Season 3, Bonus Ep. 2, “Never Break the Chain,” June 13, 2023

Lingxiu Dong: Unfortunately, we just learn from these through disruption after disruption. And I think we're getting better as consumers in anticipating, guessing, you know, what products, what services might be affected if we saw disruption happen in certain parts of the world.

Kurt Greenbaum: For Olin Business School at Washington University in St. Louis, I'm Kurt Greenbaum, and this is *On Principle*. Remember back in the earliest days of the pandemic, back when we started noticing how hard it was to find toilet paper on the supermarket shelves? That, it turns out, was a big example of a supply chain disruption. And when my guest and I originally talked in May 2022, she remembered that moment as a turning point for consumers, a time when supply chains entered the common lexicon. She actually got questions about the subject at cocktail parties. As our regular listeners know, I'm a little bit of a nerd when it comes to this subject. So for our next season three bonus episode, I wanted to take a deeper dive into my original conversation with today's guest. So can you tell us your name and what you do?

Lingxiu Dong: My name is Lingxiu Dong, and I'm a faculty member at Olin Business School, in the supply chain, operations and technology group.

Kurt Greenbaum: So tell us a little bit about what that means.

Lingxiu Dong: The way I think about operations and supply chains, they are basically the critical component, critical functions, creating value, creating value in producing products, delivering services to clients. And technology is a critical enabler in that whole value-creation process. So that's what our group studies: creating value through delivering product and services, using operations and supply chain.

Kurt Greenbaum: It's like almost like a family tree with spikes or spokes coming out from each component and then how many spokes come out from each components' component. And then when you think about putting that on the supply chain for a car or an iPod or iPhone or something like that, it makes my head spin. So what do you think consumers don't understand about this topic? And then I'm going to ask you what about business leaders, whether there's something about supply chain management that business leaders may misunderstand. But let's start with consumers.

Lingxiu Dong: I think consumers, we really don't see the complexity, right? Or you don't see the trees, right? We don't see the network, the vast network, supply network behind producing and delivering the product. The product looks simple. So the complexity is beyond everybody's imagination, and the interdependence between stages, between the value-adding stages, how they are interdependent. So, for example, give you two examples of interdependence. Many industries share common resources, maybe share common raw materials, maybe share some capability, for example, logistics. So if the logistics, the ports, the trucking, these stages were disrupted, it's going to affect multiple industries.

So you have this resource disruption happen to those resources that are going to affect multiple industries, and you wouldn't think they are there. But now we know, we start to understand when port was not able to upload and unload goods. Who knows how many industries are going to be affected? Everybody needs that logistics service. So that's one type of complexity or interdependence. I can give you an example of raw materials. For example, the semiconductor. This is ... this is an example that we are getting familiar with in the past two years. We usually think, OK, semiconductors, OK, PCs use them, our ... maybe our iPhone uses them.

But nowadays with the technology advancement, a lot of industries are using semiconductor components or chips, right? We never know that the automobile industry would need so many different chips. So when the chip supply chain gets disrupted, we cannot get automobiles. We cannot buy cars from dealers. We start to realize multiple industries might be connected with each other, connected through what? Through the same type of suppliers they work with?

For example, semiconductor industry. Although they might produce different type of chips used in the PC in your mobile device or in the car, different types of chips are different, but they are coming from the same production facility. They share the workers. Right? They share the same kind of components. So if anything happens to that facility or to the raw materials that supply that facility, then multiple industries will be affected. So this kind of a complexity is beyond our consumers' imagination. Unfortunately, we just learn from these through disruption after disruption. And I think we’re getting better as consumers in anticipating, guessing, you know, what products, what services might be affected if we saw disruption happen in certain parts of the world. We're in a way unfortunately trained to think more in a more sophisticated way of how this world, how different industries can be interdependent.

Kurt Greenbaum: Now, listeners may recall that we first heard from Ling in an earlier episode that focused on Jimmy Sansone. He's cofounder of an apparel company called The Normal Brand. At the time, we asked Ling to help us understand some of the issues surrounding a rather abrupt disruption Jimmy faced in his own supply chain. In that conversation, Ling used the example of a pencil factory to illustrate some of the concepts. And I thought we might revisit that example today. You talked about the idea of adding value at different stages in the supply chain. Can you describe what you mean by that? Maybe give us an example?

