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LEADERSHIP & BUSINESS PODCAST

EPISODE 157: RAM GANESHAN – SUPPLY CHAIN & THE PANDEMIC

Ken White

From William & Mary in Williamsburg, Virginia, this is Leadership & Business. The podcast that brings you the latest and best thinking from today's business leaders from across the world. We share the strategies, tactics, and information that help make you a more effective leader, communicator, and professional. I'm your host, Ken White. Thanks for listening. Well, if you've tried to purchase new furniture recently or chlorine for a pool or even certain makes and models of new cars. You may have been told you'll have to wait several weeks, possibly several months, before the product is back in stock. Items from lumber to clothing to electronics have been difficult to find in recent months. Well, the reason is often tied to the supply chain, which has been adversely affected throughout the pandemic—forcing consumers to wait until their new purchases arrive. Ram Ganeshan is a professor of operations and information systems management at William & Mary's School of Business. He teaches supply chain management and digital strategies courses. His research and consulting interests include supply chain management and logistics strategy. Professor Ganesan says the shortages we see now are the results of decades-long developments in supply chains, and the pandemic simply tipped it over the edge. He joins us today to discuss supply chains, their complexity, and why the shortages are happening. Here's our conversation with Professor Ram Ganeshan.

Ken White

Well, Ram, thanks for joining us. Great to see you. I appreciate you sharing your time and expertise with us today.

Ram Ganeshan

Same here.

Ken White

So supply chain, it's one of those things. I think people know the term, but they don't. Many people don't understand really what this is. What is supply chain? You've used the term division of labor. Can you explain what supply chain is?

Ram Ganeshan

The easiest way to think about it as supply chain is the series of activities that source the components, and something is made out of it, assembled, produced, manufactured, and then it slowly makes its way to the end customer via our distribution centers and ports and rail and truck and so on and gets to your local store or stuff like that. So it's a series of events that gets makes the product and gets it to you. And then the second part of the supply chain is once the product is used, how it's disassembled and reused and recycled, and so on. So that's the reverse supply chain. So that, in a sense, is what I would consider a supply chain.

Ken White

And in our world today, we need to rely on that because some products are pretty complicated, aren't they?

Ram Ganeshan

Yes, most products are. You know, your iPhone, for example, is it has at last count more than 60 or 70 metals from the periodic table.

Ken White

Wow.

Ram Ganeshan

Those of you have it hanging on your bedroom wall would know that. Not only that but it's designed in, of course, California. And all the components are made in Taiwan and Korea, and Japan. And it's actually assembled in China, and it's shipped to the United States. Where most of the demand is for the iPhone. So supply chains have not only are complex, but they've also become very global.

Ken White

We're seeing some shortages right now in various products. This didn't happen overnight, did it?

Ram Ganeshan

No, it didn't. And part of the reason we are actually seeing it now is of how supply chains have evolved over time. It used to be that 30 years ago, the common reason why large multinational companies outsource, especially this may be obvious in apparel to the Far East, is because of labor costs. So they were able to save on labor and then show a quarterly increase in profits and so on. But the way it's evolved now is supply chains have what I would call become not only global, but they've also become very specialized and very concentrated. The semiconductor was a case in point, actually. If you look at the

semiconductor supply chain if you look at the demand for chips. China and the U.S. account for half the world's demand of semiconductors. Twenty-five percent each. But if you think about how the semiconductors are actually made, the U.S. spends the value added by the United States is largely in the design and the core I.P. Folks like Intel design the chips. And what has happened over the last twenty-five years is we don't have any fabrication at least of any sufficient capacity in the United States. And most of the fabrication of those chips happened really in three countries, Taiwan, South Korea, and Japan. So they do most of what they call wafer fabrications. And you've seen pictures of people in white suits going in cleaned rooms. And so that's where that happens. It's a very expensive thing to do. And the industrial policy in those countries and the particular companies have decided that this is the way they want to go. So most of wafer production happens in the Far East, and then China has taken the more of the assembly and the testing of the semiconductor. So the United States still, if you look at the in totality, the United States still, if you look at value-added, has 40 percent of the value chain of some of the largest in the world still. But they only make certain things. They only do certain parts of it. And we can call it division of labor, if you may. So Taiwan is the only country in the world that does the less than 10 nanometer, which is the faster, more advanced logic chips. So that's how they've sort of become not just global but concentrated and highly specialized, which is leading into some of these shortages.

Ken White

Yes. So what happened then, for example, the semiconductor.

Ram Ganeshan

So the first signs of the pandemic was in February. That's when things in China and Taiwan, and Japan started shutting down.

