

Operations Practice

COVID-19 and supply-chain recovery: Planning for the future

Rarely have supply-chain leaders faced more complex, changing conditions than they have during the COVID-19 pandemic. Here's how companies can manage through the crisis and build resilience against future shocks.



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In this episode of the *McKinsey Podcast*, Diane Brady speaks with Edward Barriball and Susan Lund about how the COVID-19 crisis has affected global supply chains and how various industries are faring.

Diane Brady: Hello, and welcome to the McKinsey podcast. I'm Diane Brady, in New York. If you've tried to buy a bicycle in recent months, like I have and failed to do, or you recall the great toilet-paper shortage earlier this year, you already know about the importance of the supply chain. That's what we're talking about today with two partners here at McKinsey who've worked on a groundbreaking study on the risks and resilience in the global supply chain or, as they put it, the global value chain.

Joining me are Susan Lund—she's a partner at the McKinsey Global Institute in Washington, DC—and also joining me from Washington, DC, is Ed Barriball, a partner in the Manufacturing and Supply Chain service line within the Operations Practice, who's worked on many of these issues across both the public and the private sectors. Susan and Ed, welcome.

Ed Barriball: Thank you, Diane.

Susan Lund: Thank you.

Diane Brady: Susan, I know about supply chains. What do we mean by value chain?

Susan Lund: A value chain takes the perspective all the way from where materials are mined, the metals that are created, how they pass through the system, and then finally how the final good gets to the customer. So a supply chain will be defined by a company, and it might include their first tier of suppliers. It might even include the suppliers of those suppliers. But very rarely do companies think of their supply chain as going all the way back to where do the raw materials come from and how do they come together at each step. So when we say value chain, we mean that whole process, from the mine to the end consumer.

Reckoning with disruptions

Diane Brady: It's interesting because the pandemic has brought this to being a consumer issue. Ed—I'll start with you, but Susan too—what has been the impact of the pandemic? What's different about it?

Ed Barriball: I think this is one of the most significant shocks that global supply chains have faced, really, since we started to globalize, decades ago. The reason that we undertook this work is because shocks like what's happened with the coronavirus are becoming more and more frequent and common. But this is certainly what the coronavirus really highlighted—the impact that shocks can have on these global supply chains. And so in terms of what it's done—I mean, I think it's actually, to Susan's point around value chains—it's had a huge impact not just on the ability to get supply from your suppliers in different countries around the world but also what's happening with the end consumer in these value chains.

So you referenced toilet paper at the start. All of a sudden, people were buying a lot more toilet paper than you needed for your house, and office toilet-paper demand was completely down through the floor. And because of that, you had people who couldn't get toilet paper. And so it's been both a demand surge in some areas that has really put strain on supply chains, not just demand drop-off and not just a supply problem. So it's truly been across the entire value chain that you've seen the impact.

Diane Brady: Susan, you're an economist. I'd love to just get your top-line thought of what surprised you. This is a global study, and you look across multiple industries. Anything that just sort of really jumped out to you as different about now?

Susan Lund: Well, one of the things that I thought was really surprising was the extent to which we were able to quantify that the world is a riskier place. I'll admit, we started this work last fall—fall of 2019—and pandemic was not on our list of supply-

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–Susan Lund

chain risks. We were thinking about things like trade tensions and trade disputes, or hurricanes or cyberattacks. And then COVID came out of nowhere. But even before COVID, we were able to talk to experts across industries and find out that, on average, companies now will expect to see a disruption to their production lines of one to two months, which is a very long time, every three-and-a-half to four years.

So even though each time there is a disaster, it seems like it's coming out of the blue, the fact is that the world has more shocks. This reflects the fact that we live in a multipolar economic system, so there are differences in economic systems competing with each other. It reflects rising temperatures around the globe that's creating more frequent and severe events, like typhoons and hurricanes, heat waves, and flooding. And it also just reflects the fact that we've spent 25 years creating these incredibly complicated, complex global supply chains. And they were designed for cost and efficiency, but without really a thought to what could go wrong along the way.

