

For nearly 25 years, this section has engaged and enlightened with expertise and insight from industry insiders and leading contributors. Tackling the challenges confronting shippers today, from leveraging data to rooting out inefficiencies, Logistics Knowledge Base provides impactful advice and actionable takeaways. Get the information you need from today's logistics leaders to drive transformative change at your enterprise today.

LOGISTICS

# KNOWLEDGE BASE<sup>©</sup>

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## Data Management—Vital Today!



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*Managing information gathered from a strong TMS provides a solid pre-audit program to double-check the accuracy of bills and also delivers these value points.*

**Y**ears ago, I named my business “Freight Management,” but today it should be called “Data Management,” since that seems to be the business in which we find ourselves. Driven by competitors, by our clients, and by our own imagination, the effective collection of information can be invaluable if properly used and directed.

There are value points in managing information gathered from a strong TMS system that can also provide a solid pre-audit program to double-check accuracy of bills before payment. These points include:

**1. Tracking the duty paid on imported items with an eye to how much then reships to Canada, or falls into other categories, which will allow you to regain much of the duty paid.**

**2. Having visibility of all shipments moving inbound or outbound until delivered.** This information can be pushed or retrieved. This assumes that the freight is tendered by the shipper, or by the vendor, via the TMS that picks the approved carrier for the speed and distance of the shipment. The TMS usually notifies the carrier electronically and a bill of lading is prepared for printing for the consignee.

**3. Out-of-region freight moving from a warehouse outside the service zone is costly and a good TMS reporting system will identify these types of occurrences.** Additionally, it should identify what SKUs are involved and how frequently it happened in the past week or month. All of this adds extra costs to the bottom line.

**4. Double/triple orders moving the same day to the same customer can be identified and allow steps to be taken in the future to consolidate such orders onto one bill of lading, not two or three.** This typically happens when you have many items for sale and a customer such as Walmart will create an order for each one, which then triggers a bill of lading for each. In some cases, they insist on a bill of lading for each PO. A master bill of lading can overcome this need, which includes all the individual bills of lading onto one transaction. Additionally, carriers will even consolidate the orders and then send one bill.

**5. How often is the shipping staff or the vendor using the wrong carrier for the size, speed, and distance of the order?** This, too, can be expensive, and it is good to know when this occurs and where the failure is occurring.

**6. Sometimes freight costs rise, and you may not be sure why.** A good TMS should provide a report on all shipments for any period of time with average mileage, average weight, and cost per pound. Maybe freight order size is down, which will tend to raise the cost per pound, or orders are simply farther away than normal.

**7. Identifying when accessorials (which are logged and summarized) of a given type are spiking.** This could mean more home deliveries, more inside deliveries, etc. Counter-action can then be taken to mitigate the costs.

**8. Defend against charge back from the major retailers.** This is now a major profit center. Allegations of late arrival, etc. are charged against you. A good TMS provides status and location of all shipments during the move, which will help that defense.

**9. Develop a report card on all carriers for on-time delivery, claims ratio, or other factors**

**10. You can also chart the cost of fuel month to month, so you can better see the trends and prepare yourself or your customers.**

**11. By receiving a delivery receipt from the carrier, the process for filing claims for loss and damage is made easier and more accurate.**

**12. Finally, a good TMS will provide accurate accrual reports at the end of the month.** However, all open orders across all modes must reside in it. The TMS can then calculate the charges you can expect from the carrier even if not billed or received yet.

Freight Management has such a TMS, and additionally the staff to manage it. Data management has become our main business.



## Is the Logistics Sector Ready for the COVID-19 Vaccine?



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*The last mile will have to accommodate the reliable distribution of the billions of vaccines that providers will manufacture and ship in 2021. Here are the obstacles facing the supply chain.*

**T**he December peak season brought a new set of challenges. As COVID-19 vaccines received FDA approval in late 2020, logistics operators faced the daunting task of distributing vaccines around the world. While the FDA was able to fast-track the approvals process and many vaccines have already shipped, changes in the last mile are still ongoing to accommodate more reliable distribution of the billions of vaccines that providers will manufacture and ship in 2021.

The supply chain faces the following obstacles:

### 1. Supply Chain Cold Storage

Vaccines require proper storage conditions at all points in the supply chain to ensure their efficacy when they reach the patient. This isn't usually overly challenging—the flu vaccine requires refrigerated storage between 35°F and 42°F, for example.

The leading COVID-19 vaccine has more stringent requirements. The Pfizer and BioNTech mRNA-based vaccine requires cryogenic storage below -90°F. Cold storage has been underserved in global industrial real estate for decades, and cryogenic cold storage even more so. Low availability makes it difficult to regionally distribute and store vaccines.