Ken White

Yes.

Ram Ganeshan

So we lost some capacity there. And then in March and April, when we shut down. The demand for let's talk about the auto industry because that's where we're seeing it.

Ken White

Right.

Ram Ganeshan

The demand for new cars and rental cars just plummeted.

Ken White

Sure did.

Ram Ganeshan

And if you look at the auto industry, they have long been operating on what is called the Just-In-Time system. So they hold just enough inventory, and they become extremely good at cutting costs and cutting costs and keeping it running a tight ship. So as soon as they saw the demand go down, they just cut their orders for parts and supplies of semiconductors from the Far East because that's also spread globally. Interestingly enough, as we were shutting down demand for certain products and we have all heard of the pelotons, right.

Ken White

Sure.

Ram Ganeshan

That started increasing your webcams and your computers and iPads and so on and so forth. So what was happening is the semiconductor capacity started being reallocated from auto to all these different products where there was an increase in demand. So the change in consumer patterns caught the auto industry in a bind. But then there are other issues. They were geopolitical issues, obviously. President Trump, for example, banned Huawei and GTE. And what they started doing was they started holding the 5G chips because they saw this coming.

Ken White

Right.

Ram Ganeshan

And they started holding the chips at a time. And then certain semiconductor companies in China got blacklisted, some of the big fabs, for example, and they lost that we lost that capacity there. The issue then we had some small hiccups like fires and fabrication plants and Taiwan and Japan that sort of jammed up the system. That clearly put a lot of pressure on semiconductors. So and because it's a very capital investment intensive industry, you need big machines and clean rooms and so on. A small fire can mess things up quite a bit.

Ken White

Yeah.

Ram Ganeshan

So it's not a matter of, you know, cleaning it normally.

Ken White

Right.

Ram Ganeshan

It's a special thing. So, yeah. So it's not easy to change capacity.

Ken White

Right.

Ram Ganeshan

It takes about nine to 12 months. So what we are anticipating is maybe the semi shortage might ease up by the end of this year.

Ken White

We'll continue our discussion with Professor Ram Ganeshan in just a minute. Our podcast is brought to you by the William & Mary School of Business. Our post COVID world will require new skills and new approaches. Well, those skills and approaches are taught in the William & Mary MBA program. We offer four different MBA formats, including the full-time, the part-time, the online, and the executive, all taught by our top-ranked MBA faculty. The William & Mary MBA will prepare you to lead and succeed in our new world. Check out the MBA program at William & Mary. Now back to our conversation with Professor Ram Ganeshan.

Ram Ganeshan

I don't know if you want to talk about the logistics of getting those things to the U.S.

Ken White

Yeah, I think that's we see it in the press, right?

Ram Ganeshan

Yeah.

Ken White

We see the cargo ships sitting, you know, outside of Norfolk or Los Angeles.

Ram Ganeshan

Yeah, so I talked about the increased demand. Part of the issue of the increased demand is you had all these containers full of stuff. I mean, this could be board games or whatever else.

Ken White

Sure.

Ram Ganeshan

It's filled with that people were ordering. And part of the reason is the demand shifted from services to products. So we no longer going out to eat and we not going to cinemas or concerts or getting massages or whatever. So disposable income was being spent on these different things.

Ken White

Right.

Ram Ganeshan

And they were all a significant portion of it was coming from outside the United States and the supply. So you saw even a small increase, you know, 10 to 30 percent increase in some products. The suppliers were working overtime, and these containers full of stuff were coming towards usually they come towards the California ports because those are the closest to China. And clearly, that created a huge logjam. And I read a statistic somewhere that an average of 40 ships were waiting, an average of anchored for seven days to actually get into the port.

Ken White

Wow.

Ram Ganeshan

So think about this big not only that, the folks who are working in the ports were at lowered capacity simply because COVID restrictions. Ports couldn't go in 100 percent capacity. So those two contributed to the port congestion. But an interesting another statistic was the Port of L.A., for the first time last year, handled more than what they call one million TEUs. TEUs the easy way to think about it is a 20-foot container would be one TEU. So typical 40 foot would be set to. This is simplifying things, but more than a million the first time ever.

Ken White

Wow.

Ram Ganeshan

So they're working, and it's not like they're doing significant business. There's a problem that's associated with that, which is the trade imbalance. I mean, you heard you heard of politicians talk about it all the time. So we're getting the containers full of stuff, but then we're not shipping them full of stuff. Now, second issue that has come up in port operations is container availability. So we have these full containers that take several days to empty out. And the reason it's taking several days to empty out simply because the warehouses are full. So they don't have room to put these containers anywhere.

