

Report: Top ways freight technology will cut costs in 2021

**Supply chain predictions that will help you
conserve capital, meet demand, and modernize
your logistics operations in the next year**

Report overview

In the face of growing e-commerce activity and an uncertain economy, shippers are turning to advanced technology to guarantee a smooth customer experience and reduce costs.



This white paper outlines technologies and services that will have a big impact on shipping businesses in 2021 and beyond, including:

- Blockchain
- Artificial intelligence and machine learning
- Internet of Things
- 3D printing
- Autonomous mobile robots
- Self-driving trucks
- Shared truckload shipping

Shippers that implement these new technologies and leverage shared truckload shipping will be in a better position to reduce freight costs and meet demand – no matter what next year holds.

Table of contents

- The state of the industry**.....2
 - Nearshoring.....2
 - Supplier diversification.....3
 - Excess capacity.....3
- Our trucking market and supply chain predictions for 2021**.....4
- The tech that will help you save**.....7
 - Blockchain.....9
 - Artificial intelligence and machine learning.....11
 - Internet of Things.....13
 - 3D printing.....14
- Automation innovations**.....16
 - Autonomous semi-trucks.....17
 - Autonomous mobile robots.....18
- And the best way to cut freight costs is**.....20

The state of the industry

According to a survey by Echo Global Logistics, coronavirus has affected 82% of shipping businesses. Shippers have jumped through hoop after hoop to overcome the challenges of the pandemic, conquering surging demand in the panic-buying days of the crisis, encountering record freight rates when the trucking market rebounded, and navigating an uncertain economy all year long. Now, shippers face shifting consumer preferences, strong holiday demand, and a two-year capacity low. Freight volumes were up 16.5% year over year in the beginning of the fourth quarter, and high demand has kept inventories low. As a result, shippers are looking to advanced technologies to avoid stock depletion and guarantee a smooth customer experience.

No company survives volatility like we've experienced in 2020 without making major operational changes. In terms of supply chains, risk mitigation and flexibility have been paramount. Here are some of the tactics shippers have turned to this year:

Nearshoring

Government-mandated travel bans and business closures have created problems for companies – especially those with long or complex value chains – that import supplies. Nearshoring, on the other hand, has helped organizations deliver products quickly during coronavirus. Producing goods close to home is an effective way to strengthen supply chains, given a company's increased ability to react fast to changing business needs. New technology makes this practice possible.

The state of the industry

Supplier diversification

Since the onset of the COVID-19 crisis, American-based organizations have moved their supply chain processes away from China and toward the United States. Businesses have also contracted new suppliers to boost production capability. With multiple partners on the inbound side, businesses can pivot from one supplier to another in the event of a disruption — without jeopardizing production levels.

Excess capacity

Organizations with surplus stock have an easier time meeting high demand because they can tap into extra inventory. Regionally separating reserves offers flexibility and multiple delivery paths. If locations are too close together, shippers might sacrifice continuity when a disruption occurs. During the early stages of the pandemic, spikes in demand exacerbated fragile, just-in-time supply chains. Now, businesses are stocking more products and warehouse space is becoming increasingly valuable.

In the midst of peak-season demand and growing pressure to fulfill online orders, shippers are optimizing their logistics processes — including their last-mile delivery services — with e-commerce in mind.

Shippers are also starting to plan for the new year and budget for their 2021 freight needs. New technology — artificial intelligence (AI), 3D printing, and automation, for example — and data-backed services — like shared truckload shipping — will help businesses reduce costs during coronavirus and long after. Before learning more about these tools, however, let's add context with 2021 freight forecasts and supply chain predictions.



Our trucking market and supply chain predictions for 2021

Industry experts anticipate unpredictable shipping volumes, limited capacity, and climbing spot rates in 2021. Because the general public will most likely continue to self-isolate and sustain e-commerce activity, businesses will prioritize quick and reliable shipping.

Here's what we expect to see in the freight landscape next year:

- Growth in both the truckload (TL) and less-than truckload (LTL) market segments
- Rising freight volumes as production recovers
- Inconsistent demand
- Tight capacity
- Higher rates



2021 Predictions

Though shippers might be able to renegotiate contracts, they should understand that the current market is driving higher freight costs. The industry is battling a driver shortage, and many fleets aren't expanding right now. These challenges, combined with 2020's volatility, influence our predictions for 2021.

