

Supply chain disruption: Impacts on fleet management



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Introduction: The auto industry, supply chains, and you

The automobile industry is one of North America's most important economic engines. Brookings published a [piece](#) in 2024 that describes the industry as a whole—including imports and exports of auto parts—as “the largest component of total North American trade.” In order to build cars, original equipment manufacturers (OEMs) need materials. What makes up a vehicle? Steel, semiconductors, and lithium-ion batteries are essential. [Globally](#), OEMs purchase 12% of all steel (including 26% of U.S. steel), 13% of semiconductors, and 75% of lithium-ion batteries sold. When war and disputes over protective tariffs disrupt access to these resources, OEMs suffer, and consequently so do fleets. In this report, we'll analyze how current economic disruption is impacting supply chains, what it means for OEMs, and what it means for fleets.

How do OEMs manage supply chain in a stable economic environment?

As discussed above, cars cannot be built without suppliers delivering components including semiconductors, engines, and electronic modules. Thomas Staebelin and Katsuki Aoki describe the complexity of vehicle production in a [report](#) in the *International Journal of Production Economics*, “A modern car consists of 15,000 different parts and components, which are sourced from approximately 200 to 400 different first-tier supplier firms per plant.” In the auto manufacturing industry, the supplies used to build cars amount to 60-70% of the total cost to operate. Parts and components are sourced by way of a complex web of relationships. An OEM's production schedule is only as consistent as its suppliers are reliable.

Different auto manufacturers have different methods of scheduling their projects. The biggest scheduling variables include manufacturing conditions, managerial practices, supplier management, product customization, and product variety. Comparing an OEM's practices in two different countries, like how a manufacturer would operate in Germany compared to how one would operate in Japan, provides additional technical, cultural, and employment law variables.

Since 2000, nearly all automakers subscribe to the lean production and “just-in-time” principles developed by Toyota in the 1950s. The “just-in-time” process requires tightly synchronized supply chains. Lean manufacturing attempts to reduce waste by reducing the time that a worker stands idle, and by acquiring the minimum materials required so that materials rarely go unused. Automakers attempt to eliminate over-production - meaning making more product than can be sold in a reasonable amount of time - to make wait times as short as possible, to avoid inefficient transportation activities (shipping product that won't likely be sold) and unnecessary extra processing, and to diminish the inefficiencies involved when keeping excess inventory on hand. One of the driving principles of lean manufacturing is continuous improvement.

How is continuous improvement implemented? Through the project schedule, of course.

Automakers who work with lean production principles use a Kanban board to help organize their project schedules. Cards on the Kanban board represent tasks, which can be moved within the board to illustrate progress. The Kanban board can help managers track, visualize, and manage product backlogs. The production flow is also well-controlled to allow for greater productivity.

Supply management is an essential aspect of eliminating waste and practicing a “just-in-time” method. Line managers must fine-tune supply lists and deliver precise calculations for every aspect of operations. When OEMs face delays in supply delivery, or need to alter where and from whom they are purchasing supplies, it becomes increasingly difficult to maintain efficiency, master waste control, and keep production lines moving.



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Existing auto manufacturing trends—including electrification, regionalization, competition from Chinese OEMs, and technological disruption—are all continuing to impact the automotive industry

Since the advent of electric vehicles, the automotive industry has gone through significant change. With artificial intelligence, the industry will only continue this process of transformation.