Diane Brady: Yeah, the just-in-time sort of very lean supply chains. That struck me in the report—the complexity of the supply chain in certain industries, but also the overlap in suppliers. Were there particular industries that look especially vulnerable?

Susan Lund: We looked at, geographically, where different global supply chains sit. And we find, for

instance, that mobile phones and communication equipment is the most exposed to a range of shocks. It's very exposed to trade disputes because these are high-value goods. It's exposed to some of the geophysical risks because it sits largely in coastal Asia. And it's also exposed to cybersecurity risks because it is a high-tech value chain with a lot of value at stake and a lot of intellectual property.

Preparing for future shocks

Diane Brady: Ed, I want to get to the resilience part.

Ed Barriball: I was just going to build on that. It's interesting. There are some industries that are obviously exposed to shocks. And Susan's describing the industries that are largely located in coastal Asia. But to her point about the fact that pandemics weren't really high on our list when we started this a year ago, I think it's a bit of a fool's errand to try and predict where the next shock is going to come from. Obviously, you should have an idea of what's out there and what could happen, and a sense of the probabilities. But we also really think companies should be not just focusing on the scary event—the hurricane, the cyberattack, the pandemic, whatever it is—but really focus on their vulnerabilities. What do you control? Where are you single sourced? Where do you not have visibility in your supply chain that you should? And focusing on those. If you try to predict what the next shock is going to be, you're probably going to be wrong

99 percent of the time. But you can certainly see where your vulnerabilities are.

Diane Brady: Where are most of the vulnerabilities? What do you find are some of the most overlooked areas where you can sort of have levers against these acts of God and other things?

Ed Barriball: I think it starts from a foundation, really, of actually just even knowing what is out there. So a lot of companies have relied for a long time on the people that they know, they buy from directly, to essentially manage whoever they buy from and manage risks around that.

You need to both understand and have a really good idea, based on who you buy from, of the risks that they represent to you and the vulnerabilities that they represent. But then you also really need to work on building the fact base of “if I try to get as good transparency as I can, and then who else I’m buying from, what vulnerabilities do they represent?” So I think there’s been a real shortcoming just in understanding the full scope of vulnerabilities, from who you know you buy from and from who they buy from.

You know, I think sometimes people think about, oh, financially fragile suppliers or, oh, the places I’m single sourced, and those are certainly vulnerabilities. But as we’re in the world we’re in today, I think looking at vulnerabilities in areas of data security—in reputation and structural exposure to things like climate change or things like trade tensions is really important.

Diane Brady: We’ve seen this push for transparency, Susan, in areas like retail, where consumers, for example, want to know where something is sourced, how much somebody was paid. How important is transparency in your mind as a lever going forward, and is it an area where you think that, you know, there’s some critical decision making taking place?

Susan Lund: Well, transparency is incredibly important because it’s an area that companies

can make this a win–win. So they can become more resilient by understanding their full network of suppliers, as Ed was saying, and then they can take steps to address it, so they can actually be more efficient and resilient. You pointed out that consumers have been worried about environmental and labor standards, so this has already been a push. But by understanding the deeper tiers of your supply chain, companies are finding that they have critical potential bottlenecks. So there might be a second-tier supplier who’s supplying five of your tier-one suppliers. So if something happens to that one node in the second tier, that could bring down a whole set of inputs.

You can go into the third tier of, you know, your supplier’s supplier’s suppliers and find similar things. And so by building visibility, companies can first of all build resilience, but then they also have an opportunity to rethink the network structure and geography of their supply chain.

Ed Barriball: Building on that with Susan, I think it’s not even just the transparency into the tiers that you don’t know about—that she was talking about—but with the number of acquisitions and mergers that occur, a lot of times companies might not even have that full picture for the people that they’re now consolidated from. So it’s even at the most fundamental level of getting transparency about what you buy from as an entity and also getting down into those lower tiers.

