

Pandemic-Induced Supply Chain Disruption Urges New Tech Solutions

Supply chain tech startups target visibility, flexibility and automation

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Credits & contact

Analysts

ASAD HUSSAIN Analyst, Emerging Technology

asad.hussain@pitchbook.com

VAN LE Senior Data Analyst

Contact PitchBook

RESEARCH

reports@pitchbook.com

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Key takeaways

- Supply chain disruptions related to the ongoing coronavirus pandemic are highlighting the need for technologies that can help ensure business continuity and mitigate the impacts of economic shocks.
- Supply chain sourcing and freight tech startups serve to improve management visibility into component sourcing and movement along freight channels, which could help companies better assess their risk exposures and plan accordingly.
- Digital warehouse marketplaces and on-demand storage providers can help companies keep inventory stocked where it is needed.
- Mobile robots and automation technologies enable cost savings and continuity of operations during labor disruptions.

Overview

The new coronavirus outbreak has led to major global supply chain disruptions. As of mid-March, nearly 75% of US companies had been affected.¹ Assembly and manufacturing plants have faced shutdowns, causing production delays and global goods shortages; grocers have struggled to keep household goods on shelves. Many global companies don't fully understand their risk exposure to the current crisis because they don't track where their direct suppliers source their parts,² which has constrained their ability to respond. Several venture-backed startups are developing software and data services that could be critical in helping companies improve supply chain operations and better manage these types of severe economic disruptions. The current crisis could catalyze long-term

1: COVID-19 Survey: Impacts On Global Supply Chains, Institute for Supply Management, March 11, 2020

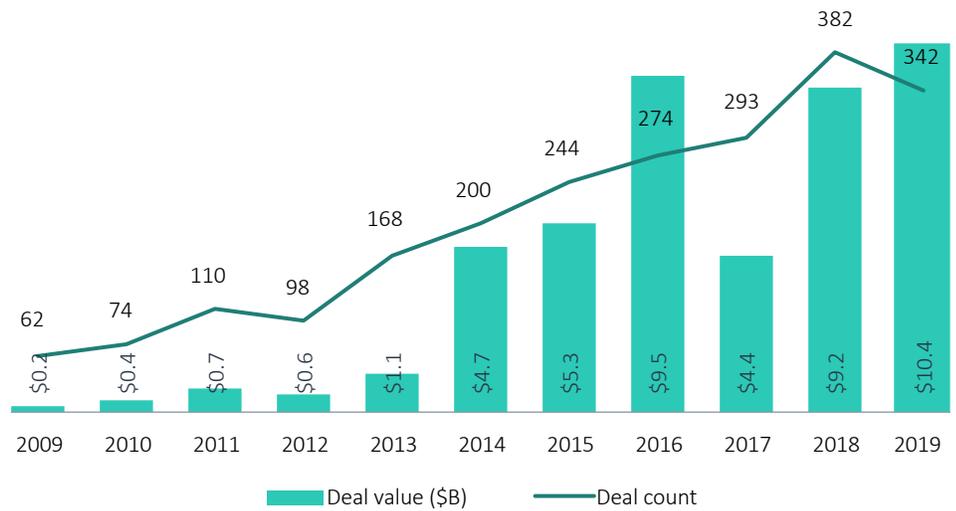
2: "From Superstorms to Factory Fires: Managing Unpredictable Supply-Chain Disruptions," Harvard Business Review, David Simchi-Levi, William Schmidt and Yehua Wei, January-February 2014 Issue

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investment into emerging supply chain technologies as companies seek to diversify their value chains and mitigate the risk of future supply chain shocks.

Supply chain tech VC deal activity



Source: PitchBook | Geography: North America & Europe

Supply chain visibility

HIGHLIGHTED STARTUPS*



Total VC raised: \$26M
Last known valuation: \$40M
Valuation step-up: 1.13x



Total VC raised: \$91M
Last known valuation: \$280M
Valuation step-up: 2x

Source: PitchBook
*As of March 15, 2020

Supply chain visibility refers to the ability of management teams to track the journey of parts, components and products from manufacturing to delivery. Startups in this space provide risk management, data analytics and real-time monitoring services that enable companies to react quickly to anomalies.

Startups focused on suppliers, such as Resilinc, may be well positioned to benefit from COVID-19's turbulent effect on supply chains. The company's platform maps supply chains to the component level, enabling management teams to better assess geographic concentration as well as risk exposure to natural disasters, outbreaks, geopolitical events and other potential disruptions. In its early stages, for example, the coronavirus primarily affected companies such as Apple and Autozone, which procure hardware components from China. For companies that similarly have extensive hardware supply chains sourcing components from affected areas, Resilinc can improve visibility and reduce risk exposure, enabling companies to adjust supply chains and alleviate the impacts of supply shocks. Additional venture-backed startups offering such platforms include Elementum, Riskmethods, DHL Resilience360 and Interos.

Whereas overall freight shipping has declined since the crisis began, shipments of grocery-related goods and certain medical supplies have increased significantly as consumers flock to stores.³ Keeping retail shelves stocked with goods and hospitals supplied with crucial medical equipment depends on a well-functioning freight system. However, shippers and customers currently have little visibility into where high-value goods are in transit, and this introduces even more uncertainty during turbulent times.