This year, shippers learned the significance of supply chain risk and resilience. Next year, they'll keep these lessons top of mind and use the following strategies to bolster supply chains:

Agility

Supply chains must be nimble to adjust to natural disasters, government travel mandates, and global trade guidelines. With the help of predictive modeling tools, shippers can think through potential issues in advance and maintain not only operations, but also quality service if trouble arises. In the long run, this efficiency helps shippers stay stable and competitive.

Elastic logistics

"Elastic logistics" means a company's supply chain can scale based on demand. Shippers that implement digital logistics processes, along with new technologies, can expand and shrink supply chain activities as needed, achieving optimal outcomes, such as right-sizing inventories and making the best use of resources (warehouses, shipping containers, trucking methods, etc.).



2021 Predictions

Visibility

Shippers have a number of reasons to increase supply chain transparency: Complying with federal regulations, communicating shipment status with customers, understanding supply chain impact, and fostering sustainability, to name a few. By knowing the processes of every link in the chain, shippers can address any hiccups that crop up and implement best practices.

Circular supply chains

According to [Supply Chain 24/7](#), “The circular supply chain is a model that encourages manufacturers and sellers of products to take discarded materials and remake them for resale,” unlike linear supply chains, which use supplies once before disposing of them. By reusing goods, “companies can spend less on raw materials and ... enjoy a reduced risk of price volatility,” says review site [FinancesOnline](#).

Supply chain integrations

Lower costs and better customer support are two benefits of partnering with third parties. With these perks in mind, shippers are contracting out supply chain processes to external firms. As a result, supply chains will have more components in the future. To prevent logistics processes from getting too complex and manage partnerships with ease, shippers will leverage up-and-coming integrations.

An [article](#) by Journal of Commerce quotes SanMar’s Global Logistics Director John Janson, who said, “In my career, I’ve never seen all facets of the supply chain in upheaval at the same time, until now.” After a turbulent 2020, shippers realize they must adapt to the post-pandemic environment and modernize their supply chains. Shippers that implement digital tools will prevent items from getting lost, enhance inventory management, and decrease the occurrence of human error, all of which provide cost savings. The takeaway? To recover from coronavirus, shippers should lean on today’s technology and lower costs.



The tech that will help you save

Shippers that are interested in backing their operations with technology have many options to choose from. Blockchain, AI, machine learning, Internet of Things (IoT), 3D printing – These cutting-edge technologies make freight processes more efficient and lower costs. They also offer real-time data insights that improve visibility.

With meaningful data, shippers can:

- Provide customers with tracking updates, such as shipment status and damage alerts
- Learn how to optimize transit methods (often via alternate routes or shipping modes)
- Identify potential slowdowns in advance

The tech that will help you save

Shippers that leverage data from their systems and partners are more prepared to navigate challenges — like meeting ever-increasing consumer expectations — and are more likely to understand their transportation operations.

They can also cut costs with increased visibility by:

- Meeting delivery schedules, preventing late fees and the cost of customer churn
- Filling trucks to capacity with optimized loads that cost less to ship

By gleaning data insights from new technology, shippers can accomplish high-level goals, like staying competitive, reducing costs, and improving productivity. Let's take a look at some of these technologies in depth.

The tech that will help you save: **Blockchain**



What it is

Merriam-Webster defines “blockchain” as “a digital database containing information (such as records of financial transactions) that can be simultaneously used and shared within a large decentralized, publicly accessible network.” MIT Technology Review writes, “The whole point of using a blockchain is to let people – in particular, people who don't trust one another – share valuable data in a secure, tamperproof way.”



Logistics applications

Blockchain technology supports logistics processes from beginning to end. By sharing tracking data and estimated times of arrival with the entire supply chain, blockchain expedites transit, lets shippers share status updates with customers, and handles invoicing and payments from one system, slashing administrative time and costs.



How it's transforming supply chains

With blockchain's data-sharing functions, global partners can become more cooperative and foster trust, delivering higher-quality products as a result. "Manufacturing leaders must learn to federate data and distribute trust to collaborate with customers and suppliers in [multi-enterprise] supply networks," research firm Forrester reveals in its Predictions 2021 guide. All of this to say: Logistics providers are becoming increasingly important to modern freight operations.