Other leading vaccines, such as Moderna's mRNA vaccine, have more standard storage requirements and last up to six months in a standard freezer. Ideally, ongoing upgrades to last mile capabilities and varying storage requirements between vaccine types will be enough to avoid significant disruptions in vaccine distribution.

### 2. Dry Ice Shortage

Due to a lack of cold storage availability, Pfizer ships directly to health agencies and hospitals. Storing vaccines at appropriate temperatures is challenging enough for the supply chain, but near impossible for the medical facilities where patients

will receive the vaccines. Once removed from cryogenic storage, the vaccine lasts about five days.

The solution to this problem is special packaging from Pfizer, which can maintain appropriate cryogenic storage temperatures for up to 30 days if refilled with dry ice every five days. Dry ice is typically created by freezing CO<sub>2</sub> byproducts recovered from oil and gas and ethanol production. These sectors have been making less fuel over the past year because of the pandemic, resulting in less available CO<sub>2</sub> needed for dry ice production.

### 3. Distributing Related Equipment

The medical supply chain still hasn't recovered fully from the shortage of personal protective equipment (PPE) it experienced in early 2020 at the onset of the pandemic. Many medical professionals still struggle to reliably source N95 masks, gloves, face shields, gowns, and other critical PPE needed to protect medical workers as they vaccinate the public.

In addition to the standard PPE, the vaccine rollout has caused a rush on other ancillary gear needed in vaccination operations, such as alcohol wipes, syringes, needles, and bandages. While manufacturers of these goods fortunately had time to prepare, it's currently unclear how well the supply chain will hold up to long-term vaccination efforts over the next several months.

### Bending But Not Breaking

The supply chain has been preparing for this moment since successful vaccine development began to appear likely. Logistics providers, airlines, ground carriers, healthcare networks, and manufacturers have all come together to find innovative ways to bring vaccines from the production floor to the people who need them.

While vaccine distribution isn't without its obstacles, 2021 still looks much more positive than the year before.



## Bringing Transportation in Sync with the World



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*True digital transformation requires the ability to think beyond the next load or the next order to find new and enduring ways to match demand with capacity and connect relevant industry partners.*

In the transportation world of today, nearly 30% of trucking capacity sits idle while approximately 20 billion empty highway miles are generated each year. Transportation is a mission-critical industry for the growth of our economy and, as we've seen this year, critical to even maintaining our basic standards of living—but it's also an industry that's crucially under-served by modern technology.

### Identifying Inefficiencies

Transportation can be a highly reactive and slow-moving industry with inefficiencies that are often compounded by destructive bullwhip effects.

It's an industry with players that make considerable margin by creating and protecting information asymmetries, and players who often base their decision-making on gut feelings, past experiences, and established relationships.

All this is happening in a world that has already moved to a state where sustainability matters more than ever before, where cost and efficiency are important, and competition is fierce.

It's happening in a world where digitization, the Internet of Things, and broad mobile communication are spreading rapidly. Today's modern world is a world of transparency and equal opportunities, of Big Data and AI-driven optimization algorithms, of real-time visibility and agility, of seamless information flows and complex networks.

### Shifting Strategy

Global manufacturing has faced some of its biggest challenges throughout the last year. Unprecedented demand in some sectors has forced a collective shift in strategy in order to keep pace with the immense changes across the supply chain—mainly in the form of digital transformation.

Many organizations have quickly pivoted to new ways of doing business, but a significant gap still remains between the state of the transportation industry and the world we live in today.

Although the number of manufacturers looking

to creatively bridge this gap has never been greater, true digital transformation requires the ability to think beyond the next load or the next order to find new and enduring ways to match fluctuating demand with constrained capacity and begin to connect relevant industry partners in the most efficient ways possible.

### Transforming Supply Chains

True digital transformation means tearing down the walls that keep this industry so out of sync with the modern world.

Digital transformation generates upsides rather than downsides—by creating the perfect backload that benefits both shippers and carriers, by connecting parties through smart interfaces and a powerful platform.

Bringing transportation up to speed with the modern world means simply using available data and building intelligent algorithms that help us make smarter, faster, and more efficient decisions.

By enabling frictionless added-value networks that strive to connect the ideal shipper with the ideal carrier, we can tear down the information walls that keep us out of touch and find new, more efficient ways of working together as an industry.

We can sync transportation up with the modern world by simply enabling everybody in the process chain to collaborate infinitely—without borders, without boundaries—today, tomorrow, and every day.

