IlLUminate Blog Transcript: **Zach Zacharia on the Biggest Threats to the Global Supply Chain**

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ANNOUNCER: 00:01	[music] This podcast is brought to you by ilLUminate, the Lehigh Business Blog. To learn more, please visit us at business.lehigh.edu/news.
JACK CROFT: 00:13	Welcome. I'm Jack Croft, host of the ilLUminate podcast for Lehigh University's College of Business. Today is December 20th, 2022. And we're talking with Zach Zacharia about the biggest threats facing the global supply chain for the first quarter of 2023, as reported in the latest Lehigh Business Supply Chain Risk Management Index. Dr. Zacharia is an associate professor of Supply Chain Management and director of the Center for Supply Chain Research at Lehigh. Lehigh Business Supply Chain Risk Management Index, or LRMI, for short, was developed in 2020 by the Center for Supply Chain Research at Lehigh University and the Council of Supply Chain Management Professionals. Zach teaches graduate and undergraduate courses in Supply Chain Operations Management and Logistics and Transportation. Welcome back to the ilLUminate podcast, Zach.
ZACH ZACHARIA: 01:11	Thanks, Jack.
CROFT: 01:13	Now, before we dive into the details of the latest Lehigh Business Supply Chain Risk Management Index, looking at the first quarter of 2023, let's set the stage by looking back at what has certainly been an eventful year in 2022. Just at the beginning of this month, for example, President Biden signed into law a bill passed by Congress to impose a contract deal on some 115,000 union workers that averted a railroad strike heading into the holidays. So I was hoping you could give us just a brief primer on the role that rail service plays in the supply chain and why the strike would have had such a devastating impact on not just the supply chain, but the economy.
ZACHARIA: 01:59	Yes, Jack. It has been estimated that a rail strike would cost about $2 billion a day directly to the U.S. economy. In fact, railroads are the most efficient transportation mode for moving heavy commodities that move in bulk over large distances. So, say over 900 miles, nothing really can compete with rail. When you're moving agricultural products, automobiles, heavy machinery, there is nothing that can match the cost per 10 mile. And also in some sense, they are more climate-friendly, as they say, when you look at the ability to actually move very heavy goods. So this is a critical part of the economy. And one of the other things, so if you had a rail strike, you're also going to stop much of the commuter train traffic that travels, because they also travel on freight rails. And if you stop the major transportation freight that gets moved on rails, it's going to stop many commuters from being able to go to their jobs across many large cities across the U.S.
CROFT: 03:13	Barring any unforeseen events, Russia's war on Ukraine will mark its first anniversary in February during the first quarter of 2023. Now, the war has clearly been one of the most disruptive things to happen to the supply chain over this past year, in addition to the tragic loss of life that's been involved there. So what are the main ways that the war continues to disrupt the global supply chain?
ZACHARIA: 03:45	Well, to me, the first thing that really, that people don't necessarily talk a lot about-- I mean, you can see that clearly the prices of fuel has gone up. There's a lot of certain

products. You've got agriculture. Ukraine was the breadbasket, and those kinds of things are important to consider. But an even more important factor is that there has been a profound shift in the way we view globalization. For over 50 years, there was an inherent belief that you built the product where it was cheapest to produce in terms of labor and raw materials, then had efficient transportation systems to bring that product into the market. But now that entire strategy has now been questioned, has been shifted because companies are realizing that even if you produce in some of these locations where it's cheaper to produce, you can be completely affected by what the government does in these other countries. So this is a profound shift that happened when Russia invaded Ukraine. And so now companies are starting to look at other locations, and maybe everyone is talking about bringing manufacturing back to the U.S., but this has been an incredible challenge. And one of the things we're going to talk about is, some of the labor shortages that we fear here in the U.S. But the war in Ukraine has really made companies thinking about near-shoring, and a new term that has just sort of started to become more popular as friend-shoring, that is finding companies that are still friendly to the U.S, that you could get some of the benefits in terms of lower labor costs and things like that, but making sure that their government has policies that will enable the free flow of goods, which are critical when you're thinking about that and supply chain.

CROFT: 05:45

And also, coming up within the first quarter of this year will be the three-year mark of the global COVID-19 pandemic. So how has that continued to affect the supply chain throughout this year and, with what has been dubbed the tridemic of COVID-19, the flu, and RSV threatening to, once again, overwhelm healthcare systems this winter, what effect is that expected to have on the supply chain?