The tech that will help you save: **Blockchain**



Why it will matter in 2021

Blockchain technology allows multiple parts of the supply chain to integrate. In fact, technology companies have developed blockchain-backed tools that enable shippers to access supply chain data from a single platform. With this enhanced visibility, shippers can communicate their respective supply chain impacts to authorities and consumers.

In July 2020, online purchases were up 25-30% year over year. In the midst of a holiday season at home (due to the pandemic), experts believe the e-commerce boom will continue. To deliver an excellent experience for consumers, retailers will turn to technology like blockchain to improve shipment tracking and customer service.



How it helps shippers lower costs

Blockchain technology accelerates administrative work and reduces all associated costs. It also decreases instances of human error, eliminating the costs of fixing mistakes and helping supply chain managers get ahead of potential disruptions before they occur.

More than that, it protects valuable information across the supply chain. By encrypting shared data, blockchain enables multiple parties to act as network gatekeepers and prevents cyber criminals from gaining access after hacking into the system of just one company. Here's why this matters: The average cost of a data breach is \$3.86 million. By safeguarding your data, you'll lower your chances of incurring the costs associated with a cyber attack.

The tech that will help you save: **Artificial intelligence and machine learning**



What it is

Dictionary.com defines “artificial intelligence” as “the capacity of a computer, robot, or other programmed mechanical device to perform operations and tasks analogous to learning and [decision-making] in humans...” Machine learning, on the other hand, is a category of algorithms that uses statistics to find patterns in data, then makes predictions based on those patterns.



Logistics applications

AI and machine learning help shippers with overarching objectives like enhancing transparency, maximizing efficiency, and avoiding costly blunders. Their applications within supply chains span from finding patterns to making human jobs faster and more flexible. Plus, they set the stage for automation with algorithms that use data from past processes to become more sophisticated over time.



How it's transforming supply chains

The same FinancesOnline piece describes how “companies can leverage this technology to predict purchasing demands and manage inventory.” Thus, AI and machine learning can streamline planning and procurement, removing the need for staff to perform the same calculations again and again.

The tech that will help you save: **Artificial intelligence and machine learning**



Why it will matter in 2021

In a world where online shopping is the new norm, AI and machine learning help shippers find the best way to synthesize supply chain components and facilitate aspects such as planning, warehousing, shipping, natural language processing, and supplier relationships. Not to mention, industrial manufacturers can use these technologies to resolve bottlenecks.



How it helps shippers lower costs

An article by Supply Chain Dive reads, “The cost reduction [of AI] is not typically the result of decreased headcount, but rather improved forecasting.” The piece quotes Gartner Vice President and Distinguished Analyst Noha Tohamy, who explains that AI “can improve my market share or my ability to make products available...”

A survey by McKinsey & Company reports spend analytics and logistics-network optimization as other sources of savings, given these technologies’ ability to find better answers more quickly.

The tech that will help you save: **Internet of Things**



What it is

IoT involves any internet-connected device that gathers and transmits data.



Logistics applications

Applied to logistics, IoT helps shippers discover potential issues in advance and optimize route and delivery planning, two benefits of improved supply chain visibility. With the data these devices collect, shippers can develop better business development strategies.



How it's transforming supply chains

Technology magazine ZDNet puts it best: "The Internet of Things is making the fabric of the world around us smarter and more responsive, merging the digital and physical universes." Smarter technology means actionable insights, and actionable insights mean sharper decisions.



Why it will matter in 2021

Shipping businesses that intend to manage supply chain risk and enhance visibility in 2021 can use IoT to detect problems before they occur and offer status updates throughout the product journey. Consequently, companies gain a favorable reputation and prevent customers from calling Support for tracking information.



How it helps shippers lower costs

Inc.com cites declines in lost shipments and damage during transit as the two main sources of IoT cost reduction. Backed by IoT, shippers and the carriers they work with can eliminate the costs associated with replacing lost or damaged goods.

The tech that will help you save: 3D printing (also known as “additive manufacturing”)



What it is

3D printers create products with computer-aided design, layering materials like molten plastic and powders from the bottom up. 3D printers allow cloud technology to store designs and build products – even strong industrial goods – on the spot.



Logistics applications

3D printers easily integrate with existing processes. Because 3D printers can manage resource-heavy work, shippers can use this technology in warehouses and other facilities. Businesses can use 3D printing technology to manufacture products closer to customers, replacing the stock-then-ship model.