Lingxiu Dong: I think it’s easier to explain through the process of making physical products. Making a pencil requires wood. Wood comes from forest. So you need to cut the woods. You need to shape or press the woods into certain qualities. Treat the woods, and you need to move—that's logistics—move the woods from mills to next-step factories for further processing, and you need to cut it into further smaller shapes. And so if you think about that piece of wood changing shapes each time getting closer and closer to the final piece that you actually can use to produce a pencil. Every step is value-adding because your shape and molded into the final product. And also the value-adding would be also the logistics, because you are moving it closer to the consumption stage, to the customer. So even if you think about agriculture products, apple. Planting apple tree, taking care of the apple tree, harvesting it, sort apples, depending on the quality, depending on the size, depending on the color. And ship it to the grocery store. All of these are, you know, transforming the products and processing the product, getting closer to shape and the quality that is acceptable at the consumption point.

Kurt Greenbaum: I'm wondering, in your experience, is there something about how supply chains work that you find business leaders maybe misunderstand?

Lingxiu Dong: Business leaders, they have a very deep understanding of the complexity of their supply chain. I would not say they have misunderstanding. I think that is a challenge of managing the sheer complexity. So some aspect of the supply chain can be overlooked until disruption happens. So that's, you know, complexity. That's a big thing, a big challenge. Another thing, it is not about misunderstanding. I think it's about making trade-offs. It is hard to make those trade-offs. We talk about efficiency, cost efficiency. We try to improve our processes and maybe cut down inventories and try to achieve low cost so that we can pass the cost saving to consumers.

But then the price we pay might be we sacrifice some of the flexibilities we have and make us vulnerable to disruptions. So how are we going to make that trade-off between cost efficiency and the resiliency? You know, there's a short term. We want to achieve profitability, cutting costs. There's also long term. We do not want our supply chain subject to disruptions and the consequence of that. So there's this trade-offs need to be made and that whenever you will try to make trade-offs it’s going to be hard because resiliency is hard to measure. How are you going to measure resiliency? Cost, we can see dollars and cents. Right? But you can manage that. But resiliency, what would be a reasonable metric for resiliency? How are we going to measure that? So I think that's a part of the challenge that business leaders need to deal with.

Kurt Greenbaum: If you didn't get a chance to listen to our earlier episode featuring Jimmy Sansone, I really recommend it. Jimmy shared the story of a breakup of sorts his company had with a sourcing agent who had handled his supply chain logistics. That breakup forced Jimmy to drop everything, fly to China and India, and identify factories himself that could produce the clothes for his next season. It was really eye opening for Jimmy on a number of levels, and I talked with Ling about some of those issues. Another thing that hadn't occurred to me before I talked to Jimmy was, and I think you've touched on this a little bit in our conversation, what hadn't occurred to me was the degree to which the third parties in the supply chain have a real influence on your brand. Jimmy's company has a brand, it has a name, it has a reputation or it's creating a reputation for itself. And, you know, this is what they want consumers to expect when they get clothing from them. But they have to be able to communicate that to their suppliers and the other components of their supply chain and hold those people accountable in some way. I'm wondering if you can speak to this idea about that dependency that you have on other people to live up to the brand that you're trying to produce.

Lingxiu Dong: That's what the supply chain is about. You rely on your supply chain to help you deliver your value. So we always ... in teaching supply chain management, we always say you're not competing with another company. It's your supply chain competing with another supply chain. So that's the idea … you cannot be just a winner by yourself. It has to be, your supply chain has to be winning rather than you winning. You are winning and your supply chain is losing. That's the mentality of the supply chain.

Kurt Greenbaum: We see the Target store sitting on the big parking lot and there's a Walmart across the street. It's not really them competing with each other. It's all of the things that underpin what makes a Target store function or a Walmart store function.

Lingxiu Dong: Exactly. So, yeah, in a way, it is Jimmy's supply chain and the other apparel brands' supply chain. These supply chains are competing each other, so you grow as a supply chain and hopefully that growth will benefit everyone in that supply chain.

Kurt Greenbaum: One of the things we've also touched on you've mentioned is this ... there's so many different components in a supply chain. And, you know, part of being a manager in a business is mitigating the risk or trying to anticipate risk. And I'm wondering if there are rules of thumb that have emerged in the research around supply chain management that business leaders might keep in mind.

Lingxiu Dong: One is related to the transparency, right? You really need to map your supply chain as comprehensively as you can to gain visibility into the supply side, the upstream side, as well as the downside, the customer side. And having that visibility means you know where your customers and where your partners are and what their processes are. And once you have that visibility, then you have the opportunity to assess your vulnerabilities in different stages of the supply chain. If one stage of the supply chain breaks down, then I need to understand how soon, how quickly it can be back up so that I can understand how much inventory should I prepare in case a certain stage of supply chain breaks down. Do I have enough inventory to survive that down period?