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Transporeon boosts logistics performance and profitability with every freight load. Founded in Germany in 2000, Transporeon connects a worldwide network of more than 1,200 industrial shippers and retailers with over 90,000 logistics service providers in 100+ countries in real time. Its security-certified platforms offer digital solutions for freight benchmarking and sourcing, freight assignment and shipment execution, time slot management, shipment tracking, and end-to-end supply chain visibility. By leveraging the latest capabilities, including artificial intelligence and predictive analytics, Transporeon solutions cut CO2 emissions, empty runs, and truck waiting times while digitizing manual processes.

# Inventory Management: Two Key Indicators to Improve Warehouse Operations



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**Y**our warehouse is your company's barometer: It measures the health of your sales, as well as its fluctuations. That is why good inventory management, including optimizing the flow of goods and sales forecasting, becomes essential if you want to avoid product shortages and overstock. Monitoring the turnover and coverage rates will help you limit the risks related to demand fluctuations and help achieve a balance between inventory turnover and supply.

## **Turnover Rate:** Measuring the speed at which the inventory is replenished

To calculate Turnover Rate use the following formula:

$$\text{Total (period X) Demand} / \text{Average Inventory} = \text{Turnover Rate (TR)}$$

In order to make this calculation you must first determine your "average inventory." This metric can be calculated as follows:

$$(\text{Initial Stock} + \text{Final Stock}) / 2 = \text{Average Inventory}$$

The above formula allows you to calculate the average inventory without factoring in the observed growth or decline over a longer time span. To include these variables, use the following formula:

$$\text{Average Stock (Monthly)} = [ [ (\$1+\$2) / 2 ] * 3 \text{ months} + [ (\$3+\$4) / 2 ] * 2 \text{ months} + [ (\$5+\$6) / 2 ] * 2 \text{ months} ] / 7 \text{ months}$$

The average inventory and the turnover rate will help avoid product shortages and overstock by giving you a general idea of the inventory replacement rate at any given time. Keep in mind that a high turnover rate is a sign of excellent performance.

## **Coverage Rate:** A daily overview of your inventory

Centralizing your products as best as possible and directing them to the right stores based on sales performance is key. To avoid having to replenish a store that has exhausted all its inventory, it is best to keep your coverage rate in mind.

Assuming you have covered your needs with a well thought out supply method, you can manage the just-in-time flow without worrying about the stock shortages. You should then be able to calculate the average period covered by the inventory with the following formula:

$$\text{Average Stock per Month} / \text{Average Monthly Demand} = \text{Coverage Rate (CR)}$$

When calculated correctly, this indicator allows you to strengthen your supply chain with the right stocked products, at the right quantity, at the right time—thus providing better coverage in response to the demand.

## **Prevention is Better Than a Cure**

If you have opted for a just-in-time model, calculating the coverage rate and the turnover rate is an excellent way to add resiliency to your supply chain. However, to do this you will need a solution in which you can accurately track data in real time.

Generix Group North America provides a suite of solutions within its Supply Chain Hub to create efficiencies across the entire supply chain. From Warehouse Management Systems (WMS) and Transportation Management Systems (TMS), to Manufacturing Execution Systems (MES) and more, their highly agile software platforms can deliver a wide range of benefits that ultimately lead to significant increases in operating efficiencies.

Please visit [www.generixgroup.com/en-na](http://www.generixgroup.com/en-na) to learn more.

# Pandemic Spurs Accelerated Investment in Supply Chain Automation, Digital Technologies



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*Digital technologies and automated solutions will help your supply chain succeed in this new, post-pandemic reality. For starters, they increase resilience in the face of disruption and support your workforce.*

The unprecedented impact of the COVID-19 pandemic has permanently changed the trajectory of businesses, consumers, and supply chains. Organizations that accelerate the implementation of digital and automated technologies to increase their visibility, flexibility, adaptability, and responsiveness are best positioned for success.

Artificial intelligence (AI) and machine learning (ML) are increasingly being applied throughout supply chains. These solutions help organizations of all sizes synthesize massive amounts of data, then evaluate various scenarios and situations in nanoseconds to extract actionable information in real-time.

Algorithmic AI and ML allow workers at all supply chain levels to further leverage innately human skills such as collaboration, negotiation, persuasion, and problem solving, which are not likely to be replaced by digital technologies.

For example, these solutions digitize the decision-making process, yielding increased supply chain visibility and agility through better risk management. They do this by comparing multiple scenarios to predict the most likely outcomes, then generate options for supply chain leaders to assess and select the best course of action based on the business rules and objectives of the company.