Ken White

Wow.

Ram Ganeshan

So it's sort of backed up that way. And now, when you have an empty container now, it has to go back to get it filled. So so you have to load it up onto a ship which takes significant amount of time.

Ken White

Sure.

Ram Ganeshan

Ship it to wherever it needs to go. So this has created a sort of a global maritime problem of port congestion. Of course, we could talk about the ship getting stuck on the Suez Canal.

Ken White

Right.

Ram Ganeshan

Wow.

Ken White

Yeah. I mean, it makes sense. It makes sense that when you think about it, when organizations, when it comes to supply chain companies, Fortune 500 companies, manufacturers, they'll practice crisis communication. Right. They'll practice for something that could happen in a public relations manner that could affect them. Do they do that with supply chain? I guess my question is, did no one see this coming, basically?

Ram Ganeshan

They saw it coming. I think there are multiple reasons why we find ourselves here. You know, Don Rumsfeld, who was our defense secretary, once said, you know, he did a four by two by two grid. The known knowns and the known unknowns and the unknown unknowns. The pandemic was definitely unknown, known. And so we just didn't know when it was going to hit. But we know it was going to hit. I mean, firms do take a lot of spend a lot of time and energy managing risk in the supply chain and disruptions in the supply chain. But most of it involve, for example, you hold a little bit more inventory than before to buffer against it, or you find some capacity somewhere, or you diversify your supply base. So if some something goes down, you can. So there are several examples that do exist. But the pandemic was unique because, for several products, the demand went down to zero. So did the supply. If you take recreational vehicles, for example, the demand was shooting through the roof, and you didn't have enough supply to make it. So it was on both sides. I mean, so I think many planners need to grapple with should we plan for a state of being in a pandemic all the time, which can be a very expensive supply chain. So you have to take your you have to balance your risks.

Ken White

Yeah.

Ram Ganeshan

So you go with the smaller risks, you cover them, the larger risks, you have a larger, bigger plan so.

Ken White

Long-term, how is important? How is the relationship between the U.S. and China affecting supply chain long term?

Ram Ganeshan

Well, we about when China joined the WTO 20 odd years ago, we really joined hands with them saying we're going to work with you. I mean, if you look at the Fortune 500 companies, it'd be hard to find a company that does not do business in China or actually get its revenues from China. So it goes both ways. So we buy stuff and sell stuff to them, too. So the real solution is, do you know what I would call broker a détente between China and the U.S.? I think we need to figure out a way to work together. I think that's the real solution. Trying to posture sort of adversarial posturing is not going to help.

Ken White

Were there winners or losers? I assume a lot of losers throughout the pandemic in terms of products and sales. Were there any winners in all of this?

Ram Ganeshan

I think it's a sort of a scale. Right. How much did you win and lose? And unfortunately, I think the biggest losers let me start there are small businesses that didn't have the scale. You know, I am, for example, big coffee drinker. And I also love craft beer. And unfortunately, because demand simply disappeared and they didn't have the sort of the skill to do digital delivery and have like a touchless thing. Many of the small businesses, unfortunately, didn't fare really well. The Cares Act did help, but not enough. I think some of the large multinationals are doing really well. I mean, I mean, just look at some of the quarterly announcements for profits, right. It was a blockbuster quarter last year, and it's going to be a blockbuster quarter this year for some of the big guys in the Fortune 500. So they were winners, I think, in many ways. So, yeah, it's unfortunate. And I think we do need some sort of an industrial policy. The U.S., I think, has been hesitant to have a policy, but I think we do need something to protect this knowledge. And because small businesses are the majority of what we have here.

Ken White

And for the consumer, if you're waiting, you just hang in there. It's coming right. Whatever it is you're waiting on is coming eventually.

Ram Ganeshan

I mean, yeah, if you have to buy a house, you don't have a choice, you pay more. I mean, that is the nature of things. But we've heard about the lumber shortage, but it's coming slowly back to normal. Of course, toilet paper is also somewhat back to normal.

Ken White

Yeah.

Ram Ganeshan

There has been some adjustments, but some of these inflationary pressures are sort of easing, at least from a supply chain perspective. I think the economy is going to do really well, at least the next quarter, from what I can tell. Yeah, I think I think hopefully, as more of the world gets vaccinated and things slowly begin, normalcy begins to appear. I think in the U.S., it's still somewhat feel to normal now, since about, oh, close to 70 percent of us are vaccinated. But you still can't travel around the world. It is still not normal for most of the rest of the world. So I think once that eases, I think we'll see things slowly getting back to where they were. At least, let's hope so.

Ken White

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