Getting resilient and productive

Diane Brady: I want to talk about the reality of the situation that we’re facing, and certainly the pandemic has touched so many industries, and looking ahead to the economic picture, investing in, building in redundancy or creating new control sounds like an expensive exercise. If I’m sitting here as a business leader, the equation that I’m making in my head is what can I afford to invest in this environment? Where is the most strategic use, for the most part, of my limited resources?

Ed Barriball: Well, I think the first thing I'd say is that you can't afford not to invest in this. If you don't invest in this, you're going to end up behind over time or as the world continues to change, and you're exposed to more and more shocks. You're just going to end up facing, over time, probably losses that aren't sustainable. And then, yes, I think others are going to. And our big challenge for companies in this situation is how do you get both more resilient and more productive? And I think many companies have the ability, long before you have to start making decisions, to ask "do I invest in something that's not going to make me more productive today?" There's a whole list of things that can make you more resilient and more productive. Can you actually have a different category strategy for things that you're buying? "I'm buying circuit boards. Could I actually buy them in a way that's more resilient and also result in lower cost because I have a more diverse set of sources to choose from? Could I think about redesigning how I design my products to actually allow me to have more diversity in my sourcing and make it simpler to assemble?"

The auto industry went through this, actually, over the past decade or so, since the Fukushima disaster in 2011, which was really a wake-up call for that industry to the risks they faced. They did things like dual sourcing and getting more transparency, but

they also focused on "how do I simplify my products so I'm not introducing a bunch of vulnerability from the complexity of my products?"

Diane Brady: So redesigning. That's interesting.

Susan Lund: I think there are two interesting examples of companies in the report. One, back to digitization, was Nike. Nike has China-based operations. Nike is a company that had invested in really understanding where goods were in its supply chain, through a digital platform linked to its contract manufacturers. And when COVID hit in January, it was able to see what products it had, reroute goods that were headed toward the brick-and-mortar stores that were shut down now, toward ecommerce fulfillment centers.

They were able to shift their marketing strategy to focus on marketing the goods that they had in stock, not the ones that they were planning to have but knew now they wouldn't have. And as a result, sales declined less in the first quarter, compared to other competitors. So that agility is a great example of how this does pay off over time. But I'd also say that one of the things we did in this report was actually try to size how much does it cost companies to have all these disruptions that are increasingly frequent. And what we found on average is that a company

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could expect, over a decade, to lose two-thirds of their profits in one year when you look over to ten years. It of course varies by industry, and it will vary by company, depending on how much inventory they hold and other elements of their own production system. But we hope that with this analysis, and by doing that calculation, companies will realize that they could invest up to that amount and still come out ahead if they take a multiyear view.

Diane Brady: How much are companies looking at this through a political prism, the trade realities. Susan, are they moving to new markets?

Susan Lund: Well, trade tensions are a big issue for companies sitting in every geography in the world. And there is definitely a sense that we are in a world in terms of government involvement in trade. And we had lived in a world, and everyone in business today had grown up in an era, where, basically, trade became more and more free as time went on, right? Tariffs went down, not up, and restrictions, nontariff barriers came down, not up. But we're no longer in that world, for a variety of reasons. So, yes, companies around the world—in the United States but also in Europe and also in Asia—are actively thinking about how are they going to cope with the new realities of trade tensions and where that could go.

Diane Brady: I was shocked at the percentage of the supply chain that could relocate across borders. I think it was something like one-quarter. What's the time line for that?

Susan Lund: The analysis we did was to try to get our arms around—based on both the economic factors involved in supply chains and the noneconomic factors—how much could reasonably shift over what we call the medium term, say three to five years. And the long term, a decade from now, clearly everything could move. But in the next three to five years—based on the business case for moving or based on the likelihood that governments are declaring your good that you're producing an essential item or important to national competitiveness or security—that could shift.