How it's transforming supply chains

3D printers shorten supply chains by removing the need for carriers to move goods from manufacturing plants to warehouses to distribution centers to customers. 3D printing reduces lead time and allows businesses to produce goods with fewer resources.



Why it will matter in 2021

Sellers that are looking to minimize risk in 2021 can use 3D printing as a tool to eliminate dependencies within supply chains.



How it helps shippers lower costs

3D printing removes the costs of warehousing, handling, and distribution. It also lowers labor costs by eliminating the assembly phase altogether.

The tech that will help you save

Conclusion

In conclusion, freight companies that leverage blockchain, AI, machine learning, and IoT technology will be able to make data-driven decisions in 2021. Businesses that seek to slash supply chain risk and create more agile production capabilities can incorporate 3D printing into their current processes. All of these technologies will help supply chains operate with fewer complications and costs in the future.



Automation innovations

Other promising technologies come in the form of automation. Autonomous mobile robots (AMRs), and self-driving trucks, for example, have the ability to streamline freight processes and reduce costs.

**Read on to find out what you
should know about these
technologies.**

Automation innovations: **Autonomous mobile robots**

AMRs have a starring role in updating supply chains, especially when logistics managers pair them with warehouse management systems (WMS). AMRs move faster than and make fewer errors than people, boosting productivity. In modern warehouses and distribution centers, AMRs are performing simple, repetitive and dangerous tasks – like packaging and picking pallets – while humans concentrate on more impactful work. In the context of today's e-commerce boom, automation allows shippers to scale their operations and accommodate fluctuating demand. AMRs ramp up quickly and carry out tasks at full capacity any time of day.

Below are the five most common types of AMRs:

Goods-to-person robots. Taking the form of programmable carts, these robots move inventory from shelves to packing employees and picking stations.

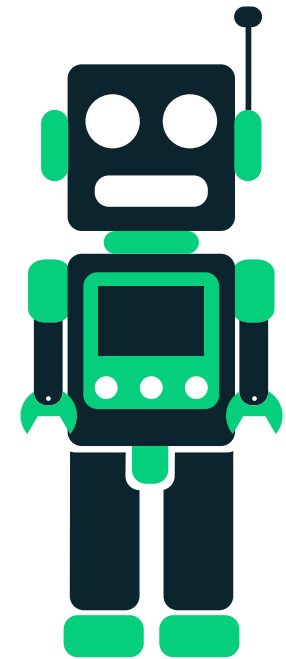
Autonomous picking carts. These AMRs help workers fulfill orders around the facility (instead of in picking areas), removing the need to reposition carts.

Conveyance robots. These robots move goods across large spaces. They're more affordable and adaptable than conveyors and automated guided vehicles.

Autonomous lift trucks. Driverless forklifts boost productivity by 200-300% for travel-heavy pallet tasks, such as put-away and replenishment.

Robot-to-goods picking, or swarming robots. A worker follows instructions on the robot's tablet, then picks and places products in the AMR's tote.

AMRs are a flexible and reliable way to reduce costs in warehouses and distribution centers. By decreasing the occurrence of mistakes, AMRs reinforce a positive customer experience, which prevents costly churn. To summarize, automated robots provide value past material handling.



Automation innovations: **Autonomous semi-trucks**

The widespread adoption of driverless semi-trucks will revolutionize the trucking industry. While there are still some kinks to work out before freight companies can fully rely on self-driving vehicles, recent advancements lead many technology forerunners and financiers to believe autonomous trucking will become common practice within 10 years.

Advocates of self-driving trucks cite many benefits, including cost savings. A 2020 study, called “Cost Analysis of Driverless Truck Operations”, examined the monetary savings of using 16-, 24-, 40-, and 60-ton autonomous trucks under three assumptions: Pessimistic, intermediate, and optimistic.

According to the abstract, “in the base scenario, the total costs decrease by 45%, 37%, 33%, and 29% for 16-, 24-, 40-, and 60-ton trucks, respectively. In the pessimistic scenario, the [driverless] truck costs are 12%–23% lower than the [manually driven] truck baseline, and, in the optimistic scenario, they are 43%–58% lower.”

The takeaway? “All scenarios result in significant cost savings compared with the [manually driven] truck baseline. This indicates that, even if the magnitude of cost savings for [driverless] trucks is uncertain, it is most likely that [driverless] trucks will enable a net decrease in costs compared with the [manually driven] truck baseline.”