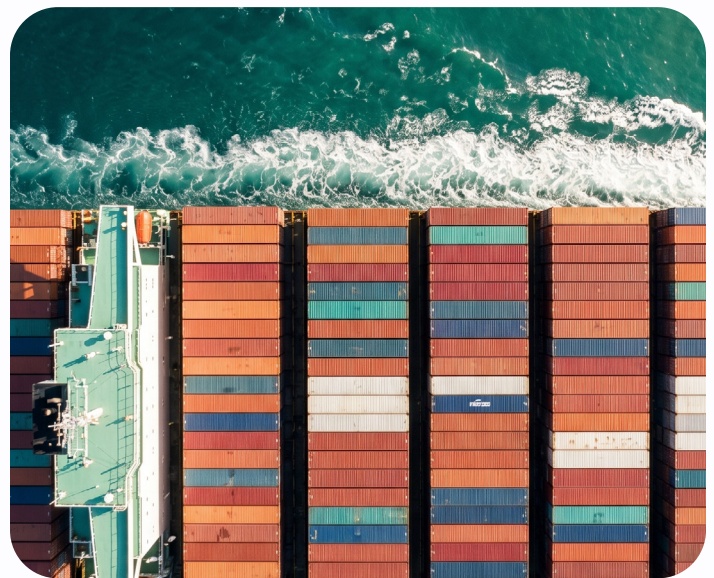
In June 2025, Annabelle Liang and Nick Marsh [reported](#) for *The BBC* on China's state-led ascendance in the last ten years, becoming the most dominant and advanced producer of electric vehicles. Liang and Marsh identified government subsidies as one of the most significant drivers of advancement. The Chinese government also created long-term plans beginning in 2007, which they have assiduously followed.

In the United States, the government has repeatedly wavered in offering the incentives which are critical to innovation. As one government administration replaces another, the removal of incentives significantly slows down the production process for OEMs. The top EV manufacturers based on market share are in China (BYD, Geely, Changang, SAIC, Chery), the U.S. (Tesla), Germany (Volkswagen, BMW), South Korea (Hyundai), and the Netherlands (Stellantis). Six countries are adopting EVs at the fastest rate. They are Norway, Sweden, Denmark, Finland, the Netherlands, and China.

Smart manufacturing technologies are already transforming the auto industry. As [The Economist](#) described it in 2022, vehicles have become “computers on wheels.” To keep up with advances in automation brought about by artificial intelligence, automotive factories will need to create complex new manufacturing processes. One example of advanced manufacturing is the way that industrial robotics are revolutionizing what our vehicles are made of and how we build them operationally. Auto makers who wish to compete in the market in the coming years will need to employ 3D printing (otherwise known as additive

manufacturing) in order to generate rapid prototyping. The benefits of additive manufacturing include faster lead times, decreased costs, and mitigation of supply chain risks due to an ability to make more parts in-house.

Designers have developed new production materials in recent years that also require automakers to make changes. High-temp superalloys, smart metamaterials, and advanced biopolymers are all contributing to shifts in how vehicles are manufactured. Beyond changes in their supply chain dealings related to these materials, OEMs also need to ensure that the technology they're building within the vehicle integrates seamlessly between the vehicle, devices, and broader mobility networks.



How global conflict, tariffs, and trade wars are impacting OEMs and fleets

Fleet managers looking to replace old vehicles, or add to their commercial vehicle fleets are directly impacted by supply chain issues that OEMs are facing. As [The Economist](#) reported in April of 2025, incoming levies imposed by the Trump administration represent the most disruptive policy in the history of global trade. When supplies dwindle due to protective tariffs, OEM production slows down, and vehicle prices increase as a result of demand outpacing supply. Today, the average cost of a new car is around **\$50,000**, and as of December 2025 vehicles costing less than \$20,000 became scarce. The supply chain isn't only influencing

the ability to purchase cars, vans, and trucks. Spare parts and after-market components have become harder to come by, impacting the ability for fleets to conduct commercial vehicle maintenance and repairs. Repair costs have also been impacted with auto repair costs increasing 15% in the last year. Fleet managers are facing elevated prices and a shortage of vehicles. The closure of the Strait of Hormuz has hit already strained vehicle supply chains hard.

America's war with Iran is compounding supply chain disruption during an already difficult economic period. The Middle East is a large supplier of aluminum and oil, so as a result of the conflict, oil prices have surged repeatedly above \$100 per barrel. This is due both to attacks on refineries and terminals in Iran and the Gulf region and the closure of the Strait of Hormuz. At the beginning of March, aluminum prices jumped to their highest level in almost four years as shipments from the region were disrupted, primarily due to attacks on Middle Eastern smelters and the closure of the Strait of Hormuz. The conflict triggered production cuts in the region—a region which accounts for roughly 9% of global aluminum output. A shutdown of deliveries from major aluminum smelters in Qatar and Bahrain because of attacks on their facilities contributed to the problem. For OEMs and fleet managers, this means a lack of necessary materials, delays to production, a decreased ability to purchase and maintain vehicles, and, inevitably, lower profits.