And we come up with a range of 16 percent to 26 percent of world trade that could take place among different sets of countries. It's not a forecast saying this will happen, but it at least gives you an idea. First of all, not everything can move. For those who say, you know, reshore everything, that's not really an option. That won't happen. But for others who say, well, supply chains are very sticky—nothing's going to shift—I think our analysis would suggest that's probably not the right answer either. So it is a big number. It's \$2.9 trillion to \$4.6 trillion worth of exports each year that could, over time, shift to different countries.

Diane Brady: Ed, a lot of what you do is regarding transformation. I think digitization plus transformation equals automation in many cases. What's the impact of this on jobs?

Ed Barriball: I don't think there's a blanket answer for that. I think there are people who have been predicting the demise of the need for human labor and the rise of robots to do all of our work for a long time, probably for decades—the idea that at some point we'll automate away all work, and humans will just live a life of leisure. And I think we've found that the world's a really complicated place, as this report highlights. And that probably isn't happening any time soon. So I don't think that there's any blanket implication for jobs from this. Will there be shifts, then, for certain types of work, as Susan is talking about? Absolutely. Value chains will move. They have been, and they'll continue to, and what we say in this report is that there's potential for significant shift in the medium term.

Diane Brady: Well, let me talk about what it means for consumers as somebody who's bought a \$3 roll of toilet paper at one point during this pandemic. Is that my future? Am I going to have to put up with paying more for what I want?

Ed Barriball: No. I really don't think that's the case. I think that there is a moment in time there where you could have such a discontinuity with coronavirus where there are some commodities and some

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—Ed Barriball

products that have gotten more expensive. But this is solvable problem. I really, truly believe that through the example like Susan gave with Nike in China—their ability to use digital to not only avoid really disruptive costs from this but also to be able to work with the marketing team and make sure that things are getting out to the market that consumers want and consumers will buy. And they were actually able to really satisfy their customer demands at the time and also avoid a really disruptive stop in their supply chain and in their logistic operations.

That to me is the future. And I would look to that and say how can we, as companies across industries, get to that point where we’re driving both better service to customers and also not increasing our costs.

Diane Brady: Susan, you spoke a little bit about the regional variations in industry. I’m curious, as you looked across industries, which ones are furthest behind? Are there particular ones that really strike you as most vulnerable, and where would they need to invest?

Susan Lund: One thing that we’d say is there’s certainly no industry that’s uniformly out ahead on this. There are companies within each industry that are leaders and have set up risk-management systems in their supply-chain operations, that have used big data analytics to forecast demand, who scan the horizon and see shocks coming and respond. But there’s no industry that’s done a great job. In fact, a survey that we did in May of global

supply-chain heads found that only in one industry— aerospace and defense—25 percent of companies thought that they had already fully digitized their supply-chain operations. And all the other industries were lower than that. So every industry just has massive opportunity to get out ahead of this.

How businesses are reacting

Diane Brady: Ed, what do you see companies actually doing? Where are we likely to see a surge of activity?

Ed Barriball: I think there’s a few things. One is I do think there’s a real push right now around this transparency question, and how do I get better transparency, both in the who I’m buying from and who folks that I buy from are buying from. And there’s some really interesting innovations. I was reading about a company that is starting to use a mix of satellite data and cell-phone data to track where their raw material is coming from. They source a lot of material from forests in Southeast Asia, and they’re very worried about making sure material is coming from farmers who are not practicing nonsustainable farming practices and a lot of slash-and-burn farming.

And so they’re actually using satellite data and mobile phone-data to actively monitor that. This whole idea of “how do I use all of the new sources of data that are available to me over the past five,

ten years, combined with processing power that I now have to get more transparency and to get better monitoring of our supply chain?”—that’s one big push. I think there’s going to be another real push around “how do I rethink how I’m running my organization to make sure I’m incentivizing the organization to build resilience as well as grow the enterprise and control our costs?”

It’s very typical for executives to have their performance-review metrics around revenue growth, market-share gain, productivity gain, cost cutting, et cetera. How do you add in there metrics about resilience? And how do you hold executives accountable for actually building resilience? How do I answer the question “am I more resilient now than I was a year ago or two years ago?”

