Transportation Procurement with Real-Time Market Intelligence

In a web survey we conducted in May 2021 with over 360 shippers, carriers, and logistics service providers from around the world, the vast majority of the respondents (75%) agreed that the time has come to transform the transportation procurement process.¹⁶



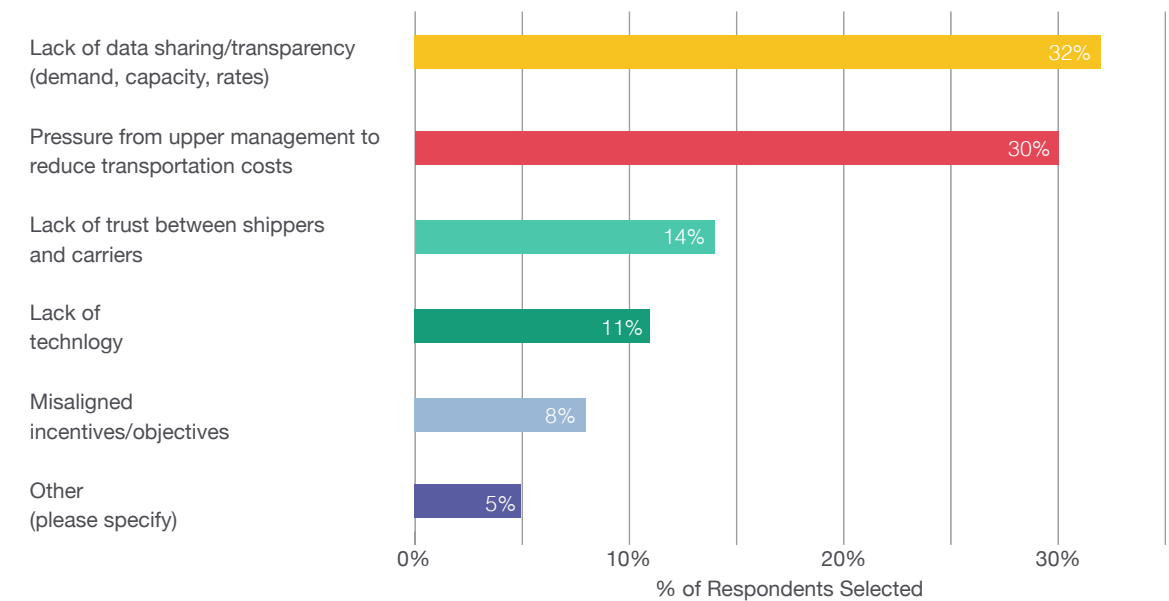
Changing the status quo, however, is never easy, and according to the survey respondents, the biggest barrier to transforming the transportation procurement process is “Lack of data sharing/transparency” about demand, rates, and capacity.¹⁷

¹⁶ “Powered by the Network: A Platform Approach to Matching Freight Demand with Capacity More Efficiently”, Transporeon, 2021

¹⁷ Ibid.



What do you believe is the biggest barrier to transforming the transportation procurement process?



On a lane-by-lane basis, how do my contracted rates compare to others in the market? How do they compare to spot rates? Are my tender rejection rates higher or lower than other shippers? Are spot rates (and spot offers) trending up or down in a given lane? How about contract rates?

Those are some of the questions transportation professionals often ask, not only in preparation for a strategic procurement engagement, but on an ongoing basis to make sure their rates stay aligned with changing market conditions – and to make sure they are able to secure capacity, when they need it, at a fair price.

Network-based platforms are helping transportation professionals answer these questions by providing more real-time data and transparency to market trends. Again, this is due to the network effect – that is, thousands of shippers, carriers, and other trading partners, processing millions of transportation transactions and billions of euros/dollars in freight spend annually, on a single platform.

This type of market intelligence provides additional context to help transportation professionals make more informed data-driven decisions. For example, let's say you have a high tender rejection rate on a given lane. By having access to network-based market intelligence, you can compare your rejection rate to the market average on that lane and see that it is indeed higher. Digging deeper, you can then compare your contract rate to the spot rate index for that lane and see that it is 25% lower (and also significantly lower than the contract rate index).

Therefore, what you learn is that the reason you are experiencing a higher-than-average tender rejection rate is because your contract rate on that lane is too low and no longer aligned with current market realities. This may lead you to conduct a targeted procurement bid to establish more competitive, market-aligned contract rates for that lane.

While your contract rates will be higher than before, your tender rejection rate should decrease, meaning you will use backup carriers and the spot market less, which ultimately saves you time and money. As research conducted by MIT shows, “if a shipper goes down to the fifth choice of carrier in its routing guide,

transportation costs could increase by some 15% over the primary contracted rate. If the company leaves the guide and uses the spot market, the increase could be more than 20–30%.”¹⁸

Simply put, the transportation market is highly dynamic and cyclical.