ZACHARIA: 06:16

The key aspect clearly is that it goes back to labor, right? Do we have enough workers coming to the office and being able to actually perform adequately? One of the things that COVID really did was increase the speed of investment into IT so that it was possible for people to work remotely. The other thing that has happened is, there's been a profound shift that now it has become completely reasonable for people to work remotely if it was capable. In fact, many of the company leaders that I've talked to have now said that, in their companies, they're mandating three days in the office, because their staff is looking for opportunities to work remotely. One of the companies I know says that they mandate Tuesdays and Thursdays, and you can pick whichever day you want as your third day, Monday, Wednesday, or Friday, because then you know that people will be in the office for meetings. COVID has also made it possible for people to ask questions about the kind of work they do, the work-life balance, and really emphasize the need for flexibility. Now, especially in supply chain, we know that a lot of work cannot be done remotely, like in transportation and warehousing. But there are jobs that can be done remotely, and companies are challenged to explain why they need to have people in the office. The other thing that COVID has actually made very, very possible is that now when people are feeling sick, it's completely OK for them to stay at home. And I think that years ago, we expected people to tough it out and come to the office with a cold and so on. But now we really want them to stay at home. I mean, that is the norm. Do not come to work if you're sick. And I think that that has definitely impacted the amount of people that are actually working in the office and labor issues in general, which I think is something that is really sort of still remaining from COVID's impact on the economy.

CROFT: 08:23 And briefly, what were some of the other most significant trends or events that had an impact on the supply chain in 2022?

ZACHARIA: 08:33 Well, you named the two biggest events. You talked about the Russian invasion of the Ukraine and, of course, all the ramifications of COVID. But a third event that has actually become more important this year, I think it really is related to climate change. There's now a greater realization that climate change is real, and that it needs to be addressed in some fashion. And large companies are beginning to make plans to look at ways that they could potentially reduce some of the impact that they're having on the climate. And they're also realizing that consumers are willing to make sacrifices to be able to, perhaps, not really become carbon neutral, but at least reduce some of the emissions that they're doing that could potentially raise our temperature.

CROFT: 09:21 OK. Now that we've set the stage, let's turn to the new Risk Index Report. And just to recap quickly, the LRMI, as we've discussed on previous podcasts, is a number between 0 and 100, where greater than 50 suggests increased risk, 50 suggests the same risk, and less than 50 suggests decreased risk. Now, the overall average risk heading into the first quarter of 2023 is 66.96, which is slightly higher than it was in the fourth quarter of 2022, which we're just wrapping up, but down pretty significantly from the all-time high of 72.79 in the first quarter of this year, 2022. So what does that tell us?

ZACHARIA: 10:13 Well, first of all, there's been a significant reduction in risk. I mean, that clearly is there. And it is also important to note that the way the index is calculated, the relationship is not linear. So a decrease of 5 points is significant. So this suggests that a lot of uncertainty surrounding COVID, surrounding even the Russian-Ukraine war has settled. And people feel that they're better able to plan so that they can be more prepared. One of the things, that is all business managers and supply chain managers specifically, is that they hate uncertainty. When there is greater certainty, there's greater efficiency. For example, let's take, if a supplier says, "Look, the product will absolutely arrive in five days," that you can plan for. It's actually a lot more difficult to plan for if the supplier says, "Well, it could arrive in three days or two days, or maybe four days or five days," because you don't know when you need to have the staff available to unload the product. So I think that the reduction in risk that you're seeing is that people are getting more comfortable with the kind of impact that's gone on to the economy, and they feel more prepared going forward.

CROFT: 11:32 Now, in the new LRMI, economic risk leads the index for the third straight quarter and is, far and away, the highest risk index out of the 10 categories that you look at every quarter, at 87.97. And just for comparison, the second place, which we'll talk about shortly, is cybersecurity and data risk at 73.42. So what are some of the main factors that go into economic risk? And what are some of the issues the supply chain professionals participating in the index see as the most threatening?

ZACHARIA: 12:17 The kind of things that we ask our respondents to consider when they think about economic risk is things like energy costs, commodity price volatility, labor shortages, demand shocks, global energy shortages, border delays. As far as some of the things that supply chain professionals see as most threatening related to the economic risk index is clearly the war in the Ukraine and the impact that it has on the global economy, the rising price of oil, and the rising price of diesel and natural gas, again, very much affected by the war in Ukraine. Another factor that people actually wrote about in the report was, they're worried about inflation. Inflation has come down a little bit from the last quarter. But still, it is relatively high compared to what it was a year ago. Another issue is, still, there is a lot of pent-up demand in certain sectors. So you could see that when COVID came, a lot of that was sort of reduced demand and was waiting for a time now when products are available. So there is that kind of increased demand. And finally, a big issue is labor. There is still a significant shortage of labor in many key industries. And the companies that I've talked to still talk about the fact that they have very high hourly wage rates, at $25 an hour, that is still not attracting the kind of people that they expected to attract a few years ago. So these are definitely kind of things that affect the economic risk going forward.