Diane Brady: The supply chain almost sounds like it has to be taken out of the silo of the supply-chain officer and embedded more in the general organization.

Ed Barriball: Absolutely. I think it really now needs to be a CEO-level issue. One of the statistics that we have in the report is that 80 percent of global trade now flows through countries with declining political-stability scores. That’s not a siloed issue for companies to deal with. That is an issue that you need to think, in a cross-functional way, about what does this mean for us as a company. What does this mean for our value chain, as Susan articulated at the beginning—you know, the full chain from raw material to the end customer—and how do we need to respond to that.

Susan Lund: I think that a big shift we’re seeing in companies around the world is they are reevaluating the geography of their supply chains. First of all, you know, different costs of energy, of labor, of transportation have changed, so part of it is just a recalculation of very specific components. I’ve set a supply chain in a certain way; it may span the entire globe, but is that still the most efficient, given that we now have changes in wage rates around the world, and we have, you know, low-cost energy in some places but not others.

And now they’re going to embed resilience as well. One of the trends we saw happening even before COVID—and at the McKinsey Global Institute I’d written about in a report 18 months ago—was the regionalization of trade, how for the first time in 20 years, trade among neighboring countries was growing faster than trade between countries in different regions. So trade within Asia, within Europe, and within North America was growing faster than trade across those regions.

And that’s really interesting. And it was happening for several reasons not having to do with risk at the time. We thought, well, there is a premium on speed to market for any good that you sell to customers. It’s better to be able to capture shifts in demand. So in the fashion world and textiles and apparel, if an influencer like Meghan Markle or Kim Kardashian West wears a certain dress or uses a handbag, it flies off the shelves. So you need to be able to react quickly. So having suppliers closer and taking less time to get to your end-consumer markets was important.

There was also a premium put on being able to collaborate more closely with suppliers, and it’s just easier if they’re not halfway around the world. But now, on top of that, we’ve got the element of COVID and the realization that there is resilience. So one of the things Toyota did after the 2011 Fukushima disaster was it found that it was producing parts in Japan that were distributed to its plants around the world, and so production went down worldwide. After that experience, they moved to diversify their supply chains in North American, in Europe, and in Asia, so that a shock in one part of the world wouldn’t have this ripple effect. And a few years later, when the 2016 earthquake hit, they were in a very different position and saw much less downtime.

Diane Brady: We’ve talked about stress tests in the report. One thing that’s interesting is where the pressure regarding these value chains is going to come from. We’ve talked about bikes, we’ve talked about toilet paper, but there’s also food and, you know, personal protective equipment. These can be life or death issues. Give us some sense as to the

environment around this and how critical an issue this is at the country and the consumer level as well.

Ed Barriball: Right now, it's on the agenda of every C-suite that I speak with and that I hear colleagues of mine speaking with. Right now, it is truly a top-of-mind issue. I think what will really force change in this area over time is I think customers are going to start asking questions about "tell me about how resilient you are." And it might not always be the customer in the grocery store but, certainly, the grocery stores themselves. And if you think across all sectors, companies are going to now start asking their suppliers to help them understand how they plan for resiliency, how they are resilient.

So I think pressure will come from the customer. I think pressure will come from investors. Investors will realize that even if returns look great today, if the supply chain was designed in the way that they've been designed over the past couple of decades—

and there's fragility there—those returns aren't going to be stable over the long run. And so I think customers and investors will force this change.

Susan Lund: I would agree. I would add that I think that governments may play a role as well, that COVID has illustrated vulnerabilities in getting essential goods like medical equipment and supplies and pharmaceuticals in a hurry when they're needed in great quantities. And lots of countries around the world are thinking "how can we better understand those potential vulnerabilities and minimize them in the future?"

Diane Brady: Thank you to Susan Lund, who's in the McKinsey Global Institute, and Ed Barriball, in the Supply Chain and Manufacturing Practice. And thank you for joining us. If you want more information, go to [McKinsey.com](https://www.mckinsey.com). I'm Diane Brady. See you next time.

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