Further, AI and ML can be used to examine external data, such as news and social media feeds. By monitoring for terminology that suggests a potential disruption in a given area—labor strikes, natural disasters, extreme weather, political unrest, port fires—the technologies create an alert, enabling an operation to counteract a potential supplier issue.

In the warehouse and distribution center, AI and ML are increasingly being leveraged within collaborative robotics, autonomous mobile robots, and automatic guided vehicles. These machines are not replacing human workers, but rather are taking over mundane, repetitive, tiring, error-prone, or dangerous tasks—such as manual sortation or long-

distance travel for picking. This enables personnel to advance into higher value, higher margin tasks that keep them engaged. It also allows operations to safeguard worker health.

## Roadmap to the Future

These are just a few ways that by teaming humans with digital and automated technologies, organizations experience greater gains through cost reductions, increased efficiency, and higher value. Other examples can be found in MHI's most recent future-looking Roadmap publication, "Transformation Age: Shaping Your Future" (available online at [mhi.org/transformationage](http://mhi.org/transformationage)).

Additionally, other accelerated technology and digital investments include Cloud computing as a means to support faster collection and analysis of data from multiple sources within a network. Those sources include not only Tier One suppliers, but increasingly Tier Two and Tier Three. They also encompass a wealth of operational data enabled by Internet of Things (IoT)-connected devices and sensors.

How will these digital technologies and automated solutions help your supply chain succeed in this new, post-pandemic reality? One way to find out is by participating in ProMatDX—the most comprehensive digital manufacturing and supply chain experience in 2021. ProMatDX sponsors will display the latest technologies and solutions that support digital supply chains.

ProMat is scheduled for April 12-16, 2021 at [promatshow.com](http://promatshow.com). At ProMatDX, you'll experience the latest automation, technologies, and innovations helping companies power up their supply chains in sponsor showcases, product demos, educational sessions, and keynotes. Many of the solutions discussed here will be on display, including sensors, Cloud computing, autonomous vehicles, robotics and automation, predictive analytics, AI, ML, wearables, mobile technologies, and much more.

For more information or to register, please visit [promatshow.com](http://promatshow.com).



## Keeping Your Eye on the Prize: What Formula One Can Teach Us About the RFP Process



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*Bid management software is like a team boss, acting as the face—or rather, interface—of the complex data streams racing through your network.*

**F**ormula One (F1) is arguably the most data-driven sport that exists. Cars are equipped with approximately 150 sensors that generate 2,000 data points/minute—including tire performance, track temperatures, steering and braking patterns, and more. That amounts to roughly 4 terabytes of data per car per race. All this data is used to drive fast decisions on the track, where every second counts.

Fast decision-making is also vital in business, so what can we learn from F1 teams about carrier procurement? In both racing and bid management, steering toward a successful outcome takes more than a skilled driver or purchasing manager. It takes a reliable network, powerful technology, and rapid-fire data exchange.

### Data-Driven Decision-Making

Before data analytics became a key component to F1 races, winning or losing depended on the driver's split-second decisions on the track. Now, decision-making is largely driven by technology, allowing drivers to focus on their core competency—driving.

Imagine if an F1 driver had to plot fuel management mid-race. How would that extra work impact their performance?

The driver at your organization is the person making procurement decisions. Selecting the right carriers for the right rates while covering commitments can be a challenge. It often involves massive lane spreadsheets, manual data entry, and mismanaged carrier relationships. Procurement decision-makers can lose focus—getting caught up in organizing Excel files instead of making decisions that lead to ROI. Like F1, technology can do most of the work for you.

Watch any F1 race, and you'll see team bosses staring at monitor banks while issuing instructions to the drivers. What may not be immediately clear is that those bosses act as the face of robust data streams flowing in from mission control centers full of race engineers.

Bid management software is like a team boss, acting as the face—or rather, interface—of the complex data streams flowing through your network. You collect massive amounts of data every day, but if you don't have the right tool for analyzing that data to drive decision-making, you may be wasting valuable time.

### An Empowered Network

F1 pit crews are notoriously efficient, and the best can change a car's tires in under two seconds. Something else that should take seconds? Adding carrier rates to your master response list.

Too often, shippers will send out RFPs, collect responses one by one, and manually add those responses to a master Excel document. This workflow is like a driver pulling into a pitstop and changing the tires himself.

When sending RFPs, if you are spending time re-entering the rates that carriers send back, your time isn't being used wisely. Bid management software can collect responses automatically within seconds of the carrier submitting them, which allows you to focus on strategic initiatives with the time saved.

In racing and business, efficiency is key. When managing your next RFP, make sure you have the right tools in place that eliminate inefficiencies and allow you to keep your eye on the prize—finalizing and executing the routing guide.