Freight platforms such as Project44, FourKites, MacroPoint, 10-4 Systems and Shippeo provide visibility when it is most needed, streamlining processes and diminishing friction in the supply chain. Project44 aims to improve visibility into load arrival times for shippers and carriers, with real-time updates and predictive analysis that help products get to market faster, limit product loss and downsize late delivery fines and fees. A differentiator for Project44 is its real-time API connectivity, whereas competitors tend to only provide intermittent updates. The company also provides an end-to-end platform that extends beyond transit functions to include visibility into planning, documentation and invoicing workflows.

³:"Coronavirus Fallout Pounds Chicago's Logistics Industry," Crain's Chicago Business, Steven R. Strahler, March 5, 2019

Supply chain flexibility

HIGHLIGHTED STARTUPS*



Total VC raised: \$64M
Last known valuation: \$193M
Valuation step-up: 2.33x



Total VC raised: \$297M
Last known valuation: \$600M
Valuation step-up: 1.67x

Source: PitchBook
*As of March 15, 2020

In recent years, retailers have adopted lean just-in-time (JIT) inventory management models to help them compete with Amazon. Using this model, companies reduce the amount of goods and materials held in stock, relying on real-time supply-demand data to match inventory levels to current needs. This trims warehousing costs without disrupting delivery speed. However, the system can break when the flow of production is disrupted or when demand for certain items rapidly increases, as is the case in the current crisis. Retailers across the US, particularly grocers, are experiencing shortages of common household items such as toilet paper and hand sanitizer in response to consumer hoarding and increased demand. Medical supply chains have also come under duress as physician visits ramp up.

Flexible on-demand warehousing can help retailers and inventory-heavy companies during periods of fluctuating demand. Providers with this focus enable companies to proactively stockpile inventory as needed without having to make prohibitively large investments into warehousing. Flexe, a digital warehouse marketplace startup based in Seattle, provides a flexible logistics solution for asset-intensive enterprises struggling to place inventory. Through its digital marketplace, Flexe helps match customers (which include Ace Hardware and Staples) with local warehouse spaces for excess inventory. These platforms can furnish small businesses, enterprises and other shipping intermediaries with the flexibility and scalability needed to maintain steady operational performance during periods of shifting inventory demand. Other venture-backed digital warehouse marketplaces include Stord, Darkstore and Spacefill.

Warehouse operator Clutter provides on-demand storage services for consumers. In early 2019, the company entered the B2B logistics space and began offering its services to small businesses. The company leveraged its experience with consumer on-demand storage—which requires the ability to allocate space for items that

don't fit well together—to serve the needs of small businesses with excess, incongruously sized inventory. On-demand storage is an attractive market as the competition is often from local operators with outdated technology and limited inventory-tracking capabilities.

Supply chain automation

HIGHLIGHTED STARTUPS*	
 <p>Total VC raised: \$94M Last known valuation: \$221M Valuation step-up: 1.17x</p>	 <p>Total VC raised: \$21M Last known valuation: \$50M Valuation step-up: N/A</p>

Source: PitchBook
*As of March 15, 2020

Warehousing, fulfillment and delivery industries are highly dependent on labor, which comprises 60%-65% of warehousing costs,⁴ and this has a downstream impact on consumers. We believe the coronavirus crisis is putting pressure on labor supply. For example, Amazon Prime's delivery model has struggled to keep up with demand, announcing a massive hiring push to staff warehouses. Additionally, rules that limit driver hours have been temporarily lifted to help meet demand for medical and grocery goods.

Robots and autonomous technologies can help warehousing operators maintain continuity of operations during labor shortages, minimizing disruptions to the flow of goods to consumers. Startups such as Fetch Robotics and Realtime Robotics that provide novel autonomous technologies are at the forefront of this trend and should be well positioned to benefit.

Fetch Robotics is a startup that provides autonomous mobile robots (AMRs) to improve warehousing and logistics operations, materials handling and data collection. Fetch differentiates from competitors by focusing on on-demand automation services. The company's AMR solution deploys over a short time span, enabling warehousing and industrial customers to implement small and large-scale automation in their facilities without making major facility or IT investments. Fetch's robotics-as-a-service subscription business model improves affordability for smaller enterprises and enables them to shift large, one-time purchase costs that would normally count as capex to smaller, more easily digestible operating expenses. We expect subscription-based business

4: "Managing Your Warehouse Labor to Reduce Overall Expenses," F. Curtis Barry & Company, n.d.

models to see wider adoption in the industrial automation space going forward.

Realtime Robotics is a startup that has developed a real-time motion planning chip that increases productivity for autonomous robots. Realtime's processor reacts to obstacles intercepting robotic motion plans and adjusts movement accordingly without being bogged down by conventional decision trees. This technology can be retrofitted to existing applications to improve speed and safety in variable, unstructured environments.

Conclusion

In addition to shining a spotlight on the need for supply chain technology, the coronavirus pandemic has revealed the consequences of not investing in the aforementioned solutions. This crisis is unlikely to be the last time global supply chains face a significant shock. Going forward, we anticipate increased interest from companies and investors in supply chain technologies to better position themselves for the next economic crisis. Our Q4 2019 Supply Chain Tech report highlights many additional technologies, companies and investments shaping the future of global supply chains.