So having that assessment of vulnerability of the supply chain will help you devise your own risk management strategies, or maybe will help you to devise some kind of a strategy to help a certain part of your supply chain. In particular, those value steps that are provided by the small-, medium-size players that may need help to recover quickly. Transparency, visibility, these to assessment of vulnerability and then these to risk management strategy. And the next would be what would be the right mix of risk mitigation measures that you need to invest in and what kind of contingency plans for disruption scenarios. So that will be the sort of a three steps visibility eventually leads to developing the right mix of risk mitigation plans.

Kurt Greenbaum: You may recall that Ling spoke earlier about her academic focus, and she included the word "technology" in that explanation. I asked her to talk about what technology has her particularly excited as an academic and researcher in the field of supply chain operations. She didn't hesitate. It was the blockchain. Ling described blockchain technology as an electronic ledger that records details about transactions in a way that's secure and tamper proof and verifiable. Everyone with access to that ledger can record information and review transactions. And why was Ling excited about this? Well, it goes back to our conversation about transparency and visibility into supply chains. I might know a lot about my tier one suppliers but almost nothing about the suppliers of my suppliers. And that's partially because they may not want to share proprietary information about their intellectual property or their financing arrangements.

Lingxiu Dong: The beauty of the blockchain technology is that it can preserve privacy at the same time sharing information. For example, I could see, "Hey, there's a transaction recorded. Party A transacted with Party B and the amount of transaction, this is the money gets transferred." But I don't have to know who is Party A and who is Party B if they decide to protect that piece of information. I could verify certain transactions taking place between my tier one supplier and its own supplier. I can verify that transaction happens, but I don't have to know who that person is. Basically who my tier two supplier is. And that way you preserve some privacy, but also you can get the information that you think is necessary for you to make your plans.

So, for example, I know I'm a manufacturer, my tier two supplier—which I do not usually have the knowledge about—I know my tier two suppliers are probably usually small-, medium-size suppliers, and they need capital. They need help to stay financially healthy. And if they have disruption, they probably need capital to quickly recover from whatever disruptions they have. I cannot just go directly lend them money because I don't know who they are. But maybe the blockchain technology can reveal to me what kind of capital level they have. I don't even need to know, for example, who they are, but as long as I know there is this supplier that really needs capital to improve their reliability, then maybe we can have some kind of financing arrangement cross tier that I can help that supplier. Because I know if they are down then I'm not going to get my components and I'm going to be … I'm going to suffer from their disruptions.

Kurt Greenbaum: That could be a tool that I could use to map my supply chain, as you talked about earlier, to understand what the components of the supply chain are that are serving me without getting into proprietary information or intellectual property that the components of my supply chain might be reluctant to share.

Lingxiu Dong: Right. And usually that part probably should be handled by a third party who is impartial to any of the members in the supply chain that can help map out the supply chain without really revealing. In that context, the third party, sometimes they call themselves fintech companies, and they can play a role of facilitating that mapping, facilitating what kind of information and need to be uploaded, need to be collected, and the quality of the data that we collect is high. It's true information. So there might be opportunities for these new companies to provide services like that to facilitate the transparency.

Kurt Greenbaum: Thank you for joining us for today's bonus episode of *On Principle*. That's the second one for the summer as we keep working on our next season of *On Principle*, which is scheduled to begin in August 2023. I'd like to thank my colleague at Olin Business School, Lingxiu Dong, for being so generous with her time and her insights. Meanwhile, I'd like to invite you to visit our website at onprinciplepodcast.com, where you can catch up on all our past episodes where we feature illuminating "oh, shoot!" business moments from executives and entrepreneurs. I'd also like to invite you to subscribe to *On Principle* in your favorite podcasting app so you don't miss an episode. If you have any questions or comments or episode ideas, send an email to Olin podcast at W-U-S-T-L dot E-D-U. That's olinpodcast@wustl.edu.

On Principle is a production of Olin Business School at Washington University in St. Louis and comes to you with creative assistance by Katie Wools, Cathy Myrick, Judy Milanovits and Lesley Liesman. Special thanks to Ray Irving and his team at Olin's Center for Digital Education, including our audio engineer, Austin Alred. Jill Young Miller is our fact checker. Sophia Passantino manages our social media. Mike Martin Media edits our episodes with original music and sound design by Hayden Molinarolo. We have website support from Lexie O'Brien and Erik Buschardt. *On Principle* is the brainchild of Paula Crews, senior associate dean of strategy and marketing for the school. Once again, I'm Kurt Greenbaum, your host for *On Principle*. Thanks for listening.