The days of “setting and forgetting” your transportation strategy and routing guide are over, at least if you want to remain competitive.

Moving forward, companies that leverage real-time market intelligence to continuously analyze market conditions and make adjustments to plans and routing guides as necessary will be in the best position to control costs, secure capacity, and meet customer service expectations.

¹⁸ <https://medium.com/mitsupplychain/in-search-of-alternatives-to-truckloads-fragile-freight-contracts-b856675e3f30>

AI-Powered Smart Tendering & Transport Execution

“There’s a reciprocal relationship between big data and AI,” explains Ken Casey in an October 2019 article in The Enterprisers Project. “The latter depends heavily on the former for success, while also helping organizations unlock the potential in their data stores in ways that were previously cumbersome or impossible.”¹⁹

What new value can companies unlock when the big data from network-based transportation management platforms is combined with artificial intelligence (AI) and machine learning?

One new opportunity is AI-powered smart tendering, or autonomous procurement.

Historically, if all contracted carriers in a routing guide reject a load, many shippers would then “dial for diesels” -- that is, they would call (or email) a bunch of carriers to see who can pick up the load. Others would manually post their loads on load boards and wait to see if a match occurs. Needless to say, these approaches are highly inefficient and costly.

For users of network-based transportation management platforms, a more sophisticated approach is for the platform to automatically (and almost instantaneously) retrieve real-time rates from carriers and brokers on the network. It can then tender the load based on shipper-defined business rules and preferred tendering strategy (e.g., sequential tender to a prioritized group of carriers/brokers vs. a broadcast tender to a large group of carriers/brokers). Once the tender is accepted, the transportation management platform then automates the booking process without any human intervention.

¹⁹ <https://enterpriseproject.com/article/2019/10/how-big-data-and-ai-work-together?page=0%2C0>

AI and machine learning add another level of intelligence and sophistication to this process. For example, AI and machine learning, coupled with applied behavioral science, can be used to develop carrier profiles -- that is, a more detailed understanding of each carrier on the network. What types of loads do they tend to accept? Which lanes are they most competitive on price? Where have they moved loads in the past? Which pickup or delivery locations do they prefer? Which types of tenders do they respond to the fastest or do they search for (or click on) the most?

Insights into these types of questions help the transportation management platform determine which carriers are the most appropriate to include in a load tender.

Another aspect of smart tendering using AI and machine learning is price prediction. For a given load, what is the price a carrier is most likely to accept to move it? Is that price the same for all carriers?

Price prediction typically involves analyzing historical load data on the platform, third-party market data, and other inputs. Carrier profiles are important too. In other words, price predictions can be customized for each carrier based on their profile.

The combination of carrier profiles and price prediction opens the door to a variety of smart tendering strategies. For example, instead of asking carriers to bid on a load tender, the platform can present the tender to a select number

of carriers (based on their profiles) along with an offered (predicted) price – with each carrier potentially receiving a different price based on their profile. If none of the initial carriers accept the tendered load at the offered prices within a defined timeframe, then the platform can initiate additional tendering rounds as needed, determining which carriers to invite next, what prices to offer them, and the duration of each round.

Another opportunity enabled by Big Data, AI, and machine learning is smarter matching of loads with capacity.

For example, if I need a load picked up three days from now, will there be any carriers unloading freight nearby (carriers I already work with on other lanes or meet a predefined set of requirements) that might be interested in this tender opportunity?

Historically, shippers had no visibility to this source of available capacity. Likewise, carriers had no visibility to these tender opportunities either, causing them to waste a lot of time, and drive many empty miles, to find another load.

