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OPINION // OPEN FORUM

AI is going to disrupt supply chains. How that happens is still up to us

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Baby formula shelves are nearly empty at a grocery store in Carmel, Ind., in May 2022. The closure of a single factory last year caused a nationwide shortage.

Michael Conroy/Associated Press 2022

Since ChatGPT arrived on the scene last fall, business leaders have been salivating over the ways in which artificial intelligence might streamline their operations and cut costs. In July, one CEO announced he had already replaced 90% of his support staff with an AI chatbot.

Putting aside the disruption AI will undoubtedly cause in the workforce, there's another area in which the technology will have a major impact that hardly anyone is talking about: supply chains — and without proper governance and restraints, it will likely wreak havoc on them, and by extension, all of us.

The past few years have made clear just how fragile the supply chain is — and how breakdowns can produce dire repercussions. The COVID-19 pandemic upended traditional procurement processes and triggered waves of panic-buying, leaving store shelves bare and depriving people of everyday necessities. Today, shortages of life-or-death cancer drugs are forcing doctors to ration medications and make impossible decisions about who should receive treatment.

With AI in the picture, those shortages may become far more frequent and across far more industries.

Contrary to what many people think, shortages are rarely caused by deficits in raw goods. Rather, they're typically caused by *perceived* shortages of a good, which then leads to overbuying. And when companies and customers start overbuying, supply drains quickly — fueling the “shortage” myth even further.

This vicious cycle is exacerbated by the nature of our supply chain. Over the decades, suppliers have consolidated and contracted, leaving fewer to choose from in many circumstances. So when just one supplier fails, it causes disruptive ripple effects across the system. Case in point: Last year, a single factory closure in Sturgis, Mich., unleashed a nationwide baby formula shortage.

Adding to that fragility, many products we use in our day-to-day lives, like toilet paper or multipurpose cleaners, depend on what's known as just-in-time supply chains — meaning that companies move goods right as they're needed. So, it's difficult to adjust to problems in the supply chain or a sudden spike in demand.

Now, add AI to the equation. Let's imagine, for example, that a food manufacturer that relies on fresh bananas for production is worried about hurricanes. The manufacturer sets up an AI agent to monitor satellite imagery of weather patterns and purchase more bananas before a potential hurricane makes land. But several other companies have configured the exact same “buy more bananas” command linked to satellite data on a potential hurricane threat. If the systems detect a hurricane, mass purchasing would ensue. Then companies would detect growing shortages and order yet more bananas. Customers, too, might hear about the “banana shortage,” and start over-buying. Supplies would be quickly depleted.

But let's say that hurricane prediction was inaccurate or wasn't quite as severe as expected. There would have been a major shortage — all for naught. Moreover, if a canny trading desk wanted to profit, it's not hard to imagine them using these triggers to manufacture phantom demand signals.

Now, imagine if panicked supply managers or malicious arbitrageurs — investors who exploit market inefficiencies of any kind — used the sensitivity of these AI-driven monitoring systems to create or amplify artificial shortages that created life-or-death choices — like cancer drugs — rather than bananas. AI systems could be induced by signals in external data feeds to automatically order life-saving supplies ahead of a predicted shortage even when no real shortage exists. This could quickly snowball, creating the perception of a larger shortage, causing demand to spike and inducing an actual large-scale shortage.

This world of AI-disrupted supply chains might come faster than we think. Generative AI is spreading at a lightning-fast pace. In a recent report, Morgan Stanley analysts stated that “AI may be able to totally (or nearly) remove all human touchpoints in the supply chain including ‘back office’ tasks.” Nearly half of companies are considering forgoing some subset of planned new hires and using AI technology instead.

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To be sure, there are reasons to be optimistic about the impact of AI on supply chains. The technology can enable companies to make faster supply chain decisions, reduce hours and headcount devoted to manual data entry and nix convoluted or

frustrating back-office processes. AI could go a long way to transform and meaningfully improve our antiquated, single-threaded supply chain systems, thus making our lives fundamentally better.

But for the time being, companies need to keep humans in the loop for any AI system that triggers recommendations, especially for essential goods with life-or-death consequences. Humans will have a greater awareness of the consequences and chaos that can be created by sudden fluctuations in demand for specific “bottleneck” materials, medicines and machines.