Automation innovations: **Autonomous semi-trucks**

Autonomous semi-truck cost savings come from:

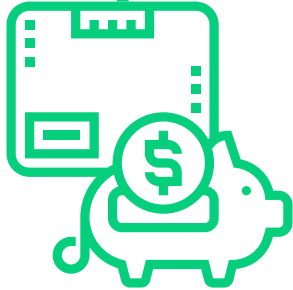
Labor. According to an [article](#) in FreightWaves, labor accounts for 30-75% of trucking costs. Freight companies spend as much as \$100,000 per year on the wages, insurance premiums, and bonuses of two drivers. These numbers translate to more than \$1 million over the service lifetime of a typical rig. Autonomous technology that eliminates the need for both drivers would completely eliminate the labor costs associated with each route, resulting in astronomical savings.

Fuel. Self-driving trucks improve efficiency. Autonomous vehicles that travel next to each other or in a line create an estimated 25% reduction in drag (wind resistance), which “generates a 5-15% decrease in fuel consumption.” This efficiency cuts fuel costs by at least 15%. Furthermore, trucks that travel outside of peak commuting hours move faster and further than they do when they’re sitting in rush-hour traffic. Indeed, “as far back as 2013, [American Trucking Associations] estimated that [interstate] congestion was costing the trucking industry over \$9 billion in traffic-related idling time fuel costs.”

Insurance. The FreightWaves piece also notes cost savings on insurance. Derek Kaufman, Managing Partner at California-based Schwartz Advisors, “estimates that a truck involved in an accident where: a) there is just property damage; b) an injury-accident; and c) a fatality, will cost insurance companies payouts of \$100-200,000, \$135-450,000 and \$850,000-\$1.3 million, respectively.” Automated technology that makes trucks safer would provide substantial cost savings for insurers.

The removed need for a cab. The driver cab is one of the priciest components of a truck. Trucks that don’t need cabs cost about 33% less than those with cabs.

With vehicle manufacturers hitting key targets more and more frequently, freight companies should stay on the lookout for opportunities to use autonomous trucks. Though driverless trucking will take some getting used to, it will provide businesses with newfound savings.



And the best way to cut freight costs is... **shared truckload**

Our top recommendation for leveraging technology to slash shipping costs next year is to use Flock Freight's shared truckload solution, an algorithm-backed service that lets several shippers share trailer space in one multi-stop full truckload.

With shared truckload, shippers pay only for the space they need and don't have to worry about broken, late, or lost freight. Freight travels directly from its pickup location to its destination (without passing through hubs or terminals), arriving on time with a 99.9% damage-free delivery rate. The outcome? Shippers avoid late fees and the costs of remanufacturing and reshipping damaged goods. With shared truckload, shippers can save up to 20% on shipping costs.

And the best way to cut freight costs is... **shared truckload**

Flock Freight's shared truckload solution also offers better visibility during transit. We move LTL freight with TL service, ensuring shipments never leave the truck until delivery and making tracking a cinch. This level of transparency is crucial to meeting customer expectations, especially in today's golden era of e-commerce.

We couldn't guarantee shared truckload service without our advanced technology. Flock Freight's algorithms solve a complex optimization problem quickly and at scale. To create shared truckloads, our pooling algorithms sift through an enormous number of shipment permutations with the goal of finding only those which are feasible to execute and economically advantageous for all parties. Origin, destination, weight, dimensions, commodity type, scheduling, shipping cost – These are just a handful of the numerous shipping constraints that our technology accounts for to propose viable shared truckloads. As we receive new shipments throughout the day, we continue to evaluate these shipping constraints in real time. Flock Freight's systems and methods are patent-pending.

Flock Freight is the only freight provider to guarantee shared truckload shipping. With our **Instant Prebate program**, shippers can instantly save up to 50% on contracted TL freight. Here's how it works: When you lock in a contracted TL rate and tender a load to us within 24 hours of pickup, we'll give you an instant prebate for that shipment and move it with shared truckload service if possible. With Instant Prebate, shippers don't take on any risk. Whether you end up filling a whole truck or not, you never pay more than your contracted rate.

There's no better time to make a change

Don't wait until 2021 to test new ways to save. The sooner you implement new systems, the sooner you'll see the benefits. Shippers that embrace cutting-edge tools and services will be in a better position to reduce costs, minimizing customer churn, identifying potential problems and streamlining operations. Invest in leading technologies today, then watch your business propel into the future.