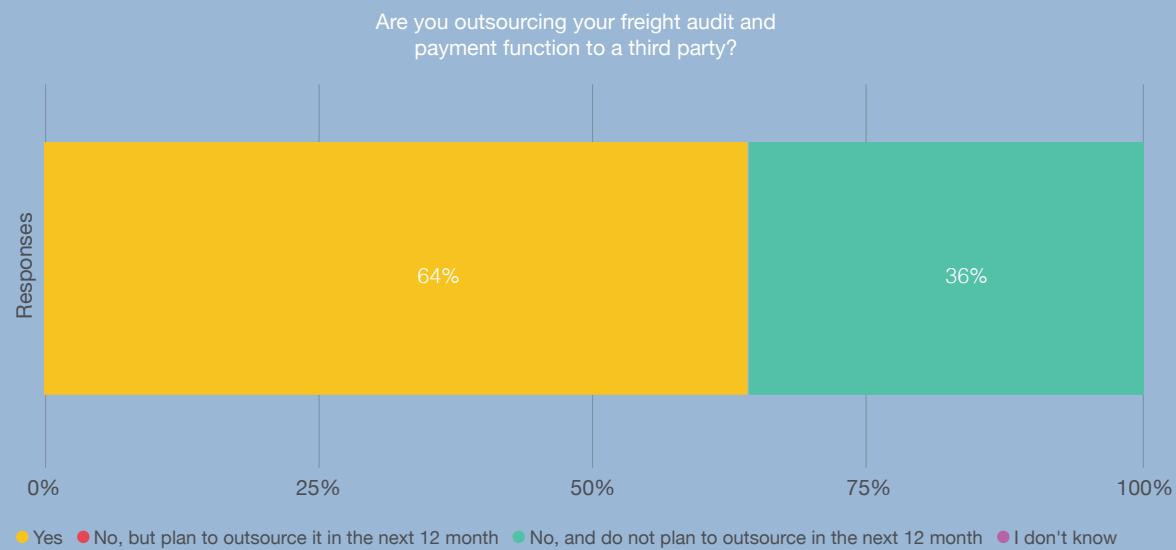
Leveraging AI, machine learning, and other tools, a network-based transportation platform can analyze a large volume of data from the many shippers and carriers transacting on it to find these match opportunities.

Pickup date, pickup location, unloading date, unloading location, distance between unloading and pickup locations, equipment type, shipment destination, and other data elements can all be factored into the analysis (along with defined pool of approved/qualified carriers). The platform can then present these match opportunities to the shipper as another tendering option and execute the tender if the shipper chooses this option.

Freight Audit: A Source of Transportation BI & Analytics

“Freight Audit & Payment is probably the most outsourced function in transportation and logistics,” commented a supply chain executive in a November 2020 Indago survey. “The value proposition for moving it in-house has not been there. There are entrenched incumbents with considerable benefits that have effectively retained the status quo thus far.”²⁰

In fact, almost two-thirds of the survey respondents (64%) were outsourcing their freight audit and payment function to a third party.



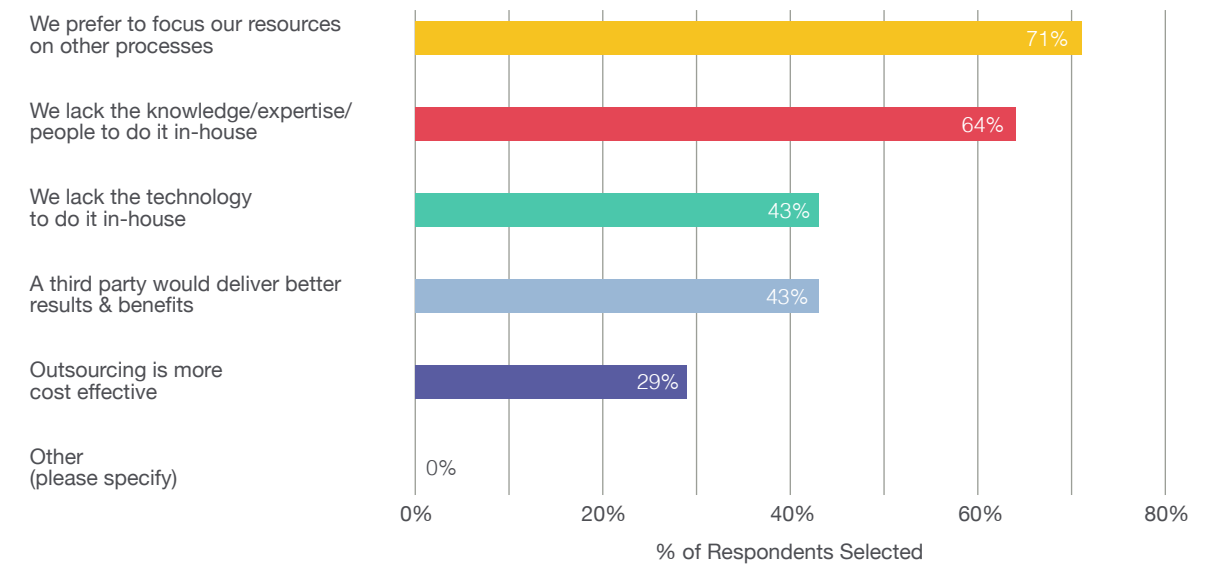
For the survey respondents, the top reason for outsourcing was “We prefer to focus our resources on other processes,” followed by “We lack the knowledge/expertise/people to do it in-house” and “We lack the technology to do it in-house.”²¹

²⁰ “Freight Audit & Payment,” Indago survey, November 2020

²¹ Ibid.