Additionally, collaboration between different market participants — and even open communication between competitors — will be useful and significant to keep our critical supply chains secure.

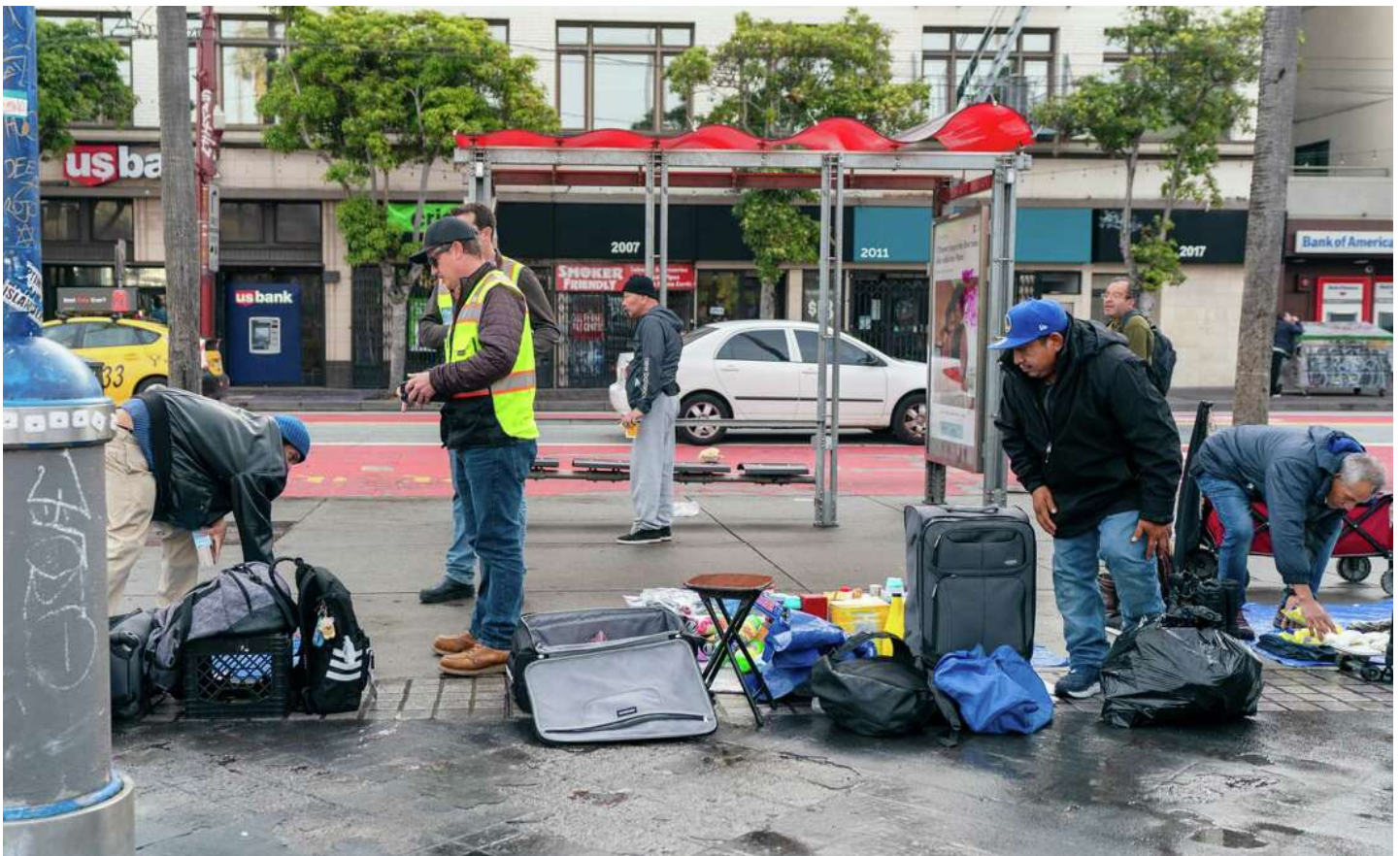
There’s no question: AI is about to upend our supply chain. Businesses have a duty to make sure it’s for the better, not for the worse.

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