Experts have long warned that attacking Iran would result in the closure of the Strait of Hormuz, a narrow corridor connecting the Persian Gulf to global shipping lanes. As predicted, in the first days of the war, Iran closed the Strait. When shipping routes through the Strait are blocked, supplies needed to build vehicles such as aluminum, petrochemicals, steel, and sulfur don't arrive at assembly plants on schedule.

The implications of the war in Iran go beyond just aluminum and oil supply. The direct and most obvious impact to the conflict is on oil prices, but there are also air and marine cargo disruptions at play. Flights are being diverted around the Gulf to avoid landing in countries involved in the conflict and to avoid entering airspace that is controlled by those countries. These diversions mean manufacturers must adjust cargo shipment routes, adding fuel costs, and causing some exporters to reduce loads. As a result, the cost of airfreight from Asia to Europe has doubled since the start of the war, and the cost of airfreight from Vietnam to the U.S. has increased by almost half.

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And of course, marine shipments are also impacted—ships that usually pass through the Red Sea are rerouting around Africa, causing higher prices and delays. Insurance costs for ships traveling through high-risk zones have also gone up. As a result American automakers face a lack of access to and an increase in the cost of electronics and car components. For OEMs this has already resulted in paralyzed production lines, a reduction in output, and an increase in operational costs.

Tariffs are another source of chaos. The protective tariffs imposed by the American government have increased the cost of manufacturing outside of the United States. OEMs depend heavily on imported supplies. The percentage of auto parts sourced overseas sits at around 40%, said Dan Ives, the global head of technology research at [Wedbush Securities](#), a financial services firm. For automakers, tariffs impose budgetary and operational challenges.

OEMs are forced to evolve amid increasingly unpredictable global supply chains

Supply chains have been fragile since COVID. The war in Ukraine rocked the system starting in 2022, followed by Israel's war with Palestine beginning in 2024. The tariffs implemented in early 2025, ensuing trade wars, and eventually the war with Iran have led to deepening struggles to efficiently and cost-effectively move energy and commodities around the world. [Ashby Lincoln of CBT News](#) reported in June 2025 that Jeep, Ford, and Stellantis halted production in their factories due to supply chain disruptions. Aluminum, semiconductors, and rare-earth minerals are consistently unavailable, and this puts production plans into a tailspin. Industry leaders are investing billions (Stellantis alone announced a \$13 billion investment to help offset tariffs) to combat tariffs and explore supply alternatives, but high costs and a lack of access to supplies continue to be a major pressure on OEMs.

In response to supply chain disruption, OEMs and fleets have had to make significant changes to their operations. Read on to learn how they are adapting.



Strategy #1: **Focus on resilience**

To adapt to supply chain disruption one thing quickly became clear: OEMs and fleets need to boost their resilience planning programs. They have shifted resources to resilience planning, to respond to the current crisis while also ensuring they're better prepared in the event of future disruption. They envision a future where instead of reacting on the fly to mitigate unforeseen events, they'll have the tools in place for a proactive and strategic response. [Resilience planning](#) includes:

1. Risk assessment:

- Identify and categorize potential risks systematically.
- Evaluate the likelihood and potential impact of each identified risk.
- Prioritize risks based on their severity. This will allow you to focus resources effectively.

2. Mitigation strategies:

- Develop proactive strategies aimed at preventing risks or minimizing their potential impact.
- Ensure supplier diversity across geographical locations, company sizes, financial stability, and the possibility of dual-sourcing essential components and materials.
- Broaden customer reach by expanding sales channels to help generate diverse revenue.
- Invest in technology and automation to enhance efficiency and reduce vulnerabilities.