CROFT: 14:10

And for the second quarter in a row, cybersecurity and data risk has the second-highest index number, as I had mentioned before, at 73.42, which is down just slightly from the previous quarter. So what factors enter into that category, and what are some of the biggest threats in cybersecurity and data risk that concern supply chain professionals?

ZACHARIA: 14:39

So the kind of factors we ask them to think about are cyberattacks, data corruption, data theft, system viruses, hardware-software issues, security platform controls. And the biggest threats that the people who wrote on the report were-- one of the things is that there's greater labor turnover, which means that the new people that are coming in are not as trained as well on the security protocol workers. There's more reliance on increased remote work. And when you're working remotely, obviously, that often leads to greater risk. And attacks are also getting more and more sophisticated. So this is always sort of a game where, as we put more of a better controls in place, the cyberattackers just come up with some new method. But I will say that this is really a risk that everybody knows, but the basic issue is actually people. People can get fooled. You can have incredible security systems. Even some of the most largest data breaches have just been people being careless or being fooled into thinking something. So of course, I'm sure you're aware there's a lot of the companies have used a two-step data verification, all sorts of things to try and figure out ways because this is a real problem going forward.

CROFT: 16:14

The issue of remote work would seem to be one that is a tough nut to crack, because you have employees all over the world, at times all working off of one network at the main office, or going through the same server. So the points of possible attack would seem to have increased almost astronomically in the past three years as more and more millions of workers are working from home with probably varying degrees of security on their personal computers.

ZACHARIA: 16:56

Absolutely. And you can see that a lot of the companies that I've talked to actually provide laptops that are just work-related. They use tokens. They use an internal VPN system. They make sure that those laptops don't get out of the country. And they have definitely-- you're absolutely right that companies are looking at ways to strengthen that, because people sitting on their personal computers at home, they are at greater risk for these kinds of attacks. But it's not like a direct attack. It's the little sale that, "Hey, look, you could win this. You could get that," it's these kinds of reasonable-looking emails that cause people to get tripped up. And I think that everybody that I've talked to suggests that you can have all these network protocols in place, but you've got to keep training humans. It's human behavior, employee behavior that leads to these issues.

CROFT: 18:09	Now, the third highest category in the current report is an interesting one. It's customer risk and it's in, very close to cybersecurity and data risk, at 72.78. But what I found particularly interesting is that it is up significantly from just last quarter, somewhere in that 5- to 6-point range that you had talked about at the beginning, with the overall risk, as being something significant. So what are the main factors that are driving the customer risk up?
ZACHARIA: 18:52	So the factors we typically ask our responders to think about is fast-changing customer demand, the customer loyalty, "How loyal are they? Is the customer demographics changing? Is it hard to predict customer behavior? Is it hard to service the customers? Are the customers being more unreasonable in some of their demands?" So these are all the factors that drive that index up. And clearly, two quarters ago when it was much, much lower, you had customers, and it was a relatively straightforward kind of demand that you could predict. When COVID capacity was tight, you had increased demand. But now you do have products availability, but everyone is a little bit more worried, "With inflation, are the consumers still going to come and buy product? And is consumer demand shifting?" As you know we went all the way to sort of an e-commerce approach, and now retail stores are coming back. In fact, it was just announced that Barnes & Noble, one of the big bookstores, have actually opened up new bookstores, because they're starting to see that people are coming back to in-person shopping. So the way that the risk index is there is that it's harder to predict what the customer is going to do. And you've also had a couple of the large retail stores, both Target and Walmart, just a quarter ago saying that they are flush with inventory, and they're hoping that consumers will come back and buy all the product that they've already stored, because they were worried that they were not going to get product in time. So they bought products six months in advance of what they normally buy just to make sure the product was available. So this risk is, is that we are not as fully sure that the customers are going to come back and buy everything. And that's one reason probably the risk is high.
CROFT: 21:03	Another one that I found interesting was transportation disruption risk, which is something we've talked about a lot in previous podcasts, looking at the various reports for the LRMI. And it is now in sixth place after consistently being up near the top. And in fact, in both the first and second quarters of 2022, it was the highest index category. And I believe that it actually had the highest score that the index has seen in any category, at one point. So obviously fuel prices have come down quite a bit from the peak, although they're still high, as we all know. So why is transportation disruption risk seen as relatively less of a threat now compared with the other categories?
ZACHARIA: 22:02	You're absolutely right. The transportation disruption risk was the highest ever. That has been the highest risk index in any of the categories over the last two-and-a-half years that we've been looking at this. The major reason that the risk has come down is that the demand for transportation has dropped significantly as the economy has slowed down. This has meant that there's trucks available. When you're looking at the first quarter of 2022, the spot prices in the truck market was ridiculous because you had COVID issues, you had labor issues, and you still had demand for shipping product. But now a lot of the warehouses are completely full. They need the consumer to come back and buy the products off of the retail shelves so that we can ship products out of those warehouses into those retail stores. So the demand, overall demand for transportation, has dropped significantly. So you know you can