If you are currently outsourcing freight audit and payment to a third party or plan to do so within the next 12 month, what are the main reasons for doing so?



At its most basic level, the traditional value proposition of a freight audit company is to review freight invoices for billing inaccuracies – a problem that happens more often than you think due to the complexity of freight contracts (which varies by transportation mode, geography, and carrier), accessorial charges, fuel surcharges, and other factors. By identifying and eliminating these billing inaccuracies, and thus preventing overpayment, freight audit firms help companies reduce their overall transportation spend.

However, today's leading freight audit companies are also providers of transportation business intelligence and analytics. **Freight audit companies collect a wealth of data from a variety of sources, such as carrier invoices, bills of lading, shipment documents, transportation management systems, and other sources. Some of this data includes:**

- » Order numbers
- » Stock Keeping Unit (SKU) numbers
- » Origin Country/City/Location
- » Destination Country/City/Location
- » Shipment Weights
- » Shipment Dates
- » Transportation Modes
- » Carrier Names
- » Vendor Names
- » Customer Names
- » Freight Costs
- » Freight Accruals

Converting all this data into actionable insights is a big part of a freight audit company's value proposition today, and they do this by providing shippers with access to BI and analytics tools. This includes, as described earlier, customizable dashboards and visualization tools that enable users to build data cubes, generate charts and graphs, and drill deep into the data to obtain a more detailed understanding of their transportation spend, operations, and other key performance indicators.

The insights obtained from freight audit data analysis delivers value to transportation professionals in a variety of ways. For example, it helps them conduct more informed procurement engagements; identify and resolve billing inaccuracies (especially overcharges); reduce accessorial expenses and rogue spending; and identify other issues and opportunities for improvement across their network.

It also brings value to other functional groups across the organization. For example, **the data captured by freight audit firms helps to answer a question that is very important to Procurement, Product Management, and Sales professionals: What is the unit landed cost of this SKU?**

Historically, this has not been an easy question to answer, especially if multiple modes, moves, and carriers are involved (each sending separate invoices). You also need granular data about shipment product quantities, weights, accessorial fees, fuel surcharges, and other cost factors. Conducting this landed cost analysis with spreadsheets or static reports is extremely difficult and very time consuming, especially if you are dealing with very large data sets. This is where the power of BI and analytics tools come in. A user can create a customized dashboard that brings together all the required data elements and leverage a variety of analytical tools to determine accurate unit landed costs based on actual data instead of estimates or guesses.



Freight audit firms and the BI and analytics tools they provide are a key enabler of data-driven decision making in transportation.

The Way Forward

As a [report](#) by The Economist Intelligence Unit states, “Data are everyone’s business. Forward-looking companies are integrating data into their day-to-day operations. They are placing data at the heart of almost all important decisions. And they are tolerant of questioning -- even dissent -- about business decisions being made, as long as the questioning is based on data and their analysis. This is what it means to adopt a data-driven culture.”²²

For many companies, however, shifting to a data-driven culture has been a slow process. This is particularly true in transportation management, as this comment by an Indago supply chain executive member illustrates:

“Transportation professionals are great at getting things done, but terrible at data science. We act based on experience and what we can see, rather than what data is telling us. A change towards data science will require investments in retraining seasoned professionals to meet the challenges of the future.”²³

The shortcomings of not having a data-driven culture were painfully revealed by the COVID-19 pandemic and its ripple effects across supply chain processes, with companies now facing a variety of transportation challenges: congestion and delays at ocean ports; trucking capacity constraints and driver shortages; surging transportation costs, especially with ocean and trucking rates; rising fuel prices; and controlling CO2 emissions.

The good news is that for companies that are willing to become more data-driven in

²² https://www.tableau.com/sites/default/files/whitepapers/tableau_dataculture_130219.pdf

²³ “Leveraging Data in Transportation & Logistics,” Indago survey, June 2021

transportation, the data and tools already exist to get started.

Transportation Management Platforms serve as the foundation. By creating a connected network of shippers, carriers, and other trading partners, and processing millions of transportation transactions annually, these network-based platforms are repositories of Big Data in transportation. When you layer business intelligence, analytics, artificial intelligence, machine learning, and visualization tools on top of this data – as well as the wealth of data captured by freight audit firms – you open the door to new insights about the transportation market and your operations.

These insights, in turn, help you to make more informed decisions on what actions to take to reduce costs, improve service, mitigate risks, and achieve sustainability objectives. Smarter decisions based on actual data, not gut feeling.

The time is now for data-driven decision making in transportation.

Are you ready to get started?

Adrian Gonzalez,
President of Adelante SCM,
Founder of Talking Logistics