3. Business continuity:

- Establish clear and tested procedures to ensure the continuation of essential business functions during disruptions.
- Develop robust backup systems for your data and comprehensive data recovery plans to minimize downtime.

4. Stakeholder communication:

- Establish clear and consistent communication channels with all stakeholders.
- Provide regular updates on the organization's status and potential disruptions.
- Proactively address concerns and manage expectations to maintain trust and confidence.

With these systems in place, OEMs and fleets can be better equipped for future supply chain disruption.

Strategy #2: **Reallocate resources**

Many OEMs and fleets are working to diversify their supplier lists. As a reaction to unreliable access to supplies and parts from overseas auto manufacturers and fleet managers are now looking at contracting with local or nearshore suppliers. Reallocating where resources originate helps tighten the supply chain in the face of global conflict and resultant lack of access to supplies.

Strategy #3: **Incorporate supply chain strategy in C Suite level discussions**

OEMs and fleets have also increased their supply chain focus internally. Those controlling fleet companies and OEMs are taking on the responsibility of planning how to manage problems brought on by supply chain unpredictability. Once just a part of the sum total of operational planning, supply chain is now a top-level, standalone concern. When executives are in planning and strategy sessions, supply chain is its own line item. By focusing on the supply chain and its attendant concerns, companies are attempting to ensure that production lines stay operating and auto manufacturers' goals stay on target. For fleets, this means access to the vehicles they need is more assured, and ideally, it will also mean vehicle prices start to come back to a pre-disruption range.

Strategy #4: **Use AI for forecasting and planning**

OEMs and fleets are developing AI tools to help them forecast and plan for unexpected events, including mitigating the current supply chain crisis. For fleet operators that don't yet have a business resilience plan, AI is emerging as a helpful partner. Predictive analytics, real-time risk detection, and logistics automation powered by AI are already used widely. As with any use of AI, the human element is important. Placing people within the process to guard against glitches, false information, and misleading bias will be critical to supplant AI use.



Developing dynamism in operational strategy allows auto manufacturers and fleet managers to adjust their supply chains, shift schedules, and absorb knowledge from all the information flowing into the firm to make the most informed decisions. Innovating like this during times of high economic stress allows OEMs and fleets to thrive despite uncertainty.



Strategy #5: **Emphasize flexibility and relationships**

In a 2025 report published by the International Journal of Productivity and Project Management, Evlin Ellati and his team determined that both buyer/supplier relationships and a team's ability to maintain a flexible supply chain strategy contribute to a stronger outcome when firms face economic instability and disruption.

OEMs and fleets with strong and enduring relationships with suppliers form bonds that in some cases transcend disruption. There is interdependence between these two roles, and strong relationships help both meet their goals. As Ellati and team describe it, "Collaboration with suppliers has been found to positively influence operational productivity by fostering information flow, reducing uncertainty, and increasing profitability." These relationships are more than purely transactional. They involve trust, shared information, joint problem-solving, and aligned strategic objectives.

OEMs and fleets that adapt and are attentive to new technology, that reallocate their resources as it serves them to do so, will survive the turmoil that we are already facing and will continue to face in the coming years. This theory, developed by David Teece, is called Dynamic Capabilities Theory. Sensing opportunities, seizing them, and transforming assets help OEMs and fleets adapt to volatility in the market.

Conclusion: The road ahead—how fleets can adapt and what is within their control

Auto manufacturers have taken action in response to the current global supply chain crisis by diversifying supply sources and increasing inventory buffers, and fleets are using what OEMs have done as an archetype for their own planning. What really needs to happen is for both to take a look at their supply chains and build concrete strategies to react when faced with disruption. Focusing on resilience, reallocating resources to nearshore or local, elevating supply chain strategy within the org, using AI for forecasting and planning, and continuing to nurture your provider and supplier relationships will all help OEMs and fleets survive the current turmoil and emerge stronger.



About WEX

WEX is a leading, global fintech solutions provider, simplifying payments and back-end business processes in the fleet management, benefits management, and corporate payments areas. To learn more, please [visit the company's About WEX page](#).

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