get a truck to haul goods from one part of the country to the other. And so there isn't that risk. And also, remember the backlog of container ships that reached all the way up to about 70 container ships in Los Angeles at one time?

CROFT: 23:17 Oh, yes.

ZACHARIA: 23:20 Well, you don't have that. Container ships are unloading. I think they're at one ship waiting. You don't have these ships just going around the ocean waiting to unload. So all of that has meant that products are flowing through the supply chain, and you don't have this huge demand and huge prices. The prices of container ships have dropped so much and same with truck transportation. So the risk has dropped significantly as well.

CROFT: 23:51 All right. Now, those were the things that I had spotted on the report that I thought were interesting. But I'm sure you probably have more. So what are some of the other trends you've spotted in other categories that you think we should be aware of?

ZACHARIA: 24:05 So I think the one issue - and we sort of touched upon it - is labor. Clearly, labor is, I think, the biggest issue going forward. Many companies are still looking to hire. And as I mentioned before, they're not getting workers willing and able to come in and do the work that is needed to get those products out the door and those kinds of things. Both the service industries and the manufacturing industries are really suffering from a lack of labor, especially the smaller companies. And that has meant that you're just not getting the kind of goods through the economy that you really need to do for it to be more efficient. So we also don't have necessarily the right labor pool to meet the jobs that are in demand. So there is a bit of a mismatch between the kind of jobs that we need people to fill and the kind of skill sets that the people have. So to me, that is still the biggest issue, and that's going to be a big issue even going into 2023.

CROFT: 25:05 Now, we started off talking about the year that is ending and all of the disruptions and challenges that the supply chain faced during the year. So let's end on a more optimistic note. The dawning of a new year is usually a time for optimism. So what do you see in the supply chain that gives you hope for 2023?

ZACHARIA: 25:36 Well, the biggest thing that I'm seeing in talking to companies and also in the LRMI, my sense is that we are going to have a very mild, if any, recession that will likely be able to-- the economy will be able to be back up by even the third quarter of next year. In other words, I see that the economy is going to recover. Now, companies are working with their employees to find more ways to be more flexible, find ways to improve efficiency. And another sign of optimism is, real discussions are going on for ways to reduce greenhouse gases. Companies are rethinking their supply chain to have more inventory available and to make sure that production is closer. So we're getting better at handling large disruptions, especially if it's across the globe. Overall, I have a strong belief that the U.S. economy is going to continue to grow. And I'm very optimistic that companies are going to become more resilient so that they'll be able to overcome any disruptions because we know that disruptions are going to happen. And I think that we've learned a lot over the last few years on how to handle major disruptions. And I think that that will enable us to become even more successful when these disruptions happen going forward.

CROFT: 26:59 Zach, it's always a pleasure. And thanks for being with us on ilLUminate again today.

ZACHARIA: 27:04 Thanks very much, Jack. I really appreciate this opportunity to talk to you about the Lehigh Risk Management Index.

CROFT: 27:10 As director of the Center for Supply Chain Research at Lehigh, Zach Zacharia and the faculty and students at Lehigh Business are generating new ideas for education and future knowledge in the field of supply chain management. This podcast is brought to you by ilLUminate, the Lehigh Business Blog. To hear more podcasts featuring Lehigh Business Thought Leaders, please visit us at business.lehigh.edu/news. And don't forget to follow us on Twitter @LehighBusiness. [music] This is Jack Croft, host of the ilLUminate podcast. Thanks for listening.